Site Inspection Report
QualaWash
South Gate, Los Angeles County, California

EPA ID No.: CAN000909573
USACE Contract Number: W912P7-16-D-0001
Document Control Number: 20074.063.105.1009

Appendices

Appendix A: Latitude and Longitude Calculations Worksheet

Latitude and Longitude Calculation Worksheet (7.5' quads)
Using an Engineer's Scale (1/50)

Site Name QualaWash **CERCLIS #** C A N 0 0 0 9 0 9 5 7 3

AKA

Address 8332 Wilcox Avenue

City South Gate **State** C A **ZIP** 90280

Site Reference Point Aerial – geometric center of site

USGS Quad Name **Scale**

Township **Range** **Section** **3** **3** **3**

Map Datum **1927** **1983** **(Check one)** **Meridian**

Map coordinates at southeast corner of 7.5' quadrangle (attach photocopy)

Latitude E > **AN** **Longitude** E > **AW**

Map coordinates at southeast corner of 2.5' grid cell

Latitude E > **AN** **Longitude** E > **AW**

Calculations

LATITUDE(x)

A) Number of ruler graduations between 2.5' (150") grid lines **(a)**

B) Number of ruler graduations between south grid line and the site reference point **(b)**

C) Therefore, a/150 = b/x, where **x= Latitude in decimal seconds, north of the south grid line**

Expressed as minutes and seconds (1' = 60") = E > AN

Add to grid cell latitude = E > AN + E > AN

Site latitude = 3 3 º 5 7 ' 2 6 " N

LONGITUDE(y)

A) Number of ruler graduations between 2.5' (150") grid lines **(a)**

B) Number of ruler graduations between south grid line and the site reference point **(b)**

C) Therefore, a/150 = b/x, where **x= Longitude in decimal seconds, west of the east grid line**

Expressed as minutes and seconds (1" = 60") = E > AW

Add to grid cell longitude = E > AN + E > AN

Site longitude = 1 1 8 º 1 0 ' 4 4 " W

Appendix B:
Site Reconnaissance Interview and Observation Report/ Photographic Documentation

SITE RECONNAISSANCE INTERVIEW AND OBSERVATIONS REPORT/PHOTOGRAPHIC DOCUMENTATION

DATES: August 4, 2015; October 12, 2015; October 26, 2015; November 2-4, 2015; and November 20, 2015.

OBSERVATIONS MADE BY: Brian P. Reilly, Weston Solutions, Inc. (WESTON)

SITE: QualaWash

EPA ID: CAN000909573

The following information was obtained during the initial Site Inspection (SI) walkthrough (August 2015), the underground utility survey (October 2015); and the SI direct push and CPT portion of the Sampling event (November 2015):

The site was located in a mixed industrial and residential area at the northeastern portion of the city of South Gate, immediately adjacent to the city of Cudahy. The site was signed as "Quala" with the address of 8332 Wilcox Ave at the Wilcox Avenue entrance and as "QC" with the address of 5042 Cecelia St at the Quality Carriers office building on Cecelia Street. The site appeared to be entirely enclosed behind a chain link fence.

The site is bordered to the north, across Cecelia Street, by single- and multi-family residential properties. The site is bordered to the east by a textile manufacturing facility (Orijean Corporation) and to the southeast by the Armstrong World Industries (Armstrong) resilient floor manufacturing facility. The site is bordered to the south by a pipes/valves/fittings (PVF) products distribution warehouse (Val-Fit) and to the west, across Wilcox Avenue, by an aluminum manufacturing and processing facility (Consolidated Precision Products).

The site was occupied by five primary structures. The Quality Carriers office building was located at the northeastern corner of the site and the Quality Carriers maintenance shop was located at the northwest corner of the site. The Quala complex was located at the southwestern and south-central portions of the site and included the Quala office building to the west, the Quala operations building at the center, and the Quala tanker wash bays to the east. A covered tote washing area was located immediately to the northeast of the wash bays and a covered hazardous waste storage area (HWSA) was located south-adjacent to the eastern portion of the Quala operations building.

With the exception of a lawn and small parking lot located adjacent to the Quala Office building, the entirety of the site was enclosed behind a chain-link fence. Vehicle access to the site was through one of four gates. Two of the entrances were located on Wilcox Avenue, one was located on Cecelia Street and primarily served Quality Carrier employees, and one was located at the southeastern corner of the site and connected to Patata Street. With the exception of a few minor landscaped areas, the entirety of the surface of the site was covered with asphalt or concrete. Four large aboveground storage tanks (ASTs) were located north-adjacent to the Quala operations building and hundreds of plastic chemical totes were stored throughout the site, primarily near the Quala complex. In addition, a clarifier was located within the Quala tanker wash bays. Several concrete troughs were located across the site that appeared to be designed to convey

stormwater into the adjacent streets where it would flow into the municipal stormwater system.

There were no apparent residences, schools, daycare facilities, or sensitive environments on site.

Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 1 – View looking southwest at central portion of site with AST farm in foreground and Quala complex in background.

Photo 2 - View looking southwest at Quala tanker wash bays

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Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 3 – View looking northwest at chemical tote washing area.

Photo 4 - View looking west at hazardous waste storage area (HWSA).

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Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 5 – View looking east at location of QWS-DP-1, north-adjacent to the Quala complex.

Photo 6 - View looking northeast at the advancement of QWS-DP-2, adjacent to the HWSA.

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Restoring Resource Efficiency

Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 7 – View looking south at approximate location of QWS-DP-3, adjacent to the chemical tote washing area.

Photo 8 - View looking southwest at approximate location of QWS-DP-4, north-adjacent to the Quality Carriers maintenance building.

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Restoring Resource Efficiency

Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 9 – View looking north at approximate location of QWS-DP-5, south-adjacent to the Quality Carriers maintenance building.

Photo 10 - View looking southwest at approximate location of QWS-DP-6, adjacent to the AST farm.

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Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 11 – View looking east at approximate location of QWS-DP-7 (final location was approximately 5 feet south), south-adjacent to Quala tanker wash bays.

Photo 12 - View looking east at location of QWS-DP-8 at southeastern portion of site within the east chemical tote storage area.

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Restoring Resource Efficiency

Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 13 – View looking at approximate location of QWS-DP-9 (background soil) and relocated QWS-CPT-2 at northeastern portion of site, west-adjacent to Quality Carriers office building.

Photo 14 - View looking southeast at advancement of QWS-CPT-1 at the east-central boundary of site.

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Restoring Resource Efficiency

Photographic Documentation
QualaWash (EPA ID: CAN000909573)

Photo 15 – View looking northeast across Wilcox Avenue at advancement of QWS-CPT-4 with Quality Carriers maintenance building in background.

Photo 16 - View looking southwest at location of QWS-CPT-5 at southwestern corner of site.

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Restoring Resource Efficiency

Appendix C:
Contact Log
and
Contact Reports

CONTACT LOG

SITE: QualaWash
EPA ID: CAN000909573

NAME	AFFILIATION	PHONE	DATE	INFORMATION
Robert Collar	Golden State Water Company, Central District	(714) 535-7711 ext. 355	03/31/2015	See Contact Report 2
Ron Hernandez	City of South Gate, Public Works	(323) 563-5796	03/31/2015	See Contact Report 3
Rene	Los Angeles County, Office of the Assessor	(562) 256-1701	07/17/2017	See Contact Report 1

CONTACT REPORT 1

AGENCY/AFFILIATION: County of Los Angeles		
DEPARTMENT: Office of the Assessor, South District Office		
ADDRESS/CITY: 1401 E. Willow Street, Signal Hill		
COUNTY/STATE/ZIP: Los Angeles, California, 90755		
CONTACT(S)	TITLE	PHONE
Rene	Assessment Clerk	(562) 256-1701
PERSON MAKING CONTACT: Brian P. Reilly		DATE: 17 July 2017
SUBJECT: Parcel Ownership Information		
SITE NAME: QualaWash		EPA ID#: CAN000909573

The current owner and recorded owner address of the three parcels associated with the QualaWash site as indicated by the Assessor's Office are:

6224-032-011: Winsome Enterprises Inc. at 5042 Cecelia St., South Gate, CA 90280.

6224-032-017: Quala Systems, Inc. at 4041 Park Oaks Blvd., Suite 200, Tampa, FL 33610.

6224-032-018: Quala Systems, Inc. at 4041 Park Oaks Blvd., Suite 200, Tampa, FL 33610.

CONTACT REPORT 2

AGENCY/AFFILIATION: Golden State Water Company		
DEPARTMENT: Central District		
ADDRESS/CITY: 12035 Burke Street, Suite 1, Santa Fe Springs		
COUNTY/STATE/ZIP: Los Angeles, California, 91773		
CONTACT(S)	TITLE	PHONE
Ana Chavez Robert Collar	Sr. Water Resources Analyst Sr. Hydrogeologist	(714) 535-7711 ext. 219 (714) 535-7711 ext. 355
PERSON MAKING CONTACT: Brian P. Reilly		DATE: 31 March 2015
SUBJECT: Public Water Distribution System Information		
SITE NAME: QualaWash		EPA ID#: CAN000909573

Bell/Bell Gardens System

According to Mr. Robert Collar, as of December 2014, the Bell/Bell Gardens System operates 7,481 service connections. The system consists of five active wells (Bissell #3, Clara #2, Gage #2, Otis #3, and Watson #1), one active/offline well (Bissell #2), two standby/inactive wells (Gage 1 and Priory 2); which supply 99 percent of the water in the system. In addition, the system formerly included four now-destroyed wells (Otis #1, Otis #2, Chanslor #1, and Hoffman #2). Bissell #2 has been offline since June 2012 due to sand issues. Gage 1 and Priory 2 are both standby/inactive, since July 2003 and March 2008, respectively, also due to sand issues. The remaining one percent of the water within the system is provided by the Central Basin Municipal Water District (CBMWD), who obtains its imported water from the Metropolitan Water District of Southern California (MWD). No individual well supplies more than 40 percent of the total supply. Watson #1 water is being treated to remove TCE and PCE.

Otis #1 and #2 were old wells and past their useful life, so they were destroyed and replaced by Otis #3 in 2007.

Chanslor #1 was destroyed in 2007 primarily due to its condition and mechanical problems. Note that VOCs had been detected in groundwater produced from this well, but it's not clear at this point what role, if any, VOCs played in the decision to destroy the well.

Hoffman #2 was destroyed because the need to treat groundwater from this well to remove hexavalent chromium made continued operation of this well uneconomical. Note that VOCs had also been detected in groundwater produced from this well, but it's not clear at this point what role, if any, VOCs played in the decision to destroy the well.

Mr. Collar also confirmed the accuracy of the information in the following table (next page) and verified that all information provided in this contact report is permissible to be presented in a publically-available document.

GSWC – Bell/Bell Gardens System				
Well Name	**Well Address (CONFIDENTIAL)**	**Screen Depths (feet below ground surface)**	**Percent Contribute to Drinking Water [1]**	**Avg. Gallons Per Minute [2]**
Bissell #2		575-1,275	0%	0
Bissell #3		595-615, 680-690, 705-730, 805-820, 900-925, 955-970, 1,005-1,025, 1,050-1,110	100%	1,695
Otis #3		520-530, 570-590, 900-940, 1,220-1,270, 1,400-1,570,	100%	665
Watson #1		243-249, 330-348, 420-427, 442-456	100%	845
Gage #1		282-301, 312-320, 428-434, 488-514	0%	0
Gage #2		290-320, 434-436, 499-502, 555-564, 569-573	100%	640
Priory #2		368-376, 380-400, 422-426, 561-581, 593-613	0%	0
Clara #2		330-350, 360-410, 420-470, 520-560, 610-640, 770-830, 960-970	100%	945
Chanslor #1		415-425	(Destroyed 2007)	N/A
Hoffman #2		437-444, 454-476, 477-494	(Destroyed 2007)	N/A
Otis #1		556-568, 578-596, 910-970, 1,280-1,330	(Destroyed 2004)	N/A
Otis #2		204-272, 285-341, 364-577, 586-906	(Destroyed 2004)	N/A

[1]Zero percent (0%) indicates that this well did not contribute drinking water to the system in 2014, whereas 100% indicates that this well did supply drinking water. Because of the way the system is operated, a fixed percentage of drinking water contributed to the system be each well cannot be defined. In other words, each well may contribute anywhere from 0 to 100% of the water in the system at any time throughout the year.

[2]Pumping rate of each well is an average for calendar year 2014, based on daily average pumping rates.

CONTACT REPORT 3

AGENCY/AFFILIATION: City of South Gate		
DEPARTMENT: Public Works		
ADDRESS/CITY: 4244 Santa Ana Street, South Gate		
COUNTY/STATE/ZIP: Los Angeles, California, 90280		
CONTACT(S)	TITLE	PHONE
Ron Hernandez	Water Operations Foreman	(323) 563-5796
PERSON MAKING CONTACT: Anitra B. Rice		DATE: 04 January 2011
PERSON MAKING CONTACT: Amanda K.C. Reilly		DATE: 22 June 2011
PERSON MAKING CONTACT: Brian P. Reilly		DATE: 31 March 2015
SUBJECT: Public Water Distribution System Information		
SITE NAME: QualaWash		EPA ID#: CAN000909573

Mr. Hernandez indicated that the City of South Gate operates a drinking water supply system that serves approximately 95,115 customers. The blended system consists of six active drinking water wells (Wells 14, 18, 19, 24, 26, and 28), four stand-by wells (Wells 13, 23, 25, and 27), one inactive well (Well 22-B), and seven destroyed wells (Wells 7, 8, 9, 12, 20, and 22-A). The six active groundwater wells provide 100 percent of the drinking water. No single well provides more than 40 percent of the total demand at any given time. The City of South Gate does not sell or purchase water to other water systems and/or water users.

Wells 13, 14, 18, and 19 are treated at the wellhead due to elevated concentrations of tetrachloroethylene (PCE). Well 25 was put into standby status due to high manganese concentrations.

Well 25 partially collapsed in June 2009 during the El Centro earthquake. The well was relined to a Total Depth of 395 feet in May 2010. The collapse was at about 415 feet below ground surface (ft-bgs). From that interval to about 385 ft-bgs, gravel was placed as a filtering media in the existing 16-inch casing. The liner that was placed to a depth of 395 ft-bgs is telescopic with the new wire wrap screen and casing.

Well 27 partially collapsed during rehabilitation work and was relined to a depth of 920’ with a stainless steel wired wrapped liner in August 2001.

Well 7 was destroyed by cementing via tremmie pipe and shooting the well with explosive charges with ball bearings in January 2011 due to the well age and multiple contaminants, specifically trichloroethylene (TCE) and hexavalent chromium.

Well 12 was destroyed in September 1984 by cementing in the well. The well was destroyed due to: the well having been 60 years old at that point; small rocks and casing materials had to be

bailed out and the casing was determined to have failed at 30 ft-bgs and 40 ft-bgs; the pump was operating at only 48% efficiency; perforations were found to have been enlarged at 540'; compression breaks were identified at 164 ft-bgs and 304' ft-bgs; well was out of round, egg-shaped, at 396, 416, 530 and 536 ft-bgs; sand covering one foot of the bottom perforations, so 18 feet of 19 feet of total perforations were deemed usable.

Mr. Hernandez also confirmed the accuracy of the information in the following table:

WELL NAME	WELL STATUS	YEAR DESTROYED	WELL DEPTH (feet)	SCREENING INTERVAL(S) (ft-bgs)
Well 7	Destroyed	2011	830	500 - 600
Well 8	Destroyed	?	?	?
Well 9	Destroyed	?	813	?
Well 12	Destroyed	1984	617	535-554
Well 13	Standby	--	810	600-628; 640-684; 706-762;
Well 14	Active	--	813	615-745; 767-775;
Well 18	Active	--	790	620-630; 640-690; 706-762;
Well 19	Active	--	794	610-620; 626-666; 678-746;
Well 20	Destroyed	?	?	?
Well 22-A	Destroyed	?	?	?
Well 22B	Inactive	--	578	495-545
Well 23	Standby	--	856	530-624; 662-692; 772-798;
Well 24	Active	--	1290	650-710; 730-860; 880-920; 930-940; 950-966; 980-1040; 1050-1110; 1126-1174; 1184-1210; 1220-1246
Well 25	Standby	--	1331	565-620; 640-660; 670-700; 720-850; 860-900; 915-1026; 1040-1160; 1120-1230; 1250-1280; 1290-1310
Well 26	Active	--	1350	634-638; 641-644; 660-689; 700-710; 734-744; 1150-1154; 1188-1192; 1204-1206
Well 27	Standby	--	1200	500-520; 674-701; 716-725; 840-1180
Well 28	Active	--	1277	610-650; 660-690; 730-750; 770-785; 825-890; 930-960; 1030-1075;

Appendix D:
Transmittal List

TRANSMITTAL LIST

Date: **August 2017**
Site Name: **QualaWash**
EPA ID No.: **CAN000909573**

****

A copy of the Site Inspection (SI) report for the above-referenced site should be sent to the following recipients:

Van Patterson
Director of Equipment Compliance
Site Owner Representative (QWS)
Quality Distribution, Inc.
4041 Park Oaks Blvd., Suite 200
Tampa, FL 33610

Javier Hinojosa
CA Department of Toxic Substances Control
9211 Oakdale Avenue
Chatsworth, CA 91311-6505

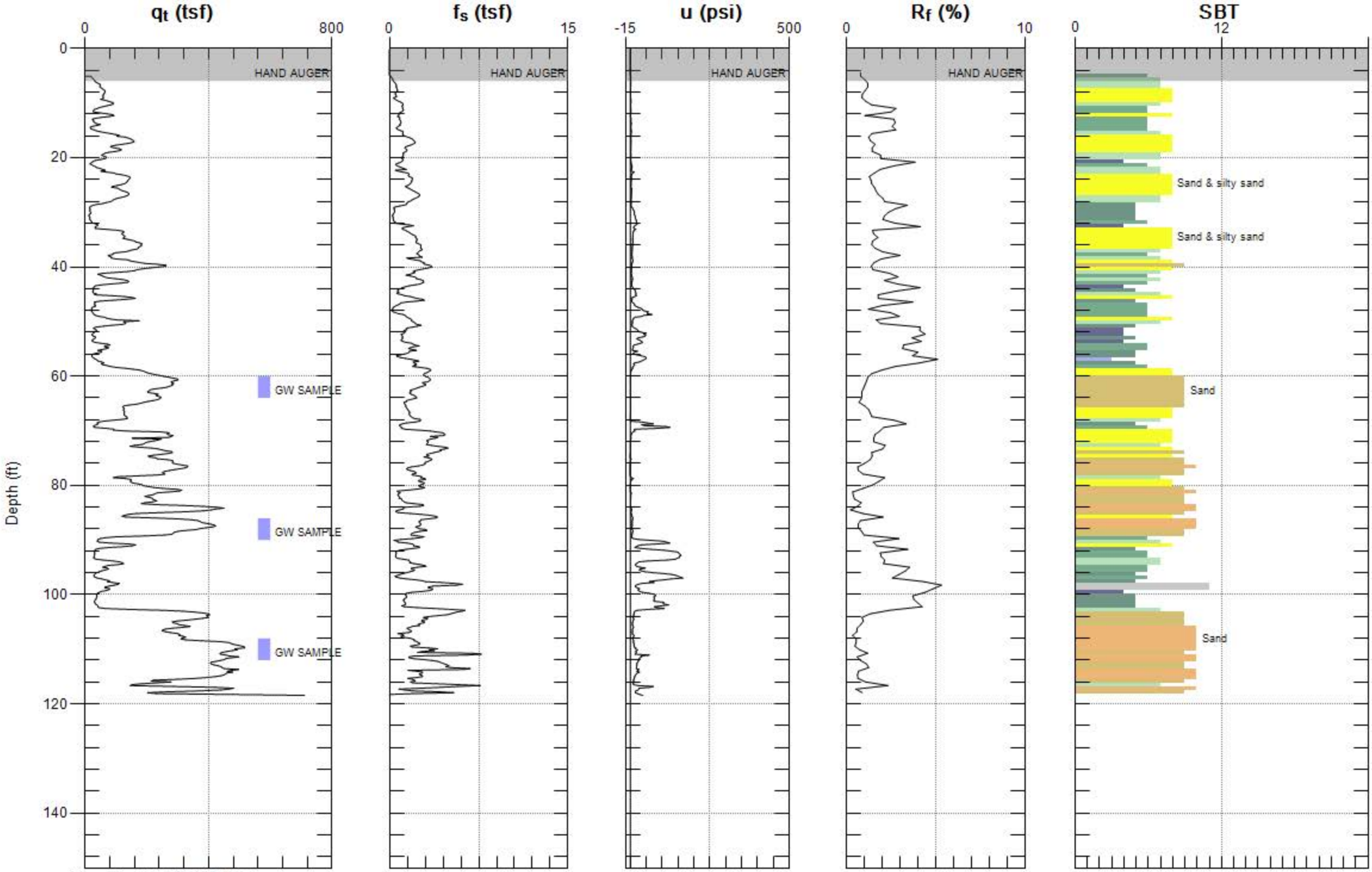
U.S. Environmental Protection Agency, Superfund Records Center
c/o Matt Mitguard
USEPA - Superfund Division
75 Hawthorne Street, SFD-6-1
San Francisco, CA 94105

Appendix E:
Cone Penetration Testing (CPT) Lithological Profile Reports

WESTON SOLUTIONS

Site: US EPA
Sounding: QWS-CPT-01

Engineer: B.REILLY
Date: 11/2/2015 03:45



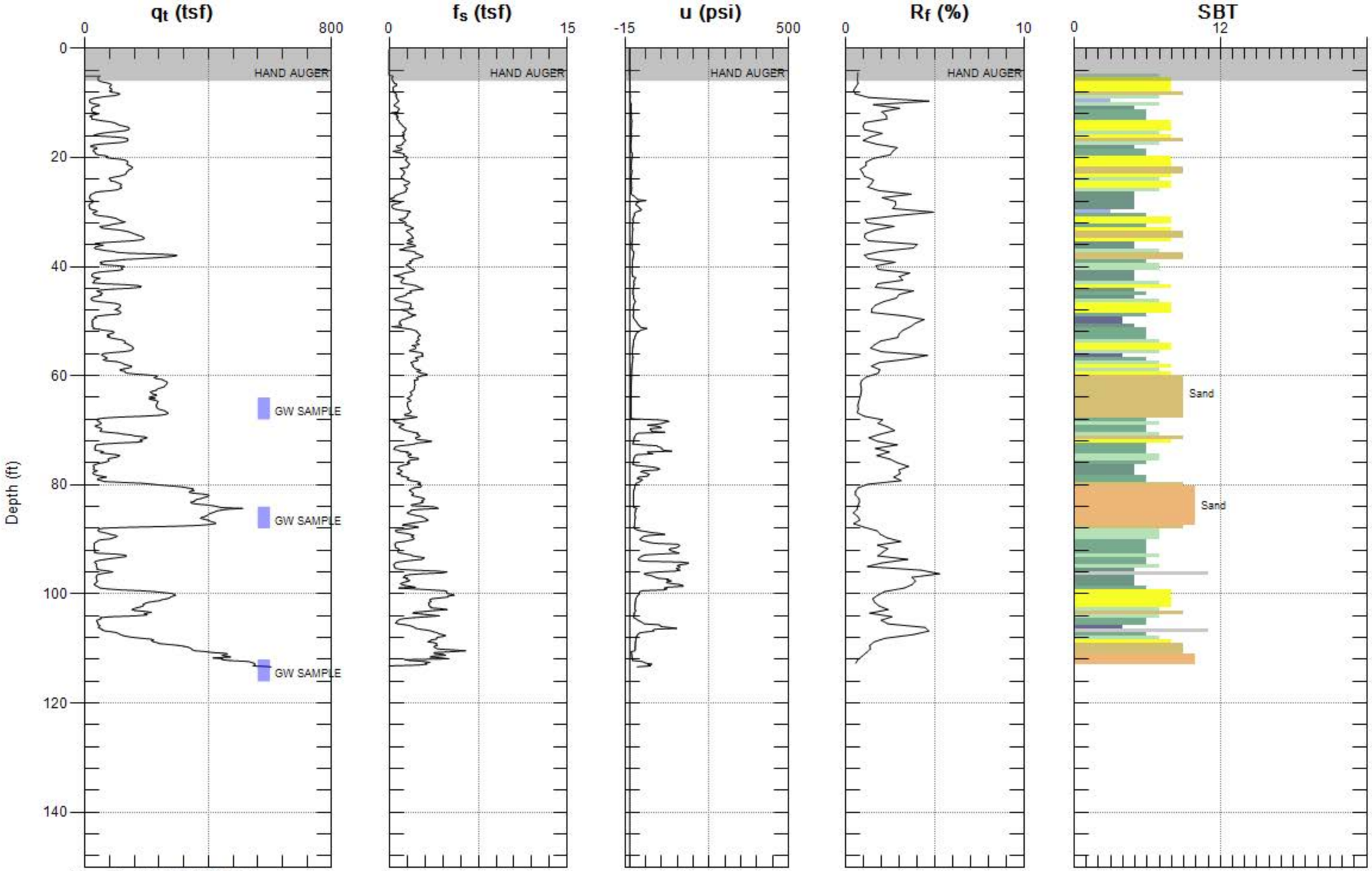
Max. Depth: 118.438 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

WESTON SOLUTIONS

Site: US EPA
Sounding: QWS-CPT-02

Engineer: B.REILLY
Date: 11/20/2015 08:03



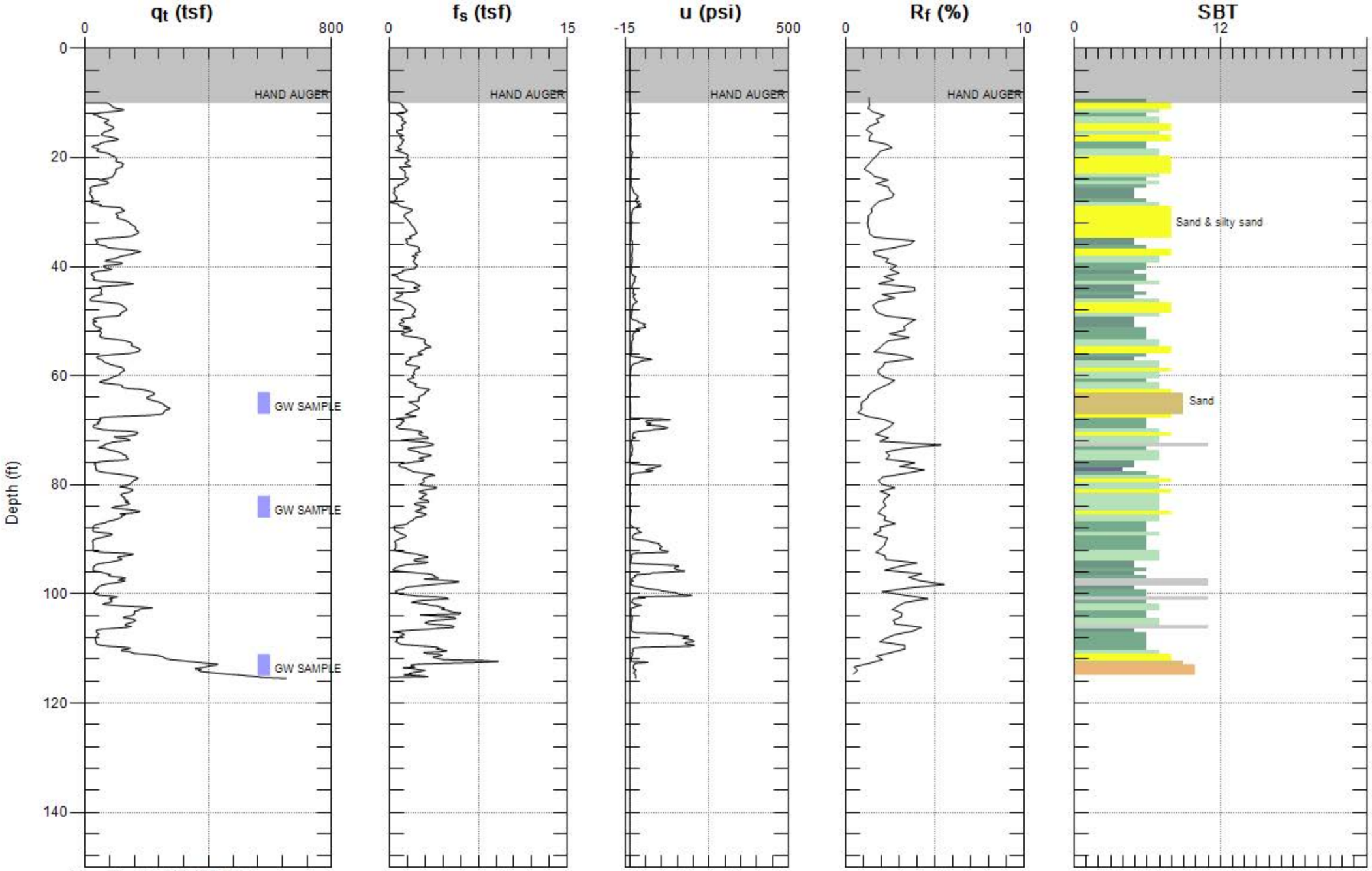
Max. Depth: 113.353 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

WESTON SOLUTIONS

Site: US EPA
Sounding: QWS-CPT-04

Engineer: B.REILLY
Date: 11/3/2015 12:21



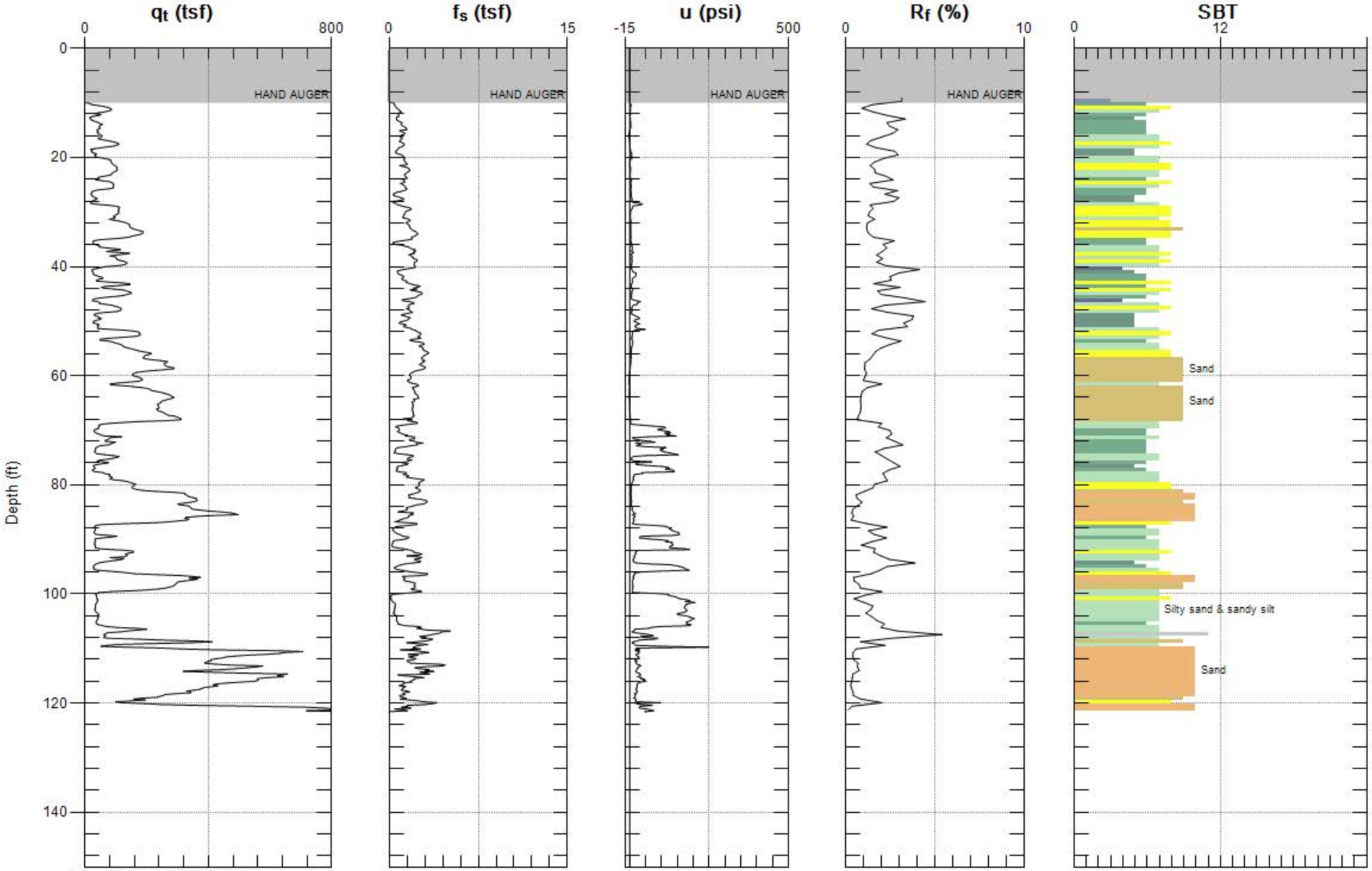
Max. Depth: 115.486 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

WESTON SOLUTIONS

Site: US EPA
Sounding: QWS-CPT-05

Engineer: B.REILLY
Date: 11/2/2015 09:02



Max. Depth: 121.719 (ft)
Avg. Interval: 0.656 (ft)

SBT: Soil Behavior Type (Robertson 1990)

Appendix F:
Sampling and Analysis Plan
(SAP)

Site Inspection
Sampling and Analysis Plan

QualaWash
8332 Wilcox Avenue
South Gate, Los Angeles County, California

EPA ID No.: CAN000909573
USACE Contract Number: W91238-11-D-0001
Interagency Agreement No.: 95777001-0
Document Control Number: 20074.063.105.1009

September 2015

Prepared for:
U.S. Environmental Protection Agency
Region 9

Prepared by:
Weston Solutions, Inc.
1340 Treat Blvd., Suite 210

Site Inspection
Sampling and Analysis Plan

QualaWash
8332 Wilcox Avenue
South Gate, Los Angeles County, California

EPA ID No.: CAN000909573
USACE Contract Number: W91238-11-D-0001
Interagency Agreement No.: 95777001-0
Document Control Number: 20074.063.105.1009

Approved by: _____
Brian P. Reilly, Project Manager
WESTON Solutions, Inc.

Approved by: _____ 9/21/15
Matt Mitguard, Site Assessment Manager
U.S. Environmental Protection Agency, Region 9

Approved by: Eugenia E. McNaughton
Eugenia E. McNaughton, Ph.D., Quality Assurance Manager
U.S. Environmental Protection Agency, Region 9

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CAN000909573

List of Acronyms

AOC	Analyte of Concern
APN	Assessor Parcel Number
AST	aboveground storage tank
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPT	Cone Penetration Testing
CLP	Contract Laboratory Program
CRQL	Contract Required Quantitation Limit
DCE	dichloroethylene
DTSC	Department of Toxic Substances Control
DQO	Data Quality Objective
EPA	United States Environmental Protection Agency
ft^2	square-feet
HCl	hydrochloric acid
HDPE	High-Density Polyethylene
HHMD	LA County Fire Department, Health Hazardous Materials Division
HNO_3	nitric acid
HRS	Hazard Ranking System
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IDW	investigation-derived wastes
LED	light-emitting diode
MCL	Maximum Contaminant Level
MEK	methyl ethyl ketone
mg/kg	milligrams per kilogram
mL	milliliters
MQO	Measurement Quality Objective
MRL	Method Reporting Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NOV	Notice of Violation
NPL	National Priorities List
PA	Preliminary Assessment
PCE	tetrachloroethylene
PM	Project Manager
PPE	personal protective equipment
PVF	pipes/valves/fittings
QA	Quality Assurance
QC	Quality Control
QualaWash	QualaWash Holdings LLC
RCRIS	Resource Conservation and Recovery Information System
RPD	Relative Percent Difference
RSCC	Regional Sample Control Coordinator

RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SAM	Site Assessment Manager
SEMS	Superfund Enterprise Management System
SI	Site Inspection
SOP	Standard Operating Procedure
TCE	trichloroethylene
VOC	volatile organic compound
WESTON	Weston Solutions, Inc.
µg/L	microgram per liter

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Weston Solutions, Inc. (WESTON®) has been tasked to conduct a Hazard Ranking System (HRS) Site Inspection (SI) of the QualaWash site in South Gate, Los Angeles County, California. The HRS assesses the relative threat associated with actual or potential releases of hazardous substances to the environment, and has been adopted by the United States Environmental Protection Agency (EPA) to assist in setting priorities for further site evaluation and potential remedial action. The HRS is the primary method for determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites where the EPA may conduct remedial actions.

This Sampling and Analysis Plan (SAP) describes the project and data use objectives, data collection rationale, quality assurance goals, and requirements for sampling and analysis activities. The SAP also defines the sampling and data collection methods that will be used for this project. The SAP is intended to accurately reflect the planned data-gathering activities for this site investigation; however, site conditions and additional EPA direction may warrant modifications. All significant changes will be documented in the final report.

WESTON has been tasked to gather and review existing, available information regarding site conditions, identify and fill data gaps, and prepare HRS scoresheets and rationale for the site.

The specific field sampling and chemical analysis information pertaining to the site is addressed in this SAP, in accordance with the EPA documents EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (QA/R-5), March 2001; Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4), February 2006; and Data Quality Objective Process for Superfund (EPA 540/G-93/71), August 1993.

1.1 Project Organization

The following is a list of project personnel and their responsibilities (see Table 1):

Table 1: Organizational Chart

Title/Responsibility	Name	Phone Number
EPA Site Assessment Manager	Matt Mitguard	(415) 972-3096
EPA Quality Assurance Manager	Eugenia E. McNaughton	(415) 972-3411
WESTON Program Manager and Quality Assurance	Christina Marquis	(818) 350-7308
WESTON Project Manager	Brian Reilly	(541) 593-3800
EPA Region 9 Sample Control Coordinator	Susan Sturges	(510) 412-2389

EPA Site Assessment Manager (SAM) - The EPA SAM is Matt Mitguard. Mr. Mitguard is the primary decision maker for this investigation and is the primary contact for the WESTON Project Manager.

EPA Quality Assurance (QA) Manager - The EPA QA Manager is Eugenia E. McNaughton, Ph.D. Ms. McNaughton will be responsible for reviewing the SAP, and arranging for data validation once sampling is completed.

WESTON Program Manager and QA Coordinator - The WESTON Program Manager and QA Coordinator is Christina Marquis. Ms. Marquis is responsible for the overall performance of all tasks assigned to WESTON by the EPA. Ms. Marquis is authorized to approve Sampling Analysis Plans for Southern California sites conducted by WESTON to ensure project quality assurance goals are met.

WESTON Project Manager (PM) - The WESTON PM is Brian Reilly. Mr. Reilly is responsible for preparing the SAP, working with the laboratories, implementing the sampling design, collecting, handling, documenting, and transporting samples, generating field documentation of sampling activities, and working with the WESTON QA Coordinator to ensure project quality assurance goals are met.

EPA Region 9 Sample Control Coordinator (RSCC) – The EPA RSCC is Susan Sturges. Ms. Sturges will determine which laboratories will perform the analyses for the project. If the Contract Laboratory Program (CLP) program will be used, the RSCC will assign CLP numbers. The RSCC will be responsible for delivering the raw data to the EPA SAM.

Analytical Laboratory - The EPA RSCC will arrange for laboratory services for metals by ISM02.2 [using Inductively Coupled Plasma Mass Spectrometry (ICP-MS)] or equivalent, and for volatile organic compounds (VOCs) by SOM02.2 or equivalent.

Data Validation – The EPA QA Office will arrange data validation for this investigation.

1.2 Distribution List

Copies of the final SAP will be distributed to the following persons and organizations:

- Matt Mitguard, EPA Region 9
- Eugenia E. McNaughton, Ph.D., EPA QA Manager
- Weston Solutions, Inc. files
- Site Owners and/or Operators, per their request.

1.3 Statement of the Specific Problem

The apparent problems at the QualaWash site, which contributed to EPA's determination that a SI was necessary, are as follows:

- The site has been used for bulk chemical tank truck distribution and/or bulk chemical tank trailer cleaning operations since at least 1986 and potentially since at least 1972 (DTSC, 2013; Weston, 2014).

- Hazardous substances documented as having been used and/or stored on the site include, but are not limited to: halogenated solvents, including tetrachloroethylene (PCE) and methyl ethyl ketone (MEK); and metals, including chromium, cadmium, arsenic, and mercury. Specific hazardous substance storage and disposal practices have not been adequately documented (DTSC, 2013).

- The site is situated upgradient with respect to the regional groundwater flow from several municipal supply wells that have been identified with elevated concentrations of volatile organic compounds (VOCs). In addition, the site boundary is located within 200 feet of the former Hoffman Well 02, which was removed from service in approximately late 2000 and destroyed in approximately October 2007 due primarily to elevated concentrations of chromium (DTSC, 2013; RWQCB, 2015; Weston, 2014).

- No known soil gas, soil matrix, or groundwater sampling has been conducted at the site.

2.0 SITE DESCRIPTION

2.1 Location and Description

The QualaWash site is located at 5000-5042 Cecelia Avenue and 8332 Wilcox Avenue in South Gate, Los Angeles County, California. The geographic coordinates for the geometric center of the site are 33° 57' 25.6" North latitude and 118° 10' 43.9"West longitude. The location of the site is shown in Figure 1.

The QualaWash site is located in a mixed industrial and residential area at the northeastern portion of the city of South Gate, California; adjacent to the border with the city of Cudahy. The site occupies approximately five acres at the southeast corner of the intersection of Wilcox Avenue and Cecelia Street. The site encompasses three Los Angeles County (LAC) parcels, designated as Assessor Parcel Numbers (APNs) 6224-032-011, 6224-032-017, and 6224-032-018 (Weston, 2014).

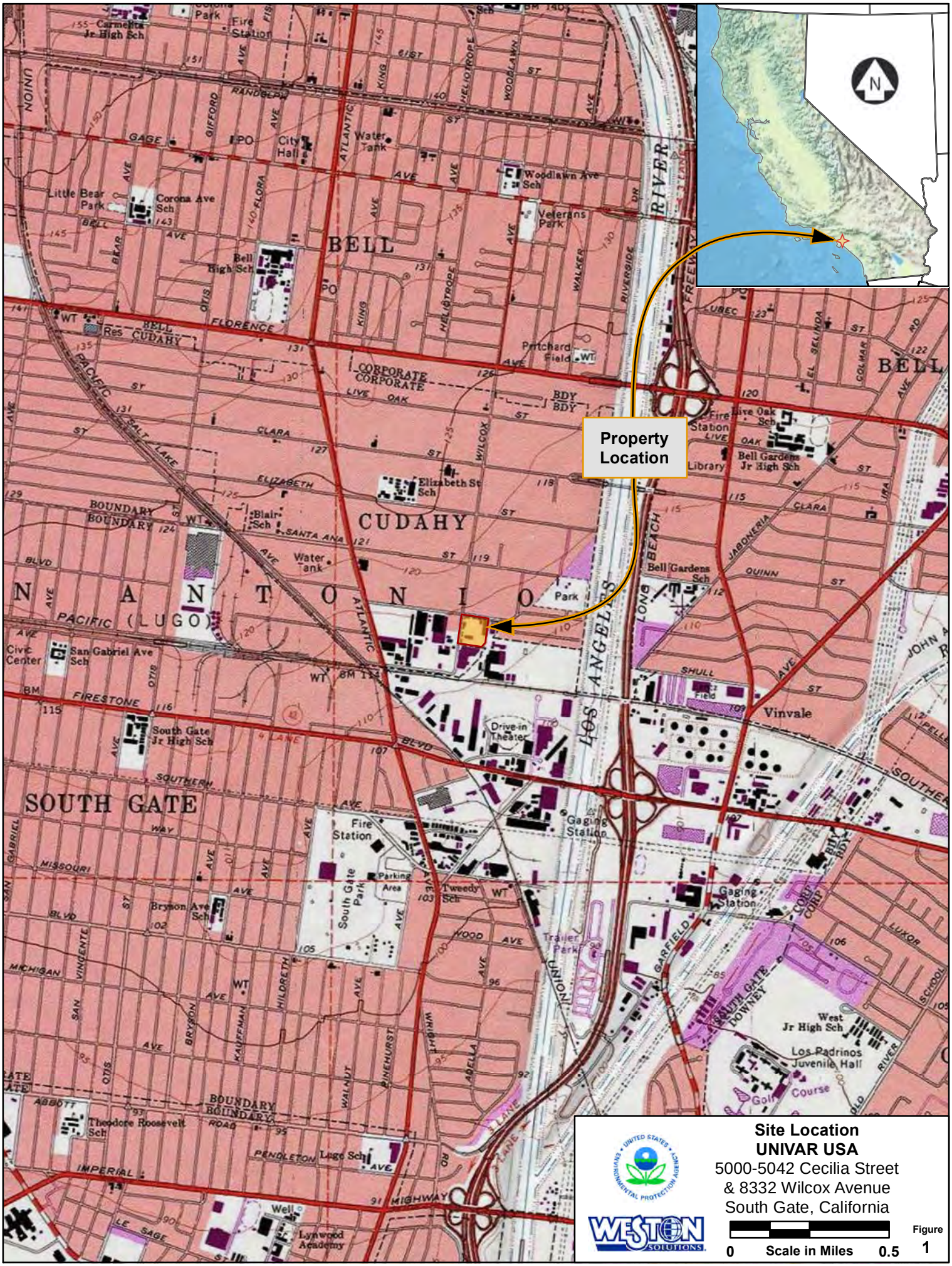
The QualaWash site is bound to the north by single- and multi-family residential properties (across Cecelia Street); to the east by an apparent light-emitting diode (LED) manufacturing and/or warehousing facility (5046 Cecelia); to the east by the Consolidated Precision Products - Cudahy Operations Plant, which specializes in high-precision aluminum manufacturing and processing for the aerospace industry (8333 Wilcox); to the south by the approximately 70,000 square-foot (ft^2) Val-Fit Los Angeles pipes/valves/fittings (PVF) products distribution warehouse (8360 Wilcox); and to the southeast by the Armstrong World Industries site (CERCLIS ID No. CAN000909482), which manufactures vinyl floor tiles (DSTC, 2013; Weston, 2014).

The QualaWash site is occupied by six primary structures that included: the approximately 7,700 ft^2 Quality Carriers Office and Warehousing Building at the northeast corner; the approximately 4,000 ft^2 Quality Carriers Maintenance Building at the northwest corner; and the approximately 1,700 ft^2 QualaWash Office Building, the approximately 6,300 ft^2 QualaWash Operations Building, the approximately 2,800 ft^2 truck bay, and the approximately 3.800 ft^2 truck bay at the west-central portion. An additional building, which was removed in the early 2000s, was formerly located adjacent west of the Quality Carriers Office and Warehousing Building. The entire site is paved with asphalt or concrete. The site layout is shown in Figure 2 (DSTC, 2013; Weston, 2014).

Four large aboveground storage tanks (ASTs) along with several smaller ASTs are located on the QualaWash site adjacent north to the eastern portion of the QualaWash Operations Building. In addition, numerous 55-gallon drums and plastic storage totes are stored on the site, primarily in the vicinity of the QualaWash buildings. A large clarifier is also reportedly located in the vicinity of the QualaWash truck-washing bays. A diesel underground storage tank (UST) was formerly located at the site; however, the specific location of this UST is not known (DSTC, 2013; Weston, 2014).

The site was first developed prior to 1954. In 1954, it was occupied primarily by single-family residential buildings and vacant land. By 1974, all but two of the single-family homes, which were located at the northwest and north-central portions of the site, had been removed and the present-day buildings, as well as an additional approximately 5,000 ft^2 building located adjacent-west of

the Quality Carriers Office and Warehousing Building, had been constructed. The QualaWash buildings and the Quality Carriers Maintenance building were reportedly constructed in 1955 and the Quality Carriers office building was reportedly constructed in 1966. By 1994, the remaining single-family residences had been removed and by 2003 the building adjacent to the Quality Carriers office had also been removed (Weston, 2014).



Site Location
UNIVAR USA
5000-5042 Cecilia Street
& 8332 Wilcox Avenue
South Gate, California

0 Scale in Miles 0.5

Figure 1

Site Layout
UNIVAR USA
5000-5042 Cecilia Street
& 8332 Wilcox Avenue
South Gate, California

Figure
2

2.2 Operational History

The QualaWash site is currently owned by Quala Systems, Inc., which has owned the larger western parcel (6224-032-018) since approximately the early 1990s and the two eastern parcels (6224-032-017 and -011) since approximately the late 1990s. The site is operated primarily by two entities: Winsome Enterprises, Inc. (Winsome), which is a partner affiliate of Quality Carriers, which is in turn a subsidiary of Quality Distribution, Inc.; and QualaWash Holdings LLC (QualaWash), which is an independent entity that prior to 2009 was a subsidiary of Quality Distribution, Inc. doing business as Quala Systems, Inc. QualaWash originated in approximately 1993 as a spin-off company of the former Chemical Leaman Tank Lines. Additional historic owner and operator information for the site is not known (DTSC, 2013; Weston, 2014).

Operations at the QualaWash site are primarily divided into two separate activities that include bulk chemical tank truck distribution, which is conducted by Winsome, and bulk chemical tank trailer cleaning, which is conducted by QualaWash. The two entities both utilize the property for tractor and trailer parking. Winsome maintains an office at the northeastern portion of the site and a tractor trailer maintenance facility at the northwestern portion of the facility. QualaWash utilizes the central portion for tank washing activities that typically operate 24 hours a day, seven days a week, and service approximately 40 tankers per day. The site has reportedly been used for tank trailer hauling and washing activities since at least 1986. In addition, activities involving tractor trailers have been conducted at the site since at least 1972; however, the specific operations associated with these earlier activities are not known (DTSC, 2013; Weston, 2014).

The four large ASTs located adjacent to the QualaWash Operations building are reportedly used to store wash fluid for tanker cleaning operations. The volume and type of hazardous substances stored at the site is variable and is dependent on tanker cleaning operations as well as the payload of the on-site tractor trailers. A QualaWash representative indicated during an interview with the DTSC that caustics, soaps, polymers, and latex are generally stored for a short time on the site. Based on identified hazardous waste manifests and generator reports, hazardous substances used and/or stored on the site include, but are not limited to: halogenated solvents, including PCE; hydrocarbon solvents; oxygenated solvents; non-halogenated solvents, including MEK; and metals, including chromium, cadmium, arsenic, and mercury. Specific hazardous substance storage and disposal practices are not known (DSTC, 2013).

Unaltered petroleum products, as well as any substances that are purposefully added to the indigenous petroleum product during the refining process, are excluded from consideration under CERCLA.

2.3 Regulatory Involvement

2.3.1 U. S. Environmental Protection Agency

The QualaWash site has multiple listings in the Resource Conservation and Recovery Act Information (RCRAInfo) database. Quala Systems Inc. (HANDLER ID: CA0000031997) is addressed as Wilcox Avenue (contact is listed at 8332 Wilcox) and listed as a Large Generator. QualaWash Holdings, Inc. (HANDLER ID: CAD000031997) is addressed as Wilcox Avenue and listed as a Large Generator. National Process Industry Corp (HANDLER ID: CAD009604893) is addressed as Cecilia St (contact is listed at 5032 Cecilia St.) and a handler type is not listed. Ashland Distribution (HANDLER ID: CAR000174078) is addressed as 8332 Wilcox Ave and a handler type is not listed. Leaseway Bulk Services, Inc. (HANDLER ID: CAD009864679) is addressed as 8332 Wilcox Avenue and listed as a Small Generator. Bulk Freightways (HANDLER ID: CAD027896208) is addressed as 8332 Wilcox Avenue and listed as a Transporter (Weston, 2014).

2.3.2 California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)

The QualaWash site is listed in DTSC's EnviroStor database as Quality Distribution AKA Univar USA (Envirostor ID: 60001785) at 5042 'Cecila' Street. The site is listed as an 'Evaluation' site that was referred to EPA as of September 17, 2013. DTSC completed a Site Screening that was approved by EPA on September 30, 2013. DTSC has had no known additional involvement with the site (Weston, 2014).

2.3.3 California Environmental Protection Agency, Regional Water Quality Control Board (RWQCB)

The QualaWash site is listed in the Regional Water Quality Control Board's (RWQCBs) GeoTracker database as Matlack Inc. (GeoTracker ID: T0603703785; Case No. I-11357) at 8332 Wilcox Avenue. The site is listed as a LUST Cleanup Site with a cleanup status as 'Completed - Case Closed as of 2/8/1993.' The potential contaminant of concern is listed as diesel and the potential media affected is soil. No additional pertinent information is listed in the GeoTracker database for the site and the RWQCB has had no known additional involvement with the site (Weston, 2014).

2.3.4 Los Angeles County Fire Department, Health Hazardous Materials Division (HHMD)

As part of the September 2013 Site Screening Assessment conducted by DTSC for the QualaWash site, a public records request was made to the Los Angeles County Fire Department (LACFD). LACFD reported that they had no files for the site addresses (DSTC, 2013).

2.4 Geology/Hydrogeology

The QualaWash site lies within the Central Subbasin in the Coastal Plain of the Los Angeles Groundwater Basin. The Central Subbasin is generally bound to the north by the folded, uplifted

and eroded Tertiary basement rocks of the La Brea High surface divide; to the northeast and east by the less permeable Tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills; to the southeast by the Coyote Creek flood control channel (approximate Los Angeles County/Orange County boundary); and to the southwest by the Newport Inglewood Uplift, a regional anticline associated with the Newport Inglewood fault system. The subbasin has historically been further divided into four areas; the Los Angeles Forebay at the northwest, the Montebello Forebay at the north, the Whittier Area at the northeast, and the Pressure Area at the central and southwest. The forebays are characterized by generally unconfined and relatively interconnected aquifer systems. The Montebello Forebay, as well as the Los Angeles Forebay to a lesser degree, serves as the primary groundwater recharge area for both shallow and deep aquifers across the entirety of the subbasin. The Central Basin Pressure Area is characterized by generally confined aquifer systems separated by relatively impermeable clay layers, although semipermeable zones within these layers allow aquifers to be interconnected in some areas. The Los Angeles and San Gabriel rivers pass across the surface of the Central Basin, primarily by way of engineered concrete channels, on their way to the Pacific Ocean. The average net annual precipitation in the subbasin is approximately 12 inches (DWR, 1961; DWR, 2004).

The QualaWash site is located within the northern portion of the Central Basin Pressure Area with the Los Angeles Forebay to the northwest and the Montebello Forebay to the northeast. Throughout the Pressure Area, groundwater occurs in Holocene alluvium, the upper Pleistocene Lakewood Formation, and the lower Pleistocene San Pedro Formation. The aquifers underlying the site are, in descending order: the Gaspur, Exposition, Gage/Gardena, Jefferson, Lynwood, Silverado, and Sunnyside. Underlying the Recent alluvium, which includes the Gaspur aquifer, sediments of the upper Pleistocene Lakewood Formation, which includes the Exposition and Gage/Gardena aquifers, are present to a depth of approximately 300 to 400 feet bgs. Sediments of the lower Pleistocene San Pedro Formation, which includes the Lynwood through Sunnyside aquifers, unconformably underlie the Lakewood Formation and extend to a depth of approximately 1,300 feet bgs. The regional groundwater flow direction within the subbasin, which was calculated using data from wells screened within the upper San Pedro Formation (Lynwood through Silverado aquifers), is generally to the southwest with local and temporal variations from approximately west to southeast. Based upon data collected between 2007 and 2013, flow within these deeper aquifers in the vicinity of the site trended towards the southwest with temporal variations from west to south-southwest (DWR, 1961; DWR, 2004; WRD, 2014).

Throughout much of the subbasin, the Pleistocene-age aquifers are under confined conditions due to the presence of fine-grained, low-permeability interbedded sediments. Although these fine-grained sediments, or aquicludes, generally restrict the downward migration of groundwater from overlying aquifers, semipermeable zones within the aquicludes allow aquifers to be interconnected in some areas. In addition, hydrogeologic modeling of multi-aquifer systems similar to that found in the Central Basin Pressure Area, have concluded that groundwater wells screened across multiple aquifers (or wells with improperly constructed annular seals that cross multiple aquifers) can act as a direct pathway for the migration of significant volumes of shallow groundwater into deep confined aquifers when vertical hydraulic head variations create a downward hydraulic gradient. The process of this downward migration is increased in areas where the deeper aquifers have periods of high-volume pumping such as seasonal demand. Furthermore, additional studies have shown that liquids that are denser than water [i.e., dense non-aqueous phase liquids

(DNAPLs), such as TCE and PCE], can migrate downward through a multi-aquifer well even when vertical hydraulic head variations create an upward hydraulic gradient. As of the end of the 2012-2013 fiscal year, there were 537 known extraction wells (306 active and 231 inactive) within the subbasin (AwwaRF, 2006; DWR, 1961; DWR, 2013; Johnson et al., 2011).

Aquifer interconnection within two miles of the site has been documented between the Gaspur through Gage/Gardena and between the Jefferson through Silverado. Aquifer interconnection between the Gage/Gardena and Jefferson, and between the Silverado and Sunnyside, has not been documented within two miles of the site. However, due to the relatively large number of older and poorly documented groundwater wells within the subbasin, including numerous wells that are screened across multiple aquifers and may be acting as conduits between these aquifers, interconnection between the Gage/Gardena and Jefferson, and between the Silverado and Sunnyside, is projected for HRS purposes (DWR, 1961; DWR, 2004; DWR, 2013).

The shallow groundwater flow direction in the vicinity of the QualaWash site is not known. The depth to groundwater at the site is not known; however, a RWQCB cleanup site located at 8411 South Atlantic, approximately 0.3 mile west of the site, measured a depth to first groundwater of approximately 53 feet bgs. In addition, the geologic materials encountered during the installation of a monitoring well at this site were reported to be primarily composed of silty fine sands to fine sands. Since the QualaWash site is situated in a relatively similar hydrogeologic setting to the 8411 South Atlantic site, the depth to groundwater and geologic materials reported at that site are considered to be a good approximation for the subsurface conditions at the QualaWash site (Weston, 2014; Weston, 2015; WRD, 2014).

2.5 Previous Sampling

No known soil gas, soil matrix, or groundwater sampling has been conducted at the QualaWash site.

2.6 Waste Characteristics

Potential hazardous substance sources associated with the QualaWash site include, but may not be limited to: on-site soils contaminated with VOCs (primarily PCE and MEK), and metals (primarily chromium, cadmium, arsenic, and mercury) (DTSC, 2013).

2.7 HRS Pathways

Based on the information presented in this report, there is evidence to indicate a potential for the release of hazardous substances from one or more sources at the QualaWash site to shallow groundwater. The depth to shallow groundwater at the site is estimated to be approximately 50-55 feet bgs. The shallow groundwater flow direction at the site has not been adequately determined. Based upon recently collected data, flow within the deeper regional aquifers in the vicinity of the site trended towards the southwest with temporal variations from west to south-southwest. The geologic materials in the unsaturated zone between ground surface and the top of the aquifer are estimated to be composed of fine sands with interbedded silts and clays. At least 10 distinct water purveyors operate up to 167 municipal drinking water wells within 4 miles of the site. The nearest

of these wells, Well 03, is an active well maintained by the Tract 349 Mutual Water Company and is located approximately 0.45 mile north-northwest of the site. In addition, the City of South Gate's Well 7 was located approximately 0.28 mile south-southwest of the site and was removed from service in approximately 2002 due to elevated concentrations of TCE, arsenic, and chromium; and GSWC - Bell/Bell Gardens system's Hoffman Well 02 was located approximately 210 feet east of the northeast corner of the site and was removed from service in approximately 2000 due to elevated concentrations of chromium (RWQCB, 2015; Weston, 2014; Weston, 2015; WRD, 2014).

Surface water runoff from the QualaWash site is expected to flow from the paved surfaces at the site to adjacent public roadways (i.e., Wilcox Ave, Cecelia St.) and into curbside municipal stormwater drains. The nearest surface water body to the site is the Los Angeles River, which is located approximately 0.4 mile east. The Los Angeles River is highly modified, having been lined with concrete along a majority of its length by the U.S. Army Corps of Engineers in the 1950s. Flows in the river are dominated by urban runoff and tertiary-treated effluent from several municipal wastewater treatment plants. The river empties into the Pacific Ocean at San Pedro Bay approximately 13.5 miles downstream of the site. There are no surface water intakes, fisheries, or sensitive environments associated with the Los Angeles River downstream of the site; however, there is a potential for fisheries and/or recreational areas to exist within San Pedro Bay (RWQCB, 1994; Weston, 2014).

As of August 2015, there were no residences, schools, or daycare facilities located on the QualaWash site. The nearest residential property to the site was located approximately 55 feet north, across Cecelia Street from the northwest corner of the site. No sensitive environments were located on the site and the surface of the site was entirely covered with pavement or buildings. In addition, the site was entirely fenced and generally inaccessible to the public. The total number of employees working at the site is not known (DTSC, 2013; Weston, 2014).

3.0 PROJECT OBJECTIVES

3.1 Project Task and Problem Definition

WESTON has been tasked to conduct sampling at the QualaWash site in order to characterize soils and groundwater to further the HRS process. To document an on-site hazardous substance source, soil matrix samples will be collected in the vicinity of the areas of the site that are known to have used and/or stored Analytes of Concern (AOCs). Soil matrix samples will be submitted for laboratory analysis for VOCs and metals. To establish an observed release to groundwater, groundwater samples will be collected and submitted for laboratory analysis of VOCs and metals. It is not necessary to analyze soil or groundwater samples for chromium(VI) since EPA currently assumes, for conservative HRS scoring purposes, that all chromium in groundwater is of the chromium(VI) species.

3.2 Data Use Objectives

Data collected during this site investigation will be used to:

- Determine the concentrations of VOCs and metals in on-site soils to document the presence of one or more hazardous substances sources.

- Determine the concentrations of VOCs and metals in groundwater beneath the site and directly adjacent to the site to document if an observed release from the site to groundwater has occurred.

- Evaluate whether further HRS characterization of the site is necessary. If additional characterization of the site is indicated, an addendum will be made to this SAP that documents these findings and provides a design and procedures for additional site characterization. The SAP Addendum will be submitted to the EPA QA Manager for approval.

If on-site soils are found to be contaminated by VOCs and/or metals, then the presence of hazardous substances in the source will be documented. If groundwater samples are also found to be contaminated with corresponding VOCs and/or metals above the corresponding action levels, an observed release will be documented and integrated into the site's HRS score.

3.3 Action Levels

In accordance with the HRS, the action levels to establish an observed release to groundwater, as well as to establish and on-site source of contaminated soil, are significantly above background concentrations. "Significantly above background" is defined as three times the background concentration for all media. If the background concentration is below the analytical quantitation limit, then the default background level is the background sample quantitation limit; "significantly above background" for this scenario is defined as a detect in the media where the analyte was not detected in the background media. Groundwater samples will be collected in the upgradient direction of the site with respect to the estimated groundwater flow direction to determine these

background levels. One or more soil background samples will be collected from location(s) deemed to have a lower potential for elevated concentrations of AOCs

Based on the regulatory and operational history of the site, as discussed in Section 2.2 and Section 2.3; VOCs and metals are the constituents deemed most likely to be elevated above background levels. The HRS will evaluate groundwater data as compared to federal Maximum Contaminant Levels (MCLs) for drinking water. The data will also be compared to State of California MCLs for drinking water. Soil data collected from the sites can be compared to EPA Region 9 residential and industrial Regional Screening Levels (RSLs).

3.4 Decision Rules

Decisions will be based primarily on data generated from this SAP. The decision rule is:

- If analytical results indicate that soil samples collected from the site exhibit concentrations of VOCs and/or metals above the corresponding action levels, the presence of a hazardous substance source will be documented and integrated into the site's HRS score.

- If a source of VOCs and/or metals is documented at the site, and if analytical results indicate that groundwater samples collected from the site exhibit concentrations of these substances above the corresponding action levels, an observed release will be documented and integrated into the site's HRS score.

3.5 Data Quality Objectives

3.5.1 Data Quality Objective Process

The DQO process, as set forth in the EPA document, *Guidance for the Data Quality Objectives Process,* EPA QA/G-4, was followed to establish the data quality objectives for this project. An outline of the process and the outputs for this project are included in Appendix A.

3.5.2 DQO Data Categories

This investigation will involve the generation of definitive data for soil and groundwater (see Section 3.1). The specific requirements for this data category are detailed in Section 9. The data generated under this project will comply with the requirements for that data category as defined in *Data Quality Objective Process for Superfund, EPA 540/G-93/71, September 1993.* All definitive analytical methods employed for this project will be methods approved by the EPA.

3.5.3 Measurement Quality Objectives (MQOs)

Measurement Quality Objective goals (MQOs) for this project were developed following guidelines in *EPA Guidance for Quality Assurance Project Plans, EPA QA/G-5 Final.* All sampling will be guided by procedures detailed in Section 6.2 and standard operating procedures (SOPs) to ensure representativeness of sample results. Table 2 and Table 3 document the MQOs for this project. As presented in this table, the published reporting limits for the Method Reporting

Limit (MRL) (including the EPA CLP Contract Required Quantitation Limits, or CRQLs) were determined to be appropriate for this project. The acceptable ranges for Accuracy [percent recovery for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis] will fall between 75 and 125 percent for water samples and 65 and 135 percent for soil samples. The threshold of precision [Relative Percent Difference (RPD) for MS/MSD and duplicate sample analysis] will be less than or equal to 35 percent for water samples, and 50 percent for soil samples. The analytical MRLs for each analyte of concern are lower than the RSLs for soils, and lower than corresponding MCLs for water, as shown in Table 2 and Table 3. These action levels are only used as risk-based benchmarks for the purposes of validating the appropriateness of the MRLs. The Industrial RSL is likely the most applicable action level for the site; the Residential RSL is presented for reference purposes only.

Table 2: Data Quality Indicator Goals - Organic Analyses

Analyte:	Method Reporting Limits				Action Levels			
	Water		Soil		Water		Soil	
	Trace Water	Low Water	Low Soil	Med Soil	MCL	CRSC	RSLr	RSLi
	(mg/L)	(mg/L)	(mg/kg)	(mg/kg)	(mg/L)	(mg/L)	(mg/kg)	(mg/kg)
1,1,1-Trichloroethane	0.0005	0.005	0.005	0.25	0.2	--	8100	36000
1,1,2,2-Tetrachloroethane	0.0005	0.005	0.005	0.25	--	0.00034	0.6	2.7
1,1,2-Trichloro-1,2,2-trifluoroethane	0.0005	0.005	0.005	0.25	--	--	40000	175000
1,1,2-Trichloroethane	0.0005	0.005	0.005	0.25	0.005	0.0011	1.1	5
1,1-Dichloroethane	0.0005	0.005	0.005	0.25	--	0.011	3.6	16
1,1-Dichloroethene	0.0005	0.005	0.005	0.25	0.007	--	230	1000
1,2,3-Trichlorobenzene	0.0005	0.005	0.005	0.25	--	--	63	930
1,2,4-Trichlorobenzene	0.0005	0.005	0.005	0.25	0.07	0.0023	24	110
1,2-Dibromo-3-chloropropane	0.0005	0.005	0.005	0.25	0.0002	0.00002	0.0053	0.064
1,2-Dibromoethane	0.0005	0.005	0.005	0.25	0.005	0.00003	0.036	0.16
1,2-Dichlorobenzene	0.0005	0.005	0.005	0.25	--	--	1800	9300
1,2-Dichloroethane	0.0005	0.005	0.005	0.25	0.005	0.00073	0.46	2
1,2-Dichloropropane	0.0005	0.005	0.005	0.25	0.005	0.0018	1	4.4
1,3-Dichlorobenzene	0.0005	0.005	0.005	0.25	--	--	--	--
1,4-Dichlorobenzene	0.0005	0.005	0.005	0.25	0.075	0.012	2.6	11
2-Butanone (Methyl Ethyl Ketone)	0.005	0.01	0.01	0.5	--	--	27000	190000
2-Hexanone	0.005	0.01	0.01	0.5	--	--	200	1300
4-Methyl-2-pentanone (Methyl Isobutyl Ketone)	0.005	0.01	0.01	0.5	--	--	5300	56000
Acetone	0.005	0.01	0.01	0.5	--	--	61000	670000
Benzene	0.0005	0.005	0.005	0.25	0.005	0.0012	1.2	5.1
Bromochloromethane	0.0005	0.005	0.005	0.25	--	--	150	630
Bromodichloromethane	0.0005	0.005	0.005	0.25	--	0.001	0.29	1.3
Bromoform	0.0005	0.005	0.005	0.25	--	--	19	86
Bromomethane (Methyl Bromide)	0.0005	0.005	0.005	0.25	--	--	6.8	30
Carbon disulfide	0.0005	0.005	0.005	0.25	--	--	770	3500
Carbon tetrachloride	0.0005	0.005	0.005	0.25	0.005	0.0009	0.65	2.9
Chlorobenzene	0.0005	0.005	0.005	0.25	0.1	--	280	1300
Chloroethane (Ethyl Chloride)	0.0005	0.005	0.005	0.25	--	--	14000	57000
Chloroform	0.0005	0.005	0.005	0.25	--	0.0021	0.32	1.4
Chloromethane (Freon 40)	0.0005	0.005	0.005	0.25	--	--	110	460
cis-1,2-Dichloroethene	0.0005	0.005	0.005	0.25	0.07	--	160	2300
cis-1,3-Dichloropropene	0.0005	0.005	0.005	0.25	--	--	--	--
Cyclohexane	0.0005	0.005	0.005	0.25	--	--	6500	27000
Dibromochloromethane	0.0005	0.005	0.005	0.25	--	--	0.75	3.3
Dichlorodifluoromethane (Freon 12)	0.0005	0.005	0.005	0.25	--	--	87	370
Ethylbenzene	0.0005	0.005	0.005	0.25	0.7	0.0061	5.8	25
Isopropylbenzene (Cumene)	0.0005	0.005	0.005	0.25	--	--	1900	9900
m,p-Xylene	0.0005	0.005	0.005	0.25	--	--	550-m/560-p	2400-m/2400-p
Methyl acetate	0.0005	0.005	0.005	0.25	--	--	78000	120000
Methyl tert-butyl ether (MTBE)	0.0005	0.005	0.005	0.25	--	0.037	47	210
Methylcyclohexane	0.0005	0.005	0.005	0.25	--	--	--	--
Methylene chloride (dichloromethane)	0.0005	0.005	0.005	0.25	0.005	0.01	57	1000
o-Xylene	0.0005	0.005	0.005	0.25	--	--	650	2800
Styrene	0.0005	0.005	0.005	0.25	0.1	--	6000	35000
Tetrachloroethene (PCE)	0.0005	0.005	0.005	0.25	0.005	0.032	24	100
Toluene	0.0005	0.005	0.005	0.25	1	--	4900	47000
trans-1,2-Dichloroethene	0.0005	0.005	0.005	0.25	0.1	--	1600	23000
trans-1,3-Dichloropropene	0.0005	0.005	0.005	0.25	--	--	--	--
Trichloroethene (TCE)	0.0005	0.005	0.005	0.25	0.005	0.001	0.94	6
Trichlorofluoromethane	0.0005	0.005	0.005	0.25	--	--	730	3100
Vinyl chloride	0.0005	0.005	0.005	0.25	0.002	0.000017	0.059	1.7

Notes:

Method Reporting Limits are based on the standard Contract Laboratory Program Contract-Required Detection Limit or EPA Method, statement of work.

Percent Complete for the project must be >/= 90%.

Precision (RPD for MS/MSD and duplicates) should be </= 35% for water samples, and </=50% for soil samples.

Accuracy for each analyte (Percent Recovery for MS/MSD) should fall between 75 and 125 % for water samples, and 65% and 135% for soil samples.

-- = No Applicable Value
CRSC = Cancer Risk Screening Concentration
MCL = Maximum Contaminant Level
mg/L = milligrams per liter.
mg/kg = milligrams per kilogram
RSLi = Regional Screening Level for Industrial Soils
RSLr = Regional Screening Level for Residential Soils

Table 3: Data Quality Indicator Goals - Inorganic Analyses

Analyte:	Method Reporting Limits		Action Levels			
			Water		Soil	
	Water	Soil	MCL	CRSC	RSLr	RSLi
	(mg/L)	(mg/kg)	(mg/L)	(mg/L)	(mg/kg)	(mg/kg)
Metals by ICP-MS:						
Aluminum	0.02	--	--	--	77000	1100000
Antimony	0.002	1	0.006	--	31	470
Arsenic	0.001	0.5	0.01	0.004	0.68	3
Barium	0.01	5	2	--	15000	220000
Beryllium	0.001	0.5	0.004	--	160	2300
Cadmium	0.001	0.5	0.005	--	71	980
Calcium	0.5	--	--	--	--	--
Chromium	0.002	1	0.1	0.00004	0.3	6.3
Cobalt	0.001	0.5	--	--	23	350
Copper	0.002	1	1.3	--	3100	47000
Iron	0.2	--	--	--	55000	820000
Lead	0.001	0.5	0.015	--	400	800
Magnesium	0.5	--	--	--	--	--
Manganese	0.001	0.5	--	--	1800	26000
Nickel (Soluble Salts)	0.001	0.5	--	--	1500	22000
Potassium	0.5	--	--	--	--	--
Selenium	0.005	2.5	0.05	--	390	5800
Silver	0.001	0.5	--	--	390	5800
Sodium	0.5	--	--	--	--	--
Thallium	0.001	0.5	0.002	--	0.78	12
Vanadium	0.005	2.5	--	--	390	5800
Zinc	0.002	1	--	--	23000	350000

Notes:

Method Reporting Limits are based on the standard Contract Laboratory Program Contract-Required Detection Limit or EPA Method, statement of work.

Percent Complete for the project must be >/= 90%.

Precision (RPD for MS/MSD and duplicates) should be </= 35% for water samples, and </=50% for soil samples.

Accuracy for each analyte (Percent Recovery for MS/MSD) should fall between 75 and 125 % for water samples, and 65% and 135% for soil samples.

Chromium action levels are for Chromium(VI) (See Section 3.1 for explanation).

-- = No Applicable Value
CRSC = Cancer Risk Screening Concentration
ICP-MS = Inductively coupled plasma mass spectrometry
MCL = Maximum Contaminant Level

mg/L = milligrams per liter.
mg/kg = milligrams per kilogram
RSLi = Regional Screening Level for Industrial Soils, THQ=1.0
RSLr = Regional Screening Level for Residential Soils, THQ=1.0

3.6 Sample and Data Management

Samples will be collected and logged on a chain-of-custody form as discussed in Section 8.5. Samples will be kept secure in the custody of the sampler at all times, who will assure that all preservation parameters are being followed. Samples will be transferred to the laboratory via a certified carrier in a properly custody-sealed container with chain-of-custody documentation. The SCRIBE data management system will be used to create chain-of-custody documents. The laboratory should note any evidence of tampering upon receipt.

The completed laboratory data report will be submitted to the EPA QA Manager, who will contract the data validation. The EPA QA Manager, will provide the data validation reports to the EPA SAM. The EPA SAM will then provide the data reports to the WESTON PM. The data validation reports and laboratory data summary sheets will be included in the final report to be submitted to the EPA SAM. Before submittal, the final report will undergo a technical review to ensure that all data have been reported and discussed correctly.

3.7 Schedule of Sampling Activities

The field sampling work is expected to take three days to perform. The work is tentatively scheduled to be conducted in November 2015. Access to the property will be necessary two weeks prior in order to mark the boring locations; locate private underground utilities; contact Underground Service Alert, as required by law; to identify buried utilities in public areas.

3.8 Special Training Requirements/Certifications

There are no special training or certification requirements specific to this project. Training requirements relevant to WESTON's health and safety program comply with 29 CFR 1910.120. The site-specific Health and Safety Plan is presented in Appendix B.

4.0 SAMPLING RATIONALE

4.1 Sampling Locations and Rationale

Based on the available history for the QualaWash site, WESTON selected a sampling strategy to evaluate the levels of contamination of site AOCs in the subsurface soil and shallow groundwater beneath the site as well as in off-site locations. The proposed sampling event will include the advancement of 15 borings using direct push technology. Sample locations were selected primarily based on their proximity to areas where site AOCs have been identified to have been historically used and/or stored as well as the estimated groundwater flow direction. Soil matrix samples will be collected from nine on-site locations and one off-site location. Groundwater samples will be collected from six on-site and three off-site direct push locations. The sampling locations may be slightly modified from the proposed locations based upon actual site conditions (e.g., accessibility, underground utilities, etc.). Proposed sample locations are presented in Figure 3.

4.1.1 Soil Matrix Sampling

Soil matrix samples will be collected at each of the nine proposed on-site boring locations (QWS-DP-1 through QWS-DP-9). Four of these locations; QWS-DP-2, QWS-DP-3, QWS-DP-6, and QWS-DP-8; are collocated with on-site groundwater sample locations. All nine of these locations were selected due to their proximity to areas that are suspected to have used and/or stored AOCs and include: adjacent southwest of the truck-wash fluid storage area (QWS-DP-1), adjacent west of the southern chemical container/tote cleaning area adjacent south of the QualaWash Operations Building (QWS-DP-2), adjacent northeast to the QualaWash Large Truck Bay chemical cleaning area and adjacent west to the northeastern chemical container/tote cleaning area (QWS-DP-3), adjacent north to the Quality Carriers Maintenance Building (QWS-DP-4), adjacent south of the Quality Carriers Maintenance Building (QWS-DP-5), adjacent northeast of the truck-wash fluid storage area (QWS-DP-6), adjacent south to the QualaWash truck bay chemical cleaning areas (QWS-DP-7), within the chemical container/tote storage area (QWS-DP-8), and adjacent west of the former building at the northeastern portion of the site (QWS-DP-9). At each of these locations, soil matrix samples will be collected from 2 feet, 5 feet, 10 feet, and 15 feet bgs. To establish a background concentration of AOCs, soil samples will also be collected from similar depths at off-site groundwater sample location QWS-CPT-2. All soil matrix samples will be analyzed for VOCs and metals.

4.1.2 Groundwater Sampling

A groundwater sample will be collected from two discrete depths at four of the nine proposed on-site direct push boring locations; QWS-DP-2, QWS-DP-3, QWS-DP-6, and QWS-DP-8; and will be collected from three discrete depths at all six of the proposed on-site and off-site CPT boring locations, QWS-CPT-1 through QWS-CPT-6. The collection of samples from multiple discrete depths within the shallow aquifers of the area (i.e., Gaspur and Exposition) will assist in the evaluation of potential impacts from AOCs on different water-bearing zones within these aquifers.

At the four on-site direct push locations, the samples will be collected from approximately 35 feet bgs (if sufficient groundwater is present) and 60 feet bgs. At the six on-site and off-site CPT

locations, the samples will be collected from approximately 60 feet bgs, 90 feet bgs, and 130 feet bgs. These depths were selected based upon a March 2013 CPT sounding, which was collected from a boring that was located approximately 0.4 mile west of the site, that indicated these depths corresponded to zones of coarser-grained materials and are likely to contain sufficient groundwater for sampling. The actual sample depths will be determined in the field based upon adjacent CPT lithological logs and/or areas where saturated subsurface soils conditions are encountered. Samples will be collected from multiple depths to evaluate potential impacts on different zones within the shallow aquifers of the area (i.e., Gaspur and Exposition).

The four on-site direct push locations were selected due to their proximity to areas that are known to have used and/or stored AOCs and include: adjacent west of the southern chemical container/tote cleaning area adjacent south of the QualaWash Operations Building (QWS-DP-2), adjacent northeast to the QualaWash Large Truck Bay chemical cleaning area and adjacent west to the northeastern chemical container/tote cleaning area (QWS-DP-3), adjacent northeast of the truck-wash fluid storage area (QWS-DP-6), and within the chemical container/tote storage area (QWS-DP-8). The six on- and off-site CPT locations were selected based upon their relative directions from the site with respect to the groundwater flow direction within the Exposition aquifer, which is estimated to be towards the southwest, as well as their proximity to a former public water supply well. It is anticipated that three of the CPT borings (QWS-CPT-1 through QWS-CPT-3) will be located upgradient of the on-site sample locations to determine background concentrations, two will be located downgradient of the site (QWS-CPT-4 and QWS-CPT-5), and one (QWS-CPT-6) will be located adjacent to the former Hoffman Well 02. It is anticipated that all of these locations will either be located on site, along Wilcox Avenue to the west of the site, or along Cecelia Street to the north of the site. All groundwater samples will be analyzed for VOCs and metals.

4.2 Analytes of Concern

Based on the historic use of the site and the previous sampling events described in Section 2.5, specific AOCs at the site are:

- VOCs, primarily PCE and MEK;
- Metals, primarily chromium, cadmium, arsenic, and mercury.

Subsequent to the SI sampling event, if any analytes in addition to the aforementioned are identified at concentrations significantly above background, they will be evaluated as AOCs for the purposes of the SI. Although chromium(VI) is considered to be an AOC for the site, it is not necessary to analyze soil or groundwater samples for chromium(VI) since EPA currently assumes, for conservative HRS scoring purposes, that all chromium in groundwater is of the chromium(VI) species.

Figure 3
Proposed Site Inspection Sample Locations

- Proposed Combined Direct Push Soil/Groundwater Grab Sample Location
  [Two discrete-depth Groundwater (~ 35 & 60 ft-bgs) and Soil Matrix (2, 5, 10, & 15 ft-bgs)]
  (4 Locations = QWS-DP-2, QWS-DP-3, QWS-DP-6, & QWS-DP-8)
- Proposed Direct Push Soil Sample Location [Soil Matrix only (2, 5, 10, & 15 ft-bgs)]
  (5 Locations = QWS-DP-1, QWS-DP-4, QWS-DP-5, QWS-DP-7, & QWS-DP-9)
- Proposed Groundwater Grab Sample Location (~ 60, 90, & 130 ft-bgs)
  (5 Locations = QWS-CPT-1, QWS-CPT-3 through QWS-CPT-6)
- Proposed Combined CPT/Background Soil Location Groundwater Grab Sample Location [Three discrete-depth Groundwater (~ 60, 90, & 130 ft-bgs) and Soil Matrix (2, 5, 10, & 15 ft-bgs)]
  (1 Location = QWS-CPT-2)

QualaWash (formerly Univar USA)
5000-5042 Cecelia St. & 8332 Wilcox Ave.
South Gate, CA

Total Samples (not including QA): **26** groundwater samples
40 soil matrix samples

All Soil and GW Samples to be analyzed for VOCs and Metals

Draft Revision Date: ***September 15th, 2015****. Disregard all undated and previous dated draft versions.*

5.0 REQUEST FOR ANALYSES

Laboratory services for soil matrix and groundwater samples will be scheduled and arranged for by the EPA Region 9 RSCC for VOC and metals analyses. Samples will be analyzed through EPA's CLP. Sample containers, preservatives, holding times, and estimated number of field and Quality Control (QC) samples are summarized in Table 4 and Table 5.

As enumerated in Table 4, soil matrix field samples will be collected from four distinct depths at 10 separate locations, including an off-site location deemed to be suitable for the collection of representative background soil matrix samples. In addition, four duplicate samples will be collected resulting in a total of 44 soil matrix samples. Additional sample volumes will be collected at three locations for use as laboratory QC samples. Each soil matrix sample will be analyzed for VOCs via EPA CLPAS SOM02.2 or equivalent and for metals via EPA CLPAS ISM02.2 (using ICP-MS) or equivalent.

As enumerated in Table 5, groundwater field samples will be collected from 10 distinct locations; which includes four on-site direct push locations, and six on- and off-site CPT locations. In addition, three duplicate samples will be collected resulting in a total of 29 aqueous samples. Up to six equipment blank and four field blank samples will be collected for QC purposes. An additional sample volume will be collected at two locations for use as a laboratory QC sample. Each groundwater sample will be analyzed for VOCs via EPA CLPAS SOM02.2 or equivalent and for metals via EPA CLPAS ISM02.2 (using ICP-MS) or equivalent.

To provide analytical quality control for the analytical program, the following measures will be utilized:

- All VOC and metals sample analysis will be conducted by a laboratory selected by the EPA Region 9 RSCC.
- Additional volume of sample will be collected for at least one sample per media per each analytical method, to be utilized for MS/MSD analysis.
- A CLP-type data package will be required from the laboratory for all resultant data.
- Holding times will be strictly observed for each analyte type and medium; holding times for each analysis are presented in Table 4 and Table 5.

Table 4: Request for Analytical Services, Matrix - Soil

ANALYSES REQUESTED				Organic	Inorganic
ANALYTICAL METHOD				CLPAS SOM02.2	CLPAS ISM02.2 (using ICP-MS)
ANALYTE(S)				VOCs	Metals
PRESERVATIVES				Chill to 4±2°C	Chill to 4±2°C
ANALYTICAL HOLDING TIME(S)				48 hours	180 days
CONTRACT HOLDING TIME(S)				48 hours	Analyze within 35 days
CONTAINER VOLUME				5 grams	4 ounce
SAMPLE CONTAINER				Plastic	Glass
NUMBER OF CONTAINERS				3	1
SAMPLE VOLUME				15 grams	4 ounce
Sample Number	Sample Location	Estimated Sample Depth (feet)	Special Designation	**VOCs** (Sample Volumes)	**Metals** (Sample Volumes)
QWS-SM-D01-0020	QWS-DP-1	2		1	1
QWS-SM-D01-0050	QWS-DP-1	5	Lab QC	2	2
QWS-SM-D01-0100	QWS-DP-1	10		1	1
QWS-SM-D01-0150	QWS-DP-1	15		1	1
QWS-SM-D02-0020	QWS-DP-2	2		1	1
QWS-SM-D02-0050	QWS-DP-2	5		1	1
QWS-SM-D02-0100	QWS-DP-2	10		1	1
QWS-SM-D02-0150	QWS-DP-2	15		1	1
QWS-SM-D03-0020	QWS-DP-3	2		1	1
QWS-SM-D03-0050	QWS-DP-3	5		1	1
QWS-SM-D03-0100	QWS-DP-3	10		1	1
QWS-SM-D03-0150	QWS-DP-3	15		1	1
QWS-SM-D04-0020	QWS-DP-4	2		1	1
QWS-SM-D04-0050	QWS-DP-4	5		1	1
QWS-SM-D04-0100	QWS-DP-4	10		1	1
QWS-SM-D04-0150	QWS-DP-4	15		1	1
QWS-SM-D05-0020	QWS-DP-5	2		1	1
QWS-SM-D05-0050	QWS-DP-5	5	Lab QC	2	2
QWS-SM-D05-0100	QWS-DP-5	10		1	1
QWS-SM-D05-0150	QWS-DP-5	15		1	1
QWS-SM-D06-0020	QWS-DP-6	2		1	1
QWS-SM-D06-0050	QWS-DP-6	5	Lab QC	2	2
QWS-SM-D06-0100	QWS-DP-6	10		1	1
QWS-SM-D06-0150	QWS-DP-6	15		1	1
QWS-SM-D07-0020	QWS-DP-7	2		1	1
QWS-SM-D07-0050	QWS-DP-7	5		1	1
QWS-SM-D07-0100	QWS-DP-7	10		1	1
QWS-SM-D07-0150	QWS-DP-7	15		1	1
QWS-SM-D08-0020	QWS-DP-8	2		1	1
QWS-SM-D08-0050	QWS-DP-8	5		1	1
QWS-SM-D08-0100	QWS-DP-8	10		1	1
QWS-SM-D08-0150	QWS-DP-8	15		1	1
QWS-SM-D09-0020	QWS-DP-9	2		1	1
QWS-SM-D09-0050	QWS-DP-9	5		1	1
QWS-SM-D09-0100	QWS-DP-9	10		1	1
QWS-SM-D09-0150	QWS-DP-9	15		1	1
QWS-SM-C02-0020	QWS-CPT-2	2	Background	1	1
QWS-SM-C02-0050	QWS-CPT-2	5	Background	1	1
QWS-SM-C02-0100	QWS-CPT-2	10	Background	1	1
QWS-SM-C02-0150	QWS-CPT-2	15	Background	1	1
QWS-SM-D10-0050	QWS-DP-2	5	Duplicate	1	1
QWS-SM-D11-0050	QWS-DP-3	5	Duplicate	1	1
QWS-SM-D14-0050	QWS-DP-4	5	Duplicate	1	1
QWS-SM-D15-0050	QWS-DP-8	5	Duplicate	1	1
Total Number of Soil Matrix Field Samples				40	40
Total Number of Duplicate Samples				4	4
Total Number of Soil Matrix Samples				**44**	**44**
Total Number of QC Volumes				3	3
Total Number of Sample Volumes				47	47
Total Number of Sample Containers				141	47

Notes:

Stated values for sample holding times, preservatives, volumes, and containers are preliminary and will be verified with the EPA RSCC prior to sampling.

CLPAS = Contract Laboratory Program Analytical Services

ICP-MS = Inductively coupled plasma mass spectrometry

QC = Quality Control

VOCs = Volatile Organic Compounds

Table 5: Request for Analytical Services, Matrix - Water

ANALYSES REQUESTED				Organic	Inorganic
ANALYTICAL METHOD				CLPAS SOM02.2	CLPAS ISM02.2 (using ICP-MS)
ANALYTE(S)				VOCs	Metals
PRESERVATIVES				Add 1:1 HCL to pH <2; no pres. for low conc.; Cool to 4°C ±2°C	Field filter; Add HNO3 to pH <2; Chill to 4±2°C
ANALYTICAL HOLDING TIME(S)				14 days; 7 days for low conc.	180 days
CONTRACT HOLDING TIME(S)				Analyze within 10 days; 5 days for low conc.	Analyze within 35 days
CONTAINER VOLUME				40 mL	500 mL
SAMPLE CONTAINER				Glass VOA Vial	HDPE
NUMBER OF CONTAINERS				3	1
SAMPLE VOLUME				120 mL	500 mL
Sample Number	Sample Location	Estimated Sample Depth (feet)	Special Designation	**VOCs** (Sample Volumes)	**Metals** (Sample Volumes)
QWS-GW-D02-0350	QWS-DP-2	35		1	1
QWS-GW-D02-0600	QWS-DP-2	60		1	1
QWS-GW-D03-0350	QWS-DP-3	35		1	1
QWS-GW-D03-0600	QWS-DP-3	60		1	1
QWS-GW-D06-0350	QWS-DP-6	35		1	1
QWS-GW-D06-0600	QWS-DP-6	60		1	1
QWS-GW-D08-0350	QWS-DP-8	35	Lab QC	2	2
QWS-GW-D08-0600	QWS-DP-8	60		1	1
QWS-GW-C01-0600	QWS-CPT-1	60	Background	1	1
QWS-GW-C01-0900	QWS-CPT-1	90	Background	1	1
QWS-GW-C01-1300	QWS-CPT-1	130	Background	1	1
QWS-GW-C02-0600	QWS-CPT-2	60	Background	1	1
QWS-GW-C02-0900	QWS-CPT-2	90	Background	1	1
QWS-GW-C02-1300	QWS-CPT-2	130	Background	1	1
QWS-GW-C03-0600	QWS-CPT-3	60	Background	1	1
QWS-GW-C03-0900	QWS-CPT-3	90	Background	1	1
QWS-GW-C03-1300	QWS-CPT-3	130	Background	1	1
QWS-GW-C04-0600	QWS-CPT-4	60		1	1
QWS-GW-C04-0900	QWS-CPT-4	90		1	1
QWS-GW-C04-1300	QWS-CPT-4	130		1	1
QWS-GW-C05-0600	QWS-CPT-5	60	Lab QC	2	2
QWS-GW-C05-0900	QWS-CPT-5	90		1	1
QWS-GW-C05-1300	QWS-CPT-5	130		1	1
QWS-GW-C06-0600	QWS-CPT-6	60		1	1
QWS-GW-C06-0900	QWS-CPT-6	90		1	1
QWS-GW-C06-1300	QWS-CPT-6	130		1	1
QWS-GW-D10-0350	QWS-DP-2	35	Duplicate	1	1
QWS-GW-D11-0350	QWS-DP-3	35	Duplicate	1	1
QWS-GW-D12-0350	QWS-DP-6	35	Duplicate	1	1
QWS-FB01-[insertdate]	Field Blank	NA	Field Blank	1	1
QWS-FB02-[insertdate]	Field Blank	NA	Field Blank	1	1
QWS-FB03-[insertdate]	Field Blank	NA	Field Blank	1	1
QWS-FB04-[insertdate]	Field Blank	NA	Field Blank	1	1
QWS-EB01-[insertdate]	EQ Blank	NA	EQ Blank	1	1
QWS-EB02-[insertdate]	EQ Blank	NA	EQ Blank	1	1
QWS-EB03-[insertdate]	EQ Blank	NA	EQ Blank	1	1
QWS-EB04-[insertdate]	EQ Blank	NA	EQ Blank	1	1
QWS-EB05-[insertdate]	EQ Blank	NA	EQ Blank	1	1
QWS-EB06-[insertdate]	EQ Blank	NA	EQ Blank	1	1
Total Number of Aqueous Field Samples				26	26
Total Number of Duplicate Samples				3	3
Total Number of Aqueous Samples				**29**	**29**
Total Number of QC Volumes				2	2
Total Number of Field and EQ Blank Volumes				10	10
Total Number of Sample Volumes				41	41
Total Number of Sample Containers				123	41

Notes:

Stated values for sample holding times, preservatives, volumes, and containers are preliminary and will be verified with the EPA RSCC prior to sampling.

CLPAS = Contract Laboratory Program Analytical Services	HNO3 = nitric acid
conc. = concentration	ICP-MS = Inductively coupled plasma mass spectrometry
EQ = equipment	mL = milliliter
HCL = hydrochloric acid	QC = Quality Control
HDPE = high-density polyethylene	VOCs = Volatile Organic Compounds

6.0 METHODS AND PROCEDURES

6.1 Field Equipment

6.1.1 Sampling Equipment

The following equipment will be used to obtain environmental samples:

Equipment	Matrix	Fabrication	Dedicated
40-micron Filter	Groundwater	Plastic	Yes
Tubing	Groundwater	Plastic	Yes
Trowel	Soil	Plastic	Yes
Hand Auger	Soil	Metal	No
Slide Hammer Sleeve	Soil	Brass	No
Sampler Sleeves	Soil	Acetate	Yes
Direct-Push Casing	All Matrices	Steel	No
Gloves	All Matrices	Nitrile	Yes
Ziploc®-style bags	All Matrices	Plastic	Yes

A subcontractor will operate the direct push and sampling devices. Equipment maintenance will be the responsibility of the subcontracted companies using standard industry practices. All non-dedicated sampling equipment will be decontaminated between samples by washing with a low phosphate detergent solution, followed by two rinses with potable water.

6.1.2 Inspection/Acceptance Requirements for Supplies and Consumables

There are no project-specific inspection/acceptance criteria for supplies and consumables. It is standard operating procedure that: personnel will not use broken or defective materials, items will not be used past their expiration date, supplies and consumables will be checked against order and packing slips to verify the correct items were received, and the supplier will be notified of any missing or damaged items.

6.2 Sampling Procedures

6.2.1 Underground Utilities Clearance

All underground utilities will be located and identified by a geophysical survey team. If any subsurface utilities are suspected beneath proposed borings, the borings will be relocated in order to avoid the utilities. Underground Services Alert will be notified at least 72 hours before drilling commences. All boring locations will be advanced using a hand auger, air knife, or similar method to at least five feet bgs.

6.2.2 Soil Sampling

Soil matrix samples will be collected from a total of 10 locations, which includes nine on-site borings (QWS-DP-1 through QWS-DP-9) and one off-site boring (QWS-CPT-2). The proposed soil sample locations are presented in Figure 3. At each location the asphalt or concrete surface will be cored until the underlying soils are encountered. The borings will then be advanced by hand-auger to a total depth of 5 feet bgs. The soil lithology will be logged in the field and soil samples will be collected from each boring at 2 feet bgs. The borings will be further advanced using direct push technology in accordance with EPA ERT SOP #2050 (Appendix E) to a sufficient depth for all proposed soil matrix samples to be collected. During the direct push advancement, soil lithology will be logged to at least the depth of the deepest soil matrix sample; soil samples will be collected from each boring at 5 feet bgs, 10 feet bgs, and 15 feet bgs. At five locations; QWS-DP-2, QWS-DP-3, QWS-DP-6, QWS-DP-8, and QWS-CPT-2; the borings will be further advanced to depths sufficient to collect groundwater samples as described in Section 6.2.3. It will be determined in the field based upon the actual site conditions and sampling schedule if soil lithology will be logged to the total depth of the direct push borings. The borings will be backfilled in a manner consistent with the requirements of the Los Angeles County Department of Health, which is generally a combination of granular bentonite, hydrated bentonite chips, and grout.

Subsurface soil matrix samples obtained from the upper 5 feet of each boring will be collected directly using a slide hammer and brass sleeve, which will be dedicated or appropriately decontaminated between each boring. Samples collected at 5 feet bgs and below will be collected directly from the direct push acetate liners. The sample portion to be used for VOC analysis will be collected first by use of a 5-gram En Core®-type sampling device. The 5-gram containers will be immediately sealed, labeled, and chilled to 4ºC. Subsequent to the collection of the VOC portion of the sample, the metals portion of the sample will be collected and placed in to a Ziploc®-style bag. The samples will be homogenized in the bag and then transferred with a dedicated plastic trowel from the bag to 4-ounce wide-mouth glass jars. Sample containers will be filled to the top, taking care to prevent soil from remaining in the lid threads prior to being closed to prevent potential contaminant migration to or from the sample. Sample containers will be closed as soon as they are filled, immediately chilled to 4ºC, and processed for shipment to the laboratory.

All soil matrix samples will be analyzed for VOCs and metals.

6.2.3 Groundwater Sampling

Groundwater samples will be collected from four on-site proposed direct push boring locations (QWS-DP-2, QWS-DP-3, QWS-DP-6, and QWS-DP-8), two on-site proposed CPT locations (QWS-CPT-1 and QWS-CPT-5), and four off-site proposed CPT locations (QWS-CPT-2 through QWS-CPT-4 and QWS-CPT-6). At each of the four direct push locations, the borings will be advanced to groundwater as described in Section 6.2.3. Two discrete-depth groundwater samples will be collected from each location at estimated depths of 35 ft-bgs and 60 ft-bgs; however, the actual sample depths will be determined in the field based upon the depths at which sufficient groundwater is encountered and/or adjacent CPT logging information.

At all six of the on- and off-site CPT locations (QWS-CPT-1 through QWS-CPT-6), the borings will be initially advanced to a total depth of approximately 150 feet bgs using the CPT drilling rig. As the borehole is advanced, the CPT drill rig will collect subsurface lithological data (i.e., relative density, static and dynamic pore pressure, hydraulic conductivity) that will be immediately provided to the WESTON field personnel. Based upon this data, WESTON personnel will determine the specific depths to collect the discrete-depth groundwater samples, which are proposed to be at approximately 60 ft-bgs, 90 ft-bgs, and 130 ft-bgs. The CPT drill rig will then advance a second boring to collect each of the groundwater grab samples.

Once the proper depth has been attained at all direct push and CPT groundwater sample locations, an in-situ groundwater sample will be collected using a Hydropunch™ water sampling device, or equivalent. The Hydropunch™ is inserted into undisturbed soils at the base of the borehole. The outer portion of the Hydropunch™ is then retracted to expose a PVC screen in the water-bearing zone. A mini-bailer is lowered into the screen for collection of an in-situ groundwater sample. Because groundwater samples collected with a Hydropunch™ are representative of in-situ groundwater conditions, samples may be collected immediately without purging or measurement of water quality parameters. The Hydropunch™ is a sealed unit so water from the upper sample location will not migrate to lower sample locations.

Groundwater samples to be analyzed for VOCs will be collected by pouring the sample directly from the bailer into 40-milliliter (mL) vials preserved in the field with hydrochloric acid (HCl), to a final pH of less than 2. The vials will be immediately capped and inverted to check for air bubbles to ensure zero head space. If a bubble appears, the vial will be discarded and a new sample will be collected.

Groundwater samples to be analyzed for metals will be collected by filtering the sample directly from the bailer into a 500-mL High-Density Polyethylene (HDPE) container, which will be preserved in the field with nitric acid (HNO_3) to a final pH of less than 2. In the event that it is not feasible to filter the sample directly from the original sampling device, the sample will be transferred to a dedicated HDPE container and then filtered into the final sample container. The filtering will be conducted either via a 40-micron filter that will connect directly to the bailer or by use of a peristaltic pump to pump the sample through a 40-micron in-line filter.

Subsequent to the collection of each sample in the appropriate container, the sample will be immediately chilled on ice and processed for shipment to the assigned laboratory. When

transferring samples, care will be taken not to touch the bailer to the sample container. For duplicate samples, bottles with the two different sample designations will be filled in an alternating sequence. All groundwater samples will be analyzed for VOCs and metals.

6.3 Decontamination Procedures

The decontamination procedures that will be followed are in accordance with approved procedures. Decontamination of sampling equipment must be conducted consistently to assure the quality of samples collected. All non-dedicated equipment that comes into contact with potentially contaminated soil or water will be decontaminated. Disposable equipment intended for one-time use will not be decontaminated, but will be packaged for appropriate disposal. Decontamination will occur prior to and after each use of a piece of non-dedicated equipment. All non-dedicated sampling devices will be steam-cleaned or decontaminated according to EPA Region 9 recommended procedures.

The following, to be carried out in sequence, is an EPA Region 9 recommended procedure for the decontamination of sampling equipment:

- Non-phosphate detergent and tap-water wash, using a brush if necessary
- Tap-water rinse
- Deionized/distilled water rinse (twice)

Equipment will be decontaminated in a pre-designated area on pallets or plastic sheeting, and clean bulky equipment will be stored on plastic sheeting in uncontaminated areas. Cleaned small equipment will be stored in plastic bags. Materials to be stored more than a few hours will also be covered.

7.0 DISPOSAL OF INVESTIGATION - DERIVED WASTE

In the process of collecting environmental samples at this site, several different types of potentially contaminated investigation-derived wastes (IDW) will be generated, including the following:

- Used personal protective equipment (PPE)
- Disposable sampling equipment
- Decontamination fluids
- Excess soil, including cuttings from soil borings.

The EPA's National Contingency Plan requires that management of IDW generated during site investigations comply with all relevant or appropriate requirements to the extent practicable. This sampling plan will follow the *Office of Emergency and Remedial Response (OERR) Directive 9345.3-02 (May 1991)* which provides the guidance for management of IDW during site investigations. Listed below are the procedures that will be followed for handling IDW. The procedures are flexible enough to allow the site investigation team to use its professional judgment on the proper method for the disposal of each type of IDW generated at each sampling location.

- Used PPE and disposable sampling equipment will be double-bagged in plastic trash bags and disposed of in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE or dedicated equipment that is to be disposed of that can still be reused will be rendered inoperable before disposal.

- Decontamination fluids that will be generated in the sampling event will consist of deionized water, residual contaminants, and water with non-phosphate detergent. Decontamination fluids will be drummed and staged on site pending laboratory analysis for VOCs and metals. Subsequent to the analysis, the fluids will be disposed in an appropriate manner.

- Soil cuttings generated during the subsurface sampling will be drummed and staged on site pending laboratory analysis for VOCs and metals. Subsequent to the analysis, the cuttings will be disposed in an appropriate manner.

8.0 SAMPLE IDENTIFICATION, DOCUMENTATION AND SHIPMENT

8.1 Field Notes

8.1.1 Field Logbooks

Field logbooks will document where, when, how, and from whom any vital project information was obtained. Logbook entries will be completed and accurate enough to permit reconstruction of field activities. The logbook is bound with consecutively numbered pages. Each page will be dated and the time of entry noted in military time. All entries will be legible, written in ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions. At a minimum, the following information will be recorded, if applicable, during the collection of each sample.

- Sampler's name(s)
- Date and time of sample collection
- Type of sample (e.g., groundwater)
- Type of sampling equipment used
- Field instrument readings and calibration readings for any equipment used, and
- equipment model(s) and serial number(s)
- Field observations and details related to analysis or integrity of samples (e.g., weather conditions, noticeable odors, colors, etc.)
- Sample preservation
- Lot numbers of the sample containers, sample identification numbers and any
- explanatory codes, and chain-of-custody form numbers
- Shipping arrangements (overnight air bill number)
- Name(s) of recipient laboratory(ies)

In addition to sampling information, the following specifics may also be recorded in the field logbook for each day of sampling:

- Team members and their responsibilities
- Time of arrival on site and time of site departure
- Other personnel on site
- Summary of any meetings or discussions with any potentially responsible parties, or representatives of any federal, state, or other regulatory agency
- Deviations from sampling plans or site safety plan procedures
- Changes in personnel and responsibilities, as well as reasons for the change
- Levels of safety protection
- Record of photographs

8.1.2 Photographs

Photographs will be taken at representative sampling locations and at other areas of interest on site. They will verify information entered in the field logbook. When a photograph is taken, the

following information will be written on the logbook or will be recorded in the field photography log:

- Date, location
- Description of the subject photographed
- Name of person taking the photograph

8.2 Sample Nomenclature

A unique, identifiable name will be assigned to each sample. The prefix “QWS” will be used to identify the QualaWash site. The qualifiers “SM” (soil matrix) and “GW” (ground water) will be used to identify the sample medium. The boring location and sample depth (to the tenth of a foot) will be identified and follow the medium qualifier. The boring location will be qualified with either a “D” to indicate a direct push location or a “C” to identify a CPT location. The identified depth for groundwater samples will be the center of the sample screen. A unique number will be assigned to each sample location. For example, if a soil matrix sample is collected from 5.5 feet bgs at QWS-DP-3, the sample number will be “QWS-SM-D03-0055." If a groundwater sample is collected at QWS-CPT-3 with the screen set from 62 to 66 feet bgs, the sample number will be “QWS-GW-C03-0640.” Duplicate samples will be assigned fictitious names. For equipment blanks and field blanks, the qualifiers “EB” and “FB” will be used respectively in place of the location/depth identification. The EPA RSCC may assign additional sample numbers. See Section 4, Table 4, and Table 5 for specific nomenclature and location assignments.

8.3 Container, Preservation, and Holding Time Requirements

All sample containers used will have been delivered to WESTON in a pre-cleaned condition. Container, preservation, and holding time requirements are summarized in in Table 4 and Table 5.

8.4 Sample Labeling, Packaging and Shipping

All samples collected will be labeled in a clear and precise way for proper identification in the field and for tracking in the laboratory. Soil- and water-matrix sample labels will be created using the SCRIBE data management system. Soil- and water-matrix sample labels will be affixed to the sample containers and secured with clear tape. Samples will have preassigned, identifiable and unique numbers in accordance with Section 8.2. The soil sample labels will contain the following information where appropriate:

- Sample number
- Sample location
- Date and time of collection
- Site name
- Analytical parameter and method of preservation
- CLP Case Number (if applicable)

Sample coolers will be retained in the custody of site personnel at all times or secured so as to deny access to anyone else. The procedures for shipping samples are as follows:

- The bottom of the cooler will be lined with bubble wrap to prevent breakage during shipment.
- Screw caps will be checked for tightness.
- Containers will have custody seals affixed so as to prevent opening of the container without breaking the seal.
- All glass sample containers will be wrapped in bubble wrap.
- All containers will be sealed in Ziploc®-style bags.

All samples will be placed in coolers with the appropriate chain-of-custody forms. The SCRIBE data management system will be used to create all chain-of-custody forms. All forms will be enclosed in plastic bags and affixed to the underside of the cooler lid. Empty space in the cooler will be filled with bubble wrap or styrofoam peanuts to prevent movement and breakage during shipment. Each ice chest will be securely taped shut with strapping tape, and custody seals will be affixed to the front, right, and back of each cooler.

Samples will be shipped for immediate delivery to the contracted laboratory. The EPA Region 9 Regional Sample Control Coordinator ((510) 412-2389) will be notified daily of the sample shipment schedule and will be provided with the following information:

- Sampling contractor's name
- The name of the site
- Case number
- Shipment date and expected delivery date
- Total number of samples by matrix, and relative level of contamination (i.e., low, medium, or high)
- Carrier, air bill number(s), and method of shipment (e.g., priority)
- Irregularities or anticipated problems associated with the samples
- Whether additional samples will be sent, if this is the last shipment]

8.5 Chain of Custody Forms and QA/QC Summary Forms

A chain of custody form will be maintained for all samples to be submitted for analysis, from the time the sample is collected until its final deposition. All chain of custody forms for the samples will be maintained by WESTON.

Every transfer of custody must be noted and signed for; a copy of this record is kept by each individual who has signed. Corrections on sample paperwork will be made by drawing a single line through the mistake and initialing and dating the change. The correct information will be entered above, below, or after the mistake. When samples are not under the direct control of the individual responsible for them, they must be stored in a locked container sealed with a custody seal. The chain of custody must include the following:

- Sample identification numbers
- Site name
- Sample date
- Number and volume of sample containers
- Required analyses
- Signature and name of samplers
- Signature(s) of any individual(s) with control over samples
- Airbill number
- Note(s) indicating special holding times and/or detection limits

Traffic reports will be used to document sample collection and shipment to the laboratory for analysis. The SCRIBE data management system will be used to generate all traffic reports and chains of custody. One copy will be completed and sent with the samples for each laboratory and each shipment. If multiple coolers are sent to a single laboratory on a single day, only one form will be completed. If all sample information cannot be entered in one form, then multiple forms will be used. One copy of the form will be sent to the EPA RSCC, another copy will be sent to Contract Laboratory Analytical Services Support, and one copy will accompany the samples to the laboratory. A photocopy of the original will be made for WESTON's master file. The document titled "*Contract Laboratory Program Guidance for Field Samplers*," EPA Superfund document 540-R-07-06, will be taken to the field as a reference. This document is included in Appendix F.

A QA/QC summary form will be completed for each laboratory and each matrix of the sampling event. The sample number for all blanks, reference samples, laboratory QC samples (MS/MSDs) and duplicates will be documented on this form. This form is not sent to the laboratory. The original form will be sent to the EPA; a photocopy of the original will be made for WESTON's master file.

9.0 QUALITY ASSURANCE AND CONTROL (QA/QC)

9.1 Field Quality Control Samples

The QA/QC samples described in the following subsections, which are also listed in Table 4 and 5, will be collected during this investigation.

9.1.1 Assessment of Field Contamination (Blanks)

9.1.1.1 Equipment Blanks

Equipment rinsate blanks will be collected to evaluate field sampling and decontamination procedures by pouring either store-bought distilled water or laboratory-certified 'clean' water over the decontaminated sampling equipment. One equipment rinsate blank will be collected per day for each piece of sampling equipment that is decontaminated in the field. Equipment rinsate blanks will be obtained by passing water through or over the decontaminated sampling devices used that day. Equipment blanks will be analyzed for VOCs and metals (see Table 5).

The equipment blanks will be preserved, packaged, and sealed in the manner described for the groundwater samples in Section 6.2. A separate sample number will be assigned to each sample as described in Section 8.2.

If any compound is detected in field blanks or equipment blanks, then sample data will be considered acceptable without qualification only if the results are above five times the amount detected in the blank(s) for each respective analyte. If the analyte detected in the blank is a common laboratory contaminate, then the sample results for those analytes would be qualified unless the results are above ten times the amount detected in the blank(s). Sample results that are below five times (ten times for common laboratory contaminants) the amount detected in the blanks, additional evaluation will be require during data validation.

9.1.1.2 Field Blanks

A field blank will be collected from each container of distilled water used to collect the equipment rinsate blanks described in Section 9.1.1.1. In the event that only laboratory-certified 'clean' water is used in the collection of equipment blanks, no field blanks will be collected. The field blank sample will consist of filling the appropriate sample container directly from the store-bought distilled water container. The field blanks will be preserved, packaged, and sealed in the manner described for the groundwater samples in Section 6.2. A separate sample number will be assigned to each sample as described in Section 8.2. Field blanks will be analyzed for VOCs and metals. If any compound is detected in the field blanks, this information will be considered when evaluating equipment blank samples as described in Section 9.1.1.1.

9.1.1.3 Temperature Blanks

For each cooler that is shipped or transported to an analytical laboratory, a 40-mL vial of store-bought distilled water will be included that is marked “temperature blank.” This blank will be used by the sample custodian to check the temperature of samples upon receipt.

9.1.2 Assessment of Sample Variability (Field Duplicate or Co-located Samples)

Duplicate soil matrix and groundwater samples will be collected at the sample locations indicated in Table 4 and Table 5. Locations for duplicate samples were chosen based on the potential of the sample containing AOCs. At a minimum, one sample per 10 samples, per matrix, will be designated as a duplicate sample. The acceptance criteria for duplicate samples are presented in Section 3.5.3.

When collecting duplicate water samples, bottles with the two different sample identification numbers will be alternated in the filling sequence.

When collecting duplicate soil matrix samples to be analyzed for metals, the samples will be homogenized in a sample-dedicated Ziploc®-style bag. Homogenized materials will then be transferred to the appropriate sample container. When collecting duplicate soil matrix samples to be analyzed for VOCs, the samples will not be homogenized to reduce the potential for volatilization. These equivalent (co-located) samples will be collected from the sample sleeve, alternating with collection of the original samples.

Duplicate samples will be preserved, packaged, and sealed in the same manner described for the groundwater samples in Section 6.2. A separate sample number will be assigned to each duplicate as described in Section 8.2 and presented in Table 4 and Table 5. All duplicate samples will be submitted blind to the laboratory.

9.2 Background Samples

Background groundwater samples will be collected in the estimated upgradient direction of the site to differentiate between on-site and off-site contributions to contamination. Background soil matrix samples will be collected from a location deemed to have a lower potential for elevated concentrations of AOCs. Background samples will be submitted blind to the laboratory and analyzed by the methods indicated in Table 4 and Table 5.

9.3 Laboratory Quality Control (QC) Samples

A laboratory QC sample is not an extra sample; rather, it is a sample that requires additional QC analyses.

For water samples, double volumes of sample will be provided to the laboratory for its use for QC purposes. Two sets of water sample containers will be filled and all containers labeled with a single sample number.

For soil matrix samples, double volumes of sample will be provided to the laboratory for its use for QC purposes. When collecting double-volume QC soil matrix samples to be analyzed for metals, the samples will be homogenized in a sample-dedicated Ziploc®-style bag. Homogenized materials will then be transferred to the appropriate sample container. When collecting double-volume QC soil matrix samples to be analyzed for VOCs, the samples will not be homogenized to reduce the potential for volatilization. These equivalent (co-located) samples will be collected from the sample sleeve, alternating with collection of the original samples.

For this sampling event, the samples collected at the locations indicated in Table 4 and Table 5 will be the designated laboratory QC samples. These locations were chosen because they are suspected to contain detectable levels of AOCs. The sample labels and chain-of-custody records for these samples will identify them as a laboratory QC samples. At a minimum, one sample per 20 samples, per matrix, will be designated as a laboratory QC sample.

9.4 Analytical and Data Package Requirements

It is required that all samples be analyzed in accordance with the methods listed in Table 4 and Table 5. The laboratory is required to supply documentation to demonstrate that their data meet the requirements specified in the contract.

The data validation package shall include all original documentation generated in support of this project. In addition, the laboratory will provide original documentation to support that all requirements of the methods have been met. This includes, but is not limited to, sample tags, custody records, shipping information, sample preparation/extraction records, and instrument printouts such as mass spectra. Copies of information and documentation required in this document are acceptable. CLP methods will follow the contract required data package requirement.]

9.5 Data Validation

Validation of analytical data generated by the CLP and contract laboratories for this investigation will be contracted by the EPA in accordance with the *EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 540-R-99\008, 10/99), the EPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review* (*EPA540-R-00-006, 06/01), and/or the EPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (EPA 540-R-04\001, 10/04).* Tier 3 validation for 100% of the data will be required.

To meet requirements for categorization as definitive data, the following criteria will be evaluated:

- Holding times
- Sampling design approach
- Blank contamination
- Initial and continuing calibration
- Detection limits
- Analyte identification and quantitation

- Matrix spike recoveries
- Performance evaluation samples when specified
- Analytical and total error determination
- Laboratory Control Samples.

Upon completion of validation, data will be classified as one of the following: acceptable for use without qualifications, acceptable for use with qualifications, or unacceptable for use.

9.6 Field Variances

As conditions in the field may vary, it may become necessary to implement minor modifications to this plan. When appropriate, the EPA will be notified of the modifications and a verbal approval obtained before implementing the modifications. Modifications to the original plan will be documented in the final report.

9.7 Assessment of Project Activities

9.7.1 WESTON Assessment Activities

The following assessment activities will be performed by WESTON:

- All project deliverables (SAP, Data Summaries, Data Validation Reports, Site Inspection Report) will be peer-reviewed prior to release to the EPA. In time-critical situations, the peer review may be concurrent with the release of a draft document. Errors discovered in the peer review process will be reported by the reviewer to the originator of the document, who will be responsible for corrective action.

- The WESTON QA Officer will review project documentation (logbooks, chain of custody forms, etc.) to ensure the SAP was followed and that sampling activities were adequately documented. The WESTON QA Officer will document deficiencies and the WESTON Project Manager will be responsible for corrective actions. The WESTON QA Officer is also responsible for review and assessment of the data for data quality issues for the project.

- The WESTON Project Manager is responsible for the review of data, and ensuring that sampling design approach and total error determination meet the DQOs for this project.

9.7.2 EPA Assessment Activities

EPA assessment activities, which can include surveillance, management system reviews, readiness reviews, technical system audits, performance evaluation, and audits and assessments of data quality, have not been formally identified to WESTON by the EPA at the time of completion of the SAP.

9.7.3 Project Status Reports to Management

It is standard procedure for the WESTON PM to report to the EPA SAM any issues, as they occur, that arise during the course of the project that could affect data quality, data use objectives, the project objectives, or project schedules.

9.7.4 Reconciliation of Data with DQOs

Assessment of data quality is an ongoing activity throughout all phases of a project. The following outlines the methods to be used by WESTON for evaluating the results obtained from the project.

- Review of the DQO outputs and the sampling design will be conducted by the WESTON QA Officer and the EPA prior to sampling activities. The reviewer will submit comments to the WESTON PM for action, comment, or clarification. This process will be iterative.

- A preliminary data review will be conducted by WESTON. The purpose of this review is to look for problems or anomalies in the implementation of the sample collection and analysis procedures and to examine QC data for information to verify assumptions underlying the DQOs and the SAP. Anomalies may include changes in the MRLs as a result of dilution, sampling, and/or matrix factors across the sample suite; such anomalies will be reported in writing to the SAM when they are confirmed.

- Data review will also include a comparison of analytical results, MRLs, and background concentrations in an effort to determine whether each result can be identified as “significantly above,” or “significantly below” background, as defined in Section 3.3.

10.0 REFERENCES

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Appendix G:
Sample Nos. – CLP Nos. Correlation Tables

CLP No. to Sample No. Correlation Table - Sorted by Sample No.				
Sample #	CLP Sample #	Location	SampleType	Remarks
QWS-EB01-110215	MYA1J6	EQ Blank	Equipment Blank	
QWS-EB01-110215	YA1J6	EQ Blank	Equipment Blank	
QWS-EB02-110315	MYA1J7	EQ Blank	Equipment Blank	
QWS-EB02-110315	YA1J7	EQ Blank	Equipment Blank	
QWS-GW-C01-0641	MYA1G1	QWS-CPT-1	Field Sample	
QWS-GW-C01-0641	YA1G1	QWS-CPT-1	Field Sample	
QWS-GW-C01-0901	MYA1G2	QWS-CPT-1	Field Sample	
QWS-GW-C01-0901	YA1G2	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	MYA1G3	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	MYA1G3D	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	MYA1G3S	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	YA1G3	QWS-CPT-1	Field Sample	
QWS-GW-C02-0681	MYA1G4	QWS-CPT-2	Field Sample	MS/MSD
QWS-GW-C02-0681	MYA1G4D	QWS-CPT-2	Lab QC	
QWS-GW-C02-0681	MYA1G4S	QWS-CPT-2	Lab QC	
QWS-GW-C02-0681	YA1G4	QWS-CPT-2	Field Sample	
QWS-GW-C02-0881	MYA1G5	QWS-CPT-2	Field Sample	
QWS-GW-C02-0881	YA1G5	QWS-CPT-2	Field Sample	
QWS-GW-C02-1122	MYA1G6	QWS-CPT-2	Field Sample	
QWS-GW-C02-1122	YA1G6	QWS-CPT-2	Field Sample	
QWS-GW-C04-0671	MYA1H0	QWS-CPT-4	Field Sample	
QWS-GW-C04-0671	YA1H0	QWS-CPT-4	Field Sample	
QWS-GW-C04-0861	MYA1H1	QWS-CPT-4	Field Sample	
QWS-GW-C04-0861	YA1H1	QWS-CPT-4	Field Sample	
QWS-GW-C04-1143	MYA1H2	QWS-CPT-4	Field Sample	
QWS-GW-C04-1143	YA1H2	QWS-CPT-4	Field Sample	
QWS-GW-C05-0680	MYA1H3	QWS-CPT-5	Field Sample	MS/MSD
QWS-GW-C05-0680	MYA1H3D	QWS-CPT-5	Lab QC	
QWS-GW-C05-0680	MYA1H3S	QWS-CPT-5	Lab QC	
QWS-GW-C05-0680	YA1H3	QWS-CPT-5	Field Sample	MS/MSD
QWS-GW-C05-0680	YA1H3MS	QWS-CPT-5	Lab QC	
QWS-GW-C05-0680	YA1H3MSD	QWS-CPT-5	Lab QC	
QWS-GW-C05-0863	MYA1H4	QWS-CPT-5	Field Sample	
QWS-GW-C05-0863	YA1H4	QWS-CPT-5	Field Sample	
QWS-GW-C05-1161	MYA1H5	QWS-CPT-5	Field Sample	
QWS-GW-C05-1161	YA1H5	QWS-CPT-5	Field Sample	
QWS-GW-C10-0671	MYA1K2	QWS-CPT-4	Field Sample	
QWS-GW-C10-0671	YA1K2	QWS-CPT-4	Field Duplicate	DUP OF QWS-GW-C04-0671
QWS-GW-D02-0600	YA1F4	QWS-DP-2	Field Sample	
QWS-GW-D06-0690	MYA1F8	QWS-DP-6	Field Sample	
QWS-GW-D06-0690	YA1F8	QWS-DP-6	Field Sample	
QWS-SM-D01-0020	MYA1A9	QWS-DP-1	Field Sample	
QWS-SM-D01-0020	YA1A9	QWS-DP-1	Field Sample	
QWS-SM-D01-0050	MYA1B0	QWS-DP-1	Field Sample	MS/MSD
QWS-SM-D01-0050	MYA1B0D	QWS-DP-1	Lab QC	
QWS-SM-D01-0050	MYA1B0S	QWS-DP-1	Lab QC	

QWS-SM-D01-0050	YA1B0	QWS-DP-1	Field Sample	MS/MSD
QWS-SM-D01-0050	YA1B0MS	QWS-DP-1	Lab QC	
QWS-SM-D01-0050	YA1B0MSD	QWS-DP-1	Lab QC	
QWS-SM-D01-0100	MYA1B1	QWS-DP-1	Field Sample	
QWS-SM-D01-0100	YA1B1	QWS-DP-1	Field Sample	
QWS-SM-D01-0150	MYA1B2	QWS-DP-1	Field Sample	
QWS-SM-D01-0150	YA1B2	QWS-DP-1	Field Sample	
QWS-SM-D02-0020	MYA1B3	QWS-DP-2	Field Sample	
QWS-SM-D02-0020	YA1B3	QWS-DP-2	Field Sample	
QWS-SM-D02-0050	MYA1B4	QWS-DP-2	Field Sample	
QWS-SM-D02-0050	YA1B4	QWS-DP-2	Field Sample	
QWS-SM-D02-0100	MYA1B5	QWS-DP-2	Field Sample	
QWS-SM-D02-0100	YA1B5	QWS-DP-2	Field Sample	
QWS-SM-D02-0150	MYA1B6	QWS-DP-2	Field Sample	
QWS-SM-D02-0150	YA1B6	QWS-DP-2	Field Sample	
QWS-SM-D03-0020	MYA1B7	QWS-DP-3	Field Sample	
QWS-SM-D03-0020	YA1B7	QWS-DP-3	Field Sample	
QWS-SM-D03-0050	MYA1B8	QWS-DP-3	Field Sample	
QWS-SM-D03-0050	YA1B8	QWS-DP-3	Field Sample	
QWS-SM-D03-0100	MYA1B9	QWS-DP-3	Field Sample	
QWS-SM-D03-0100	YA1B9	QWS-DP-3	Field Sample	
QWS-SM-D03-0150	MYA1C0	QWS-DP-3	Field Sample	
QWS-SM-D03-0150	YA1C0	QWS-DP-3	Field Sample	
QWS-SM-D04-0020	MYA1C1	QWS-DP-4	Field Sample	
QWS-SM-D04-0020	YA1C1	QWS-DP-4	Field Sample	
QWS-SM-D04-0050	MYA1C2	QWS-DP-4	Field Sample	
QWS-SM-D04-0050	YA1C2	QWS-DP-4	Field Sample	
QWS-SM-D04-0100	MYA1C3	QWS-DP-4	Field Sample	
QWS-SM-D04-0100	YA1C3	QWS-DP-4	Field Sample	
QWS-SM-D04-0150	MYA1C4	QWS-DP-4	Field Sample	
QWS-SM-D04-0150	YA1C4	QWS-DP-4	Field Sample	
QWS-SM-D05-0020	MYA1C5	QWS-DP-5	Field Sample	
QWS-SM-D05-0020	YA1C5	QWS-DP-5	Field Sample	
QWS-SM-D05-0050	MYA1C6	QWS-DP-5	Field Sample	MS/MSD
QWS-SM-D05-0050	MYA1C6D	QWS-DP-5	Lab QC	
QWS-SM-D05-0050	MYA1C6S	QWS-DP-5	Lab QC	
QWS-SM-D05-0050	YA1C6	QWS-DP-5	Field Sample	MS/MSD
QWS-SM-D05-0050	YA1C6MS	QWS-DP-5	Lab QC	
QWS-SM-D05-0050	YA1C6MSD	QWS-DP-5	Lab QC	
QWS-SM-D05-0100	MYA1C7	QWS-DP-5	Field Sample	
QWS-SM-D05-0100	YA1C7	QWS-DP-5	Field Sample	
QWS-SM-D05-0150	MYA1C8	QWS-DP-5	Field Sample	
QWS-SM-D05-0150	YA1C8	QWS-DP-5	Field Sample	
QWS-SM-D06-0020	MYA1C9	QWS-DP-6	Field Sample	
QWS-SM-D06-0020	YA1C9	QWS-DP-6	Field Sample	
QWS-SM-D06-0050	MYA1D0	QWS-DP-6	Field Sample	MS/MSD
QWS-SM-D06-0050	MYA1D0D	QWS-DP-6	Lab QC	
QWS-SM-D06-0050	MYA1D0S	QWS-DP-6	Lab QC	

QWS-SM-D06-0050	YA1D0	QWS-DP-6	Field Sample	
QWS-SM-D06-0100	MYA1D1	QWS-DP-6	Field Sample	
QWS-SM-D06-0100	YA1D1	QWS-DP-6	Field Sample	
QWS-SM-D06-0150	MYA1D2	QWS-DP-6	Field Sample	
QWS-SM-D06-0150	YA1D2	QWS-DP-6	Field Sample	
QWS-SM-D07-0020	MYA1D3	QWS-DP-7	Field Sample	
QWS-SM-D07-0020	YA1D3	QWS-DP-7	Field Sample	
QWS-SM-D07-0050	MYA1D4	QWS-DP-7	Field Sample	
QWS-SM-D07-0050	YA1D4	QWS-DP-7	Field Sample	
QWS-SM-D07-0100	MYA1D5	QWS-DP-7	Field Sample	
QWS-SM-D07-0100	YA1D5	QWS-DP-7	Field Sample	
QWS-SM-D07-0150	MYA1D6	QWS-DP-7	Field Sample	
QWS-SM-D07-0150	YA1D6	QWS-DP-7	Field Sample	
QWS-SM-D08-0020	MYA1D7	QWS-DP-8	Field Sample	
QWS-SM-D08-0020	YA1D7	QWS-DP-8	Field Sample	
QWS-SM-D08-0050	MYA1D8	QWS-DP-8	Field Sample	
QWS-SM-D08-0050	YA1D8	QWS-DP-8	Field Sample	
QWS-SM-D08-0100	MYA1D9	QWS-DP-8	Field Sample	
QWS-SM-D08-0100	YA1D9	QWS-DP-8	Field Sample	
QWS-SM-D08-0150	MYA1E0	QWS-DP-8	Field Sample	
QWS-SM-D08-0150	YA1E0	QWS-DP-8	Field Sample	
QWS-SM-D09-0020	MYA1E1	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0020	YA1E1	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0050	MYA1E2	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0050	YA1E2	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0100	MYA1E3	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0100	YA1E3	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0150	MYA1E4	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0150	YA1E4	QWS-DP-9	Field Sample	Background
QWS-SM-D10-0050	MYA1E9	QWS-DP-2	Field Duplicate	DUP OF QWS-SM-D02-0050
QWS-SM-D10-0050	YA1E9	QWS-DP-2	Field Duplicate	DUP OF QWS-SM-D02-0050
QWS-SM-D11-0050	MYA1F0	QWS-DP-3	Field Duplicate	DUP OF QWS-SM-D03-0050
QWS-SM-D11-0050	YA1F0	QWS-DP-3	Field Duplicate	DUP OF QWS-SM-D03-0050
QWS-SM-D14-0050	MYA1F1	QWS-DP-4	Field Duplicate	DUP OF QWS-SM-D04-0050
QWS-SM-D14-0050	YA1F1	QWS-DP-4	Field Duplicate	DUP OF QWS-SM-D04-0050
QWS-SM-D15-0050	MYA1F2	QWS-DP-8	Field Duplicate	DUP OF QWS-SM-D08-0050
QWS-SM-D15-0050	YA1F2	QWS-DP-8	Field Duplicate	DUP OF QWS-SM-D08-0050

CLP No. to Sample No. Correlation Table - Sorted by CLP No.				
Sample #	CLP Sample #	Location	SampleType	Remarks
QWS-SM-D01-0020	MYA1A9	QWS-DP-1	Field Sample	
QWS-SM-D01-0050	MYA1B0	QWS-DP-1	Field Sample	MS/MSD
QWS-SM-D01-0050	MYA1B0D	QWS-DP-1	Lab QC	
QWS-SM-D01-0050	MYA1B0S	QWS-DP-1	Lab QC	
QWS-SM-D01-0100	MYA1B1	QWS-DP-1	Field Sample	
QWS-SM-D01-0150	MYA1B2	QWS-DP-1	Field Sample	
QWS-SM-D02-0020	MYA1B3	QWS-DP-2	Field Sample	
QWS-SM-D02-0050	MYA1B4	QWS-DP-2	Field Sample	
QWS-SM-D02-0100	MYA1B5	QWS-DP-2	Field Sample	
QWS-SM-D02-0150	MYA1B6	QWS-DP-2	Field Sample	
QWS-SM-D03-0020	MYA1B7	QWS-DP-3	Field Sample	
QWS-SM-D03-0050	MYA1B8	QWS-DP-3	Field Sample	
QWS-SM-D03-0100	MYA1B9	QWS-DP-3	Field Sample	
QWS-SM-D03-0150	MYA1C0	QWS-DP-3	Field Sample	
QWS-SM-D04-0020	MYA1C1	QWS-DP-4	Field Sample	
QWS-SM-D04-0050	MYA1C2	QWS-DP-4	Field Sample	
QWS-SM-D04-0100	MYA1C3	QWS-DP-4	Field Sample	
QWS-SM-D04-0150	MYA1C4	QWS-DP-4	Field Sample	
QWS-SM-D05-0020	MYA1C5	QWS-DP-5	Field Sample	
QWS-SM-D05-0050	MYA1C6	QWS-DP-5	Field Sample	MS/MSD
QWS-SM-D05-0050	MYA1C6D	QWS-DP-5	Lab QC	
QWS-SM-D05-0050	MYA1C6S	QWS-DP-5	Lab QC	
QWS-SM-D05-0100	MYA1C7	QWS-DP-5	Field Sample	
QWS-SM-D05-0150	MYA1C8	QWS-DP-5	Field Sample	
QWS-SM-D06-0020	MYA1C9	QWS-DP-6	Field Sample	
QWS-SM-D06-0050	MYA1D0	QWS-DP-6	Field Sample	MS/MSD
QWS-SM-D06-0050	MYA1D0D	QWS-DP-6	Lab QC	
QWS-SM-D06-0050	MYA1D0S	QWS-DP-6	Lab QC	
QWS-SM-D06-0100	MYA1D1	QWS-DP-6	Field Sample	
QWS-SM-D06-0150	MYA1D2	QWS-DP-6	Field Sample	
QWS-SM-D07-0020	MYA1D3	QWS-DP-7	Field Sample	
QWS-SM-D07-0050	MYA1D4	QWS-DP-7	Field Sample	
QWS-SM-D07-0100	MYA1D5	QWS-DP-7	Field Sample	
QWS-SM-D07-0150	MYA1D6	QWS-DP-7	Field Sample	
QWS-SM-D08-0020	MYA1D7	QWS-DP-8	Field Sample	
QWS-SM-D08-0050	MYA1D8	QWS-DP-8	Field Sample	
QWS-SM-D08-0100	MYA1D9	QWS-DP-8	Field Sample	
QWS-SM-D08-0150	MYA1E0	QWS-DP-8	Field Sample	
QWS-SM-D09-0020	MYA1E1	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0050	MYA1E2	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0100	MYA1E3	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0150	MYA1E4	QWS-DP-9	Field Sample	Background
QWS-SM-D10-0050	MYA1E9	QWS-DP-2	Field Duplicate	DUP OF QWS-SM-D02-0050
QWS-SM-D11-0050	MYA1F0	QWS-DP-3	Field Duplicate	DUP OF QWS-SM-D03-0050
QWS-SM-D14-0050	MYA1F1	QWS-DP-4	Field Duplicate	DUP OF QWS-SM-D04-0050
QWS-SM-D15-0050	MYA1F2	QWS-DP-8	Field Duplicate	DUP OF QWS-SM-D08-0050

QWS-GW-D06-0690	MYA1F8	QWS-DP-6	Field Sample	
QWS-GW-C01-0641	MYA1G1	QWS-CPT-1	Field Sample	
QWS-GW-C01-0901	MYA1G2	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	MYA1G3	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	MYA1G3D	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	MYA1G3S	QWS-CPT-1	Field Sample	
QWS-GW-C02-0681	MYA1G4	QWS-CPT-2	Field Sample	MS/MSD
QWS-GW-C02-0681	MYA1G4D	QWS-CPT-2	Lab QC	
QWS-GW-C02-0681	MYA1G4S	QWS-CPT-2	Lab QC	
QWS-GW-C02-0881	MYA1G5	QWS-CPT-2	Field Sample	
QWS-GW-C02-1122	MYA1G6	QWS-CPT-2	Field Sample	
QWS-GW-C04-0671	MYA1H0	QWS-CPT-4	Field Sample	
QWS-GW-C04-0861	MYA1H1	QWS-CPT-4	Field Sample	
QWS-GW-C04-1143	MYA1H2	QWS-CPT-4	Field Sample	
QWS-GW-C05-0680	MYA1H3	QWS-CPT-5	Field Sample	MS/MSD
QWS-GW-C05-0680	MYA1H3D	QWS-CPT-5	Lab QC	
QWS-GW-C05-0680	MYA1H3S	QWS-CPT-5	Lab QC	
QWS-GW-C05-0863	MYA1H4	QWS-CPT-5	Field Sample	
QWS-GW-C05-1161	MYA1H5	QWS-CPT-5	Field Sample	
QWS-EB01-110215	MYA1J6	EQ Blank	Equipment Blank	
QWS-EB02-110315	MYA1J7	EQ Blank	Equipment Blank	
QWS-GW-C10-0671	MYA1K2	QWS-CPT-4	Field Sample	
QWS-SM-D01-0020	YA1A9	QWS-DP-1	Field Sample	
QWS-SM-D01-0050	YA1B0	QWS-DP-1	Field Sample	MS/MSD
QWS-SM-D01-0050	YA1B0MS	QWS-DP-1	Lab QC	
QWS-SM-D01-0050	YA1B0MSD	QWS-DP-1	Lab QC	
QWS-SM-D01-0100	YA1B1	QWS-DP-1	Field Sample	
QWS-SM-D01-0150	YA1B2	QWS-DP-1	Field Sample	
QWS-SM-D02-0020	YA1B3	QWS-DP-2	Field Sample	
QWS-SM-D02-0050	YA1B4	QWS-DP-2	Field Sample	
QWS-SM-D02-0100	YA1B5	QWS-DP-2	Field Sample	
QWS-SM-D02-0150	YA1B6	QWS-DP-2	Field Sample	
QWS-SM-D03-0020	YA1B7	QWS-DP-3	Field Sample	
QWS-SM-D03-0050	YA1B8	QWS-DP-3	Field Sample	
QWS-SM-D03-0100	YA1B9	QWS-DP-3	Field Sample	
QWS-SM-D03-0150	YA1C0	QWS-DP-3	Field Sample	
QWS-SM-D04-0020	YA1C1	QWS-DP-4	Field Sample	
QWS-SM-D04-0050	YA1C2	QWS-DP-4	Field Sample	
QWS-SM-D04-0100	YA1C3	QWS-DP-4	Field Sample	
QWS-SM-D04-0150	YA1C4	QWS-DP-4	Field Sample	
QWS-SM-D05-0020	YA1C5	QWS-DP-5	Field Sample	
QWS-SM-D05-0050	YA1C6	QWS-DP-5	Field Sample	MS/MSD
QWS-SM-D05-0050	YA1C6MS	QWS-DP-5	Lab QC	
QWS-SM-D05-0050	YA1C6MSD	QWS-DP-5	Lab QC	
QWS-SM-D05-0100	YA1C7	QWS-DP-5	Field Sample	
QWS-SM-D05-0150	YA1C8	QWS-DP-5	Field Sample	
QWS-SM-D06-0020	YA1C9	QWS-DP-6	Field Sample	
QWS-SM-D06-0050	YA1D0	QWS-DP-6	Field Sample	

QWS-SM-D06-0100	YA1D1	QWS-DP-6	Field Sample	
QWS-SM-D06-0150	YA1D2	QWS-DP-6	Field Sample	
QWS-SM-D07-0020	YA1D3	QWS-DP-7	Field Sample	
QWS-SM-D07-0050	YA1D4	QWS-DP-7	Field Sample	
QWS-SM-D07-0100	YA1D5	QWS-DP-7	Field Sample	
QWS-SM-D07-0150	YA1D6	QWS-DP-7	Field Sample	
QWS-SM-D08-0020	YA1D7	QWS-DP-8	Field Sample	
QWS-SM-D08-0050	YA1D8	QWS-DP-8	Field Sample	
QWS-SM-D08-0100	YA1D9	QWS-DP-8	Field Sample	
QWS-SM-D08-0150	YA1E0	QWS-DP-8	Field Sample	
QWS-SM-D09-0020	YA1E1	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0050	YA1E2	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0100	YA1E3	QWS-DP-9	Field Sample	Background
QWS-SM-D09-0150	YA1E4	QWS-DP-9	Field Sample	Background
QWS-SM-D10-0050	YA1E9	QWS-DP-2	Field Duplicate	DUP OF QWS-SM-D02-0050
QWS-SM-D11-0050	YA1F0	QWS-DP-3	Field Duplicate	DUP OF QWS-SM-D03-0050
QWS-SM-D14-0050	YA1F1	QWS-DP-4	Field Duplicate	DUP OF QWS-SM-D04-0050
QWS-SM-D15-0050	YA1F2	QWS-DP-8	Field Duplicate	DUP OF QWS-SM-D08-0050
QWS-GW-D02-0600	YA1F4	QWS-DP-2	Field Sample	
QWS-GW-D06-0690	YA1F8	QWS-DP-6	Field Sample	
QWS-GW-C01-0641	YA1G1	QWS-CPT-1	Field Sample	
QWS-GW-C01-0901	YA1G2	QWS-CPT-1	Field Sample	
QWS-GW-C01-1120	YA1G3	QWS-CPT-1	Field Sample	
QWS-GW-C02-0681	YA1G4	QWS-CPT-2	Field Sample	
QWS-GW-C02-0881	YA1G5	QWS-CPT-2	Field Sample	
QWS-GW-C02-1122	YA1G6	QWS-CPT-2	Field Sample	
QWS-GW-C04-0671	YA1H0	QWS-CPT-4	Field Sample	
QWS-GW-C04-0861	YA1H1	QWS-CPT-4	Field Sample	
QWS-GW-C04-1143	YA1H2	QWS-CPT-4	Field Sample	
QWS-GW-C05-0680	YA1H3	QWS-CPT-5	Field Sample	MS/MSD
QWS-GW-C05-0680	YA1H3MS	QWS-CPT-5	Lab QC	
QWS-GW-C05-0680	YA1H3MSD	QWS-CPT-5	Lab QC	
QWS-GW-C05-0863	YA1H4	QWS-CPT-5	Field Sample	
QWS-GW-C05-1161	YA1H5	QWS-CPT-5	Field Sample	
QWS-EB01-110215	YA1J6	EQ Blank	Equipment Blank	
QWS-EB02-110315	YA1J7	EQ Blank	Equipment Blank	
QWS-GW-C10-0671	YA1K2	QWS-CPT-4	Field Duplicate	DUP OF QWS-GW-C04-0671

Appendix H:
Laboratory Reports

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager Ko
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: May 26, 2016

SUBJECT: Review of Analytical Data, **Tier 3 [UPDATED]**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	MYA1A9
Laboratory:	Shealy Environmental Services, Inc. (EQI)
Analysis:	CLP Metals by ICP-MS
Samples:	20 Soil Samples
Collection Date:	November 2, and 3, 2015
Reviewer:	Anna Pajarillo, ESAT

This report has been updated to include a review of field quality control samples (duplicates) and revise the criteria used to evaluate laboratory matrix spike recovery for soil samples.

EXES Data Manager has been updated; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Howard Pham, CLP PO USEPA Region 5
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [X] Yes [ ] No

Data Validation Report – **Tier 3**

Case No.: 45736
SDG No.: MYA1A9
Site: QualaWash
Laboratory: Shealy Environmental Services, Inc. (EQI)
Analysis: CLP Metals by ICP-MS
Reviewer: Anna Pajarillo, ESAT
Date: May 26, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Inorganic Analytical Sequence*.

Field QC

Field Blanks (FB): None.
Equipment Blanks (EB): MYA1J6 and MYA1J7 (both in SDG MAY1D0).
Background Samples (BG): None.
Field Duplicates (D1): MYA1B4, MYA1E9 (in SDG MYA1E9)
(D2): MYA1B8, MYA1F0 (in SDG MYA1E9)
(D4): MYA1D8, MYA1F2 (in SDG MYA1E9)

CLP PO Action

None.

Sampling Issues

1. Equipment blanks MYA1J6 and MYA1J7 were received with pH greater than two. No impact on sample results is anticipated since the laboratory adjusted the pH to less than two upon sample receipt.
2. Equipment blanks were not submitted "blind" to the laboratory since the matrix was stated as "Blank" and the location was stated as "EQ Blank" on chain of custody records (COCs).

Additional Comments

The samples were analyzed for the following Contract Laboratory Program (CLP) metals by Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc.

The internal standard (IS) yttrium-89 relative intensities (RIs) for MYA1A9, MYA1B0, and MYA1B0D exceeded the QC limit of 60-125%. These samples were re-analyzed at 2-fold dilutions as required by the statement of work (SOW) and the RIs are within QC limit as noted in the Table below.

Sample	Internal Standard	% Relative Intensity from undiluted Analysis	% Relative Intensity from 2-Fold Dilution
MYA1A9	Yttrium-89	129	121
MYA1B0	Yttrium-89	126	119
MYA1B0D	Yttrium-89	127	122

Results for cadmium, chromium, manganese, nickel and vanadium in the samples listed above are reported from the 2-fold dilution.

The preparation logs for some solutions were missing from the data package. The laboratory provided the missing pages upon request, on 01/25/16. All standards and spiking solutions were analyzed before the expiration date.

The mass intensity raw data was missing from the report. The laboratory provided the missing data upon request, on 01/25/16.

All method requirements specified in the EPA Contract Laboratory Program (CLP) Statement of Work (SOW), except as noted, have been met.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)* ISM02.2, August 2014; and
- *USEPA National Functional Guidelines for Inorganic Superfund Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), EPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods, Multi-Media, Multi-Concentration*, ISM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1.	Data Completeness	Yes	
2.	Preservation and Holding Times	Yes	
3.	ICP-MS Tune Analysis	Yes	
4.	Calibration	Yes	
	a. Initial	Yes	
	b. Initial and Continuing Calibration Verification	Yes	
5.	Blanks	Yes	
6.	ICP Interference Check Sample (ICS)	Yes	
7.	Laboratory Control Sample (LCS)	Yes	
8.	Duplicate Sample Analysis	Yes	
9.	Spike Sample Analysis	No	C
10.	ICP Serial Dilution	No	B
11.	ICP-MS Internal Standards	Yes	
12.	Field Duplicate Sample Analysis	Yes	
13.	Sample Quantitation	Yes	A
14.	Overall Assessment	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged “J”. Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. The following results are estimated and flagged “J” because a serial dilution result is outside method QC limit.

- Zinc in all samples.

Percent difference for the serial dilution analysis does not meet the percent difference criterion for the analyte presented below.

QC Sample ID	Matrix	Analyte	% Difference	% Difference Criteria
MYA1B0L	Soil	Zinc	36	15

Zinc results are considered quantitatively uncertain. Chemical and physical interferences may exist due to sample matrix effects. The reported zinc results may be biased low since the result for the diluted sample is higher than the original.

C. The following results are estimated and flagged "UJ" because the matrix spike recovery is outside method QC limit.

- Antimony and selenium in all samples.

Matrix spike recoveries for antimony and selenium in QC sample MYA1B0S do not meet the 75-125% criterion for accuracy as presented below.

Analyte	% Recovery
Antimony	31
Selenium	72

The detected results for these analytes in the samples are considered quantitatively uncertain and may be biased low.

The following post-digestion spike recoveries were reported for antimony and selenium in QC sample MYA1B0A. The post-digestion spike recoveries do not reflect the entire sample preparation and analysis; the impact on reported results cannot be determined. Qualification is based on the matrix spike recovery only.

Analyte	Post-Digestion Spike, % Recovery
Antimony	103
Selenium	98

Since the post-digestion spike recoveries are acceptable, the unacceptable pre-digestion spike recoveries may indicate poor laboratory technique or matrix effects which may interfere with the analysis.

Sample Summary Report

Case No:	45736	Contract:	EPW14035	SDG No:	MYA1A9	Lab Code:	EQI

Sample Number:	LCS003	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :	100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.0		mg/kg	2.0		1	Yes	S3VEM
Arsenic	Target	1.2		mg/kg	1.2		1	Yes	S3VEM
Barium	Target	9.6		mg/kg	9.6		1	Yes	S3VEM
Beryllium	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Cadmium	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Chromium	Target	2.1		mg/kg	2.1		1	Yes	S3VEM
Cobalt	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Copper	Target	2.1		mg/kg	2.1		1	Yes	S3VEM
Lead	Target	0.91		mg/kg	0.91		1	Yes	S3VEM
Manganese	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Nickel	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Selenium	Target	6.0		mg/kg	6.0		1	Yes	S3VEM
Silver	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Thallium	Target	0.79		mg/kg	0.79		1	Yes	S3VEM
Vanadium	Target	4.9		mg/kg	4.9		1	Yes	S3VEM
Zinc	Target	2.2		mg/kg	2.2		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1A9	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:10:00
% Moisture :				% Solids :	88.7231		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.84	UJ	mg/kg	0.84	U*	1	Yes	S3VEM
Arsenic	Target	2.2		mg/kg	2.2	*	1	Yes	S3VEM
Barium	Target	132		mg/kg	132	*	1	Yes	S3VEM
Beryllium	Target	0.43		mg/kg	0.43		1	Yes	S3VEM
Cadmium	Target	0.84	U	mg/kg	0.84	UD	2	Yes	S3VEM
Chromium	Target	15.8		mg/kg	15.8	*D	2	Yes	S3VEM
Cobalt	Target	9.0		mg/kg	9.0	*	1	Yes	S3VEM
Copper	Target	24.7		mg/kg	24.7		1	Yes	S3VEM
Lead	Target	3.8		mg/kg	3.8		1	Yes	S3VEM
Manganese	Target	383		mg/kg	383	D	2	Yes	S3VEM
Nickel	Target	12.9		mg/kg	12.9	D	2	Yes	S3VEM
Selenium	Target	2.1	UJ	mg/kg	2.1	U*	1	Yes	S3VEM
Silver	Target	0.42	U	mg/kg	0.42	U	1	Yes	S3VEM
Thallium	Target	0.16	J	mg/kg	0.16	J	1	Yes	S3VEM
Vanadium	Target	35.3		mg/kg	35.3	D	2	Yes	S3VEM
Zinc	Target	50.9	J	mg/kg	50.9	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B0	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:27:00
% Moisture :				% Solids :	86.9351		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.84	UJ	mg/kg	0.84	U*	1	Yes	S3VEM
Arsenic	Target	1.8		mg/kg	1.8	*	1	Yes	S3VEM
Barium	Target	118		mg/kg	118	*	1	Yes	S3VEM
Beryllium	Target	0.49		mg/kg	0.49		1	Yes	S3VEM
Cadmium	Target	0.84	U	mg/kg	0.84	UD	2	Yes	S3VEM
Chromium	Target	14.7		mg/kg	14.7	*D	2	Yes	S3VEM
Cobalt	Target	7.6		mg/kg	7.6	*	1	Yes	S3VEM
Copper	Target	18.0		mg/kg	18.0		1	Yes	S3VEM
Lead	Target	3.4		mg/kg	3.4		1	Yes	S3VEM
Manganese	Target	304		mg/kg	304	D	2	Yes	S3VEM
Nickel	Target	11.4		mg/kg	11.4	D	2	Yes	S3VEM
Selenium	Target	2.1	UJ	mg/kg	2.1	U*	1	Yes	S3VEM
Silver	Target	0.42	U	mg/kg	0.42	U	1	Yes	S3VEM
Thallium	Target	0.16	J	mg/kg	0.16	J	1	Yes	S3VEM
Vanadium	Target	32.7		mg/kg	32.7	D	2	Yes	S3VEM
Zinc	Target	45.0	J	mg/kg	45.0	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B0A	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:		pH:		Sample Date:	11/02/2015	Sample Time:	09:27:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	1.7		mg/kg	4.1		1	Yes	S3VEM
Selenium	Spike	4.1		mg/kg	9.8		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B0D	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:	11/02/2015	Sample Time:	09:27:00
% Moisture :				% Solids :	86.9351		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.84	U	mg/kg	0.84	U	1	Yes	S3VEM
Arsenic	Target	2.4		mg/kg	2.4	*	1	Yes	S3VEM
Barium	Target	164	J	mg/kg	164	*	1	Yes	S3VEM
Beryllium	Target	0.51		mg/kg	0.51		1	Yes	S3VEM
Cadmium	Target	0.85	U	mg/kg	0.85	UD	2	Yes	S3VEM
Chromium	Target	15.1		mg/kg	15.1	D	2	Yes	S3VEM
Cobalt	Target	7.7		mg/kg	7.7		1	Yes	S3VEM
Copper	Target	20.1		mg/kg	20.1		1	Yes	S3VEM
Lead	Target	3.8		mg/kg	3.8		1	Yes	S3VEM
Manganese	Target	317		mg/kg	317	D	2	Yes	S3VEM
Nickel	Target	11.6		mg/kg	11.6	D	2	Yes	S3VEM
Selenium	Target	2.1	U	mg/kg	2.1	U	1	Yes	S3VEM
Silver	Target	0.42	U	mg/kg	0.42	U	1	Yes	S3VEM
Thallium	Target	0.16		mg/kg	0.16	J	1	Yes	S3VEM
Vanadium	Target	33.4		mg/kg	33.4	D	2	Yes	S3VEM
Zinc	Target	45.2	J	mg/kg	45.2		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number: MYA1B0L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	U	ug/L	10.0	U	5	Yes	S3VEM
Arsenic	Target	3.4		ug/L	8.2		5	Yes	S3VEM
Barium	Target	121.3		ug/L	289		5	Yes	S3VEM
Beryllium	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Cadmium	Target	1.0	U	mg/kg	10.0	U	10	Yes	S3VEM
Chromium	Target	16.4		mg/kg	39.0	*	10	Yes	S3VEM
Cobalt	Target	8.8		mg/kg	20.9	*	5	Yes	S3VEM
Copper	Target	19.2		mg/kg	45.7		5	Yes	S3VEM
Lead	Target	3.4		mg/kg	8.2		5	Yes	S3VEM
Manganese	Target	314.3		mg/kg	749		10	Yes	S3VEM
Nickel	Target	12.3		mg/kg	29.2		10	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	25.0	U	5	Yes	S3VEM
Silver	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Thallium	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Vanadium	Target	32.7		mg/kg	77.8		10	Yes	S3VEM
Zinc	Target	61.3		mg/kg	146	*	5	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B0S	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:	11/02/2015	Sample Time:	09:27:00
% Moisture :				% Solids :	86.9351		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	2.6		mg/kg	2.6	*	1	Yes	S3VEM
Arsenic	Spike	5.2		mg/kg	5.2		1	Yes	S3VEM
Barium	Spike	275		mg/kg	275		1	Yes	S3VEM
Beryllium	Spike	5.2		mg/kg	5.2		1	Yes	S3VEM
Cadmium	Spike	4.2		mg/kg	4.2	D	2	Yes	S3VEM
Chromium	Spike	29.3		mg/kg	29.3	D	2	Yes	S3VEM
Cobalt	Spike	44.7		mg/kg	44.7		1	Yes	S3VEM
Copper	Spike	39.5		mg/kg	39.5		1	Yes	S3VEM
Lead	Spike	5.0		mg/kg	5.0		1	Yes	S3VEM
Manganese	Spike	348		mg/kg	348	D	2	Yes	S3VEM
Nickel	Spike	48.2		mg/kg	48.2	D	2	Yes	S3VEM
Selenium	Spike	6.1		mg/kg	6.1	*	1	Yes	S3VEM
Silver	Spike	4.3		mg/kg	4.3		1	Yes	S3VEM
Thallium	Spike	3.6		mg/kg	3.6		1	Yes	S3VEM
Vanadium	Spike	69.5		mg/kg	69.5	D	2	Yes	S3VEM
Zinc	Spike	77.5		mg/kg	77.5		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B1	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:41:00
% Moisture :				% Solids :	80.4698		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.2	UJ	mg/kg	1.2	U*	1	Yes	S3VEM
Arsenic	Target	2.7		mg/kg	2.7	*	1	Yes	S3VEM
Barium	Target	159		mg/kg	159	*	1	Yes	S3VEM
Beryllium	Target	0.56	J	mg/kg	0.56	J	1	Yes	S3VEM
Cadmium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Chromium	Target	19.2		mg/kg	19.2	*	1	Yes	S3VEM
Cobalt	Target	10.8		mg/kg	10.8	*	1	Yes	S3VEM
Copper	Target	29.1		mg/kg	29.1		1	Yes	S3VEM
Lead	Target	5.4		mg/kg	5.4		1	Yes	S3VEM
Manganese	Target	426		mg/kg	426		1	Yes	S3VEM
Nickel	Target	15.3		mg/kg	15.3		1	Yes	S3VEM
Selenium	Target	2.9	UJ	mg/kg	2.9	U*	1	Yes	S3VEM
Silver	Target	0.59	U	mg/kg	0.59	U	1	Yes	S3VEM
Thallium	Target	0.17	J	mg/kg	0.17	J	1	Yes	S3VEM
Vanadium	Target	41.7		mg/kg	41.7		1	Yes	S3VEM
Zinc	Target	62.1	J	mg/kg	62.1	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B2	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:55:00
% Moisture :				% Solids :	79.9749		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	UJ	mg/kg	1.0	U*	1	Yes	S3VEM
Arsenic	Target	2.3		mg/kg	2.3	*	1	Yes	S3VEM
Barium	Target	131		mg/kg	131	*	1	Yes	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1	Yes	S3VEM
Cadmium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Chromium	Target	15.9		mg/kg	15.9	*	1	Yes	S3VEM
Cobalt	Target	9.4		mg/kg	9.4	*	1	Yes	S3VEM
Copper	Target	25.2		mg/kg	25.2		1	Yes	S3VEM
Lead	Target	5.2		mg/kg	5.2		1	Yes	S3VEM
Manganese	Target	388		mg/kg	388		1	Yes	S3VEM
Nickel	Target	13.0		mg/kg	13.0		1	Yes	S3VEM
Selenium	Target	2.6	UJ	mg/kg	2.6	U*	1	Yes	S3VEM
Silver	Target	0.52	U	mg/kg	0.52	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	36.4		mg/kg	36.4		1	Yes	S3VEM
Zinc	Target	53.5	J	mg/kg	53.5	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B3	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:02:00
% Moisture :				% Solids :	83.0299		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.91	UJ	mg/kg	0.91	U*	1	Yes	S3VEM
Arsenic	Target	2.7		mg/kg	2.7	*	1	Yes	S3VEM
Barium	Target	147		mg/kg	147	*	1	Yes	S3VEM
Beryllium	Target	0.54		mg/kg	0.54		1	Yes	S3VEM
Cadmium	Target	0.28	J	mg/kg	0.28	J	1	Yes	S3VEM
Chromium	Target	16.3		mg/kg	16.3	*	1	Yes	S3VEM
Cobalt	Target	9.6		mg/kg	9.6	*	1	Yes	S3VEM
Copper	Target	33.7		mg/kg	33.7		1	Yes	S3VEM
Lead	Target	12.8		mg/kg	12.8		1	Yes	S3VEM
Manganese	Target	410		mg/kg	410		1	Yes	S3VEM
Nickel	Target	15.1		mg/kg	15.1		1	Yes	S3VEM
Selenium	Target	2.3	UJ	mg/kg	2.3	U*	1	Yes	S3VEM
Silver	Target	0.46	U	mg/kg	0.46	U	1	Yes	S3VEM
Thallium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Vanadium	Target	38.7		mg/kg	38.7		1	Yes	S3VEM
Zinc	Target	65.3	J	mg/kg	65.3	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B4	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:10:00
% Moisture :				% Solids :	92.9639		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	1.3		mg/kg	1.3	*	1	Yes	S3VEM
Barium	Target	81.1		mg/kg	81.1	*	1	Yes	S3VEM
Beryllium	Target	0.26	J	mg/kg	0.26	J	1	Yes	S3VEM
Cadmium	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Chromium	Target	9.4		mg/kg	9.4	*	1	Yes	S3VEM
Cobalt	Target	5.7		mg/kg	5.7	*	1	Yes	S3VEM
Copper	Target	10.9		mg/kg	10.9		1	Yes	S3VEM
Lead	Target	2.2		mg/kg	2.2		1	Yes	S3VEM
Manganese	Target	260		mg/kg	260		1	Yes	S3VEM
Nickel	Target	7.7		mg/kg	7.7		1	Yes	S3VEM
Selenium	Target	2.7	UJ	mg/kg	2.7	U*	1	Yes	S3VEM
Silver	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Thallium	Target	0.11	J	mg/kg	0.11	J	1	Yes	S3VEM
Vanadium	Target	25.1		mg/kg	25.1		1	Yes	S3VEM
Zinc	Target	37.7	J	mg/kg	37.7	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B5	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:25:00
% Moisture :				% Solids :	84.7064		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.97	UJ	mg/kg	0.97	U*	1	Yes	S3VEM
Arsenic	Target	2.1		mg/kg	2.1	*	1	Yes	S3VEM
Barium	Target	124		mg/kg	124	*	1	Yes	S3VEM
Beryllium	Target	0.50		mg/kg	0.50		1	Yes	S3VEM
Cadmium	Target	0.10	J	mg/kg	0.10	J	1	Yes	S3VEM
Chromium	Target	15.3		mg/kg	15.3	*	1	Yes	S3VEM
Cobalt	Target	9.0		mg/kg	9.0	*	1	Yes	S3VEM
Copper	Target	23.1		mg/kg	23.1		1	Yes	S3VEM
Lead	Target	4.5		mg/kg	4.5		1	Yes	S3VEM
Manganese	Target	311		mg/kg	311		1	Yes	S3VEM
Nickel	Target	12.5		mg/kg	12.5		1	Yes	S3VEM
Selenium	Target	2.4	UJ	mg/kg	2.4	U*	1	Yes	S3VEM
Silver	Target	0.48	U	mg/kg	0.48	U	1	Yes	S3VEM
Thallium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Vanadium	Target	35.3		mg/kg	35.3		1	Yes	S3VEM
Zinc	Target	51.2	J	mg/kg	51.2	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B6	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:38:00
% Moisture :				% Solids :	81.4834		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.84	UJ	mg/kg	0.84	U*	1	Yes	S3VEM
Arsenic	Target	2.1		mg/kg	2.1	*	1	Yes	S3VEM
Barium	Target	128		mg/kg	128	*	1	Yes	S3VEM
Beryllium	Target	0.52		mg/kg	0.52		1	Yes	S3VEM
Cadmium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Chromium	Target	14.7		mg/kg	14.7	*	1	Yes	S3VEM
Cobalt	Target	8.8		mg/kg	8.8	*	1	Yes	S3VEM
Copper	Target	21.7		mg/kg	21.7		1	Yes	S3VEM
Lead	Target	4.1		mg/kg	4.1		1	Yes	S3VEM
Manganese	Target	331		mg/kg	331		1	Yes	S3VEM
Nickel	Target	12.2		mg/kg	12.2		1	Yes	S3VEM
Selenium	Target	2.1	UJ	mg/kg	2.1	U*	1	Yes	S3VEM
Silver	Target	0.42	U	mg/kg	0.42	U	1	Yes	S3VEM
Thallium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Vanadium	Target	33.9		mg/kg	33.9		1	Yes	S3VEM
Zinc	Target	49.5	J	mg/kg	49.5	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B7	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:34:00
% Moisture :				% Solids :	87.3543		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.82	UJ	mg/kg	0.82	U*	1	Yes	S3VEM
Arsenic	Target	2.6		mg/kg	2.6	*	1	Yes	S3VEM
Barium	Target	144		mg/kg	144	*	1	Yes	S3VEM
Beryllium	Target	0.47		mg/kg	0.47		1	Yes	S3VEM
Cadmium	Target	0.17	J	mg/kg	0.17	J	1	Yes	S3VEM
Chromium	Target	17.4		mg/kg	17.4	*	1	Yes	S3VEM
Cobalt	Target	9.2		mg/kg	9.2	*	1	Yes	S3VEM
Copper	Target	25.5		mg/kg	25.5		1	Yes	S3VEM
Lead	Target	7.9		mg/kg	7.9		1	Yes	S3VEM
Manganese	Target	384		mg/kg	384		1	Yes	S3VEM
Nickel	Target	13.9		mg/kg	13.9		1	Yes	S3VEM
Selenium	Target	2.1	UJ	mg/kg	2.1	U*	1	Yes	S3VEM
Silver	Target	0.41	U	mg/kg	0.41	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	35.9		mg/kg	35.9		1	Yes	S3VEM
Zinc	Target	59.1	J	mg/kg	59.1	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B8	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:45:00
% Moisture :				% Solids :	88.0148		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	1.8		mg/kg	1.8	*	1	Yes	S3VEM
Barium	Target	129		mg/kg	129	*	1	Yes	S3VEM
Beryllium	Target	0.40	J	mg/kg	0.40	J	1	Yes	S3VEM
Cadmium	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Chromium	Target	14.2		mg/kg	14.2	*	1	Yes	S3VEM
Cobalt	Target	8.8		mg/kg	8.8	*	1	Yes	S3VEM
Copper	Target	19.1		mg/kg	19.1		1	Yes	S3VEM
Lead	Target	3.5		mg/kg	3.5		1	Yes	S3VEM
Manganese	Target	364		mg/kg	364		1	Yes	S3VEM
Nickel	Target	11.9		mg/kg	11.9		1	Yes	S3VEM
Selenium	Target	2.7	UJ	mg/kg	2.7	U*	1	Yes	S3VEM
Silver	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Thallium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Vanadium	Target	33.7		mg/kg	33.7		1	Yes	S3VEM
Zinc	Target	50.8	J	mg/kg	50.8	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1B9	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:57:00
% Moisture :				% Solids :	87.0523		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.90	UJ	mg/kg	0.90	U*	1	Yes	S3VEM
Arsenic	Target	1.7		mg/kg	1.7	*	1	Yes	S3VEM
Barium	Target	115		mg/kg	115	*	1	Yes	S3VEM
Beryllium	Target	0.45		mg/kg	0.45		1	Yes	S3VEM
Cadmium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Chromium	Target	14.1		mg/kg	14.1	*	1	Yes	S3VEM
Cobalt	Target	7.9		mg/kg	7.9	*	1	Yes	S3VEM
Copper	Target	18.1		mg/kg	18.1		1	Yes	S3VEM
Lead	Target	3.6		mg/kg	3.6		1	Yes	S3VEM
Manganese	Target	345		mg/kg	345		1	Yes	S3VEM
Nickel	Target	11.2		mg/kg	11.2		1	Yes	S3VEM
Selenium	Target	2.2	UJ	mg/kg	2.2	U*	1	Yes	S3VEM
Silver	Target	0.45	U	mg/kg	0.45	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	31.6		mg/kg	31.6		1	Yes	S3VEM
Zinc	Target	47.4	J	mg/kg	47.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1C0	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	11:10:00
% Moisture :				% Solids :	90.0178		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	1.7		mg/kg	1.7	*	1	Yes	S3VEM
Barium	Target	96.6		mg/kg	96.6	*	1	Yes	S3VEM
Beryllium	Target	0.31	J	mg/kg	0.31	J	1	Yes	S3VEM
Cadmium	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Chromium	Target	11.6		mg/kg	11.6	*	1	Yes	S3VEM
Cobalt	Target	6.8		mg/kg	6.8	*	1	Yes	S3VEM
Copper	Target	13.5		mg/kg	13.5		1	Yes	S3VEM
Lead	Target	2.8		mg/kg	2.8		1	Yes	S3VEM
Manganese	Target	275		mg/kg	275		1	Yes	S3VEM
Nickel	Target	9.4		mg/kg	9.4		1	Yes	S3VEM
Selenium	Target	2.6	UJ	mg/kg	2.6	U*	1	Yes	S3VEM
Silver	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Thallium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Vanadium	Target	27.1		mg/kg	27.1		1	Yes	S3VEM
Zinc	Target	43.8	J	mg/kg	43.8	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D3	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	15:05:00
% Moisture :				% Solids :	89.6172		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.97	UJ	mg/kg	0.97	U*	1	Yes	S3VEM
Arsenic	Target	2.2		mg/kg	2.2	*	1	Yes	S3VEM
Barium	Target	136		mg/kg	136	*	1	Yes	S3VEM
Beryllium	Target	0.43	J	mg/kg	0.43	J	1	Yes	S3VEM
Cadmium	Target	0.20	J	mg/kg	0.20	J	1	Yes	S3VEM
Chromium	Target	15.8		mg/kg	15.8	*	1	Yes	S3VEM
Cobalt	Target	8.8		mg/kg	8.8	*	1	Yes	S3VEM
Copper	Target	27.6		mg/kg	27.6		1	Yes	S3VEM
Lead	Target	10.4		mg/kg	10.4		1	Yes	S3VEM
Manganese	Target	350		mg/kg	350		1	Yes	S3VEM
Nickel	Target	17.5		mg/kg	17.5		1	Yes	S3VEM
Selenium	Target	2.4	UJ	mg/kg	2.4	U*	1	Yes	S3VEM
Silver	Target	0.49	U	mg/kg	0.49	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	32.2		mg/kg	32.2		1	Yes	S3VEM
Zinc	Target	74.6	J	mg/kg	74.6	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D4	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	15:48:00
% Moisture :				% Solids :	89.9143		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.79	UJ	mg/kg	0.79	U*	1	Yes	S3VEM
Arsenic	Target	1.7		mg/kg	1.7	*	1	Yes	S3VEM
Barium	Target	113		mg/kg	113	*	1	Yes	S3VEM
Beryllium	Target	0.38	J	mg/kg	0.38	J	1	Yes	S3VEM
Cadmium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Chromium	Target	12.3		mg/kg	12.3	*	1	Yes	S3VEM
Cobalt	Target	7.5		mg/kg	7.5	*	1	Yes	S3VEM
Copper	Target	17.6		mg/kg	17.6		1	Yes	S3VEM
Lead	Target	4.1		mg/kg	4.1		1	Yes	S3VEM
Manganese	Target	318		mg/kg	318		1	Yes	S3VEM
Nickel	Target	10.3		mg/kg	10.3		1	Yes	S3VEM
Selenium	Target	2.0	UJ	mg/kg	2.0	U*	1	Yes	S3VEM
Silver	Target	0.39	U	mg/kg	0.39	U	1	Yes	S3VEM
Thallium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Vanadium	Target	29.2		mg/kg	29.2		1	Yes	S3VEM
Zinc	Target	50.3	J	mg/kg	50.3	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D5	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	15:58:00
% Moisture :				% Solids :	82.3481		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.86	UJ	mg/kg	0.86	U*	1	Yes	S3VEM
Arsenic	Target	2.7		mg/kg	2.7	*	1	Yes	S3VEM
Barium	Target	154		mg/kg	154	*	1	Yes	S3VEM
Beryllium	Target	0.59		mg/kg	0.59		1	Yes	S3VEM
Cadmium	Target	0.19	J	mg/kg	0.19	J	1	Yes	S3VEM
Chromium	Target	17.7		mg/kg	17.7	*	1	Yes	S3VEM
Cobalt	Target	10.1		mg/kg	10.1	*	1	Yes	S3VEM
Copper	Target	28.6		mg/kg	28.6		1	Yes	S3VEM
Lead	Target	8.4		mg/kg	8.4		1	Yes	S3VEM
Manganese	Target	480		mg/kg	480		1	Yes	S3VEM
Nickel	Target	14.4		mg/kg	14.4		1	Yes	S3VEM
Selenium	Target	2.2	UJ	mg/kg	2.2	U*	1	Yes	S3VEM
Silver	Target	0.43	U	mg/kg	0.43	U	1	Yes	S3VEM
Thallium	Target	0.19	J	mg/kg	0.19	J	1	Yes	S3VEM
Vanadium	Target	39.7		mg/kg	39.7		1	Yes	S3VEM
Zinc	Target	68.2	J	mg/kg	68.2	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D6	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	16:10:00
% Moisture :				% Solids :	88.7878		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.94	UJ	mg/kg	0.94	U*	1	Yes	S3VEM
Arsenic	Target	2.3		mg/kg	2.3	*	1	Yes	S3VEM
Barium	Target	131		mg/kg	131	*	1	Yes	S3VEM
Beryllium	Target	0.45	J	mg/kg	0.45	J	1	Yes	S3VEM
Cadmium	Target	0.16	J	mg/kg	0.16	J	1	Yes	S3VEM
Chromium	Target	16.5		mg/kg	16.5	*	1	Yes	S3VEM
Cobalt	Target	9.1		mg/kg	9.1	*	1	Yes	S3VEM
Copper	Target	22.8		mg/kg	22.8		1	Yes	S3VEM
Lead	Target	5.5		mg/kg	5.5		1	Yes	S3VEM
Manganese	Target	388		mg/kg	388		1	Yes	S3VEM
Nickel	Target	12.9		mg/kg	12.9		1	Yes	S3VEM
Selenium	Target	2.4	UJ	mg/kg	2.4	U*	1	Yes	S3VEM
Silver	Target	0.47	U	mg/kg	0.47	U	1	Yes	S3VEM
Thallium	Target	0.17	J	mg/kg	0.17	J	1	Yes	S3VEM
Vanadium	Target	35.1		mg/kg	35.1		1	Yes	S3VEM
Zinc	Target	59.7	J	mg/kg	59.7	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D7	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:00:00
% Moisture :				% Solids :	87.8986		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.82	UJ	mg/kg	0.82	U*	1	Yes	S3VEM
Arsenic	Target	2.0		mg/kg	2.0	*	1	Yes	S3VEM
Barium	Target	118		mg/kg	118	*	1	Yes	S3VEM
Beryllium	Target	0.46		mg/kg	0.46		1	Yes	S3VEM
Cadmium	Target	0.26	J	mg/kg	0.26	J	1	Yes	S3VEM
Chromium	Target	15.4		mg/kg	15.4	*	1	Yes	S3VEM
Cobalt	Target	7.9		mg/kg	7.9	*	1	Yes	S3VEM
Copper	Target	25.3		mg/kg	25.3		1	Yes	S3VEM
Lead	Target	15.2		mg/kg	15.2		1	Yes	S3VEM
Manganese	Target	329		mg/kg	329		1	Yes	S3VEM
Nickel	Target	16.1		mg/kg	16.1		1	Yes	S3VEM
Selenium	Target	2.1	UJ	mg/kg	2.1	U*	1	Yes	S3VEM
Silver	Target	0.41	U	mg/kg	0.41	U	1	Yes	S3VEM
Thallium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Vanadium	Target	30.3		mg/kg	30.3		1	Yes	S3VEM
Zinc	Target	62.8	J	mg/kg	62.8	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D8	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:15:00
% Moisture :				% Solids :	92.9018		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	UJ	mg/kg	1.0	U*	1	Yes	S3VEM
Arsenic	Target	1.3		mg/kg	1.3	*	1	Yes	S3VEM
Barium	Target	89.9		mg/kg	89.9	*	1	Yes	S3VEM
Beryllium	Target	0.28	J	mg/kg	0.28	J	1	Yes	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Chromium	Target	10.4		mg/kg	10.4	*	1	Yes	S3VEM
Cobalt	Target	6.4		mg/kg	6.4	*	1	Yes	S3VEM
Copper	Target	12.2		mg/kg	12.2		1	Yes	S3VEM
Lead	Target	2.6		mg/kg	2.6		1	Yes	S3VEM
Manganese	Target	241		mg/kg	241		1	Yes	S3VEM
Nickel	Target	8.6		mg/kg	8.6		1	Yes	S3VEM
Selenium	Target	2.5	UJ	mg/kg	2.5	U*	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Vanadium	Target	24.5		mg/kg	24.5		1	Yes	S3VEM
Zinc	Target	38.7	J	mg/kg	38.7	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1D9	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:25:00
% Moisture :				% Solids :	81.5011		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	2.2		mg/kg	2.2	*	1	Yes	S3VEM
Barium	Target	138		mg/kg	138	*	1	Yes	S3VEM
Beryllium	Target	0.62		mg/kg	0.62		1	Yes	S3VEM
Cadmium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Chromium	Target	16.9		mg/kg	16.9	*	1	Yes	S3VEM
Cobalt	Target	9.6		mg/kg	9.6	*	1	Yes	S3VEM
Copper	Target	25.9		mg/kg	25.9		1	Yes	S3VEM
Lead	Target	4.8		mg/kg	4.8		1	Yes	S3VEM
Manganese	Target	340		mg/kg	340		1	Yes	S3VEM
Nickel	Target	13.9		mg/kg	13.9		1	Yes	S3VEM
Selenium	Target	2.8	UJ	mg/kg	2.8	U*	1	Yes	S3VEM
Silver	Target	0.56	U	mg/kg	0.56	U	1	Yes	S3VEM
Thallium	Target	0.16	J	mg/kg	0.16	J	1	Yes	S3VEM
Vanadium	Target	38.4		mg/kg	38.4		1	Yes	S3VEM
Zinc	Target	57.6	J	mg/kg	57.6	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number:	MYA1E0	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:37:00
% Moisture :				% Solids :	86.3283		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	2.1		mg/kg	2.1	*	1	Yes	S3VEM
Barium	Target	127		mg/kg	127	*	1	Yes	S3VEM
Beryllium	Target	0.40	J	mg/kg	0.40	J	1	Yes	S3VEM
Cadmium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Chromium	Target	14.0		mg/kg	14.0	*	1	Yes	S3VEM
Cobalt	Target	8.5		mg/kg	8.5	*	1	Yes	S3VEM
Copper	Target	19.0		mg/kg	19.0		1	Yes	S3VEM
Lead	Target	3.6		mg/kg	3.6		1	Yes	S3VEM
Manganese	Target	333		mg/kg	333		1	Yes	S3VEM
Nickel	Target	12.1		mg/kg	12.1		1	Yes	S3VEM
Selenium	Target	2.8	UJ	mg/kg	2.8	U*	1	Yes	S3VEM
Silver	Target	0.55	U	mg/kg	0.55	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	31.4		mg/kg	31.4		1	Yes	S3VEM
Zinc	Target	50.9	J	mg/kg	50.9	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1A9	Lab Code: EQI

Sample Number: PBS003	Method: Metals by ICP-MS	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Arsenic	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Barium	Target	5.0	U	mg/kg	5.0	U	1	Yes	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Cobalt	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Copper	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Lead	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Manganese	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Nickel	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Vanadium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Zinc	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager Ko
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: May 26, 2016

SUBJECT: Review of Analytical Data, **Tier 3 [UPDATED]**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	MYA1D0
Laboratory:	Shealy Environmental Services, Inc. (EQI)
Analysis:	CLP Metals by ICP-MS
Samples:	10 Groundwater and 3 Soil Samples
Collection Date:	November 3 and 4, 2015
Reviewer:	Anna Pajarillo, ESAT

This report has been updated to include a review of field quality control samples (duplicates) and revise the criteria used to evaluate laboratory matrix spike recovery for soil samples.

EXES Data Manager has been updated; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Howard Pham, CLP PO USEPA Region 5
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [X] Yes [ ] No

Data Validation Report – **Tier 3**

Case No.: 45736
SDG No.: MYA1D0
Site: QualaWash
Laboratory: Shealy Environmental Services, Inc. (EQI)
Analysis: CLP Metals by ICP-MS
Reviewer: Anna Pajarillo, ESAT
Date: May 26, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Inorganic Analytical Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	MYA1J6 and MYA1J7.
Background Samples (BG):	None.
Field Duplicates (D3):	MYA1F1, MYA1C2 (in SDG MYA1E9)

CLP PO Action

None.

Sampling Issues

1. Equipment blanks MYA1J6 and MYA1J7 were received with pH greater than two. No impact on sample results is anticipated since the laboratory adjusted the pH to less than two upon sample receipt.
2. Equipment blanks were not submitted "blind" to the laboratory since the matrix was stated as "Blank" and the location was stated as "EQ Blank" on chain of custody records (COCs).

Additional Comments

The samples were analyzed for the following Contract Laboratory Program (CLP) metals by Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc.

The mass intensity raw data were missing from the report. The laboratory provided the missing data upon request, on 01/07/16.

The preparation logs for some solutions were missing from the data package. The laboratory provided the missing pages upon request, on 01/07/16. All standards and spiking solutions were analyzed before the expiration date.

All method requirements specified in the EPA Contract Laboratory Program (CLP) Statement of Work (SOW), except as noted, have been met.

This report was prepared in accordance with the following documents:
- *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)* ISM02.2, August 2014; and
- *USEPA National Functional Guidelines for Inorganic Superfund Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), EPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods, Multi-Media, Multi-Concentration*, ISM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1.	Data Completeness	Yes	
2.	Preservation and Holding Times	Yes	
3.	ICP-MS Tune Analysis	Yes	
4.	Calibration	Yes	
	a. Initial	Yes	
	b. Initial and Continuing Calibration Verification	Yes	
5.	Blanks	Yes	B
6.	ICP Interference Check Sample (ICS)	Yes	
7.	Laboratory Control Sample (LCS)	Yes	
8.	Duplicate Sample Analysis	Yes	
9.	Spike Sample Analysis	No	E
10.	ICP Serial Dilution	No	C
11.	ICP-MS Internal Standards	No	D
12.	Field Duplicate Sample Analysis	Yes	
13.	Sample Quantitation	Yes	A
14.	Overall Assessment	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged "J". Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. The following results are qualified as nondetected (U) due to low level initial calibration blank (ICB) and continuing calibration blank (CCB) contamination.

- Chromium in samples MYA1F8, MYA1G1, MYA1H1, and MYA1H2.
- Cobalt in samples MYA1F8, MYA1G1 through MYA1G3, MYA1H0 through MYA1H2, and MYA1K2.
- Lead in samples MYA1F8, MYA1G1, MYA1G2, MYA1H0 through MYA1H2, and MYA1K2.
- Nickel in all equipment blanks.
- Thallium in samples MYA1D0, MYA1E4, and MYA1F1.
- Zinc in all equipment blanks and preparation blank PBW023.

Analyte amounts greater than the MDL but less than the CRQL were reported in the following blanks at the concentrations presented below.

Analyte	Blank	Concentration, µg/L
Chromium	CCB157	0.95
Cobalt	CCB155/CCB156/CCB157	0.033/0.068/0.053
Lead	ICB019/CCB156/CCB157	0.079/0.049/0.034
Nickel	CCB156	0.072
Thallium	ICB008/CCB086/CCB087/CCB088	0.089/0.22/0.23/0.24
Zinc	ICB019	1.3

Sample results that are greater than or equal to the MDL but less than or equal to the CRQL are reported as nondetected (U) at the respective CRQL.

C. The following results are estimated and flagged “J” because a serial dilution result is outside method QC limit.

- Zinc in all soil samples.

Percent difference for the serial dilution analysis does not meet the percent difference criterion for the analyte presented below.

QC Sample ID	Matrix	Analyte	% Difference	% Difference Criteria
MYA1D0L	Soil	Zinc	19	15

Zinc results for the soil samples are considered quantitatively uncertain. Chemical and physical interferences may exist due to sample matrix effects. The reported zinc results may be biased low since result for the diluted sample is higher than the original.

D. The following results are qualified as estimated and flagged “J” or UJ” because internal standard relative intensities (RIs) are outside method QC limit.

{Yttrium-89}

- Cadmium, chromium, manganese, nickel, and vanadium in samples MYA1D0 and MYA1E4.

Since the RIs for original analysis are outside the 60-125% QC limit, samples MYA1D0 and MYA1E4 were re-analyzed at two-fold dilutions as specified in the SOW. The RIs of the original analysis and two-fold dilution re-analysis are presented below.

Sample	Internal Standard	% Relative Intensity from Undiluted	% Relative Intensity from 2-Fold Dilution
MYA1D0	Yttrium-89	129	136
MYA1D0D	Yttrium-89	126	128
MYA1E4	Yttrium-89	131	138

Because the RIs for 2-fold dilution re-analysis are outside the 60-125% QC limit, cadmium, chromium, manganese, nickel, and vanadium results for the samples listed above were reported from the original undiluted analysis and flagged as specified in the NFG. The reported results are considered quantitatively uncertain.

E. The following results are estimated and flagged “UJ” because the matrix spike recovery is outside method QC limit.

- Antimony in all soil samples.

Matrix spike recovery for antimony in QC sample MYA1D0 does not meet the 75-125% criterion for accuracy as presented below.

Analyte	% Recovery
Antimony	59

The detected results for antimony in the soil samples are considered quantitatively uncertain and may be biased low.

The following post-digestion spike recovery was reported for antimony in QC sample MYA1D0A. The post-digestion spike recovery does not reflect the entire sample preparation and analysis; the impact on reported results cannot be determined. Qualification is based on the matrix spike recovery only.

Analyte	Post-Digestion Spike, % Recovery
Antimony	114

Since the post-digestion spike recovery is acceptable, the unacceptable pre-digestion spike recovery may indicate poor laboratory technique or matrix effects which may interfere with the analysis.

Sample Summary Report

Case No:	45736	Contract:	EPW14035	SDG No:	MYA1D0	Lab Code:	EQI

Sample Number:	LCS001	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :	100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.3		mg/kg	2.3		1	Yes	S3VEM
Arsenic	Target	0.86		mg/kg	0.86		1	Yes	S3VEM
Barium	Target	10.0		mg/kg	10.0		1	Yes	S3VEM
Beryllium	Target	1.2		mg/kg	1.2		1	Yes	S3VEM
Cadmium	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Chromium	Target	2.0		mg/kg	2.0		1	Yes	S3VEM
Cobalt	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Copper	Target	2.1		mg/kg	2.1		1	Yes	S3VEM
Lead	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Manganese	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Nickel	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Selenium	Target	5.9		mg/kg	5.9		1	Yes	S3VEM
Silver	Target	1.2		mg/kg	1.2		1	Yes	S3VEM
Thallium	Target	0.90		mg/kg	0.90		1	Yes	S3VEM
Vanadium	Target	5.0		mg/kg	5.0		1	Yes	S3VEM
Zinc	Target	2.3		mg/kg	2.3		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: LCS023	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	4.1		ug/L	4.1		1	Yes	S3VEM
Arsenic	Target	2.4		ug/L	2.4		1	Yes	S3VEM
Barium	Target	18.1		ug/L	18.1		1	Yes	S3VEM
Beryllium	Target	2.3		ug/L	2.3		1	Yes	S3VEM
Cadmium	Target	2.0		ug/L	2.0		1	Yes	S3VEM
Chromium	Target	4.0		ug/L	4.0		1	Yes	S3VEM
Cobalt	Target	2.0		ug/L	2.0		1	Yes	S3VEM
Copper	Target	4.7		ug/L	4.7		1	Yes	S3VEM
Lead	Target	1.7		ug/L	1.7		1	Yes	S3VEM
Manganese	Target	2.1		ug/L	2.1		1	Yes	S3VEM
Nickel	Target	2.1		ug/L	2.1		1	Yes	S3VEM
Selenium	Target	10.8		ug/L	10.8		1	Yes	S3VEM
Silver	Target	2.2		ug/L	2.2		1	Yes	S3VEM
Thallium	Target	1.7		ug/L	1.7		1	Yes	S3VEM
Vanadium	Target	9.4		ug/L	9.4		1	Yes	S3VEM
Zinc	Target	5.1		ug/L	5.1		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1D0	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:31:00
% Moisture :				% Solids :	88.3664		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	UJ	mg/kg	1.0	U*	1	Yes	S3VEM
Arsenic	Target	1.5		mg/kg	1.5		1	Yes	S3VEM
Barium	Target	97.4		mg/kg	97.4		1	Yes	S3VEM
Beryllium	Target	0.37	J	mg/kg	0.37	J	1	Yes	S3VEM
Cadmium	Target	0.52	UJ	mg/kg	0.52	U	1	Yes	S3VEM
Chromium	Target	11.6	J	mg/kg	11.6		1	Yes	S3VEM
Cobalt	Target	7.1		mg/kg	7.1		1	Yes	S3VEM
Copper	Target	13.7		mg/kg	13.7		1	Yes	S3VEM
Lead	Target	3.1		mg/kg	3.1		1	Yes	S3VEM
Manganese	Target	295	J	mg/kg	295		1	Yes	S3VEM
Nickel	Target	9.6	J	mg/kg	9.6		1	Yes	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1	Yes	S3VEM
Silver	Target	0.52	U	mg/kg	0.52	U	1	Yes	S3VEM
Thallium	Target	0.52	U	mg/kg	0.13	J	1	Yes	S3VEM
Vanadium	Target	27.7	J	mg/kg	27.7		1	Yes	S3VEM
Zinc	Target	42.1	J	mg/kg	42.1		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1D0A	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:		pH:		Sample Date:	11/03/2015	Sample Time:	14:31:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	23.6		mg/kg	45.6		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1D0D	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:	11/03/2015	Sample Time:	14:31:00
% Moisture :				% Solids :	88.3664		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	U	mg/kg	1.1	U	1	Yes	S3VEM
Arsenic	Target	1.7		mg/kg	1.7		1	Yes	S3VEM
Barium	Target	104		mg/kg	104		1	Yes	S3VEM
Beryllium	Target	0.42		mg/kg	0.42	J	1	Yes	S3VEM
Cadmium	Target	0.56	U	mg/kg	0.56	U	1	Yes	S3VEM
Chromium	Target	13.1		mg/kg	13.1		1	Yes	S3VEM
Cobalt	Target	7.5		mg/kg	7.5		1	Yes	S3VEM
Copper	Target	15.7		mg/kg	15.7		1	Yes	S3VEM
Lead	Target	3.4		mg/kg	3.4		1	Yes	S3VEM
Manganese	Target	327		mg/kg	327		1	Yes	S3VEM
Nickel	Target	10.1		mg/kg	10.1		1	Yes	S3VEM
Selenium	Target	2.8	U	mg/kg	2.8	U	1	Yes	S3VEM
Silver	Target	0.56	U	mg/kg	0.56	U	1	Yes	S3VEM
Thallium	Target	0.15		mg/kg	0.15	J	1	Yes	S3VEM
Vanadium	Target	31.6		mg/kg	31.6		1	Yes	S3VEM
Zinc	Target	46.8		mg/kg	46.8		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: MYA1D0L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	U	mg/kg	10.0	U	5	Yes	S3VEM
Arsenic	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Barium	Target	101.2		mg/kg	196		5	Yes	S3VEM
Beryllium	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Cadmium	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Chromium	Target	12.3		mg/kg	23.9		5	Yes	S3VEM
Cobalt	Target	7.7		mg/kg	14.9		5	Yes	S3VEM
Copper	Target	15.7		mg/kg	30.4		5	Yes	S3VEM
Lead	Target	3.3		mg/kg	6.4		5	Yes	S3VEM
Manganese	Target	325.4		mg/kg	630		5	Yes	S3VEM
Nickel	Target	10.6		mg/kg	20.5		5	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	25.0	U	5	Yes	S3VEM
Silver	Target	0.5	U	mg/kg	5.0	U	5	Yes	S3VEM
Thallium	Target	0.1	J	mg/kg	0.28	J	5	Yes	S3VEM
Vanadium	Target	28.8		mg/kg	55.7		5	Yes	S3VEM
Zinc	Target	49.9		mg/kg	96.7		5	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1D0S	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:	11/03/2015	Sample Time:	14:31:00
% Moisture :				% Solids :	88.3664		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	6.6		mg/kg	6.6	*	1	Yes	S3VEM
Arsenic	Spike	6.7		mg/kg	6.7		1	Yes	S3VEM
Barium	Spike	324		mg/kg	324		1	Yes	S3VEM
Beryllium	Spike	6.7		mg/kg	6.7		1	Yes	S3VEM
Cadmium	Spike	6.2		mg/kg	6.2		1	Yes	S3VEM
Chromium	Spike	34.8		mg/kg	34.8		1	Yes	S3VEM
Cobalt	Spike	62.9		mg/kg	62.9		1	Yes	S3VEM
Copper	Spike	42.2		mg/kg	42.2		1	Yes	S3VEM
Lead	Spike	5.4		mg/kg	5.4		1	Yes	S3VEM
Manganese	Spike	353		mg/kg	353		1	Yes	S3VEM
Nickel	Spike	67.5		mg/kg	67.5		1	Yes	S3VEM
Selenium	Spike	10.7		mg/kg	10.7		1	Yes	S3VEM
Silver	Spike	6.2		mg/kg	6.2		1	Yes	S3VEM
Thallium	Spike	5.6		mg/kg	5.6		1	Yes	S3VEM
Vanadium	Spike	85.7		mg/kg	85.7		1	Yes	S3VEM
Zinc	Spike	99.3		mg/kg	99.3		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1E4	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:18:00
% Moisture :				% Solids :	88.4158		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.99	UJ	mg/kg	0.99	U*	1	Yes	S3VEM
Arsenic	Target	1.5		mg/kg	1.5		1	Yes	S3VEM
Barium	Target	113		mg/kg	113		1	Yes	S3VEM
Beryllium	Target	0.36	J	mg/kg	0.36	J	1	Yes	S3VEM
Cadmium	Target	0.21	J	mg/kg	0.21	J	1	Yes	S3VEM
Chromium	Target	13.9	J	mg/kg	13.9		1	Yes	S3VEM
Cobalt	Target	8.1		mg/kg	8.1		1	Yes	S3VEM
Copper	Target	16.4		mg/kg	16.4		1	Yes	S3VEM
Lead	Target	3.5		mg/kg	3.5		1	Yes	S3VEM
Manganese	Target	366	J	mg/kg	366		1	Yes	S3VEM
Nickel	Target	10.9	J	mg/kg	10.9		1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.50	U	mg/kg	0.17	J	1	Yes	S3VEM
Vanadium	Target	35.7	J	mg/kg	35.7		1	Yes	S3VEM
Zinc	Target	48.8	J	mg/kg	48.8		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1F1	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:20:00
% Moisture :				% Solids :	93.4251		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	1.4		mg/kg	1.4		1	Yes	S3VEM
Barium	Target	89.4		mg/kg	89.4		1	Yes	S3VEM
Beryllium	Target	0.38	J	mg/kg	0.38	J	1	Yes	S3VEM
Cadmium	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Chromium	Target	10.9		mg/kg	10.9		1	Yes	S3VEM
Cobalt	Target	6.7		mg/kg	6.7		1	Yes	S3VEM
Copper	Target	10.9		mg/kg	10.9		1	Yes	S3VEM
Lead	Target	2.9		mg/kg	2.9		1	Yes	S3VEM
Manganese	Target	267		mg/kg	267		1	Yes	S3VEM
Nickel	Target	8.2		mg/kg	8.2		1	Yes	S3VEM
Selenium	Target	2.6	U	mg/kg	2.6	U	1	Yes	S3VEM
Silver	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Thallium	Target	0.53	U	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	28.9		mg/kg	28.9		1	Yes	S3VEM
Zinc	Target	41.4	J	mg/kg	41.4		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1F8	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	16:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.6	J	ug/L	1.6	J	1	Yes	S3VEM
Arsenic	Target	2.2		ug/L	2.2		1	Yes	S3VEM
Barium	Target	191		ug/L	191		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	0.27	J	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.39	J	1	Yes	S3VEM
Copper	Target	1.0	J	ug/L	1.0	J	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.059	J	1	Yes	S3VEM
Manganese	Target	248		ug/L	248		1	Yes	S3VEM
Nickel	Target	10.1		ug/L	10.1		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Zinc	Target	11.6		ug/L	11.6		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1G1	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-1	pH:		Sample Date:	11/03/2015	Sample Time:	08:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	J	ug/L	1.0	J	1	Yes	S3VEM
Arsenic	Target	26.8		ug/L	26.8		1	Yes	S3VEM
Barium	Target	101		ug/L	101		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	1.5	J	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.71	J	1	Yes	S3VEM
Copper	Target	2.7		ug/L	2.7		1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.46	J	1	Yes	S3VEM
Manganese	Target	167		ug/L	167		1	Yes	S3VEM
Nickel	Target	5.5		ug/L	5.5		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	3.0	J	ug/L	3.0	J	1	Yes	S3VEM
Zinc	Target	6.8		ug/L	6.8		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1G2	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-1	pH:		Sample Date:	11/03/2015	Sample Time:	08:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.7		ug/L	2.7		1	Yes	S3VEM
Arsenic	Target	20.1		ug/L	20.1		1	Yes	S3VEM
Barium	Target	135		ug/L	135		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.23	J	1	Yes	S3VEM
Copper	Target	1.1	J	ug/L	1.1	J	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.030	J	1	Yes	S3VEM
Manganese	Target	380		ug/L	380		1	Yes	S3VEM
Nickel	Target	3.5		ug/L	3.5		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	6.9		ug/L	6.9		1	Yes	S3VEM
Zinc	Target	4.7		ug/L	4.7		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1G3	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-1	pH:		Sample Date:	11/03/2015	Sample Time:	09:15:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.58	J	ug/L	0.58	J	1	Yes	S3VEM
Arsenic	Target	2.9		ug/L	2.9		1	Yes	S3VEM
Barium	Target	54.9		ug/L	54.9		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.79	J	1	Yes	S3VEM
Copper	Target	1.7	J	ug/L	1.7	J	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	108		ug/L	108		1	Yes	S3VEM
Nickel	Target	7.9		ug/L	7.9		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	1.4	J	ug/L	1.4	J	1	Yes	S3VEM
Zinc	Target	5.6		ug/L	5.6		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: MYA1G3D	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date: 11/03/2015	Sample Time: 09:15:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.65	J	ug/L	0.65	J	1	Yes	S3VEM
Arsenic	Target	2.7		ug/L	2.7		1	Yes	S3VEM
Barium	Target	55.5		ug/L	55.5		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	0.24	J	ug/L	0.24	J	1	Yes	S3VEM
Cobalt	Target	0.85	J	ug/L	0.85	J	1	Yes	S3VEM
Copper	Target	1.6	J	ug/L	1.6	J	1	Yes	S3VEM
Lead	Target	0.019	J	ug/L	0.019	J	1	Yes	S3VEM
Manganese	Target	108		ug/L	108		1	Yes	S3VEM
Nickel	Target	7.9		ug/L	7.9		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	1.5	J	ug/L	1.5	J	1	Yes	S3VEM
Zinc	Target	5.6		ug/L	5.6		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: MYA1G3L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Arsenic	Target	2.6	J	ug/L	2.6	J	5	Yes	S3VEM
Barium	Target	51.3		ug/L	51.3		5	Yes	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Cobalt	Target	0.52	J	ug/L	0.52	J	5	Yes	S3VEM
Copper	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Lead	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Manganese	Target	108		ug/L	108		5	Yes	S3VEM
Nickel	Target	8.3		ug/L	8.3		5	Yes	S3VEM
Selenium	Target	25.0	U	ug/L	25.0	U	5	Yes	S3VEM
Silver	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Thallium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Vanadium	Target	25.0	U	ug/L	25.0	U	5	Yes	S3VEM
Zinc	Target	7.2	J	ug/L	7.2	J	5	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: MYA1G3S	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date: 11/03/2015	Sample Time: 09:15:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	101		ug/L	101		1	Yes	S3VEM
Arsenic	Spike	43.9		ug/L	43.9		1	Yes	S3VEM
Barium	Spike	1890		ug/L	1890		1	Yes	S3VEM
Beryllium	Spike	53.5		ug/L	53.5		1	Yes	S3VEM
Cadmium	Spike	49.0		ug/L	49.0		1	Yes	S3VEM
Chromium	Spike	198		ug/L	198		1	Yes	S3VEM
Cobalt	Spike	502		ug/L	502		1	Yes	S3VEM
Copper	Spike	260		ug/L	260		1	Yes	S3VEM
Lead	Spike	18.6		ug/L	18.6		1	Yes	S3VEM
Manganese	Spike	614		ug/L	614		1	Yes	S3VEM
Nickel	Spike	501		ug/L	501		1	Yes	S3VEM
Selenium	Spike	105		ug/L	105		1	Yes	S3VEM
Silver	Spike	50.5		ug/L	50.5		1	Yes	S3VEM
Thallium	Spike	45.3		ug/L	45.3		1	Yes	S3VEM
Vanadium	Spike	503		ug/L	503		1	Yes	S3VEM
Zinc	Spike	496		ug/L	496		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1H0	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:		Sample Date:	11/03/2015	Sample Time:	14:10:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	J	ug/L	1.1	J	1	Yes	S3VEM
Arsenic	Target	13.4		ug/L	13.4		1	Yes	S3VEM
Barium	Target	168		ug/L	168		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.29	J	1	Yes	S3VEM
Copper	Target	0.89	J	ug/L	0.89	J	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.046	J	1	Yes	S3VEM
Manganese	Target	206		ug/L	206		1	Yes	S3VEM
Nickel	Target	5.4		ug/L	5.4		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	1.7	J	ug/L	1.7	J	1	Yes	S3VEM
Zinc	Target	3.8		ug/L	3.8		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1H1	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:		Sample Date:	11/03/2015	Sample Time:	14:55:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.7	J	ug/L	1.7	J	1	Yes	S3VEM
Arsenic	Target	4.1		ug/L	4.1		1	Yes	S3VEM
Barium	Target	217		ug/L	217		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	1.0	J	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.68	J	1	Yes	S3VEM
Copper	Target	3.0		ug/L	3.0		1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.66	J	1	Yes	S3VEM
Manganese	Target	323		ug/L	323		1	Yes	S3VEM
Nickel	Target	2.8		ug/L	2.8		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	15.1		ug/L	15.1		1	Yes	S3VEM
Zinc	Target	7.8		ug/L	7.8		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1H2	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:		Sample Date:	11/03/2015	Sample Time:	15:35:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.64	J	ug/L	0.64	J	1	Yes	S3VEM
Arsenic	Target	1.6		ug/L	1.6		1	Yes	S3VEM
Barium	Target	51.9		ug/L	51.9		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	0.98	J	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.48	J	1	Yes	S3VEM
Copper	Target	1.5	J	ug/L	1.5	J	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.098	J	1	Yes	S3VEM
Manganese	Target	136		ug/L	136		1	Yes	S3VEM
Nickel	Target	8.4		ug/L	8.4		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	0.84	J	ug/L	0.84	J	1	Yes	S3VEM
Zinc	Target	10.3		ug/L	10.3		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1J6	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	EQ Blank	pH:		Sample Date:	11/03/2015	Sample Time:	10:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Arsenic	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Barium	Target	10.0	U	ug/L	10.0	U	1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	0.84	j	ug/L	0.84	J	1	Yes	S3VEM
Nickel	Target	1.0	U	ug/L	0.79	J	1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Zinc	Target	2.0	U	ug/L	1.5	J	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1J7	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	EQ Blank	pH:		Sample Date:	11/03/2015	Sample Time:	16:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Arsenic	Target	0.54	J	ug/L	0.54	J	1	Yes	S3VEM
Barium	Target	10.0	U	ug/L	10.0	U	1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	0.23	j	ug/L	0.23	J	1	Yes	S3VEM
Nickel	Target	1.0	U	ug/L	0.10	J	1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Zinc	Target	2.0	U	ug/L	1.6	J	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number:	MYA1K2	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:		Sample Date:	11/03/2015	Sample Time:	14:30:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.91	J	ug/L	0.91	J	1	Yes	S3VEM
Arsenic	Target	13.9		ug/L	13.9		1	Yes	S3VEM
Barium	Target	157		ug/L	157		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	0.33	J	1	Yes	S3VEM
Copper	Target	0.66	J	ug/L	0.66	J	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	0.018	J	1	Yes	S3VEM
Manganese	Target	196		ug/L	196		1	Yes	S3VEM
Nickel	Target	6.6		ug/L	6.6		1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	2.4	J	ug/L	2.4	J	1	Yes	S3VEM
Zinc	Target	3.5		ug/L	3.5		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: PBS001	Method: Metals by ICP-MS	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Arsenic	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Barium	Target	5.0	U	mg/kg	5.0	U	1	Yes	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Cobalt	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Copper	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Lead	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Manganese	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Nickel	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Vanadium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Zinc	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1D0	Lab Code: EQI

Sample Number: PBW023	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Arsenic	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Barium	Target	10.0	U	ug/L	10.0	U	1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Nickel	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Zinc	Target	2.0	U	ug/L	0.65	J	1	Yes	S3VEM

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager Ko
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: May 26, 2016

SUBJECT: Review of Analytical Data, **Tier 3 [UPDATED]**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	MYA1E9
Laboratory:	Shealy Environmental Services, Inc. (EQI)
Analysis:	CLP Metals by ICP-MS
Samples:	3 Groundwater and 17 Soil Samples
Collection Date:	November 2, 3, and 4, 2015
Reviewer:	Anna Pajarillo, ESAT

This report has been updated to include a review of field quality control samples (duplicates) and revise the criteria used to evaluate laboratory matrix spike recovery for soil samples.

EXES Data Manager has been updated; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Howard Pham, CLP PO USEPA Region 5
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [ ] FYI [X] Action

SAMPLING ISSUES: [X] Yes [] No

Data Validation Report – **Tier 3**

Case No.: 45736
SDG No.: MYA1E9
Site: QualaWash
Laboratory: Shealy Environmental Services, Inc. (EQI)
Analysis: CLP Metals by ICP-MS
Reviewer: Anna Pajarillo, ESAT
Date: May 26, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Inorganic Analytical Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	MYA1J6 and MYA1J7 (both in SDG MYA1D0).
Background Samples (BG):	None.
Field Duplicates (D1):	MYA1E9, MYA1B4 (in SDG MYA1A9)
(D2):	MYA1F0, MYA1B8 (in SDG MYA1A9)
(D3):	MYA1C2, MYA1D0 (in SDG MYA1D0)
(D4):	MYA1F2, MYA1D8 (in SDG MYA1A9)

CLP PO Action

The zinc concentration in preparation blank PBW001 (2.03 µg/L) is greater than the CRQL (2.0 µg/L). Water samples MYA1H3 through MYA1H5 with reported zinc concentrations greater than the CRQL but less than 10 times the blank result were not redigested and reanalyzed as required by the Statement of Work (SOW) (see Comment B).

Sampling Issues

1. Equipment blanks MYA1J6 and MYA1J7 were received with pH greater than two. No impact on sample results is anticipated since the laboratory adjusted the pH to less than two upon sample receipt.
2. Equipment blanks were not submitted “blind” to the laboratory since the matrix was stated as “Blank” and the location was stated as “EQ Blank” on chain of custody records (COCs).

Additional Comments

The samples were analyzed for the following Contract Laboratory Program (CLP) metals by Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc.

The mass intensity raw data were missing from the report. The laboratory provided the missing data upon request, on 01/25/16.

The preparation logs for some solutions were missing from the data package. The laboratory provided the missing pages upon request, on 01/25/16. All standards and spiking solutions were analyzed before the expiration date.

All method requirements specified in the EPA Contract Laboratory Program (CLP) Statement of Work (SOW), except as noted, have been met.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)* ISM02.2, August 2014; and
- *USEPA National Functional Guidelines for Inorganic Superfund Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), EPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods, Multi-Media, Multi-Concentration*, ISM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1.	Data Completeness	Yes	
2.	Preservation and Holding Times	Yes	
3.	ICP-MS Tune Analysis	Yes	
4.	Calibration	Yes	
	a. Initial	Yes	
	b. Initial and Continuing Calibration Verification	Yes	
5.	Blanks	No	B
6.	ICP Interference Check Sample (ICS)	Yes	
7.	Laboratory Control Sample (LCS)	Yes	
8.	Duplicate Sample Analysis	Yes	
9.	Spike Sample Analysis	No	D
10.	ICP Serial Dilution	No	C
11.	ICP-MS Internal Standards	Yes	
12.	Field Duplicate Sample Analysis	Yes	
13.	Sample Quantitation	Yes	A
14.	Overall Assessment	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged "J". Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. The following results are qualified as estimated and flagged "J+" due to preparation blank (PB) contamination.

- Zinc in water samples MYA1H3 through MYA1H5.

Analyte amount greater than the CRQL was reported in the following preparation blank at the concentration presented below.

Analyte	Blank	Concentration, µg/L
Zinc	PBW001	2.03

Results for zinc in the above samples are considered quantitatively uncertain and may be biased high.

C. The following results are estimated and flagged "J" because serial dilution results are outside method QC limits.

- Manganese and nickel in all water samples.
- Zinc in all soil samples.

Percent differences for the serial dilution analyses do not meet the percent difference criteria for the analytes presented below.

QC Sample ID	Matrix	Analyte	% Difference	% Difference Criteria
MYA1H3L	Water	Manganese	16	10
MYA1H3L	Water	Nickel	37	10
MYA1C6L	Soil	Zinc	25	15

Results for analytes listed above are considered quantitatively uncertain. Chemical and physical interferences may exist due to sample matrix effects. The reported results for these analytes may be biased low since results for the diluted samples are higher than the original.

D. The following results are estimated and flagged "UJ" because the matrix spike recovery is outside method QC limit.

- Antimony in all soil samples.

Matrix spike recoveries for antimony and selenium in QC sample MYA1C6S do not meet the 75-125% criterion for accuracy as presented below.

Analyte	% Recovery
Antimony	35

The detected results for antimony in the soil samples are considered quantitatively uncertain and may be biased low.

The following post-digestion spike recovery was reported for antimony in QC sample MYA1C6A. The post-digestion spike recovery does not reflect the entire sample preparation and analysis; the impact on reported results cannot be determined. Qualification is based on the matrix spike recovery only.

Analyte	Post-Digestion Spike, % Recovery
Antimony	93

Since the post-digestion spike recovery is acceptable, the unacceptable pre-digestion spike recovery may indicate poor laboratory technique or matrix effects which may interfere with the analysis.

Sample Summary Report

Case No:	45736	Contract:	EPW14035	SDG No:	MYA1E9	Lab Code:	EQI

Sample Number: LCS001	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	4.1		ug/L	4.1		1	Yes	S3VEM
Arsenic	Target	1.6		ug/L	1.6		1	Yes	S3VEM
Barium	Target	18.4		ug/L	18.4		1	Yes	S3VEM
Beryllium	Target	2.3		ug/L	2.3		1	Yes	S3VEM
Cadmium	Target	2.0		ug/L	2.0		1	Yes	S3VEM
Chromium	Target	3.8		ug/L	3.8		1	Yes	S3VEM
Cobalt	Target	1.9		ug/L	1.9		1	Yes	S3VEM
Copper	Target	4.8		ug/L	4.8		1	Yes	S3VEM
Lead	Target	1.8		ug/L	1.8		1	Yes	S3VEM
Manganese	Target	2.0		ug/L	2.0		1	Yes	S3VEM
Nickel	Target	2.0		ug/L	2.0		1	Yes	S3VEM
Selenium	Target	11.1		ug/L	11.1		1	Yes	S3VEM
Silver	Target	2.1		ug/L	2.1		1	Yes	S3VEM
Thallium	Target	1.9		ug/L	1.9		1	Yes	S3VEM
Vanadium	Target	9.2		ug/L	9.2		1	Yes	S3VEM
Zinc	Target	4.9		ug/L	4.9		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number: LCS004	Method: Metals by ICP-MS	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.9		mg/kg	1.9		1	Yes	S3VEM
Arsenic	Target	1.2		mg/kg	1.2		1	Yes	S3VEM
Barium	Target	9.6		mg/kg	9.6		1	Yes	S3VEM
Beryllium	Target	1.2		mg/kg	1.2		1	Yes	S3VEM
Cadmium	Target	0.95		mg/kg	0.95		1	Yes	S3VEM
Chromium	Target	2.1		mg/kg	2.1		1	Yes	S3VEM
Cobalt	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Copper	Target	2.3		mg/kg	2.3		1	Yes	S3VEM
Lead	Target	0.95		mg/kg	0.95		1	Yes	S3VEM
Manganese	Target	1.0		mg/kg	1.0		1	Yes	S3VEM
Nickel	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Selenium	Target	5.3		mg/kg	5.3		1	Yes	S3VEM
Silver	Target	1.1		mg/kg	1.1		1	Yes	S3VEM
Thallium	Target	0.80		mg/kg	0.80		1	Yes	S3VEM
Vanadium	Target	4.6		mg/kg	4.6		1	Yes	S3VEM
Zinc	Target	2.4		mg/kg	2.4		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C1	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	08:58:00
% Moisture :				% Solids :	89.8236		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	1.7		mg/kg	1.7		1	Yes	S3VEM
Barium	Target	128		mg/kg	128		1	Yes	S3VEM
Beryllium	Target	0.44	J	mg/kg	0.44	J	1	Yes	S3VEM
Cadmium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Chromium	Target	14.5		mg/kg	14.5		1	Yes	S3VEM
Cobalt	Target	8.8		mg/kg	8.8		1	Yes	S3VEM
Copper	Target	22.4		mg/kg	22.4		1	Yes	S3VEM
Lead	Target	4.9		mg/kg	4.9		1	Yes	S3VEM
Manganese	Target	342		mg/kg	342		1	Yes	S3VEM
Nickel	Target	12.7		mg/kg	12.7	*	1	Yes	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1	Yes	S3VEM
Silver	Target	0.53	U	mg/kg	0.53	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	33.1		mg/kg	33.1		1	Yes	S3VEM
Zinc	Target	54.0	J	mg/kg	54.0	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C2	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:10:00
% Moisture :				% Solids :	93.8254		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	UJ	mg/kg	1.0	U*	1	Yes	S3VEM
Arsenic	Target	1.4		mg/kg	1.4		1	Yes	S3VEM
Barium	Target	82.6		mg/kg	82.6		1	Yes	S3VEM
Beryllium	Target	0.33	J	mg/kg	0.33	J	1	Yes	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Chromium	Target	9.8		mg/kg	9.8		1	Yes	S3VEM
Cobalt	Target	6.2		mg/kg	6.2		1	Yes	S3VEM
Copper	Target	12.6		mg/kg	12.6		1	Yes	S3VEM
Lead	Target	2.5		mg/kg	2.5		1	Yes	S3VEM
Manganese	Target	256		mg/kg	256		1	Yes	S3VEM
Nickel	Target	8.1		mg/kg	8.1	*	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.10	J	mg/kg	0.10	J	1	Yes	S3VEM
Vanadium	Target	26.2		mg/kg	26.2		1	Yes	S3VEM
Zinc	Target	38.4	J	mg/kg	38.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C3	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:19:00
% Moisture :				% Solids :	80.1001		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.91	UJ	mg/kg	0.91	U*	1	Yes	S3VEM
Arsenic	Target	3.2		mg/kg	3.2		1	Yes	S3VEM
Barium	Target	173		mg/kg	173		1	Yes	S3VEM
Beryllium	Target	0.84		mg/kg	0.84		1	Yes	S3VEM
Cadmium	Target	0.23	J	mg/kg	0.23	J	1	Yes	S3VEM
Chromium	Target	21.0		mg/kg	21.0		1	Yes	S3VEM
Cobalt	Target	11.6		mg/kg	11.6		1	Yes	S3VEM
Copper	Target	35.8		mg/kg	35.8		1	Yes	S3VEM
Lead	Target	7.6		mg/kg	7.6		1	Yes	S3VEM
Manganese	Target	532		mg/kg	532		1	Yes	S3VEM
Nickel	Target	16.9		mg/kg	16.9	*	1	Yes	S3VEM
Selenium	Target	2.3	U	mg/kg	2.3	U	1	Yes	S3VEM
Silver	Target	0.46	U	mg/kg	0.46	U	1	Yes	S3VEM
Thallium	Target	0.19	J	mg/kg	0.19	J	1	Yes	S3VEM
Vanadium	Target	46.6		mg/kg	46.6		1	Yes	S3VEM
Zinc	Target	63.0	J	mg/kg	63.0	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C4	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:30:00
% Moisture :				% Solids :	80.7257		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.87	UJ	mg/kg	0.87	U*	1	Yes	S3VEM
Arsenic	Target	3.0		mg/kg	3.0		1	Yes	S3VEM
Barium	Target	153		mg/kg	153		1	Yes	S3VEM
Beryllium	Target	0.71		mg/kg	0.71		1	Yes	S3VEM
Cadmium	Target	0.34	J	mg/kg	0.34	J	1	Yes	S3VEM
Chromium	Target	18.1		mg/kg	18.1		1	Yes	S3VEM
Cobalt	Target	10.5		mg/kg	10.5		1	Yes	S3VEM
Copper	Target	27.5		mg/kg	27.5		1	Yes	S3VEM
Lead	Target	6.4		mg/kg	6.4		1	Yes	S3VEM
Manganese	Target	399		mg/kg	399		1	Yes	S3VEM
Nickel	Target	14.6		mg/kg	14.6	*	1	Yes	S3VEM
Selenium	Target	2.2	U	mg/kg	2.2	U	1	Yes	S3VEM
Silver	Target	0.43	U	mg/kg	0.43	U	1	Yes	S3VEM
Thallium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Vanadium	Target	43.8		mg/kg	43.8		1	Yes	S3VEM
Zinc	Target	56.6	J	mg/kg	56.6	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C5	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	07:56:00
% Moisture :				% Solids :	89.105		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.99	UJ	mg/kg	0.99	U*	1	Yes	S3VEM
Arsenic	Target	2.2		mg/kg	2.2		1	Yes	S3VEM
Barium	Target	137		mg/kg	137		1	Yes	S3VEM
Beryllium	Target	0.46	J	mg/kg	0.46	J	1	Yes	S3VEM
Cadmium	Target	0.21	J	mg/kg	0.21	J	1	Yes	S3VEM
Chromium	Target	16.8		mg/kg	16.8		1	Yes	S3VEM
Cobalt	Target	9.2		mg/kg	9.2		1	Yes	S3VEM
Copper	Target	27.3		mg/kg	27.3		1	Yes	S3VEM
Lead	Target	9.0		mg/kg	9.0		1	Yes	S3VEM
Manganese	Target	370		mg/kg	370		1	Yes	S3VEM
Nickel	Target	15.3		mg/kg	15.3	*	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.49	U	mg/kg	0.49	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	36.0		mg/kg	36.0		1	Yes	S3VEM
Zinc	Target	63.3	J	mg/kg	63.3	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C6	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	08:10:00
% Moisture :				% Solids :	94.1767		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.86	UJ	mg/kg	0.86	U*	1	Yes	S3VEM
Arsenic	Target	1.3		mg/kg	1.3		1	Yes	S3VEM
Barium	Target	80.1		mg/kg	80.1		1	Yes	S3VEM
Beryllium	Target	0.30	J	mg/kg	0.30	J	1	Yes	S3VEM
Cadmium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Chromium	Target	8.6		mg/kg	8.6		1	Yes	S3VEM
Cobalt	Target	5.8		mg/kg	5.8		1	Yes	S3VEM
Copper	Target	11.2		mg/kg	11.2		1	Yes	S3VEM
Lead	Target	2.2		mg/kg	2.2		1	Yes	S3VEM
Manganese	Target	247		mg/kg	247		1	Yes	S3VEM
Nickel	Target	7.5		mg/kg	7.5	*	1	Yes	S3VEM
Selenium	Target	2.2	U	mg/kg	2.2	U	1	Yes	S3VEM
Silver	Target	0.43	U	mg/kg	0.43	U	1	Yes	S3VEM
Thallium	Target	0.11	J	mg/kg	0.11	J	1	Yes	S3VEM
Vanadium	Target	24.5		mg/kg	24.5		1	Yes	S3VEM
Zinc	Target	35.4	J	mg/kg	35.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C6A	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:		pH:		Sample Date:	11/04/2015	Sample Time:	08:10:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	1.6		mg/kg	3.7		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C6D	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:	11/04/2015	Sample Time:	08:10:00
% Moisture :				% Solids :	94.1767		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.88	U	mg/kg	0.88	U	1	Yes	S3VEM
Arsenic	Target	1.4		mg/kg	1.4		1	Yes	S3VEM
Barium	Target	84.6		mg/kg	84.6		1	Yes	S3VEM
Beryllium	Target	0.34		mg/kg	0.34	J	1	Yes	S3VEM
Cadmium	Target	0.44	U	mg/kg	0.44	U	1	Yes	S3VEM
Chromium	Target	8.9		mg/kg	8.9		1	Yes	S3VEM
Cobalt	Target	5.8		mg/kg	5.8		1	Yes	S3VEM
Copper	Target	11.6		mg/kg	11.6		1	Yes	S3VEM
Lead	Target	2.3		mg/kg	2.3		1	Yes	S3VEM
Manganese	Target	248		mg/kg	248		1	Yes	S3VEM
Nickel	Target	7.8		mg/kg	7.8		1	Yes	S3VEM
Selenium	Target	2.2	U	mg/kg	2.2	U	1	Yes	S3VEM
Silver	Target	0.44	U	mg/kg	0.44	U	1	Yes	S3VEM
Thallium	Target	0.11		mg/kg	0.11	J	1	Yes	S3VEM
Vanadium	Target	25.0		mg/kg	25.0		1	Yes	S3VEM
Zinc	Target	36.7	J	mg/kg	36.7		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number: MYA1C6L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	U	mg/kg	5.0	U	5	Yes	S3VEM
Arsenic	Target	1.4		mg/kg	3.3		5	Yes	S3VEM
Barium	Target	81.9		mg/kg	190		5	Yes	S3VEM
Beryllium	Target	0.3	J	mg/kg	0.81	J	5	Yes	S3VEM
Cadmium	Target	0.5	U	mg/kg	2.5	U	5	Yes	S3VEM
Chromium	Target	9.4		mg/kg	21.9		5	Yes	S3VEM
Cobalt	Target	6.3		mg/kg	14.6		5	Yes	S3VEM
Copper	Target	11.0		mg/kg	25.5		5	Yes	S3VEM
Lead	Target	2.2		mg/kg	5.1		5	Yes	S3VEM
Manganese	Target	260.2		mg/kg	604		5	Yes	S3VEM
Nickel	Target	8.6		mg/kg	20.0	*	5	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	12.5	U	5	Yes	S3VEM
Silver	Target	0.5	U	mg/kg	2.5	U	5	Yes	S3VEM
Thallium	Target	0.5	U	mg/kg	2.5	U	5	Yes	S3VEM
Vanadium	Target	26.2		mg/kg	60.7		5	Yes	S3VEM
Zinc	Target	44.4		mg/kg	103	*	5	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C6S	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:	11/04/2015	Sample Time:	08:10:00
% Moisture :				% Solids :	94.1767		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	3.0		mg/kg	3.0	*	1	Yes	S3VEM
Arsenic	Spike	4.9		mg/kg	4.9		1	Yes	S3VEM
Barium	Spike	252		mg/kg	252		1	Yes	S3VEM
Beryllium	Spike	5.3		mg/kg	5.3		1	Yes	S3VEM
Cadmium	Spike	4.4		mg/kg	4.4		1	Yes	S3VEM
Chromium	Spike	25.7		mg/kg	25.7		1	Yes	S3VEM
Cobalt	Spike	46.1		mg/kg	46.1		1	Yes	S3VEM
Copper	Spike	35.1		mg/kg	35.1		1	Yes	S3VEM
Lead	Spike	3.9		mg/kg	3.9		1	Yes	S3VEM
Manganese	Spike	284		mg/kg	284		1	Yes	S3VEM
Nickel	Spike	49.6		mg/kg	49.6		1	Yes	S3VEM
Selenium	Spike	7.5		mg/kg	7.5		1	Yes	S3VEM
Silver	Spike	4.6		mg/kg	4.6		1	Yes	S3VEM
Thallium	Spike	3.8		mg/kg	3.8		1	Yes	S3VEM
Vanadium	Spike	65.9		mg/kg	65.9		1	Yes	S3VEM
Zinc	Spike	76.1		mg/kg	76.1		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C7	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	08:17:00
% Moisture :				% Solids :	88.8554		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	2.4		mg/kg	2.4		1	Yes	S3VEM
Barium	Target	159		mg/kg	159		1	Yes	S3VEM
Beryllium	Target	0.55	J	mg/kg	0.55	J	1	Yes	S3VEM
Cadmium	Target	0.20	J	mg/kg	0.20	J	1	Yes	S3VEM
Chromium	Target	18.8		mg/kg	18.8		1	Yes	S3VEM
Cobalt	Target	10.5		mg/kg	10.5		1	Yes	S3VEM
Copper	Target	26.1		mg/kg	26.1		1	Yes	S3VEM
Lead	Target	4.4		mg/kg	4.4		1	Yes	S3VEM
Manganese	Target	484		mg/kg	484		1	Yes	S3VEM
Nickel	Target	15.4		mg/kg	15.4	*	1	Yes	S3VEM
Selenium	Target	2.8	U	mg/kg	2.8	U	1	Yes	S3VEM
Silver	Target	0.56	U	mg/kg	0.56	U	1	Yes	S3VEM
Thallium	Target	0.18	J	mg/kg	0.18	J	1	Yes	S3VEM
Vanadium	Target	43.1		mg/kg	43.1		1	Yes	S3VEM
Zinc	Target	63.4	J	mg/kg	63.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C8	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	08:27:00
% Moisture :				% Solids :	85.3936		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	2.1		mg/kg	2.1		1	Yes	S3VEM
Barium	Target	121		mg/kg	121		1	Yes	S3VEM
Beryllium	Target	0.52	J	mg/kg	0.52	J	1	Yes	S3VEM
Cadmium	Target	0.57	U	mg/kg	0.57	U	1	Yes	S3VEM
Chromium	Target	14.9		mg/kg	14.9		1	Yes	S3VEM
Cobalt	Target	8.8		mg/kg	8.8		1	Yes	S3VEM
Copper	Target	20.7		mg/kg	20.7		1	Yes	S3VEM
Lead	Target	4.0		mg/kg	4.0		1	Yes	S3VEM
Manganese	Target	330		mg/kg	330		1	Yes	S3VEM
Nickel	Target	12.4		mg/kg	12.4	*	1	Yes	S3VEM
Selenium	Target	2.8	U	mg/kg	2.8	U	1	Yes	S3VEM
Silver	Target	0.57	U	mg/kg	0.57	U	1	Yes	S3VEM
Thallium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Vanadium	Target	35.0		mg/kg	35.0		1	Yes	S3VEM
Zinc	Target	50.4	J	mg/kg	50.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1C9	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:22:00
% Moisture :				% Solids :	89.528		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	2.9		mg/kg	2.9		1	Yes	S3VEM
Barium	Target	131		mg/kg	131		1	Yes	S3VEM
Beryllium	Target	0.44	J	mg/kg	0.44	J	1	Yes	S3VEM
Cadmium	Target	0.22	J	mg/kg	0.22	J	1	Yes	S3VEM
Chromium	Target	17.5		mg/kg	17.5		1	Yes	S3VEM
Cobalt	Target	8.9		mg/kg	8.9		1	Yes	S3VEM
Copper	Target	27.7		mg/kg	27.7		1	Yes	S3VEM
Lead	Target	12.2		mg/kg	12.2		1	Yes	S3VEM
Manganese	Target	381		mg/kg	381		1	Yes	S3VEM
Nickel	Target	13.7		mg/kg	13.7	*	1	Yes	S3VEM
Selenium	Target	2.7	U	mg/kg	2.7	U	1	Yes	S3VEM
Silver	Target	0.54	U	mg/kg	0.54	U	1	Yes	S3VEM
Thallium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Vanadium	Target	35.7		mg/kg	35.7		1	Yes	S3VEM
Zinc	Target	69.3	J	mg/kg	69.3	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1D1	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:40:00
% Moisture :				% Solids :	81.0867		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.99	UJ	mg/kg	0.99	U*	1	Yes	S3VEM
Arsenic	Target	3.1		mg/kg	3.1		1	Yes	S3VEM
Barium	Target	132		mg/kg	132		1	Yes	S3VEM
Beryllium	Target	0.56		mg/kg	0.56		1	Yes	S3VEM
Cadmium	Target	0.20	J	mg/kg	0.20	J	1	Yes	S3VEM
Chromium	Target	17.3		mg/kg	17.3		1	Yes	S3VEM
Cobalt	Target	9.5		mg/kg	9.5		1	Yes	S3VEM
Copper	Target	26.5		mg/kg	26.5		1	Yes	S3VEM
Lead	Target	5.4		mg/kg	5.4		1	Yes	S3VEM
Manganese	Target	479		mg/kg	479		1	Yes	S3VEM
Nickel	Target	13.7		mg/kg	13.7	*	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.16	J	mg/kg	0.16	J	1	Yes	S3VEM
Vanadium	Target	38.9		mg/kg	38.9		1	Yes	S3VEM
Zinc	Target	54.7	J	mg/kg	54.7	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1D2	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:47:00
% Moisture :				% Solids :	80.4231		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.1	UJ	mg/kg	1.1	U*	1	Yes	S3VEM
Arsenic	Target	2.8		mg/kg	2.8		1	Yes	S3VEM
Barium	Target	158		mg/kg	158		1	Yes	S3VEM
Beryllium	Target	0.65		mg/kg	0.65		1	Yes	S3VEM
Cadmium	Target	0.16	J	mg/kg	0.16	J	1	Yes	S3VEM
Chromium	Target	18.0		mg/kg	18.0		1	Yes	S3VEM
Cobalt	Target	9.9		mg/kg	9.9		1	Yes	S3VEM
Copper	Target	26.9		mg/kg	26.9		1	Yes	S3VEM
Lead	Target	5.4		mg/kg	5.4		1	Yes	S3VEM
Manganese	Target	425		mg/kg	425		1	Yes	S3VEM
Nickel	Target	14.5		mg/kg	14.5	*	1	Yes	S3VEM
Selenium	Target	2.8	U	mg/kg	2.8	U	1	Yes	S3VEM
Silver	Target	0.56	U	mg/kg	0.56	U	1	Yes	S3VEM
Thallium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Vanadium	Target	40.4		mg/kg	40.4		1	Yes	S3VEM
Zinc	Target	56.4	J	mg/kg	56.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1E1	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:00:00
% Moisture :				% Solids :	91.4215		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.95	UJ	mg/kg	0.95	U*	1	Yes	S3VEM
Arsenic	Target	1.7		mg/kg	1.7		1	Yes	S3VEM
Barium	Target	111		mg/kg	111		1	Yes	S3VEM
Beryllium	Target	0.34	J	mg/kg	0.34	J	1	Yes	S3VEM
Cadmium	Target	0.47	U	mg/kg	0.47	U	1	Yes	S3VEM
Chromium	Target	12.5		mg/kg	12.5		1	Yes	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1	Yes	S3VEM
Copper	Target	17.7		mg/kg	17.7		1	Yes	S3VEM
Lead	Target	2.9		mg/kg	2.9		1	Yes	S3VEM
Manganese	Target	279		mg/kg	279		1	Yes	S3VEM
Nickel	Target	11.6		mg/kg	11.6	*	1	Yes	S3VEM
Selenium	Target	2.4	U	mg/kg	2.4	U	1	Yes	S3VEM
Silver	Target	0.47	U	mg/kg	0.47	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	29.1		mg/kg	29.1		1	Yes	S3VEM
Zinc	Target	44.0	J	mg/kg	44.0	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1E2	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:07:00
% Moisture :				% Solids :	92.579		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.89	UJ	mg/kg	0.89	U*	1	Yes	S3VEM
Arsenic	Target	1.3		mg/kg	1.3		1	Yes	S3VEM
Barium	Target	79.3		mg/kg	79.3		1	Yes	S3VEM
Beryllium	Target	0.27	J	mg/kg	0.27	J	1	Yes	S3VEM
Cadmium	Target	0.44	U	mg/kg	0.44	U	1	Yes	S3VEM
Chromium	Target	8.3		mg/kg	8.3		1	Yes	S3VEM
Cobalt	Target	5.4		mg/kg	5.4		1	Yes	S3VEM
Copper	Target	9.9		mg/kg	9.9		1	Yes	S3VEM
Lead	Target	2.0		mg/kg	2.0		1	Yes	S3VEM
Manganese	Target	204		mg/kg	204		1	Yes	S3VEM
Nickel	Target	6.9		mg/kg	6.9	*	1	Yes	S3VEM
Selenium	Target	2.2	U	mg/kg	2.2	U	1	Yes	S3VEM
Silver	Target	0.44	U	mg/kg	0.44	U	1	Yes	S3VEM
Thallium	Target	0.099	J	mg/kg	0.099	J	1	Yes	S3VEM
Vanadium	Target	23.2		mg/kg	23.2		1	Yes	S3VEM
Zinc	Target	32.9	J	mg/kg	32.9	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1E3	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:12:00
% Moisture :				% Solids :	85.9548		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	UJ	mg/kg	1.0	U*	1	Yes	S3VEM
Arsenic	Target	2.0		mg/kg	2.0		1	Yes	S3VEM
Barium	Target	113		mg/kg	113		1	Yes	S3VEM
Beryllium	Target	0.47	J	mg/kg	0.47	J	1	Yes	S3VEM
Cadmium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Chromium	Target	14.4		mg/kg	14.4		1	Yes	S3VEM
Cobalt	Target	7.8		mg/kg	7.8		1	Yes	S3VEM
Copper	Target	20.0		mg/kg	20.0		1	Yes	S3VEM
Lead	Target	4.4		mg/kg	4.4		1	Yes	S3VEM
Manganese	Target	299		mg/kg	299		1	Yes	S3VEM
Nickel	Target	11.3		mg/kg	11.3	*	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Vanadium	Target	32.7		mg/kg	32.7		1	Yes	S3VEM
Zinc	Target	48.4	J	mg/kg	48.4	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1E9	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:20:00
% Moisture :				% Solids :	92.9367		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	UJ	mg/kg	1.0	U*	1	Yes	S3VEM
Arsenic	Target	1.5		mg/kg	1.5		1	Yes	S3VEM
Barium	Target	92.8		mg/kg	92.8		1	Yes	S3VEM
Beryllium	Target	0.34	J	mg/kg	0.34	J	1	Yes	S3VEM
Cadmium	Target	0.11	J	mg/kg	0.11	J	1	Yes	S3VEM
Chromium	Target	10.1		mg/kg	10.1		1	Yes	S3VEM
Cobalt	Target	6.2		mg/kg	6.2		1	Yes	S3VEM
Copper	Target	12.1		mg/kg	12.1		1	Yes	S3VEM
Lead	Target	2.3		mg/kg	2.3		1	Yes	S3VEM
Manganese	Target	268		mg/kg	268		1	Yes	S3VEM
Nickel	Target	8.6		mg/kg	8.6	*	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.12	J	mg/kg	0.12	J	1	Yes	S3VEM
Vanadium	Target	27.1		mg/kg	27.1		1	Yes	S3VEM
Zinc	Target	39.6	J	mg/kg	39.6	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1F0	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:50:00
% Moisture :				% Solids :	87.7812		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.91	UJ	mg/kg	0.91	U*	1	Yes	S3VEM
Arsenic	Target	1.9		mg/kg	1.9		1	Yes	S3VEM
Barium	Target	124		mg/kg	124		1	Yes	S3VEM
Beryllium	Target	0.45	J	mg/kg	0.45	J	1	Yes	S3VEM
Cadmium	Target	0.15	J	mg/kg	0.15	J	1	Yes	S3VEM
Chromium	Target	13.5		mg/kg	13.5		1	Yes	S3VEM
Cobalt	Target	8.3		mg/kg	8.3		1	Yes	S3VEM
Copper	Target	19.7		mg/kg	19.7		1	Yes	S3VEM
Lead	Target	3.6		mg/kg	3.6		1	Yes	S3VEM
Manganese	Target	390		mg/kg	390		1	Yes	S3VEM
Nickel	Target	11.7		mg/kg	11.7	*	1	Yes	S3VEM
Selenium	Target	2.3	U	mg/kg	2.3	U	1	Yes	S3VEM
Silver	Target	0.46	U	mg/kg	0.46	U	1	Yes	S3VEM
Thallium	Target	0.14	J	mg/kg	0.14	J	1	Yes	S3VEM
Vanadium	Target	32.6		mg/kg	32.6		1	Yes	S3VEM
Zinc	Target	46.9	J	mg/kg	46.9	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1F2	Method:	Metals by ICP-MS	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:20:00
% Moisture :				% Solids :	92.7693		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.94	UJ	mg/kg	0.94	U*	1	Yes	S3VEM
Arsenic	Target	1.4		mg/kg	1.4		1	Yes	S3VEM
Barium	Target	109		mg/kg	109		1	Yes	S3VEM
Beryllium	Target	0.34	J	mg/kg	0.34	J	1	Yes	S3VEM
Cadmium	Target	0.47	U	mg/kg	0.47	U	1	Yes	S3VEM
Chromium	Target	12.8		mg/kg	12.8		1	Yes	S3VEM
Cobalt	Target	7.4		mg/kg	7.4		1	Yes	S3VEM
Copper	Target	14.9		mg/kg	14.9		1	Yes	S3VEM
Lead	Target	2.8		mg/kg	2.8		1	Yes	S3VEM
Manganese	Target	280		mg/kg	280		1	Yes	S3VEM
Nickel	Target	10.1		mg/kg	10.1	*	1	Yes	S3VEM
Selenium	Target	2.4	U	mg/kg	2.4	U	1	Yes	S3VEM
Silver	Target	0.47	U	mg/kg	0.47	U	1	Yes	S3VEM
Thallium	Target	0.13	J	mg/kg	0.13	J	1	Yes	S3VEM
Vanadium	Target	31.3		mg/kg	31.3		1	Yes	S3VEM
Zinc	Target	42.7	J	mg/kg	42.7	*	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1H3	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-5	pH:		Sample Date:	11/02/2015	Sample Time:	11:33:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.77	J	ug/L	0.77	J	1	Yes	S3VEM
Arsenic	Target	16.1		ug/L	16.1		1	Yes	S3VEM
Barium	Target	253		ug/L	253		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	0.39	J	ug/L	0.39	J	1	Yes	S3VEM
Copper	Target	0.85	J	ug/L	0.85	J	1	Yes	S3VEM
Lead	Target	0.16	J	ug/L	0.16	J	1	Yes	S3VEM
Manganese	Target	322	J	ug/L	322	*	1	Yes	S3VEM
Nickel	Target	4.9	J	ug/L	4.9	*	1	Yes	S3VEM
Selenium	Target	2.4	J	ug/L	2.4	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	0.77	J	ug/L	0.77	J	1	Yes	S3VEM
Zinc	Target	7.1	J+	ug/L	7.1		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1H3D	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:		pH:		Sample Date:	11/02/2015	Sample Time:	11:33:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.70		ug/L	0.70	J	1	Yes	S3VEM
Arsenic	Target	15.6		ug/L	15.6		1	Yes	S3VEM
Barium	Target	243		ug/L	243		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	0.41		ug/L	0.41	J	1	Yes	S3VEM
Copper	Target	0.83		ug/L	0.83	J	1	Yes	S3VEM
Lead	Target	0.16		ug/L	0.16	J	1	Yes	S3VEM
Manganese	Target	314		ug/L	314		1	Yes	S3VEM
Nickel	Target	4.8		ug/L	4.8		1	Yes	S3VEM
Selenium	Target	3.0		ug/L	3.0	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	0.87		ug/L	0.87	J	1	Yes	S3VEM
Zinc	Target	7.5		ug/L	7.5		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number: MYA1H3L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Arsenic	Target	18.2		ug/L	18.2		5	Yes	S3VEM
Barium	Target	277		ug/L	277		5	Yes	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Cobalt	Target	0.47	J	ug/L	0.47	J	5	Yes	S3VEM
Copper	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Lead	Target	0.14	J	ug/L	0.14	J	5	Yes	S3VEM
Manganese	Target	373		ug/L	373	*	5	Yes	S3VEM
Nickel	Target	6.7		ug/L	6.7	*	5	Yes	S3VEM
Selenium	Target	25.0	U	ug/L	25.0	U	5	Yes	S3VEM
Silver	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Thallium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Vanadium	Target	25.0	U	ug/L	25.0	U	5	Yes	S3VEM
Zinc	Target	10.3		ug/L	10.3		5	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number: MYA1H3S	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date: 11/02/2015	Sample Time: 11:33:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	97.1		ug/L	97.1		1	Yes	S3VEM
Arsenic	Spike	55.4		ug/L	55.4		1	Yes	S3VEM
Barium	Spike	2080		ug/L	2080		1	Yes	S3VEM
Beryllium	Spike	54.0		ug/L	54.0		1	Yes	S3VEM
Cadmium	Spike	47.8		ug/L	47.8		1	Yes	S3VEM
Chromium	Spike	180		ug/L	180		1	Yes	S3VEM
Cobalt	Spike	445		ug/L	445		1	Yes	S3VEM
Copper	Spike	218		ug/L	218		1	Yes	S3VEM
Lead	Spike	18.6		ug/L	18.6		1	Yes	S3VEM
Manganese	Spike	801		ug/L	801		1	Yes	S3VEM
Nickel	Spike	440		ug/L	440		1	Yes	S3VEM
Selenium	Spike	103		ug/L	103		1	Yes	S3VEM
Silver	Spike	48.0		ug/L	48.0		1	Yes	S3VEM
Thallium	Spike	45.8		ug/L	45.8		1	Yes	S3VEM
Vanadium	Spike	465		ug/L	465		1	Yes	S3VEM
Zinc	Spike	469		ug/L	469		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1H4	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-5	pH:		Sample Date:	11/02/2015	Sample Time:	12:15:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.6	J	ug/L	1.6	J	1	Yes	S3VEM
Arsenic	Target	4.5		ug/L	4.5		1	Yes	S3VEM
Barium	Target	87.6		ug/L	87.6		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	0.17	J	ug/L	0.17	J	1	Yes	S3VEM
Copper	Target	0.44	J	ug/L	0.44	J	1	Yes	S3VEM
Lead	Target	0.067	J	ug/L	0.067	J	1	Yes	S3VEM
Manganese	Target	208	J	ug/L	208	*	1	Yes	S3VEM
Nickel	Target	2.8	J	ug/L	2.8	*	1	Yes	S3VEM
Selenium	Target	1.2	J	ug/L	1.2	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	1.6	J	ug/L	1.6	J	1	Yes	S3VEM
Zinc	Target	3.1	J+	ug/L	3.1		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number:	MYA1H5	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-5	pH:		Sample Date:	11/02/2015	Sample Time:	13:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.64	J	ug/L	0.64	J	1	Yes	S3VEM
Arsenic	Target	1.1		ug/L	1.1		1	Yes	S3VEM
Barium	Target	48.2		ug/L	48.2		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	0.36	J	ug/L	0.36	J	1	Yes	S3VEM
Copper	Target	1.3	J	ug/L	1.3	J	1	Yes	S3VEM
Lead	Target	0.040	J	ug/L	0.040	J	1	Yes	S3VEM
Manganese	Target	110	J	ug/L	110	*	1	Yes	S3VEM
Nickel	Target	7.7	J	ug/L	7.7	*	1	Yes	S3VEM
Selenium	Target	1.1	J	ug/L	1.1	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	0.37	J	ug/L	0.37	J	1	Yes	S3VEM
Zinc	Target	4.7	J+	ug/L	4.7		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number: PBS004	Method: Metals by ICP-MS	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Arsenic	Target	0.25	J	mg/kg	0.25	J	1	Yes	S3VEM
Barium	Target	5.0	U	mg/kg	5.0	U	1	Yes	S3VEM
Beryllium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Cadmium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Chromium	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Cobalt	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Copper	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM
Lead	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Manganese	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Nickel	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Selenium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Silver	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Thallium	Target	0.50	U	mg/kg	0.50	U	1	Yes	S3VEM
Vanadium	Target	2.5	U	mg/kg	2.5	U	1	Yes	S3VEM
Zinc	Target	1.0	U	mg/kg	1.0	U	1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1E9	Lab Code: EQI

Sample Number: PBW001	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Arsenic	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Barium	Target	10.0	U	ug/L	10.0	U	1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Nickel	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Zinc	Target	2.0		ug/L	2.0		1	Yes	S3VEM

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: January 29, 2016

SUBJECT: Review of Analytical Data, **Tier 3**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	MYA1G4
Laboratory:	Shealy Environmental Services, Inc. (EQI)
Analysis:	CLP Metals by ICP-MS
Samples:	3 Groundwater Samples
Collection Date:	November 20, 2015
Reviewer:	Anna Pajarillo, ESAT

EXES Data Manager has been updated; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Howard Pham, CLP PO USEPA Region 5
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [] Action

SAMPLING ISSUES: [X] Yes [] No

Data Validation Report – **Tier 3**

Case No.: 45736
SDG No.: MYA1G4
Site: QualaWash
Laboratory: Shealy Environmental Services, Inc. (EQI)
Analysis: CLP Metals by ICP-MS
Reviewer: Anna Pajarillo, ESAT
Date: January 29, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Inorganic Analytical Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	None.
Background Samples (BG):	None.
Field Duplicates (D1):	Not Provided.

CLP PO Action

None.

Sampling Issues

A temperature blank was not present in the cooler.

Additional Comments

The samples were analyzed for the following Contract Laboratory Program (CLP) metals by Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver, thallium, vanadium, and zinc.

The preparation logs for some solutions were missing from the data package. The laboratory provided the missing pages upon request, on 01/25/16. All standards and spiking solutions were analyzed before the expiration date.

The mass intensity raw data were missing from the report. The laboratory provided the missing data upon request, on 01/25/16.

All method requirements specified in the EPA Contract Laboratory Program (CLP) Statement of Work (SOW), except as noted, have been met.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)* ISM02.2, August 2014; and
- *USEPA National Functional Guidelines for Inorganic Superfund Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), EPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods, Multi-Media, Multi-Concentration*, ISM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1.	Data Completeness	Yes	
2.	Preservation and Holding Times	Yes	
3.	ICP-MS Tune Analysis	Yes	
4.	Calibration	Yes	
	a. Initial	Yes	
	b. Initial and Continuing Calibration Verification	Yes	
5.	Blanks	Yes	B
6.	ICP Interference Check Sample (ICS)	Yes	
7.	Laboratory Control Sample (LCS)	Yes	
8.	Duplicate Sample Analysis	Yes	
9.	Spike Sample Analysis	Yes	
10.	ICP Serial Dilution	Yes	
11.	ICP-MS Internal Standards	Yes	
12.	Field Duplicate Sample Analysis	N/A	
13.	Sample Quantitation	Yes	A
14.	Overall Assessment	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged "J". Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. The following result is qualified as nondetected (U) due to low level initial calibration blank (ICB) contamination.

- Thallium in sample MYA1G6.

Analyte concentration greater than the MDL but less than the CRQL was reported in the following blank as presented below.

Analyte	Blank	Concentration, µg/L
Thallium	ICB032	0.042

Sample results that are greater than or equal to the MDL but less than or equal to the CRQL are reported as nondetected (U) at the respective CRQL.

Sample Summary Report

Case No:	45736	Contract:	EPW14035	SDG No:	MYA1G4	Lab Code:	EQI

Sample Number: LCS042	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	4.1		ug/L	4.1		1	Yes	S3VEM
Arsenic	Target	1.7		ug/L	1.7		1	Yes	S3VEM
Barium	Target	19.7		ug/L	19.7		1	Yes	S3VEM
Beryllium	Target	1.9		ug/L	1.9		1	Yes	S3VEM
Cadmium	Target	2.1		ug/L	2.1		1	Yes	S3VEM
Chromium	Target	4.0		ug/L	4.0		1	Yes	S3VEM
Cobalt	Target	1.8		ug/L	1.8		1	Yes	S3VEM
Copper	Target	4.3		ug/L	4.3		1	Yes	S3VEM
Lead	Target	1.9		ug/L	1.9		1	Yes	S3VEM
Manganese	Target	2.1		ug/L	2.1		1	Yes	S3VEM
Nickel	Target	2.1		ug/L	2.1		1	Yes	S3VEM
Selenium	Target	11.6		ug/L	11.6		1	Yes	S3VEM
Silver	Target	2.2		ug/L	2.2		1	Yes	S3VEM
Thallium	Target	2.0		ug/L	2.0		1	Yes	S3VEM
Vanadium	Target	10.0		ug/L	10.0		1	Yes	S3VEM
Zinc	Target	5.1		ug/L	5.1		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number:	MYA1G4	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-2	pH:		Sample Date:	11/20/2015	Sample Time:	09:54:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.5	J	ug/L	1.5	J	1	Yes	S3VEM
Arsenic	Target	10.0		ug/L	10.0		1	Yes	S3VEM
Barium	Target	98.2		ug/L	98.2		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	0.13	J	ug/L	0.13	J	1	Yes	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U*	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	101		ug/L	101		1	Yes	S3VEM
Nickel	Target	2.4		ug/L	2.4		1	Yes	S3VEM
Selenium	Target	1.9	J	ug/L	1.9	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	1.6	J	ug/L	1.6	J	1	Yes	S3VEM
Zinc	Target	2.6		ug/L	2.6		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number: MYA1G4A	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date: 11/20/2015	Sample Time: 09:54:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	5.5		ug/L	5.5		1	Yes	S3VEM
Arsenic	Spike	11.9		ug/L	11.9		1	Yes	S3VEM
Barium	Spike	115		ug/L	115		1	Yes	S3VEM
Beryllium	Spike	1.9		ug/L	1.9		1	Yes	S3VEM
Cadmium	Spike	1.9		ug/L	1.9		1	Yes	S3VEM
Chromium	Spike	3.6		ug/L	3.6		1	Yes	S3VEM
Cobalt	Spike	1.8		ug/L	1.8		1	Yes	S3VEM
Copper	Spike	4.1		ug/L	4.1		1	Yes	S3VEM
Lead	Spike	2.0		ug/L	2.0		1	Yes	S3VEM
Manganese	Spike	100		ug/L	100		1	Yes	S3VEM
Nickel	Spike	4.2		ug/L	4.2		1	Yes	S3VEM
Selenium	Spike	11.1		ug/L	11.1		1	Yes	S3VEM
Silver	Spike	1.9		ug/L	1.9		1	Yes	S3VEM
Thallium	Spike	1.9		ug/L	1.9		1	Yes	S3VEM
Vanadium	Spike	10.7		ug/L	10.7		1	Yes	S3VEM
Zinc	Spike	6.2		ug/L	6.2		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number: MYA1G4D	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date: 11/20/2015	Sample Time: 09:54:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.6	J	ug/L	1.6	J	1	Yes	S3VEM
Arsenic	Target	10.3		ug/L	10.3		1	Yes	S3VEM
Barium	Target	95.8		ug/L	95.8		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	0.18	J	ug/L	0.18	J	1	Yes	S3VEM
Cobalt	Target	0.14	J	ug/L	0.14	J	1	Yes	S3VEM
Copper	Target	2.7		ug/L	2.7	*	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	102		ug/L	102		1	Yes	S3VEM
Nickel	Target	2.3		ug/L	2.3		1	Yes	S3VEM
Selenium	Target	2.3	J	ug/L	2.3	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	2.1	J	ug/L	2.1	J	1	Yes	S3VEM
Zinc	Target	2.3		ug/L	2.3		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number: MYA1G4L	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.6	J	ug/L	1.6	J	5	Yes	S3VEM
Arsenic	Target	10.6		ug/L	10.6		5	Yes	S3VEM
Barium	Target	96.3		ug/L	96.3		5	Yes	S3VEM
Beryllium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Cadmium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Chromium	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Cobalt	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Copper	Target	10.0	U	ug/L	10.0	U	5	Yes	S3VEM
Lead	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Manganese	Target	102		ug/L	102		5	Yes	S3VEM
Nickel	Target	2.4	J	ug/L	2.4	J	5	Yes	S3VEM
Selenium	Target	25.0	U	ug/L	25.0	U	5	Yes	S3VEM
Silver	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Thallium	Target	5.0	U	ug/L	5.0	U	5	Yes	S3VEM
Vanadium	Target	25.0	U	ug/L	25.0	U	5	Yes	S3VEM
Zinc	Target	10.9		ug/L	10.9		5	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number: MYA1G4S	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date: 11/20/2015	Sample Time: 09:54:00
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Spike	104		ug/L	104		1	Yes	S3VEM
Arsenic	Spike	44.6		ug/L	44.6		1	Yes	S3VEM
Barium	Spike	2090		ug/L	2090		1	Yes	S3VEM
Beryllium	Spike	47.4		ug/L	47.4		1	Yes	S3VEM
Cadmium	Spike	47.5		ug/L	47.5		1	Yes	S3VEM
Chromium	Spike	196		ug/L	196		1	Yes	S3VEM
Cobalt	Spike	445		ug/L	445		1	Yes	S3VEM
Copper	Spike	221		ug/L	221		1	Yes	S3VEM
Lead	Spike	20.0		ug/L	20.0		1	Yes	S3VEM
Manganese	Spike	592		ug/L	592		1	Yes	S3VEM
Nickel	Spike	475		ug/L	475		1	Yes	S3VEM
Selenium	Spike	101		ug/L	101		1	Yes	S3VEM
Silver	Spike	49.3		ug/L	49.3		1	Yes	S3VEM
Thallium	Spike	49.6		ug/L	49.6		1	Yes	S3VEM
Vanadium	Spike	506		ug/L	506		1	Yes	S3VEM
Zinc	Spike	486		ug/L	486		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number:	MYA1G5	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-2	pH:		Sample Date:	11/20/2015	Sample Time:	10:25:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	1.2	J	ug/L	1.2	J	1	Yes	S3VEM
Arsenic	Target	4.3		ug/L	4.3		1	Yes	S3VEM
Barium	Target	170		ug/L	170		1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.9		ug/L	2.9		1	Yes	S3VEM
Cobalt	Target	1.4		ug/L	1.4		1	Yes	S3VEM
Copper	Target	4.2		ug/L	4.2	*	1	Yes	S3VEM
Lead	Target	2.7		ug/L	2.7		1	Yes	S3VEM
Manganese	Target	345		ug/L	345		1	Yes	S3VEM
Nickel	Target	5.8		ug/L	5.8		1	Yes	S3VEM
Selenium	Target	2.1	J	ug/L	2.1	J	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	7.4		ug/L	7.4		1	Yes	S3VEM
Zinc	Target	9.9		ug/L	9.9		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number:	MYA1G6	Method:	Metals by ICP-MS	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-2	pH:		Sample Date:	11/20/2015	Sample Time:	11:00:00
% Moisture :				% Solids :			

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	0.80	J	ug/L	0.80	J	1	Yes	S3VEM
Arsenic	Target	5.0		ug/L	5.0		1	Yes	S3VEM
Barium	Target	168		ug/L	168		1	Yes	S3VEM
Beryllium	Target	0.18	J	ug/L	0.18	J	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	17.8		ug/L	17.8		1	Yes	S3VEM
Cobalt	Target	4.3		ug/L	4.3		1	Yes	S3VEM
Copper	Target	11.8		ug/L	11.8	*	1	Yes	S3VEM
Lead	Target	3.6		ug/L	3.6		1	Yes	S3VEM
Manganese	Target	217		ug/L	217		1	Yes	S3VEM
Nickel	Target	13.5		ug/L	13.5		1	Yes	S3VEM
Selenium	Target	1.4	J	ug/L	1.4	J	1	Yes	S3VEM
Silver	Target	0.024	J	ug/L	0.024	J	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	0.045	J	1	Yes	S3VEM
Vanadium	Target	21.3		ug/L	21.3		1	Yes	S3VEM
Zinc	Target	26.6		ug/L	26.6		1	Yes	S3VEM

Case No: 45736	Contract: EPW14035	SDG No: MYA1G4	Lab Code: EQI

Sample Number: PBW042	Method: Metals by ICP-MS	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids :	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Antimony	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Arsenic	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Barium	Target	10.0	U	ug/L	10.0	U	1	Yes	S3VEM
Beryllium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Cadmium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Chromium	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Cobalt	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Copper	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM
Lead	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Manganese	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Nickel	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Selenium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Silver	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Thallium	Target	1.0	U	ug/L	1.0	U	1	Yes	S3VEM
Vanadium	Target	5.0	U	ug/L	5.0	U	1	Yes	S3VEM
Zinc	Target	2.0	U	ug/L	2.0	U	1	Yes	S3VEM

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300; Fax: (510) 412-2304.

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager KO
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: May 27, 2016

SUBJECT: Review of Analytical Data, **Tier 3 [UPDATED]**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	YA1A9
Laboratory:	Chemtech Consulting Group (CHM)
Analysis:	CLP Low-Level Volatiles
Samples:	20 Soil Samples
Collection Date:	November 2 and 3, 2015
Reviewer:	Cecelia Minch, ESAT

This report has been updated to include a review of field quality control samples (duplicates).

EXES Data Manager has been updated with the results of this review and the validation label revised to S3VEM; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Kim Brandon-Bazile, CLP PO USEPA Region 2
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [ ] Yes [X] No

Data Validation Report - **Tier 3**

Case No.: 45736
SDG No.: YA1A9
Site: QualaWash
Laboratory: Chemtech Consulting Group (CHM)
Analysis: CLP Low-Level Volatiles
Reviewer: Cecelia Minch, ESAT
Date: May 27, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Organic Analytical Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	None.
Trip Blanks (TB):	None.
Background Samples (BG):	None.
Field Duplicates (D1):	YA1B4, YA1E9 (in SDG YA1D6)
(D2):	YA1B8, YA1F0 (in SDG YA1D6)
(D4):	YA1F2, YA1D8

CLP PO Action

None.

Sampling Issues

None.

Additional Comments

Due to a data entry error during sample login, sample YA1F2 was initially recorded as YA1F0 in laboratory records. The laboratory corrected the error prior to generating deliverables. However, the hardcopy raw data, and the pdf of that data, retains the error on a few pages. The data reviewer manually corrected the Region 9 hard copy; the electronic file (pdf) was not revised.

All standards and spiking solutions were analyzed before the expiration date.

Other than a laboratory artifact (retention time of 9.6 minutes), tentatively identified compounds (TICs) were not found in the samples.

The laboratory performed manual peak integration for some calibrations and samples. Manual integrations were reviewed and found to be in compliance with CLP Statement of Work (SOW) requirements.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014; and
- *USEPA National Functional Guidelines for Superfund Organic Methods Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1	Data Completeness	Yes	
2	Holding Time/Preservation	Yes	
3	GC/MS Tune/GC Performance	Yes	
4	Initial Calibration	No	A
5	Continuing Calibration Verification (CCV)	Yes	
6	Laboratory Blanks	Yes	
7	Field Blanks	N/A	
8	Deuterated Monitoring Compounds (DMCs)	No	B
9	Matrix Spike/Matrix Spike Duplicates (MS/MSDs)	Yes	
10	Internal Standards	Yes	
11	Compound Identification	Yes	
12	Compound Quantitation	Yes	
13	System Performance	Yes	
14	Field Duplicate Sample Analysis	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results for the following analyte are qualified as estimated due to a large percent relative standard deviation (%RSD) in the initial calibration and are flagged "UJ".

- Bromoform in all samples, all method blanks, and storage blank VHBLK01.

The %RSD of 21.6% reported for bromoform in the 11/03/15 initial calibration exceeds the 20.0% validation criterion. In addition, the relative response factor (RRF) of 0.185 for the 5.0 ug/kg CRQL standard is below the average RRF of 0.258, indicating low sensitivity at the CRQL.

B. Results for the following analytes are qualified as estimated due to low DMC recoveries and are flagged "UJ".

{1,2-Dichloroethane-d4}
- Trichlorofluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane, methyl acetate, methylene chloride, methyl-tert-butyl ether, 1,1,1-trichloroethane, carbon tetrachloride, 1,2-dichloroethane, and 1,2-dibromoethane in sample YA1A9.

{1,2-Dichlorobenzene-d4}
- Chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, and 1,2,3-trichlorobenzene in sample YA1A9.

DMC recoveries for the qualifications listed above are shown below.

Sample	DMC	% Recovery	QC Limit
YA1A9	1,2-Dichloroethane-d4	69	70-130
YA1A9	1,2-Dichlorobenzene-d4	73	75-120

Since qualified results are nondetected, false negatives may exist. Sample Y91A9 was not reanalyzed.

Sample Summary Report

Case No:	45736	Contract:	EPW14030	SDG No:	YA1A9	Lab Code:	CHM

Sample Number:	VBLK24	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :	100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: VBLK25	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: VBLK26	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: VBLK27	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: VBLK28	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: VHBLK01	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1A9	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:10:00
% Moisture :				% Solids :	89.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromomethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloroform	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Benzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
o-xylene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Styrene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromoform	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B0	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:27:00
% Moisture :				% Solids :	88.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromomethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloroform	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Benzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
o-xylene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Styrene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromoform	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: YA1B0MS	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 88.2	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Chloromethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Bromomethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Chloroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Spike	42		ug/kg	42		1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Acetone	Target	9.7	U	ug/kg	9.7	U	1.0	Yes	S3VEM
Carbon disulfide	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
2-Butanone	Target	9.7	U	ug/kg	9.7	U	1.0	Yes	S3VEM
Bromochloromethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Chloroform	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Benzene	Spike	45		ug/kg	45		1.0	Yes	S3VEM
1,2-Dichloroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Trichloroethene	Spike	43		ug/kg	43		1.0	Yes	S3VEM
Methylcyclohexane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	9.7	U	ug/kg	9.7	U	1.0	Yes	S3VEM
Toluene	Spike	45		ug/kg	45		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	9.7	U	ug/kg	9.7	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Chlorobenzene	Spike	43		ug/kg	43		1.0	Yes	S3VEM
Ethylbenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
o-xylene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Styrene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Bromoform	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	4.8	U	ug/kg	4.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: YA1B0MSD	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 88.2	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Chloromethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Vinyl chloride	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Bromomethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Chloroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Spike	41		ug/kg	41		1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Acetone	Target	9.9	U	ug/kg	9.9	U	1.0	Yes	S3VEM
Carbon disulfide	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Methyl Acetate	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Methylene chloride	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
2-Butanone	Target	9.9	U	ug/kg	9.9	U	1.0	Yes	S3VEM
Bromochloromethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Chloroform	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Cyclohexane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Benzene	Spike	51		ug/kg	51		1.0	Yes	S3VEM
1,2-Dichloroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Trichloroethene	Spike	50		ug/kg	50		1.0	Yes	S3VEM
Methylcyclohexane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	9.9	U	ug/kg	9.9	U	1.0	Yes	S3VEM
Toluene	Spike	50		ug/kg	50		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
2-Hexanone	Target	9.9	U	ug/kg	9.9	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Chlorobenzene	Spike	48		ug/kg	48		1.0	Yes	S3VEM
Ethylbenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
o-xylene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
m,p-Xylene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Styrene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Bromoform	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	4.9	U	ug/kg	4.9	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B1	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:41:00
% Moisture :				% Solids :	80.4		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Chloromethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Bromomethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Chloroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Chloroform	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Benzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
o-xylene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Styrene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Bromoform	Target	5.9	UJ	ug/kg	5.9	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.9	U	ug/kg	5.9	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B2	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-1	pH:		Sample Date:	11/02/2015	Sample Time:	09:55:00
% Moisture :				% Solids :	81.7		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromomethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroform	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Benzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
o-xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Styrene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromoform	Target	5.2	UJ	ug/kg	5.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B3	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:02:00
% Moisture :				% Solids :	83.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromomethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Benzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
o-xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Styrene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromoform	Target	5.8	UJ	ug/kg	5.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B4	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:10:00
% Moisture :				% Solids :	93.4		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromomethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloroform	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Benzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
o-xylene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Styrene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromoform	Target	6.2	UJ	ug/kg	6.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B5	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:25:00
% Moisture :				% Solids :	86.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromomethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroform	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Benzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
o-xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Styrene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromoform	Target	5.7	UJ	ug/kg	5.7	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B6	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:38:00
% Moisture :				% Solids :	82.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromomethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroform	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Benzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
o-xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Styrene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromoform	Target	5.2	UJ	ug/kg	5.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B7	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:34:00
% Moisture :				% Solids :	87.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromomethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Benzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
o-xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Styrene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromoform	Target	5.8	UJ	ug/kg	5.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B8	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:45:00
% Moisture :				% Solids :	88.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Chloromethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Bromomethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Chloroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Chloroform	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Benzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
o-xylene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Styrene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Bromoform	Target	6.0	UJ	ug/kg	6.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.0	U	ug/kg	6.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1B9	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:57:00
% Moisture :				% Solids :	84.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromomethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroform	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Benzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
o-xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Styrene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromoform	Target	5.7	UJ	ug/kg	5.7	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1C0	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	11:10:00
% Moisture :				% Solids :	91.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Bromomethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Acetone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
2-Butanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chloroform	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Benzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Toluene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
o-xylene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Styrene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Bromoform	Target	6.6	UJ	ug/kg	6.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1D3	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	15:05:00
% Moisture :				% Solids :	89.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Chloromethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Bromomethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Chloroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Acetone	Target	15		ug/kg	15		1.0	Yes	S3VEM
Carbon disulfide	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Chloroform	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Benzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
o-xylene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Styrene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Bromoform	Target	5.5	UJ	ug/kg	5.5	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.5	U	ug/kg	5.5	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1D4	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	15:48:00
% Moisture :				% Solids :	90.6		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromomethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Acetone	Target	11		ug/kg	11		1.0	Yes	S3VEM
Carbon disulfide	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroform	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Benzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
o-xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Styrene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromoform	Target	5.6	UJ	ug/kg	5.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: YA1D5	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location: QWS-DP-7	pH:	Sample Date: 11/02/2015	Sample Time: 15:58:00
% Moisture :		% Solids : 83.3	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromomethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroform	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Benzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
o-xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Styrene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromoform	Target	5.6	UJ	ug/kg	5.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1D7	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:00:00
% Moisture :				% Solids :	87.7		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromomethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chloroform	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Benzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
o-xylene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Styrene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Bromoform	Target	5.1	UJ	ug/kg	5.1	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.1	U	ug/kg	5.1	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1D8	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:15:00
% Moisture :				% Solids :	93.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromomethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroform	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Benzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
o-xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Styrene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromoform	Target	5.6	UJ	ug/kg	5.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1D9	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:25:00
% Moisture :				% Solids :	83		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromomethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroform	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Benzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
o-xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Styrene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromoform	Target	5.2	UJ	ug/kg	5.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number:	YA1E0	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-8	pH:		Sample Date:	11/02/2015	Sample Time:	11:37:00
% Moisture :				% Solids :	86.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromomethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloroform	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Benzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
o-xylene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Styrene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromoform	Target	6.2	UJ	ug/kg	6.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1A9	Lab Code: CHM

Sample Number: YA1F2	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location: QWS-DP-8	pH:	Sample Date: 11/02/2015	Sample Time: 11:20:00
% Moisture :		% Solids : 93	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromomethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Acetone	Target	12		ug/kg	12		1.0	Yes	S3VEM
Carbon disulfide	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroform	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Benzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
o-xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Styrene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromoform	Target	5.7	UJ	ug/kg	5.7	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300; Fax: (510) 412-2304.

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager Ko
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: May 27, 2016

SUBJECT: Review of Analytical Data, **Tier 3 [UPDATED]**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	YA1D6
Laboratory:	Chemtech Consulting Group (CHM)
Analysis:	CLP Low-Level Volatiles
Samples:	20 Soil Samples
Collection Date:	November 2, 3, and 4, 2015
Reviewer:	Cecelia Minch, ESAT

This report has been updated to include a review of field quality control samples (duplicates).

EXES Data Manager has been updated; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Kim Brandon-Bazile, CLP PO USEPA Region 2
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [ ] Yes [X] No

Data Validation Report - **Tier 3**

Case No.: 45736
SDG No.: YA1D6
Site: QualaWash
Laboratory: Chemtech Consulting Group (CHM)
Analysis: CLP Low-Level Volatiles
Reviewer: Cecelia Minch, ESAT
Date: May 25, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Organic Analytic Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	None.
Trip Blanks (TB):	None.
Background Samples (BG):	None.
Field Duplicates (D1):	YA1E9, YA1B4 (in SDG YA1A9)
(D2):	YA1F0, YA1B8 (in SDG YA1A9)
(D3):	YA1F1, YA1C2

CLP PO Action

None.

Sampling Issues

None.

Additional Comments

All standards and spiking solutions were analyzed before the expiration date.

Other than a laboratory artifact (retention time of 9.6 minutes), tentatively identified compounds (TICs) were not found in the samples.

The laboratory performed manual peak integration for some calibrations and samples. Manual integrations were reviewed and found to be in compliance with CLP Statement of Work (SOW) requirements.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014; and
- *USEPA National Functional Guidelines for Superfund Organic Methods Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1	Data Completeness	Yes	
2	Holding Time/Preservation	Yes	
3	GC/MS Tune/GC Performance	Yes	
4	Initial Calibration	No	B
5	Continuing Calibration Verification (CCV)	Yes	
6	Laboratory Blanks	Yes	C
7	Field/Equipment/Trip Blanks	N/A	
8	Deuterated Monitoring Compounds (DMCs)	Yes	
9	Matrix Spike/Matrix Spike Duplicates (MS/MSDs)	Yes	
10	Internal Standards	Yes	
11	Compound Identification	Yes	
12	Compound Quantitation and Reported CRQLs	Yes	A
13	System Performance	Yes	
14	Field Duplicate Sample Analysis	Yes	

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged “J”. Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. Results for the following analyte are qualified as estimated due to a large percent relative standard deviation (%RSD) in the initial calibration and are flagged “UJ”.

- Bromoform in all samples, all method blanks, and storage blank VHBLK01.

The %RSD of 21.6% reported for bromoform in the 11/03/15 initial calibration exceeds the 20.0% validation criterion. In addition, the relative response factor (RRF) of 0.185 for the 5.0 µg/kg CRQL standard is below the average RRF of 0.258, indicating low sensitivity at the CRQL.

C. The following results are qualified as non-detected due to method blank contamination and are flagged “U”.

- Methylene chloride in samples YA1C4, YA1C5, and YA1E1.

Methylene chloride is present in method blank VBLK30 at 3.6 µg/kg.

Sample Summary Report

Case No:	45736	Contract:	EPW14030	SDG No:	YA1D6	Lab Code:	CHM

Sample Number:	VBLK27	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :	100		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: VBLK28	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: VBLK29	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV
unknown-01	TIC	14	J	ug/kg	14	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: VBLK30	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	3.6	J	ug/kg	3.6	J	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: VHBLK01	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 100	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromomethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chloroform	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Benzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
o-xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Styrene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Bromoform	Target	5.0	UJ	ug/kg	5.0	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.0	U	ug/kg	5.0	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C1	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	08:58:00
% Moisture :				% Solids :	90.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromomethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chloroform	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Benzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
o-xylene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Styrene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Bromoform	Target	6.2	UJ	ug/kg	6.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.2	U	ug/kg	6.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C2	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:10:00
% Moisture :				% Solids :	93.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromomethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Benzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
o-xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Styrene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromoform	Target	5.8	UJ	ug/kg	5.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C3	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:19:00
% Moisture :				% Solids :	80.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Bromomethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Acetone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
2-Butanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chloroform	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Benzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Toluene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
o-xylene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Styrene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Bromoform	Target	6.6	UJ	ug/kg	6.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.6	U	ug/kg	6.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C4	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:30:00
% Moisture :				% Solids :	80.8		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromomethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.7	U	ug/kg	5.0	J	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroform	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Benzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
o-xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Styrene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromoform	Target	5.7	UJ	ug/kg	5.7	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C5	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	07:56:00
% Moisture :				% Solids :	89.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromomethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.7	U	ug/kg	5.2	J	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroform	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Benzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
o-xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Styrene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromoform	Target	5.7	UJ	ug/kg	5.7	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C6	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	08:10:00
% Moisture :				% Solids :	94.7		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Chloromethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Bromomethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Chloroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Acetone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
2-Butanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Chloroform	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Benzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Toluene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
2-Hexanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
o-xylene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Styrene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Bromoform	Target	6.4	UJ	ug/kg	6.4	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.4	U	ug/kg	6.4	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: YA1C6MS	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 94.7	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Chloromethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Bromomethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Chloroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Spike	83		ug/kg	83		1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Acetone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
2-Butanone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Chloroform	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Benzene	Spike	62		ug/kg	62		1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Trichloroethene	Spike	60		ug/kg	60		1.0	Yes	S3VEM
Methylcyclohexane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Toluene	Spike	62		ug/kg	62		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
2-Hexanone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Chlorobenzene	Spike	59		ug/kg	59		1.0	Yes	S3VEM
Ethylbenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
o-xylene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Styrene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Bromoform	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.9	U	ug/kg	6.9	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: YA1C6MSD	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 94.7	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromomethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Spike	67		ug/kg	67		1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Benzene	Spike	55		ug/kg	55		1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichloroethene	Spike	53		ug/kg	53		1.0	Yes	S3VEM
Methylcyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Spike	55		ug/kg	55		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chlorobenzene	Spike	53		ug/kg	53		1.0	Yes	S3VEM
Ethylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
o-xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Styrene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromoform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C7	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	08:17:00
% Moisture :				% Solids :	89.2		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Bromomethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Acetone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
2-Butanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chloroform	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Benzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Toluene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
2-Hexanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
o-xylene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Styrene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Bromoform	Target	6.3	UJ	ug/kg	6.3	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C8	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-5	pH:		Sample Date:	11/04/2015	Sample Time:	08:27:00
% Moisture :				% Solids :	86.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromomethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroform	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Benzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
o-xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Styrene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromoform	Target	5.2	UJ	ug/kg	5.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1C9	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:22:00
% Moisture :				% Solids :	90.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromomethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroform	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Benzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
o-xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Styrene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromoform	Target	5.6	UJ	ug/kg	5.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1D0	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:31:00
% Moisture :				% Solids :	89		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Bromomethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chloroform	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Benzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
o-xylene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Styrene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Bromoform	Target	5.4	UJ	ug/kg	5.4	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1D1	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:40:00
% Moisture :				% Solids :	81.9		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Bromomethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chloroform	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Benzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
o-xylene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Styrene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Bromoform	Target	5.4	UJ	ug/kg	5.4	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.4	U	ug/kg	5.4	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1D2	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-6	pH:		Sample Date:	11/03/2015	Sample Time:	14:47:00
% Moisture :				% Solids :	80.6		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromomethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroform	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Benzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
o-xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Styrene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromoform	Target	5.6	UJ	ug/kg	5.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1D6	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-7	pH:		Sample Date:	11/02/2015	Sample Time:	16:10:00
% Moisture :				% Solids :	89.1		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromomethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Acetone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chloroform	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Benzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
o-xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Styrene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Bromoform	Target	5.6	UJ	ug/kg	5.6	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.6	U	ug/kg	5.6	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number: YA1E1	Method: Volatile Organics	Matrix: Soil	MA Number:
Sample Location: QWS-DP-9	pH:	Sample Date: 11/04/2015	Sample Time: 10:00:00
% Moisture :		% Solids : 92.1	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromomethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Acetone	Target	10	J	ug/kg	10	J	1.0	Yes	S3VEM
Carbon disulfide	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.7	U	ug/kg	4.2	J	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Butanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chloroform	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Benzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Toluene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
2-Hexanone	Target	11	U	ug/kg	11	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
o-xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Styrene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Bromoform	Target	5.7	UJ	ug/kg	5.7	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.7	U	ug/kg	5.7	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1E2	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:07:00
% Moisture :				% Solids :	93.3		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Bromomethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Acetone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
2-Butanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chloroform	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Benzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Toluene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
2-Hexanone	Target	13	U	ug/kg	13	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
o-xylene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Styrene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Bromoform	Target	6.3	UJ	ug/kg	6.3	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.3	U	ug/kg	6.3	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1E3	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:12:00
% Moisture :				% Solids :	86		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromomethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Acetone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Butanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chloroform	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Benzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Toluene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
2-Hexanone	Target	10	U	ug/kg	10	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
o-xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Styrene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Bromoform	Target	5.2	UJ	ug/kg	5.2	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.2	U	ug/kg	5.2	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1E4	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-9	pH:		Sample Date:	11/04/2015	Sample Time:	10:18:00
% Moisture :				% Solids :	88		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromomethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Benzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
o-xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Styrene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromoform	Target	5.8	UJ	ug/kg	5.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1E9	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-2	pH:		Sample Date:	11/03/2015	Sample Time:	08:20:00
% Moisture :				% Solids :	93.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Chloromethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Bromomethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Chloroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Acetone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
2-Butanone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Chloroform	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Benzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Toluene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	14	U	ug/kg	14	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
o-xylene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Styrene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Bromoform	Target	6.8	UJ	ug/kg	6.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.8	U	ug/kg	6.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1F0	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-3	pH:		Sample Date:	11/03/2015	Sample Time:	10:50:00
% Moisture :				% Solids :	88.8		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Chloromethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Vinyl chloride	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Bromomethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Chloroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Methyl Acetate	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Methylene chloride	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Chloroform	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Cyclohexane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Benzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Trichloroethene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Chlorobenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Ethylbenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
o-xylene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
m,p-Xylene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Styrene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Bromoform	Target	6.1	UJ	ug/kg	6.1	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	6.1	U	ug/kg	6.1	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1D6	Lab Code: CHM

Sample Number:	YA1F1	Method:	Volatile Organics	Matrix:	Soil	MA Number:	
Sample Location:	QWS-DP-4	pH:		Sample Date:	11/04/2015	Sample Time:	09:20:00
% Moisture :				% Solids :	93.5		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Vinyl chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromomethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Acetone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Carbon disulfide	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl Acetate	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylene chloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Butanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Bromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chloroform	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Cyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Benzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Trichloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Toluene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
2-Hexanone	Target	12	U	ug/kg	12	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Chlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Ethylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
o-xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
m,p-Xylene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Styrene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Bromoform	Target	5.8	UJ	ug/kg	5.8	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	5.8	U	ug/kg	5.8	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/kg			1.0	Yes	NV

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300; Fax: (510) 412-2304.

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager KO
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: February 12, 2016

SUBJECT: Review of Analytical Data, **Tier 3**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	YA1F4
Laboratory:	Chemtech Consulting Group (CHM)
Analysis:	CLP Trace Volatiles
Samples:	14 Water Samples
Collection Date:	November 2 and 3, 2015
Reviewer:	Cecelia Minch, ESAT

EXES Data Manager has been updated with the results of this review and the validation label revised to S3VEM; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Kim Brandon-Bazile, CLP PO USEPA Region 2
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [X] Yes [ ] No

Data Validation Report - **Tier 3**

Case No.: 45736
SDG No.: YA1F4
Site: QualaWash
Laboratory: Chemtech Consulting Group (CHM)
Analysis: CLP Trace Volatiles
Reviewer: Cecelia Minch, ESAT
Date: February 12, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Organic Analytic Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	YA1J6 and YA1J7.
Trip Blanks (TB):	None.
Background Samples (BG):	None.
Field Duplicates (D1):	Not Provided.

CLP PO Action

None.

Sampling Issues

1. Samples YA1F4, YA1F8, YA1H0, and YA1H5 were received by the laboratory at pH of 2.2, 2.5, 2.5, and 2.2, respectively; results are not qualified since they were analyzed within the 7-day technical holding time.
2. Contamination above the contract required quantitation limit (CRQL) was found for toluene in equipment blank YA1J6 and for carbon disulfide in equipment blank YA1J7 (see Comment B).
3. Only one vial was received for sample YA1F4 which contained sediment. The laboratory was granted permission by Region 9 to use an air tight syringe to transfer the sample to another vial for analysis.
4. For equipment blank YA1J6, it appears that the collection date of 11/03/2015 on the chain of custody (COC) is incorrect; the sample identifier (EB01-110215) indicates that it was collected on 11/02/15.
5. Equipment blanks were not submitted “blind” to the laboratory since the matrix was stated as “Blank” and the location was stated as “EQ Blank” on chain of custody records (COCs).

Additional Comments

The standard preparation logs for solutions VP47621 and VP47681 are missing. A Communication Record Log (CRL) was sent to the laboratory requesting the information. Data quality is not likely to be affected and this report is considered final.

Other than a laboratory artifact (retention time of 9.3/9.6 minutes), tentatively identified compounds (TICs) were found in samples YA1F4, YA1F8, YA1G1, YA1G2, YA1G3, YA1H0, YA1H2, YA1H3, YA1H4, and YA1H5 (see attached Forms 1B).

The laboratory performed manual peak integration for standard and sample chromatograms. Manual integrations were reviewed and found to be in compliance with CLP Statement of Work (SOW) requirements.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014; and
- *USEPA National Functional Guidelines for Superfund Organic Methods Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1	Data Completeness	Yes	
2	Holding Time/Preservation	Yes	
3	GC/MS Tune/GC Performance	Yes	
4	Initial Calibration	Yes	
5	Continuing Calibration Verification (CCV)	Yes	
6	Laboratory Blanks	Yes	
7	Field/Equipment/Trip Blanks	No	B
8	Deuterated Monitoring Compounds (DMCs)	No	C
9	Matrix Spike/Matrix Spike Duplicates (MS/MSDs)	Yes	
10	Internal Standards	Yes	
11	Compound Identification	Yes	
12	Compound Quantitation and Reported CRQLs	Yes	A
13	System Performance	Yes	
14	Field Duplicate Sample Analysis	N/A	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged “J”. Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. The following results are qualified as non-detected due to equipment blank contamination and are flagged “U”.

- Acetone in sample YA1K2.
- Carbon disulfide in sample YA1H0.
- Toluene in samples YA1F4 and YA1F8.

Acetone and toluene are present in equipment blank YA1J6 at 2.8 µg/L and 0.51 µg/L, respectively. Acetone, carbon disulfide, and toluene are present in equipment blank YA1J7 at 2.6 µg/L, 0.57 µg/L, and 0.40 µg/L, respectively. Results for carbon disulfide in samples YA1H3 (0.23 µg/L) and YA1H5 (0.15 µg/L) are not qualified because it is not detected in associated equipment blank YA1J6. However, carbon disulfide may be a field artifact since it is found in equipment blank YA1J7.

C. Results for the following analytes are qualified as estimated due to low DMC recoveries and are flagged “UJ”.

{1,1-Dichloroethene-d2}
- 1,1-Dichloroethene, cis-1,2-dichloroethene, and trans-1,2-dichloroethene in equipment blank YA1J7 and sample YA1K2.

{trans-1,3-Dichloropropene-d4}

- cis-1,3-Dichloropropene, trans-1,3-dichloropropene, and 1,1,2-trichloroethane in sample YA1F8.

DMC recoveries for qualification listed above are shown below.

Sample	DMC	% Recovery	QC Limit
YA1J7	1,1-Dichloroethene-d2	59	60-125
YA1K2	1,1-Dichloroethene-d2	58	60-125
YA1F8	trans-1,3-Dichloropropene-d4	52	55-130

Since qualified results are nondetected, false negatives may exist. The samples listed above were not re-analyzed.

Recoveries for DMCs 2-butanone-d5 and 1,2-dichlorobenzene-d4 exceeded QC limits in some samples, indicating potential high bias in detected results; qualification is not necessary because the associated target analytes are not detected.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1F4

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg) : µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-01
Lab File ID : VR017276.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type : PT
Injection Volume : (µL)
pH : 2.2 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000463-71-8	~~Carbonothioic dichloride~~	~~9.57~~	~~1.6~~	~~JN~~
2	000066-25-1	Hexanal	10.64	0.33	JN
3	000097-88-1	2-Propenoic acid, 2-methyl-, butyl	12.56	0.78	JN
4	000124-13-0	Octanal	12.98	0.31	JN
5	000104-76-7	1-Hexanol, 2-ethyl-	13.23	2.1	JN
6	003789-85-3	Benzoic acid, 2-[(trimethylsilyl)o	13.66	0.36	JN
7	000124-19-6	Nonanal	13.91	0.54	JN
8	000103-09-3	Acetic acid, 2-ethylhexyl ester	14.12	1.1	JN
9	E966796	Total Alkanes	N/A	34.68	

CW 2/9/16

EPA-designated Registry Number.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1F8

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: 45736
MA No. : SDG No.: YA1F4
Analytical Method : Trace VOA
Level :
Matrix : Water
Lab Sample ID : G4271-11
Sample wt/vol : 25.0 (g/mL) : mL
Lab File ID : VI046610.D
% Solids :
Date Received : 11/05/2015
GC Column : RXI-624 ID : 0.25 (mm)
Date Extracted :
Extract Concentrated : (Y / N)
Date Analyzed : 11/06/2015
Soil Aliquot (VOA) : (µL)
Extract Volume : (µL)
Heated Purge : (Y / N) N
Extraction Type : PT
Purge Volume : 25 (mL)
Injection Volume : (µL)
Cleanup Types :
pH : 2.5 Dilution Factor : 1.0
Concentration Units (µg/L,mg/L,µg/kg): µg/L
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1		~~unknown-01~~ LAB ARTIFACT	~~9.34~~	~~1.6~~	~~J~~
2	E966796	Total Alkanes	N/A	32.02	

CW 2/9/16

EPA-designated Registry Number.

Form 1B-OR

SOM02.3 (10/2015)

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FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1G1

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg) : µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-02
Lab File ID : VI046602.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 1.6 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	253664-95-8	Bis(3-methylbutyl) fluorene-2,7-di	1.41	0.82	JN
2	000104-76-7	1-Hexanol, 2-ethyl-	13.53	0.84	JN
3	018479-58-8	7-Octen-2-ol, 2,6-dimethyl-	13.95	1.3	JN
4	000124-19-6	Nonanal	14.28	0.72	JN
5	000125-12-2	Isobornyl acetate	16.27	0.97	JN
6	E966796	Total Alkanes	N/A	10.47	

EPA-designated Registry Number.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1G2

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL): mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg): µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-03
Lab File ID : VI046603.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 1.3 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000625-38-7	3-Butenoic acid	1.41	0.64	JN
2		~~unknown-01~~ LAB ARTIFACT	~~9.35~~	~~2.8~~	~~J~~
3	E966796	Total Alkanes	N/A	0	

CW 2/9/16

EPA-designated Registry Number.

Form 1B-OR SOM02.2 (08/2014)

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FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1G3

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg) : µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-04
Lab File ID : VI046604.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 1.6 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000123-73-9	2-Butenal, (E)-	1.41	0.87	JN
2	001076-43-3	Perdeuterobenzene	7.31	0.98	JN
3	000367-11-3	~~Benzene, 1,2-difluoro-~~	~~8.03~~	~~0.8~~	~~JN~~
4	000124-19-6	Nonanal	14.29	0.68	JN
5	E966796	Total Alkanes	N/A	0	

CW 2/9/16

EPA-designated Registry Number.

FORM 1B-OR
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EPA SAMPLE NO.

YA1H0

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg) : µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-12
Lab File ID : VI046611.D
Date Received : 11/05/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 2.5 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000123-73-9	2-Butenal, (E)-	1.41	1.5	JN
2	E966796	Total Alkanes	N/A	0	

EPA-designated Registry Number.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1H2

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL): mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg): µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-14
Lab File ID : VI046613.D
Date Received : 11/05/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 1.0 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000124-13-0	Octanal	13.25	0.71	JN
2	000104-76-7	1-Hexanol, 2-ethyl-	13.53	0.56	JN
3	000124-19-6	Nonanal	14.29	1.7	JN
4	E966796	Total Alkanes	N/A	0	

EPA-designated Registry Number.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1H3

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg): µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-05
Lab File ID : VI046605.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type : PT
Injection Volume : (µL)
pH : 1.6 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000123-73-9	2-Butenal, (E)-	1.41	0.56	JN
2	018479-58-8	7-Octen-2-ol, 2,6-dimethyl-	13.94	0.56	JN
3	E966796	Total Alkanes	N/A	19.62	

EPA-designated Registry Number.

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EPA SAMPLE NO.

YA1H4

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg) : µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-08
Lab File ID : VI046608.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 1.3 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000124-19-6	Nonanal	14.28	0.74	JN
2	E966796	Total Alkanes	N/A	0	

EPA-designated Registry Number.

Form 1B-OR SOM02.2 (08/2014)

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FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1H5

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL) : mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg) : µg/L

Contract : EPW14030
MA No. : SDG No.: YA1F4
Level :
Lab Sample ID : G4271-09
Lab File ID : VI046609.D
Date Received : 11/04/2015
Date Extracted :
Date Analyzed : 11/06/2015
Extract Volume : (µL)
Extraction Type :
Injection Volume : (µL)
pH : 2.2 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000123-73-9	2-Butenal, (E)-	1.41	0.59	JN
2	000066-25-1	Hexanal	10.58	0.92	JN
3	000111-71-7	Heptanal	12.05	0.63	JN
4	000124-13-0	Octanal	13.25	1.6	JN
5	000104-76-7	1-Hexanol, 2-ethyl-	13.53	0.83	JN
6	018479-58-8	7-Octen-2-ol, 2,6-dimethyl-	13.95	3.8	JN
7	000124-19-6	Nonanal	14.29	3.3	JN
8		unknown-01	14.83	0.59	J
9	000125-12-2	Isobornyl acetate	16.28	1.6	JN
10	E966796	Total Alkanes	N/A	0	

EPA-designated Registry Number.

Sample Summary Report

Case No:	45736	Contract:	EPW14030	SDG No:	YA1F4	Lab Code:	CHM

Sample Number:	VBLK45	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number: VBLK50	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 0	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number: VBLK59	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH:	Sample Date:	Sample Time:
% Moisture :		% Solids : 0	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.57		ug/L	0.57		1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number: VHBLK01	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 1.6	Sample Date:	Sample Time:
% Moisture :		% Solids : 0	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene, 1,2-difluoro-	TIC	0.79	J	ug/L	0.79	J	1.0	Yes	NV
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1F4	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-DP-2	pH:	2.2	Sample Date:	11/03/2015	Sample Time:	09:50:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	20		ug/L	20		1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.44	J	ug/L	0.44	J	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	6.1		ug/L	6.1		1.0	Yes	S3VEM
2-Butanone	Target	4.5	J	ug/L	4.5	J	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	1.9		ug/L	1.9		1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.45	J	ug/L	0.45	J	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	3.4		ug/L	3.4		1.0	Yes	S3VEM
Methylcyclohexane	Target	0.65		ug/L	0.65		1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.58	U	ug/L	0.58		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.10	J	ug/L	0.10	J	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Propenoic acid, 2-methyl-, butyl	TIC	0.76	J	ug/L	0.76	J	1.0	Yes	NV
1-Hexanol, 2-ethyl-	TIC	2.1	J	ug/L	2.1	J	1.0	Yes	NV
Total Alkanes	TIC	28		ug/L	28		1.0	Yes	NV
Acetic acid, 2-ethylhexyl ester	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1F8	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-DP-6	pH:	2.5	Sample Date:	11/03/2015	Sample Time:	16:30:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.23	J	ug/L	0.23	J	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.13	J	ug/L	0.13	J	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.16	J	ug/L	0.16	J	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.11	J	ug/L	0.11	J	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.21	J	ug/L	0.21	J	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.21	J	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
unknown-01	TIC	1.6	J	ug/L	1.6	J	1.0	Yes	NV
Total Alkanes	TIC	24		ug/L	24		1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1G1	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-1	pH:	1.6	Sample Date:	11/03/2015	Sample Time:	08:00:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.23	J	ug/L	0.23	J	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	1.9		ug/L	1.9		1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.94		ug/L	0.94		1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	1.6		ug/L	1.6		1.0	Yes	S3VEM
Methylcyclohexane	Target	0.31	J	ug/L	0.31	J	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bis(3-methylbutyl) fluorene-2,7-di	TIC	0.82	J	ug/L	0.82	J	1.0	Yes	NV
7-Octen-2-ol, 2,6-dimethyl-	TIC	1.3	J	ug/L	1.3	J	1.0	Yes	NV
Total Alkanes	TIC	10		ug/L	10		1.0	Yes	NV
1-Hexanol, 2-ethyl-	TIC	0.84	J	ug/L	0.84	J	1.0	Yes	NV
Nonanal	TIC	0.72	J	ug/L	0.72	J	1.0	Yes	NV
Isobornyl acetate	TIC	0.97	J	ug/L	0.97	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1G2	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-1	pH:	1.3	Sample Date:	11/03/2015	Sample Time:	08:30:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
unknown-01	TIC	2.8	J	ug/L	2.8	J	1.0	Yes	NV
Total Alkanes	TIC			ug/L			1.0	Yes	NV
3-Butenoic acid	TIC	0.64	J	ug/L	0.64	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1G3	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-1	pH:	1.6	Sample Date:	11/03/2015	Sample Time:	09:15:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV
2-Butenal, (E)-	TIC	0.87	J	ug/L	0.87	J	1.0	Yes	NV
Nonanal	TIC	0.68	J	ug/L	0.68	J	1.0	Yes	NV
Benzene, 1,2-difluoro-	TIC	0.80	J	ug/L	0.80	J	1.0	Yes	NV
Perdeuterobenzene	TIC	0.98	J	ug/L	0.98	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1H0	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:	2.5	Sample Date:	11/03/2015	Sample Time:	14:10:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.14	J	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.37	J	ug/L	0.37	J	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butenal, (E)-	TIC	1.5	J	ug/L	1.5	J	1.0	Yes	NV
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1H1	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:	1.6	Sample Date:	11/03/2015	Sample Time:	14:55:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1H2	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:	1.0	Sample Date:	11/03/2015	Sample Time:	15:35:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV
Octanal	TIC	0.71	J	ug/L	0.71	J	1.0	Yes	NV
1-Hexanol, 2-ethyl-	TIC	0.56	J	ug/L	0.56	J	1.0	Yes	NV
Nonanal	TIC	1.7	J	ug/L	1.7	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1H3	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-5	pH:	1.6	Sample Date:	11/02/2015	Sample Time:	11:33:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.23	J	ug/L	0.23	J	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.21	J	ug/L	0.21	J	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	2.3		ug/L	2.3		1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	1.3		ug/L	1.3		1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	1.5		ug/L	1.5		1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
7-Octen-2-ol, 2,6-dimethyl-	TIC	0.56	J	ug/L	0.56	J	1.0	Yes	NV
Total Alkanes	TIC	18		ug/L	18		1.0	Yes	NV
2-Butenal, (E)-	TIC	0.56	J	ug/L	0.56	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number: YA1H3MS	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 1.6	Sample Date:	Sample Time:
% Moisture :		% Solids : 0	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Spike	6.1		ug/L	6.1		1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.14	J	ug/L	0.14	J	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.15	J	ug/L	0.15	J	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	2.2		ug/L	2.2		1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	1.2		ug/L	1.2		1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Spike	6.6		ug/L	6.6		1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Spike	4.9		ug/L	4.9		1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number: YA1H3MSD	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 2.2	Sample Date:	Sample Time:
% Moisture :		% Solids : 0	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Spike	6.5		ug/L	6.5		1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.21	J	ug/L	0.21	J	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.16	J	ug/L	0.16	J	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	2.2		ug/L	2.2		1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	1.2		ug/L	1.2		1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Spike	4.6		ug/L	4.6		1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Spike	6.3		ug/L	6.3		1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Spike	5.0		ug/L	5.0		1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1H4	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-5	pH:	1.3	Sample Date:	11/02/2015	Sample Time:	12:15:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV
Nonanal	TIC	0.74	J	ug/L	0.74	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1H5	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-5	pH:	2.2	Sample Date:	11/02/2015	Sample Time:	13:00:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.15	J	ug/L	0.15	J	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Hexanal	TIC	0.92	J	ug/L	0.92	J	1.0	Yes	NV
Nonanal	TIC	3.3	J	ug/L	3.3	J	1.0	Yes	NV
Heptanal	TIC	0.63	J	ug/L	0.63	J	1.0	Yes	NV
2-Butenal, (E)-	TIC	0.59	J	ug/L	0.59	J	1.0	Yes	NV
1-Hexanol, 2-ethyl-	TIC	0.83	J	ug/L	0.83	J	1.0	Yes	NV
unknown-01	TIC	0.59	J	ug/L	0.59	J	1.0	Yes	NV
Octanal	TIC	1.6	J	ug/L	1.6	J	1.0	Yes	NV
Isobornyl acetate	TIC	1.6	J	ug/L	1.6	J	1.0	Yes	NV
Total Alkanes	TIC			ug/L			1.0	Yes	NV
7-Octen-2-ol, 2,6-dimethyl-	TIC	3.8	J	ug/L	3.8	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1J6	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	EQ Blank	pH:	1.6	Sample Date:	11/03/2015	Sample Time:	10:00:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	2.8	J	ug/L	2.8	J	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.51		ug/L	0.51		1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1J7	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	EQ Blank	pH:	1.0	Sample Date:	11/03/2015	Sample Time:	16:25:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	2.6	J	ug/L	2.6	J	1.0	Yes	S3VEM
Carbon disulfide	Target	0.57		ug/L	0.57		1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.40	J	ug/L	0.40	J	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1F4	Lab Code: CHM

Sample Number:	YA1K2	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-4	pH:	1.0	Sample Date:	11/03/2015	Sample Time:	14:30:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	1.9	J	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

ICF International
Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300; Fax: (510) 412-2304.

MEMORANDUM

TO: Matt Mittguard, Site Manager
Brownfields and Site Assessment Section, SFD-6-1
USEPA Region 9

THROUGH: Joe Eidelberg, Chemist
Quality Assurance Section, EMD 3-2
USEPA Region 9

FROM: Kathy O'Brien, Project Manager
Environmental Services Assistance Team (ESAT) Region 9
ICF International

ESAT Contract No.: EP-W-13-029
Technical Direction Form No.: 10106114

DATE: February 4, 2016

SUBJECT: Review of Analytical Data, **Tier 3**

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	QualaWash
Site Account No.:	A9 97 QB 00
Case No.:	45736
SDG No.:	YA1G4
Laboratory:	Chemtech Consulting Group (CHM)
Analysis:	CLP Trace Volatiles
Samples:	3 Water Samples
Collection Date:	November 20, 2015
Reviewer:	Cecelia Minch, ESAT

EXES Data Manager has been updated with the results of this review and the validation level revised to S3VEM; the dynamic deliverables were regenerated and are available on the SMO Portal.

If there are any questions, please contact Joe Eidelberg (QA Program/EPA) at (415) 972-3809.

Attachment

cc: Kim Brandon-Bazile, CLP PO USEPA Region 2
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI [ ] Action

SAMPLING ISSUES: [ ] Yes [X] No

Data Validation Report - **Tier 3**

Case No.: 45736
SDG No.: YA1G4
Site: QualaWash
Laboratory: Chemtech Consulting Group (CHM)
Analysis: CLP Trace Volatiles
Reviewer: Cecelia Minch, ESAT
Date: February 4, 2016

I. SDG SUMMARY

For Sample Information and Laboratory Quality Control (QC), refer to EXES National Functional Guidelines (NFG) data validation reports *Analytical Sample Listing* and *Organic Analytic Sequence*.

Field QC

Field Blanks (FB):	None.
Equipment Blanks (EB):	None.
Trip Blanks (TB):	None.
Background Samples (BG):	None.
Field Duplicates (D1):	Not Provided.

CLP PO Action

None.

Sampling Issues

None.

Additional Comments

In addition to a laboratory artifact (retention time of 9.6 minutes), a tentatively identified compound (TIC) was found in sample YA1G6 (see attached Form 1B).

The standard preparation log for solution VP48315 is missing the identification of the internal standard mix added to the solution. A Communication Record Log (CRL) was sent to the laboratory requesting the information. Data quality is not likely to be affected and this report is considered final.

The laboratory performed manual peak integration for some standard chromatograms. Manual integrations were reviewed and found to be in compliance with CLP Statement of Work (SOW) requirements.

This report was prepared in accordance with the following documents:

- *USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014; and
- *USEPA National Functional Guidelines for Superfund Organic Methods Data Review*, August 2014.

For technical definitions, refer to *Exhibit G (Glossary of Terms), USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.2, August 2014.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	Parameter	Acceptable	Comment
1	Data Completeness	Yes	
2	Holding Time/Preservation	Yes	
3	GC/MS Tune/GC Performance	Yes	
4	Initial Calibration	Yes	
5	Continuing Calibration Verification (CCV)	Yes	
6	Laboratory Blanks	Yes	
7	Field/Equipment/Trip Blanks	N/A	
8	Deuterated Monitoring Compounds (DMCs)	No	B
9	Matrix Spike/Matrix Spike Duplicates (MS/MSDs)	N/A	
10	Internal Standards	Yes	
11	Compound Identification	Yes	
12	Compound Quantitation and Reported CRQLs	Yes	A
13	System Performance	Yes	
14	Field Duplicate Sample Analysis	N/A	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) are estimated and flagged “J”. Results are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in analytical precision near the quantitation limit.

B. Results for the following analytes are qualified as estimated due to a low DMC recovery and are flagged “UJ”.

{1,1-Dichloroethene-d2}

- 1,1-Dichloroethene, trans-1,2-dichloroethene, and cis-1,2-dichloroethene in sample YA1G5.

The DMC recovery for qualification listed above is shown below.

Sample	DMC	% Recovery	QC Limit
YA1G5	1,1-Dichloroethene-d2	56	60-125

Since qualified results are nondetected, false negatives may exist. Sample YA1G5 was not reanalyzed.

FORM 1B-OR
ORGANIC ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

YA1G6

Lab Name : Chemtech Consulting Group
Lab Code: CHM Case No.: 45736
Analytical Method : Trace VOA
Matrix : Water
Sample wt/vol : 25.0 (g/mL): mL
% Solids :
GC Column : RXI-624 ID : 0.25 (mm)
Extract Concentrated : (Y / N)
Soil Aliquot (VOA) : (µL)
Heated Purge : (Y / N) N
Purge Volume : 25 (mL)
Cleanup Types :
Concentration Units (µg/L,mg/L,µg/kg): µg/L

Contract : EPW14030
MA No. : SDG No.: YA1G4
Level :
Lab Sample ID : G4542-03
Lab File ID : VR017483.D
Date Received : 11/21/2015
Date Extracted :
Date Analyzed : 11/25/2015
Extract Volume : (µL)
Extraction Type : PT
Injection Volume : (µL)
pH : 1.3 Dilution Factor : 1.0
Cleanup Factor :

	CAS NO.	ANALYTE	RT	EST. CONC.	Q
1	000124-19-6	Nonanal	13.91	1	JN
2	E966796	Total Alkanes	N/A	0	

EPA-designated Registry Number.

Sample Summary Report

Case No:	45736	Contract:	EPW14030	SDG No:	YA1G4	Lab Code:	CHM

Sample Number:	VBLK74	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:		pH:		Sample Date:		Sample Time:	
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV
unknown-01	TIC	1.1	J	ug/L	1.1	J	1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1G4	Lab Code: CHM

Sample Number: VHBLK01	Method: Trace Volatiles	Matrix: Water	MA Number:
Sample Location:	pH: 1.6	Sample Date:	Sample Time:
% Moisture :		% Solids : 0	

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1G4	Lab Code: CHM

Sample Number:	YA1G4	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-2	pH:	1.3	Sample Date:	11/20/2015	Sample Time:	09:54:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1G4	Lab Code: CHM

Sample Number:	YA1G5	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-2	pH:	1.3	Sample Date:	11/20/2015	Sample Time:	10:25:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.16	J	ug/L	0.16	J	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	UJ	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Case No: 45736	Contract: EPW14030	SDG No: YA1G4	Lab Code: CHM

Sample Number:	YA1G6	Method:	Trace Volatiles	Matrix:	Water	MA Number:	
Sample Location:	QWS-CPT-2	pH:	1.3	Sample Date:	11/20/2015	Sample Time:	11:00:00
% Moisture :				% Solids :	0		

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
Dichlorodifluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Vinyl chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromomethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichlorofluoromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloro-1,2,2-trifluoroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Acetone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Carbon disulfide	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl Acetate	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylene chloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
trans-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methyl tert-butyl Ether	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,2-Dichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Butanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Bromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chloroform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,1-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Cyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Carbon tetrachloride	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Benzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Trichloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Methylcyclohexane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Bromodichloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
cis-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
4-Methyl-2-pentanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Toluene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM

Analyte Name	Analyte Type	Validation Result	Validation Flag	Units	Lab Result	Lab Flag	Dilution Factor	Reportable	Validation Level
trans-1,3-Dichloropropene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2-Trichloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Tetrachloroethene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
2-Hexanone	Target	5.0	U	ug/L	5.0	U	1.0	Yes	S3VEM
Dibromochloromethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromoethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Chlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Ethylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
o-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
m,p-Xylene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Styrene	Target	0.23	J	ug/L	0.23	J	1.0	Yes	S3VEM
Bromoform	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Isopropylbenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,1,2,2-Tetrachloroethane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,3-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,4-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2-Dibromo-3-chloropropane	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,4-trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
1,2,3-Trichlorobenzene	Target	0.50	U	ug/L	0.50	U	1.0	Yes	S3VEM
Nonanal	TIC	1.0	J	ug/L	1.0	J	1.0	Yes	NV
Total Alkanes	TIC			ug/L			1.0	Yes	NV

Appendix I:
Field Logbook

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PAGE	REFERENCE	DATE
2-17	QuakWash Direct-Push drilling/Sampling	11/2/2015 - 11/4/2015

11/2/2015 70°F

0700 – WESTON Ryan Green met project lead Brian Reilly and Rivian Villanueva at the staging area at 8420 Atlantic Ave, Cudahy CA. Drill crews on site, Brian coordinating starting at the Quala site down the street.

0730 – Signed in at the Quala site, Brian leading morning health and safety briefing, discussed vehicle and traffic hazards, Quala site is a 24-hour chemical cleaning facility that cleans totes and truck containers, lots of vehicle traffic and chemicals and cleaners on site. Brian coordinating with facility to gain access to the boring locations. WESTON Ben Castellano and Ian Bruce are on site.

0845 – Prepared sampling equipment for drilling. Truck-mount Geoprobe direct-push rig for Gregg drillers is set up at QWS-DP-1.

0900 – Gregg crew began hand augering at location QWS-DP-1. Ben and Kevin from EZ Magnetech are on site with Ryan and Rivian to collect split samples of WESTON/EPA samples.

0910 – Gregg crew pulled a 6-inch core from 2-ft bgs at QWS-DP-1 using hand auger first then hammer auger with core. WESTON and EZ Magnetech collecting split VOCs in Encore's (WESTON) and Terracores (EZ),

11/2/2015 70°F

then percent moisture in 40-ml VOA (WESTON) and one half-filled 8oz jar (WESTON). Soil at 2-ft bgs is dark brown clayey sand, fine grained, poorly graded, slightly moist, loose.

0927 – Gregg crew hand augered to 5-ft bgs, began coring 5-9 ft bgs in 4-ft sleeves. Collected sample QWS-SM-DØ1-0050 from 5-6 ft bgs; QC sample double volume. Dark brown sand as above 5-6 ft bgs, transition to light brown sand, fine grained, poorly graded, slightly moist, loose at 6ft.

0941 – Collected sample QWS-SM-DØ1-Ø1ØØ from 10 ft bgs. Light brown sand as above to 11-ft bgs, transitioning to dark brown clay at 11-ft bgs, moist, soft, med plasticity, few fine-grained sand. Good recovery on 2 sleeves so far, 80%

0955 – Collected sample QWS-SM-DØ1-Ø15Ø from 15-ft bgs. Dark brown clay as above to 14 ft bgs, transition to brown sand at 14 ft bgs, fine-grained, poorly graded, dry, loose → to end.

1040 – Gregg crew backfilled QWS-DP-1 with bentonite and portland 90 mix, no asphalt patch on top, core placed on top temporarily. Moved to QWS-DP-8, Brian had Quala fork driver move some totes that prevented access.

1100 – Gregg crew hand augered & hammer augered to 2ft

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bgs, collected sample QWS-SM-D08-0020 from 2 ft bgs; dark brown clayey sand, fine to medgr, poorly graded, dry, loose. 0-2 feet hand auger cuttings were same with some angular limestone gravel under asphalt.

1115 - Gregg crew direct-pushed to 5-9 ft bgs, collected sample QWS-SM-D08-0050 from 5 ft bgs; soil is light brown sand, fine-grained, poorly graded, dry, loose, some clay 5-9 ft bgs. Duplicate sample QWS-SM-D15-0050 collected from same sampling interval as QWS-SM-D08-0050, time of 1120 used.

1125 - Collected sample QWS-SM-D08-0100 from 10 ft bgs, as above to 10 ft bgs, transition to dark brown clayey sand at 11 ft bgs, fine-grained, poorly graded, slightly moist, loose. Two pieces of charcoal at 12 ft bgs, photo.

1137 - Collected sample QWS-SM-D08-0150 from 15 ft bgs at QWS-DP-8 boring. Soil as above, becoming light brown at 14 ft bgs, with some silt 15.5-17 ft bgs.

1158 - Brian explained to Gregg drillers expectations for drilling down for water sample at QWS-DP-8 and dropped off water sampling supplies; drillers to target 32-36 ft bgs interval for shallow

water sample, and 60-65 ft bgs for deeper sampling interval (water). Grab samples to be collected with disposable bailers. Water in VOA will need to be preserved with drops of HCl. Water in 1-L poly containers will be filtered at the staging area after sampling (metals analysis).

1205 - Gregg Geoprobe crew reached 36 ft bgs at QWS-DP-8, breaking for lunch, vis will sit.

1238 - Returned from lunch, preparing to collect water sample at QWS-DP-8.

1250 - Gregg crew tried using bailer to get water 32-36 ft bgs at QWS-DP-8, less than an inch of water in bailer after sitting 45 minutes. R Green called B Reilly, opted to skip sample at 32-36 ft bgs interval due to insufficient recharge/volume. Asked crew to attempt to reach 65-69 ft bgs interval for next target depth for water at QWS-DP-8, based on DTW seen at CPT drill rig at the site today.

1340 - Gregg crew advanced to 69 ft, attempted 4 bailers to get water for sample, insufficient recharge/volume, approximately 30 ml in 4 bailers, 50% solids. CREW began to backfill with 95% portland 5% bent, mixture, cap with asphalt.

1443 - Gregg crew finished at QWS-DP-8 grout to surface

Rite in the Rain

11/2/2015 72°F

and asphalt patch, decon'ed, moved to QWS-DP-7 location.

1455 - Dense concrete encountered under asphalt approx 8-inches bgs, relocated 2 ft South and 2 ft east, no concrete under asphalt.

1505 - Collected sample QWS-SM-D07-0020 from 2 ft bgs at QWS-DP-7. Med brown Sand, fine grained, some silt, trace med-gr sand, dry, loose, poorly graded.

1510 - While hand augering 3 ft bgs at QWS-DP-7 Gregg crew encountered an obstruction, possible conduit but difficult to see, stopped hand auger at QWS-DP-7, stepping out 3 ft South.

1530 - Third spot tried at QWS-DP-7 encountered dense concrete 7 inches bgs, below asphalt. Relocated 5 feet Southeast.

1540 - Greg crew hand augered to 5 ft bgs successfully at 4th location; WESTON and EZ Keeping sample at 2 ft bgs from first attempt.

1548 - Collected sample QWS-SM-D07-0050 from 5 ft bgs at location QWS-DP-7; 0-1 ft bgs asphalt & gravel, 1-9 ft bgs med brown sand, fine gr, dry, loose, few med gr sand and tr silt. At 8 ft bgs, as above, becoming some clay and moist.

11/2/2015 68°F

1558 - Collected sample QWS-SM-D08-0100 from 10 ft bgs at QWS-DP-7. As above, at 10 ft becoming sandy clay, dark brown, moist, soft, low plasticity, to 12 ft bgs, then reverts to med brown sand as above.

1610 - Collected sample QWS-SM-D08-0150 from 15 ft bgs at QWS-DP-7. As above med brown sand to 16 ft bgs, dark brown sandy clay at 16 ft - 17 ft bgs, slightly moist, dense, low plasticity. End of boring.

1635 - Push-probe crew filled QWS-DP-7 boring with 95% Portland cement, 5% bentonite mixture. Cleaned up work area & removed equipment and supplies. Crew put asphalt patch in 2 holes, other 2 put cones over and will be filled tomorrow with asphalt patch on surface at QWS-DP-7.

1640 - RGreen drove to staging area at 8420 Atlantic. Brian Reilly asked RGreen to purchase ice at nearby store while he and Ian and Finian put coolers.

1710 - RGreen returned to staging area with 6 bags ice.

1715 - Loaded all supplies into B Reilly rental car, depart site.

WESTON Solutions Inc. 11/2/2015

Rite in the Rain

11/3/2015 58°F

0700 - 0940 - WESTON Ben Castellana logged soil cores at QWS-DP-2: 0"-3" asphalt, 3"-2ft bgs silty sand, olive brown, loose, dry; 2ft-6ft bgs Sand, fine-med gr, some silt, olive brown to orange brown; 6-7 ft bgs olive brown ~~sand~~ silty sand, little clay, moist; 7-10 ft bgs interbedded sand and silt layers each 8 to 10 inches thick/deep, mildly cohesive; 10-12 ft bgs orange brown sand, fine-grained, some silt, moist; 12-16 ft bgs olive brown silt, some sand, little clay, moist.

0802 - Collected soil sample QWS-SM-D02-0020 from 2ft bgs at boring QWS-DP-2.

0810 - Collected soil sample QWS-SM-D02-0050 from 5ft bgs at boring QWS-DP-2.

0825 - Collected soil sample QWS-SM-D02-0100 from 10ft bgs QWS-DP-2.

0838 - Collected soil sample QWS-SM-D02-0150 from 15ft bgs QWS-DP-2.

0950 - Collected water sample QWS-GW-D02-0600 from 60 ft bgs QWS-DP-2.

1027 - Gregg push-probe crew moved to QWS-DP-3 boring location, pushed through 6 inches asphalt and began hand augering.

1034 - Collected soil sample QWS-SM-D03-0020 from 2ft bgs at QWS-DP-3. 6"-2ft bgs med brown sand, fine-grained, poorly graded, dry, loose, some silt, trace med gr sand.

1045 - Collected sample QWS-SM-D03-0050 from 5ft bgs at QWS-DP-3. Med brown sand as above to 8 ft bgs, becoming moist at 6ft bgs.

11/3/2015 65°F

Transition to light brown sand at 8ft bgs, med gr, dry, loose, few silt and fine gr sand. Also collected duplicate sample QWS-SM-D11-0050 from same 5-ft bgs interval as QWS-SM-D03-0050 sample, but used time of 1050

1057 - Collected soil sample QWS-SM-D~~P~~ RE 03-01 00 from 10ft bgs at QWS-DP-3. Light brown sand as above to 9.5 ft bgs, transition to dark brown clayey sand at 9.5 ft bgs, fine grained, moist, dense, some silt.

1110 - Collected sample QWS-SM-D03-0150 from 15 ft bgs at QWS-DP-3 boring. Dark brown clayey sand as above to 17 ft bgs but with a 1-ft sand seam from 14.5 to 15.5 ft bgs with same characteristics noted for light brown sand above at 8-9.5 ft bgs.

1120 - Gregg push-probe crew advanced directly to 35 ft bgs, pulled back retractable screen and attempting to bail water with decontaminated stainless steel bailer.

1131 - Gregg crew getting no water recovery in bailer after 10+ minutes recharge, bottom inch of the bailer is wet/muddy but not enough to infiltrate bailer. No sample of groundwater collected from 35ft.

1150 - Gregg crew advanced rig to 60 ft bgs at QWS-DP-3. Allowing screen to recharge while crew to lunch.

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11/3/2015 70°F

1250 - Let QWS-DP-3 recharge for 48 minutes over lunch, tried bailer 2 times, no groundwater, tip of bailer muddy/moist at 60 ft bgs. No Sample collected from QWS-DP-3 at 60 ft bgs. Gregg crew began backfilling QWS-DP-3 with 95% portland cement + 5% bentonite mixture.

1355 - Gregg crew finished backfilling boring QWS-DP-3. Moved to boring location QWS-DP-6.

1422 - Gregg crew augered through 6-inches asphalt at QWS-DP-6 and hand augered to 2 ft bgs, then used hammer auger to collect core from 2ft bgs, dark brown sand, fine grained, very dense, dry, poorly graded, some silt, little clay and med-gr sand. Collected soil Sample QWS-SM-D06-0020 from 2 ft bgs at boring QWS-DP-6.

1431 - Collected sample QWS-SM-D06-0050 from 5ft bgs at boring QWS-DP-6. Light brown sand from 3 ft to 7.5 ft bgs, med-grained, loose, dry, some fine-gr sand and little silt. Transition to dark brown silty sand at 7.5 ft bgs, fine-gr, loose, dry, little clay and med-gr sand.

1440 - Collected Sample QWS-SM-D06-0100 from 10ft bgs at boring QWS-DP-6. Dark brown silty sand as above from 7.5 ft bgs but becoming clayey sand from 10-12.5 ft bgs and very moist; back to dry silty sand at 12.5

11/3/2015 74°F

1447 - Collected Sample QWS-SM-D06-0150 from 15 ft bgs at boring QWS-DP-6. As-above dark brown silty sand to 14 ft bgs, 14.0-14.5 transition to light brown med-gr sand, dry, loose, some fine-gr sand and silt; 14.5-15 ft bgs (end of boring) transition back to dark brown silty sand as-above, moist.

* Backnote 1431 - Soil Sample collected was lab QC sample with double volume except VOC (5 Encore).

1450 - Gregg crew reached 35 ft bgs at QWS-DP-6 and no water after 10 minute recharge. Brian Reilly asked drill crew to advance to 36 ft bgs and wait for recharge for 30 mins.

1505 - Gregg crew advanced to 36 ft bgs at QWS-DP-6, waiting 30 minutes for recharge per BR.

1535 - Gregg crew attempted to bail QWS-DP-6, no water in bailer, bottom tip of bailer slightly damp.

1550 - Gregg crew advanced to 69 ft bgs at QWS-DP-6, waiting for recharge into screen. (5ft).

1610 - Began bailing QWS-DP-6, collected approx 80ml in one poly unpreserved 1-L Container so far, waiting for recharge and will attempt to fill VOA containers.

1630 - Collected 3 40-ml VOA groundwater samples QWS-GW-D06-0690 from 69 ft bgs at QWS-DP-6, and 1 poly 1-L for metals.

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11/3/2015 62°F

1655 - R Green delivered water sample from QWS-DP-6 to B Reilly for filtering on metals sample. VOAs were not preserved with HCl due to the turbidity of the water to avoid effervescence with carbonate matrix.

1735 - Gregg crew finished backfilling QWS-DP-6 with 95% portland cement and 5% bentonite mix. Packed up all equipment and supplies, putting soil cuttings from the day into IDW drums on other side of building.

1745 - R Green departed site, to Long Beach.

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11/3/2015

11/4/2015 52°F

0650 - WESTON Ryan Green arrived at the staging area at 8420 Atlantic Ave, Brian Reilly, Ben Castellana, and Rivian Villanueva and Ian Bruce from WESTON on site.

0700 - Gregg drill crews arrived on site, B Reilly began morning safety meeting. Discussed moving equipment around the sites, will plan to finish at Qualawash site today and move to Armstrong Facility in the afternoon, discussed coordination with facility operations.

0725 - Morning safety briefing over, packing up supplies at the staging area needed at the Qualawash site.

0745 - Gregg drilling crew began augering through asphalt at QWS-DP-5 boring location with truck-mounted push probe rig. Dwan running rig today.

0756 - Collected soil sample QWS-SM-D05-0020 from 2 ft bgs at boring QWS-DP-5. Gregg crew augered through 6-inches asphalt and hand augered to 2 ft bgs then used hammer auger to collect 6-inch core from 2 ft bgs. 6-inches - 2 ft bgs is dark brown sand, fine-grained, dry, loose, some silt, little clay.

0810 - Collected soil sample QWS-SM-D05-0050 from 5 ft bgs at boring QWS-DP-5; MS/MSD double volume sample (5 Encores). Dark brown sand as above, but becoming some clay to clayey sand at 7 ft bgs.

0817 - Collected soil sample QWS-~~D~~ SM-D05-0100 from

Rite in the Rain

11/4/2015 57°F

boring QWS-DP-5 at 10 ft bgs. Same dark brown sand as-above with some clay, becoming moist at 10 ft bgs; transition to light brown silty sand at 11.5 ft bgs, fine-grained, dry, loose, few med-gr sand.

0827 - Collected soil sample QWS-SM-D05-0150 from 15 ft bgs at QWS-DP-5. Light brown silty sand as-above to 14 ft bgs; transition to clayey silt at 14 ft bgs to end of boring at 15 ft bgs, med brown, moist, dense, little fine-grained sand.

0845 - Gregg crew grouted QWS-DP-5 boring and moved to QWS-DP-4 location. Used rig to auger through 6-inches asphalt. 6-inches - 2ft bgs hand augered, dark brown silty sand, fine-grained, slightly moist, dense, trace med-gr sand and clay.

0858 - Collected soil sample QWS-SM-D04-0020 from 2 ft bgs at boring QWS-DP-4. Dark brown silty sand as above.

0910 - Collected sample QWS-SM-D04-0050 from 5ft bgs at boring QWS-DP-4. Dark brown silty sand as-above to 5.5 ft bgs, transition to med brown sand at 5.5 ft bgs, medium-grained, poorly graded, dry, dense, some silt and fine-grained sand; becoming trace clay at 8 ft bgs.

0919 - Collected sample QWS-SM-D04-0100 from 10ft

11/4/2015 61°F

bgs at boring QWS-DP-4. Same med-brown sand as-above to 9.5 ft bgs; transition to dark brown clay at 9.5 ft bgs to 11 ft bgs, soft, moist, low plasticity, some silt and trace med-gr sand; transition to same med brown sand (noted at 5.5 ft above) from 11ft bgs to 13 ft bgs.

0930 - Collected soil sample QWS-SM-D04-0150 from 15 ft bgs at boring QWS-DP-4. Transition to light brown silty sand at 13.5 to 14.5 ft bgs, fine grained, dry, loose, poorly graded, few med-grained sand; transition to silty clay 14.5 - 15.5 ft bgs (end of boring), dense, moist, low plasticity, trace med gr sand.

0947 - Gregg push-probe crew grouted QWS-DP-4 and moved to QWS-DP-9 location.

* Backnote 0910 - Collected a duplicate sample QWS-SM-D14-0050 from 5 ft bgs at QWS-DP-4, duplicate sample of QWS-SM-D04-0050, duplicate has a time of 0915.

0955 - Gregg crew used rig to auger through 6-inches asphalt at QWS-DP-9, hand augered to 2 ft bgs through dark brown sand, med-gr, loose, dry, poorly graded, little angular coarse grained sand, trace angular pebble-size gravel.

1000 - Collected soil sample QWS-SM-D09-0020 from

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11/4/2015 63°F

2 ft bgs at QWS-DP-9, Same dark brown sand as above but no gravel.

1007 - Collected soil sample QWS-SM-D09-0050 from 5 ft bgs at boring QWS-DP-9. Same dark brown sand as above, with trace coarse gr sand, becoming slightly moist at 7.5 ft bgs.

1012 - Collected soil sample QWS-SM-D09-0100 from 10 ft bgs at boring QWS-DP-9. Same dark brown sand as above to 9.5 ft bgs, transition to dark brown sand at 9.5 ft bgs, fine grained, dense, moist, poorly graded, some clay, little med-grained sand.

* Backnote 1007 - dark brown sand noted here also had thin ~~annual~~ laminations / varves.

1018 - Collected soil sample QWS-SM-D09-0150 from 15 ft bgs at QWS-DP-9. Same dark brown sand as above to 13.5 ft bgs, transition to 1 ft of dark brown clay 13.5-14.5 ft bgs, soft, moist, low plasticity, some silt and little fine-gr sand; transition to light brown med-gr sand at 14.5 ft to 15.5 ft bgs (end of boring) loose, dry, little coarse grained sand.

1035 - R Green and push-probe crew packed up and departing Qualawash site, last direct-push boring completed. Brian Reilly said to meet at Armstrong site after lunch

11/4/2015 68°F

1154 - R Green and R Villanueva and B Castellana and direct push crew at Armstrong site.

1230 - Attended safety briefing with Claudia at Armstrong site, signed visitor & day worker safety reminders (all personnel).

1246 - R Green and R Villanueva and direct-push crew (Greg) and Josh and Amy (contractors for Armstrong) arrived at ANI-DP-2 location northeast side of Armstrong buildings.

* Backnote: 1154 - 1246 notes transferred to a new log book dedicated to the Armstrong site, END OF LOG for Qualawash direct-push crew.

WESTON SOLUTIONS, INC.

11/4/2015

END OF LOG

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702140

QWS-CPT-Ø5

CPT R:s B. Castellano 11-Ø2-2015

Ø7ØØ - meet @ LBC - load eq.
Ø72Ø - leave for site.
Ø75Ø - on site Qwals - washing
Ø83Ø - Tailgate meeting; set up on QWS-CPT-Ø5
Ø9ØØ - Begin ~~ge~~ation - hand augered to 8' bgs then backfilled.
Ø93Ø - 9Ø' bgs. TD - attempt 15Ø
- 12Ø-13Ø will go
Ø935 - 11Ø.6 - hard interval
Ø949 - Refusal @ 121.7
1ØØØ - Recieve data output from CPT
1Ø2Ø - tripping down to grout hole
1Ø25 - grouting hole.
1Ø33 - tripping out
1Ø4Ø - begin sampling hole
1Ø49 - At first depth - 68.Ø8'
Screen - 64-68
11:33 collected sample QWS-GW-CØ5-Ø68.Ø 6VOAs, 2x1L poly - to be filtered.
- E2 ~~consultants~~ consultants for PRP collected split of sample @ CPT-Ø5-Ø68.Ø location.
12Ø7 - At 22 TD = 86.29.
1215 Collected Sample QWS-GW-CØ5-Ø86.3
3x VOAs, 1x1L poly.

B. Castellano 11-Ø2-2015

1226 - E2 collects 3 VOAs from 86.3' splits of Weston's CO5-Ø86.3.
- Begin tripping out
124Ø - Begin tripping in
13ØØ - Collected sample QWS-GW-CØ5-116.1
3x VOAs, 1x1L poly unpreserved & unfiltered
VOAs pH<2 @ 7-9 drops HPLC HCL
142Ø - had to wait for exchange to collect E2's samples
15ØØ moved to QWS-CPT-1 location, hand-augered to 8' bgs. 2 holes.
1535 - positioning on 1st hole for CPT
1625 - @ 11Ø' bgs.
1628 - Refusal @ 118.43' bgs.
1648 - CPT pipe out of hole.
- begin tripping grout pipe.
1646 - begin grouting hole.
1655 - out of hole - grouting complete.
173Ø - cleaned up; off site

Rite in the Rain

QWS-CPT-Ø1

QWS Site
11/3/2015] CPT Rig

0700 Arrived @ Staging Area
0715 Safety meeting @ Project Site
0730 Gate opens from inside only - drill rig forced to drive through entrance to site
0740 Arrived @ CPT rig in corner of lot [QWS-CPT-1]
Grabbed PID from mtg area
0745 Begin penetration
Decide intervals: 60-64' bgs
86-90' bgs
108-110' bgs

QWS-GW-C01-0641 08:00
Depth: 64.14 ft
40 ml VOAs x3 w/ 12 drops HCl
1 L HDPE x1 unpreserved, no filter

QWS-GW-C01-0901 08:30
Depth: 90.06
40 ml VOAs x3 w/ 12 drops HCl
1L HDPE x1 unpreserved, no filter

QWS-GW-C01-1120 09:15
Depth: 112.04
40 ml VOAs x3 w/ 12 drops HCl
1L HDPE x1 unpreserved, no filter

QWS-CPT-Ø4

B. Castellano 11-3-2015

1000 - Complete grouting CPT-Ø1
1015 - Move Rig to QWS-CPT-Ø2
1025 - Issues with boring on Cecelia St. (CPTs Ø2, Ø3, Ø6): utility conflict cannot do CPT unless forced middle of St. - Grays Drilling will not drill w/in 3' of marked utility
1120 - Moved to CPT-Ø4 location - there is a 6" gas line, but there is room to set the rig.
1145 - Hand augered to 8' bgs @ 2 locations.
1215 - Begin push CPT-Ø4
1230 - Tomas Tayc LA County Public Health on site. Asked to see the two CPT locations. Left site @ 1230.
1309 Refusal @ 115.5.
1325 - tripped out begin advancing grout pipe
1340 - hit gravel; pipe torque.
1345 Begin push for 1st water sample
1356 - First sample depth 67.1'
1410 Collected sample QWS-CØ4-Ø67.1 3 VOAs, 1L poly.
1430 collected sample QWS-C1Ø-Ø67.1 dup of CØ4
3 VOAs, 1x1L poly

Rite in the Rain

QWS-CPT-Ø4

Ben Castellano 11-3-2015

1438 - tripping out
1451 - Zone 2 sample Pg 86.1' bgs
1455 - Collected sample QWS-CØ4-86.1
3VOAs, 1XL poly
1500 - tripping out
1510 - tripping to target depth 115+
1534 - Refusal @ 114.3'
1535 - Collect Sample QWS-CØ4-114.3
1610 - Begin grouting.
1615 - tripping out
1625 - Collected QWS-EBØ2-11-Ø3-2015
3XVOAs, 1X 500ml poly
Equipment blank from SS bailer.
~~4DC~~ 1627 - Moving CPT Rig to complete grout
1700 offsite

NE 1-710 SI 11/20/2015

0650 Rivian Villanueva arrive at staging area (8420 Atlantic Ave.)
0705 Morning brief. B. Reily discuss traffic safety at QualaWash. Busiest day of the week at QualaWash
Gregg Drilling: Tim Patterson, & Keith Ward RMW
0740 Gather equipment/supplies. Demobe from staging area to QualaWash
0743 Sign visitor's log and mobe to QWS-CPT-2. Relocated sample location inside facility to QWS-CPT-2: Original location on Celecia Street.
0755 Ben Morgan with E2 Mange Tech QualaWash consultant ~~arrive.~~ RMW will collect split samples
0758 Gregg CPT crew cleared 2 spots at location QWS-CPT-2 with hand auger to depths of 5 ft. bgs. 6 inches of asphalt underlain by brown sand, loose, dry.
0805 CPT crew begin pushing cone and logging data at QWS-CPT-2.
0855 CPT crew advanced to a total depth (refusal) at 113.35

Rite in the Rain

NE I-710 SI 11/20/2015

— ft bgs at QWS-CPT-2. Begin
— removing rods from bore hole.
— Groundwater sampling depths
— as follows-based on CPT
— log: 64-68 ft bgs, 84-88 ft
— bgs, 112 ft bgs.

0954 Collect groundwater sample
— [QWS-GW-C02-068.1] from
— 68.1 ft bgs. Collected 3 VOAs
— preserved with HCl (12 drops)
— <2 pH, 1, 1-L poly unpre-
— served/unfiltered. To be
— preserved/filtered at a later
— time today. Moderately Silty.

1025 Collect groundwater Sample
— [QWS-GW-C02-088.1] from
— 88.1 ft bgs. Collect 3 VOAs
— preserved with HCl (12 drops)
— <2 pH, 1, 1-L poly unpreserved/
— unfiltered. Will filter at a later
— time. — RMV

1100 Collect groundwater Sample
— [QWS-GW-C02-112.2] from
— 112.2 ft bgs. Collect 3 VOAs
— preserved with HCl (12 drops)

NE I-710 SI 11/20/2015

— <2 pH, 1-1L poly unpreserved/
— unfiltered. Will filter at a later
— time. — RMV

1115 Complete sample collection at
— QWS-CPT-2. —
CPT Crew grout bore holes.

1130 R. Villanueva depart QWS-CPT-2
Sign out of Quala Wash.

11/20/2015

Appendix J: References

Reference:
ARCADIS, 2017

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445 South Figueroa St
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Los Angeles
California 90071
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ENVIRONMENT

Mr. Manjul Bose
California Environmental Protection Agency
Department of Toxic Substances Control
9211 Oakdale Avenue
Chatsworth, California 91311

Subject:
Second Semi-Annual 2016 Groundwater Monitoring Report
Brenntag – South Gate (Former L.A. Chemical)
4545 Ardine Street
South Gate, California

Date:
January 31, 2017

Contact:
Greg Fiol

Phone:
213.797.5278

Email
greg.fiol@arcadis.com

Our Ref:
CA000677.0018.00002

Dear Mr. Bose:

Arcadis U.S., Inc. (Arcadis) is pleased to submit this progress report on behalf of Brenntag Pacific, Inc. (Brenntag) presenting the results of groundwater monitoring performed during the second semi-annual 2016 groundwater monitoring event at the Brenntag South Gate facility (site) for the July 1 through December 31, 2016 reporting period. Twenty-eight groundwater monitoring wells were gauged for depth to water, and groundwater samples were collected as part of the current monitoring event. A description of groundwater monitoring activities and results is presented in the following sections. The site location is shown on Figure 1, and the current monitoring well locations are shown on Figure 2.

Previous groundwater monitoring events at the site were conducted using submersible pumps and low-flow groundwater sampling methods as outlined in the Department of Toxic Substances Control (DTSC) approved 2007 *Sampling and Analysis Plan*[1] (SAP). Arcadis proposed a switch to passive sampling using HydraSleeve™ samplers, and the DTSC approved the change following a review of the data collected as part of the first semi-annual 2009 monitoring event. The HydraSleeve™ sampling devices are attached to stainless steel harnesses that have been constructed for each individual site monitoring well.

[1] Arcadis. 2007. Sampling and Analysis Plan: Brenntag South Gate Site. March.

GROUNDWATER MONITORING

On October 6, 2016, Arcadis personnel gauged 28 wells (MW-1 through MW-4, MW-5S, MW-5D, MW-6S, MW-6D, MW-7S, MW-7D, MW-8 through MW-12, MW-13A, MW-13B, MW-13C, MW-14A, MW-14B, MW-14C, MW-15A, MW-15B, MW-16, MW-16C, MW-17A, MW-17B, and MW-17C) for depth to static groundwater and well total depth. The water level meter was decontaminated between monitoring wells by washing with a non-phosphate detergent and purified water solution wash followed by two purified water rinses. Results of the gauging activities performed during the reporting period are summarized in Table 2. Field gauging forms are included as Appendix A.

Following well gauging, 1.5-liter or 3-liter HydraSleeve™ samplers were deployed in each of the 28 site wells. The sampler is placed in the center of the screened interval in each monitoring well with a fully submerged screen interval, or it is placed approximately 5 feet from the bottom of the well in wells that have partially submerged screen intervals. The 1.5-liter or 3-liter HydraSleeve™ samplers were placed in each well a minimum of two weeks prior to collection of groundwater samples, to allow each water column to reach equilibrium with groundwater. To ensure that representative groundwater samples are collected, field parameters (i.e., turbidity, dissolved oxygen [DO], oxidation-reduction potential [ORP], conductivity, and temperature) are recorded.

From October 24 to October 26, 2016, Arcadis personnel retrieved the HydraSleeve™ samplers from each well and groundwater samples were collected. The HydraSleeve™ harness systems dedicated to each well were replaced following groundwater sampling. A complete description of site passive sampling methods utilizing HydraSleeve™ samplers was included with the *First Semi-Annual 2009 Groundwater Monitoring and Comparative Groundwater Sampling Report*[2], dated September 1, 2009.

Groundwater Sampling

Field measurement of pH, temperature, specific conductance, DO, ORP, and turbidity was completed immediately after the sampler was retrieved from the well by transferring groundwater from the sampler into a container and collecting the information using a Horiba U-53 water quality meter. With the exception of wells

[2] Arcadis. 2009. First Semi-Annual 2009 Groundwater Monitoring and Comparative Groundwater Sampling Report. September 1.

MW-1, MW-8 through MW-11, MW-13C, MW-14A, MW-15A, and MW-17A, where insufficient water was available in the top portion of the HydraSleeve™ sampler, all other samplers had sufficient water to collect the parameter readings; however, sufficient water for parameter collection was not available in MW-7S and MW-7D due to a field error during retrieval. Upon retrieval of the HydraSleeve™ sampler and collection of water quality parameters, groundwater samples were transferred into method appropriate, laboratory-supplied containers. Each container was labeled, recorded on a chain-of-custody form, placed in an ice-chilled cooler for preservation, and delivered to SGS-Accutest Laboratories (Accutest), a state-certified analytical laboratory located in San Jose, California.

Duplicate groundwater samples were collected from monitoring wells MW-2 and MW-6D. The duplicate samples were collected in a separate set of sample containers immediately following the collection of the primary samples and were analyzed to evaluate the precision of laboratory analytical procedures. The primary and duplicate samples were analyzed for the same parameters, and the duplicate sample results from monitoring wells MW-2 and MW-6D were consistent with their primary sample results for most constituents. Field and quality control samples were collected in accordance with the SAP. Laboratory analytical results are summarized in Tables 3 and 4. Copies of the laboratory reports and chain-of-custody documents are provided in Appendix B.

Trip blanks were provided by Accutest and placed inside each cooler containing groundwater samples to be analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260B. Three trip blanks were submitted for analysis as part of the second semi-annual 2016 groundwater monitoring event. No VOCs were detected in the trip blanks. Primary and duplicate groundwater samples were analyzed for VOCs and total petroleum hydrocarbon gasoline range organics (TPH-g) carbon chain analysis using EPA Method 8260B, Title 22 California Assessment Manual (CAM) metals using EPA Methods 6010/7000, total petroleum hydrocarbon diesel range organics (TPH-d) and total petroleum hydrocarbon motor oil range organics (TPH-o) carbon chain analysis using EPA Method 8260B, and 1,4-dioxane using EPA Method 8270C (M) Isotope Dilution. For wells MW-6D DUP, MW-13A, MW-13B, MW-13C, MW-14A, MW-14B, MW-14C, MW-15A, MW-15B, MW-16, MW-16C, MW-17A, MW-17B, and MW-17C insufficient water was available to collect samples for TPH-d and TPH-o (Tables 3 and 4).

Purge water was not produced during the second semi-annual 2016 groundwater monitoring event.

RESULTS

Groundwater Levels

During the reporting period, all groundwater elevations decreased by an average of 0.74 foot compared to the previous monitoring event. The greatest groundwater level decline of 1.40 feet was observed in well MW-10. Since 2007, groundwater levels have declined over 5 feet at the site. Groundwater levels are shown in Table 2. Figure 3 presents a hydrograph for site monitoring well elevation data from December 2005 to the present.

Data from wells MW-1, MW-2, MW-3, MW-4, MW-5S, MW-6S, MW-7S, MW-12, MW-13A, MW-14A, MW-15A, and MW-17A (screened between approximately 45 to 85 feet below ground surface [bgs]) were used to evaluate groundwater gradient and flow direction in the shallow saturated zone. Elevations of groundwater in the shallow wells indicate a hydraulic gradient of 0.020 foot per foot (ft/ft) to the northeast, but the gradient is slightly variable on site. Shallow groundwater elevation contours are depicted on Figure 4.

Data from wells MW-5D, MW-6D, MW-7D, MW-8, MW-13B, MW-14B, MW-15B, and MW-15B (screened between approximately 80 to 104 feet bgs) were used to evaluate groundwater gradient and flow direction in the deeper Gaspur Aquifer. Data from the deeper wells indicate an average gradient of approximately 0.003 ft/ft consistently to the southwest. The groundwater elevation contours and hydraulic gradient direction map for the Gaspur Aquifer are presented on Figure 5.

Laboratory Analytical Results

VOCs were detected in 27 of the 28 monitoring wells sampled during the current monitoring event. Tetrachloroethene (PCE) was detected in 10 of the 26 primary samples at concentrations ranging from 1.5 J microgram per liter (µg/L) (MW-6D; the "J" flag means a result detected between the laboratory detection and reporting limit and is considered an estimate) to 76.3 µg/L (MW-7D).

Trichloroethene (TCE) was detected in 24 of the 28 primary samples at concentrations ranging from 0.28 J µg/L (MW-13C) to 174 µg/L (MW-7D). Cis-1,2-

dichloroethene was detected in 25 of the 28 primary samples at concentrations ranging from an estimated value of 0.33 J µg/L (MW-13C) to 1,020 µg/L. Vinyl chloride was detected in two of the 28 primary samples at estimated concentrations of 0.86 J µg/L (MW-1) and 0.93 J µg/L (MW-5D). Vinyl chloride was also detected in the duplicate sample for MW-2 (DUP 1) at an estimated concentration of 0.32 J µg/L.

1,4-Dioxane was detected in 22 of the 28 of the primary samples for which it was analyzed at concentrations ranging from 0.16 J µg/L (MW-5D) to 513 µg/L (MW-14A). Table 3 summarizes the results of VOCs and 1,4-Dioxane in groundwater for the current monitoring event, and Figure 6 depicts the distribution of VOCs and 1,4-Dioxane in groundwater during the current monitoring event. Total VOC and 1,4-Dioxane concentrations from the second semi-annual 2016 monitoring event were consistent with results from previous monitoring events.

Metals were detected in 26 of the 28 monitoring wells sampled. In 17 of the sampled wells, arsenic was detected at or above concentrations exceeding 0.010 milligram per liter (mg/L) (the California Code of Regulations, Title 22 Maximum Contaminant Level [MCL] or Regulatory Action Level [RAL] for drinking water, which is used here for comparative purposes only). The detected concentrations ranged from 0.0100 mg/L (MW-15B) to 5.40 mg/L (MW-16). Cadmium was detected in one well (MW-6S), exceeding its MCL of 0.0050 mg/L at a concentration of 0.0117 mg/L. Nickel was detected in 12 of the 28 monitoring wells sampled; in six of the wells nickel concentrations were above its MCL of 0.10 mg/L. Nickel concentrations ranged from 0.0402 mg/L (MW-12) to 0.359 mg/L (MW-1). Lead was detected above its RAL of 0.015 mg/L in four of the 27 sampled wells, and in one duplicate sample collected at concentrations ranging from 0.0052 mg/L (MW-11) to 0.0288 mg/L (MW-6 DUP). Table 4 summarizes the analytical results for metals in groundwater during the current monitoring event. Figure 7 depicts the distribution of metals in groundwater for the current groundwater monitoring event.

TPH-g was detected in 10 of the 28 monitoring wells sampled. Gasoline range hydrocarbons (C_6-C_{10}) ranged from 53.1 J µg/L (MW-2 DUP) to 601 µg/L (MW-4); however, the detection of TPH has been identified in the TPH as gasoline carbon range and may not indicate the presence of gasoline. Of the 15 primary samples collected and analyzed for TPH-d (C_{10}-C_{28}) and TPH-o (C_{28}-C_{40}), TPH-d was detected in all 15 at concentrations ranging from 39.3 J µg/L (MW-5S) to 2,180 µg/L (MW-12), and TPH-o was detected in all 15 samples at concentrations ranging from 22.6 J µg/L (MW-5S) to 747 µg/L (MW-1).

Table 4 summarizes the analytical results for petroleum hydrocarbons in groundwater during the current monitoring event. Figure 8 depicts the distribution of TPH in groundwater for the current groundwater monitoring event.

Appendix C includes a summary of laboratory analytical results for groundwater samples collected at the site to date.

PLANNED ACTIVITIES NEXT QUARTER

Groundwater will continue to be monitored and sampled on a semi-annual basis, with the next groundwater sampling event tentatively scheduled for the first quarter of 2017.

CLOSING

If you have any questions or comments regarding this report, please contact Greg Fiol at 213.797.5278.

Sincerely,

Arcadis U.S., Inc.

Arianne R Terry

Arianne Terry
Staff Geologist

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Jeff Miller – Hawks Bay, LLC (CD only)
Project File

Enclosures:

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Appendices

Appendix A	Field Monitoring Forms
Appendix B	Laboratory Analytical Results and Chain-of-Custody Documentation
Appendix C	Summary of Groundwater Analytical Results

TABLES

Table 1. **Summary of Well Construction Information**
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well ID	Off-Site/ On-Site	Top of Casing Elevation	Installation Date	Total Depth of Boring (feet bgs)	Total Depth of Well (feet bgs)	Screen Interval (feet bgs)	Casing Diameter (inches)	Well Screen Construction	Screen Slot Size (inches)	Sand Pack Material	Depth to Top of Sand Pack (feet bgs)
MW-1	On-Site	121.21	10/18/1985	75.0	75.0	65 to 75	4	PVC	0.02	# 3 washed monterey sand	60
MW-2	On-Site	120.65	2/6/1986	85.0	85.0	50 to 85	4	PVC	NA	Unknown	43.5
MW-3	On-Site	119.97	2/6/1986	85.0	85.0	50 to 85	4	PVC	NA	Unknown	43.5
MW-4	On-Site	121.33	2/21/1986	85.0	85.0	50 to 85	4	PVC	NA	Unknown	46
MW-5S	Off-Site	120.26	9/29/1988	87.5	73.0	53 to 73	4	PVC	Unknown	Unknown	49
MW-5D	Off-Site	120.26	10/5/1988	104.0	93.0	83 to 93	4	PVC	Unknown	Unknown	80
MW-6S	On-Site	121.17	10/11/1988	75.0	71.0	51 to 71	4	PVC	Unknown	Unknown	48
MW-6D	On-Site	121.21	10/10/1988	98.0	91.0	81 to 91	4	PVC	Unknown	Unknown	78
MW-7S	On-Site	122.21	10/12/1988	73.0	73.0	53 to 73	4	PVC	Unknown	Unknown	48
MW-7D	On-Site	122.24	10/12/1988	100.0	96.0	86 to 96	4	PVC	Unknown	Unknown	84
MW-8	On-Site	121.20	10/6/1988	101.5	96.0	86 to 96	4	PVC	Unknown	Unknown	81
MW-9	On-Site	121.49	11/26/1990	100.0	97.0	52 to 97	4	PVC	0.02	# 2/12	48
MW-10	On-Site	121.80	11/28/1990	97.0	97.0	52 to 97	4	PVC	0.02	# 2/12	49
MW-11	On-Site	122.37	11/28/1990	100.0	95.0	50 to 95	4	PVC	Unknown	Unknown	48
MW-12	On-Site	122.53	5/23/2002	75.0	75.0	40 to 75	4	PVC	Unknown	Unknown	38
MW-13A	Off-Site	121.99	4/3/2012	104.0	70.0	55-70	2	PVC	0.01	# 2/12	53
MW-13B	Off-Site	122.02	4/3/2012	104.0	104.0	94-104	2	PVC	0.01	# 2/12	92
MW-13C	Off-Site	121.81	4/2/2012	130.0	130.0	120-130	2	PVC	0.01	# 2/12	118
MW-14A	Off-Site	121.61	4/5/2012	95.0	70.0	55-70	2	PVC	0.01	# 2/12	53
MW-14B	Off-Site	121.48	4/5/2012	95.0	95.0	85-95	2	PVC	0.01	# 2/12	83
MW-14C	Off-Site	121.62	4/4/2012	130.0	129.0	119-129	2	PVC	0.01	# 2/12	117
MW-15A	Off-Site	117.79	3/31/2012	100.0	70.0	55-70	2	PVC	0.01	# 2/12	53
MW-15B	Off-Site	117.88	3/31/2012	100.0	90.0	80-90	2	PVC	0.01	# 2/12	78
MW-16	On-Site	121.84	4/9/2012	142.0	118.0	108-118	2	PVC	0.01	# 2/12	106
MW-16C	On-Site	121.89	4/9/2012	142.0	142.0	132-142	2	PVC	0.01	# 2/12	130
MW-17A	Off-Site	120.84	9/23/2015	71.5	71.0	56-71	4	PVC	0.01	# 2/12	54
MW-17B	Off-Site	120.90	9/22/2015	125.0	90.0	80-90	2	PVC	0.01	# 2/12	78
MW-17C	Off-Site	120.92	9/22/2015	125.0	124.0	114-124	2	PVC	0.01	# 2/12	112

Notes:

bgs Below ground surface
NA Not available
PVC Polyvinyl chloride

Wells MW-1 to MW-12 were surveyed in June 2007. Wells MW-13 to MW-16 were surveyed in April 2012, and well MW-17 was surveyed in September 2015 by Guida Surveying, Inc.

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-1	65 to 75	12/18/05	119.12	59.80	59.32
		5/22/06	119.12	55.88	63.24
		12/6/06	119.12	56.49	62.63
		6/2/07	121.21	56.18	65.03
		11/27/07	121.21	56.71	64.50
		7/14/08	121.21	57.30	63.91
		12/1/08	121.21	57.88	63.33
		6/15/09	121.21	58.45	62.76
		12/10/09	121.21	59.20	62.01
		6/16/10	121.21	59.70	61.51
		12/15/10	121.21	60.20	61.01
		6/3/11	121.21	60.45	60.76
		12/2/11	121.21	60.50	60.71
		5/18/12	121.21	60.48	60.73
		11/16/12	121.21	60.82	60.39
		3/19/13	121.21	61.02	60.19
		9/18/13	121.21	61.58	59.63
		4/21/14	121.21	62.38	58.83
		9/24/14	121.21	62.98	58.23
		4/6/15	121.21	63.71	57.50
		10/9/15	121.21	64.44	56.77
		4/4/16	121.21	65.28	55.93
		10/6/16	**121.21**	**66.00**	**55.21**
MW-2	50 to 85	12/18/05	118.50	58.85	59.65
		5/22/06	118.50	55.77	62.73
		12/6/06	118.50	55.65	62.85
		6/2/07	120.65	55.40	65.25
		11/27/07	120.65	55.95	64.70
		7/14/08	120.65	56.57	64.08
		12/1/08	120.65	57.25	63.40
		6/15/09	120.65	57.72	62.93
		12/10/09	120.65	58.50	62.15
		6/16/10	120.65	59.05	61.60
		12/15/10	120.65	62.10	58.55
		6/3/11	120.65	59.85	60.80
		12/2/11	120.65	59.85	60.80
		5/18/12	120.65	59.80	60.85
		11/16/12	120.65	60.26	60.39
		3/19/13	120.65	60.42	60.23
		9/18/13	120.65	60.93	59.72
		4/21/14	120.65	61.68	58.97
		9/24/14	120.65	62.32	58.33
		4/6/15	120.65	62.96	57.69
		10/9/15	120.65	63.84	56.81
		4/4/16	120.65	64.71	55.94
		10/6/16	**120.65**	**65.42**	**55.23**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-3	50 to 85	12/18/05	117.88	58.28	59.60
		5/22/06	117.88	55.02	62.86
		12/6/06	117.88	NM	NA
		6/2/07	119.97	54.60	65.37
		7/14/08	119.97	56.00	63.97
		12/1/08	119.97	56.36	63.61
		6/15/09	119.97	57.05	62.92
		12/10/09	119.97	57.72	62.25
		6/16/10	119.97	58.30	61.67
		12/15/10	119.97	59.40	60.57
		6/3/11	119.97	59.10	60.87
		12/2/11	119.97	59.10	60.87
		5/18/12	119.97	59.10	60.87
		11/16/12	119.97	59.49	60.48
		3/19/13	119.97	59.86	60.11
		9/18/13	119.97	60.24	59.73
		4/21/14	119.97	61.08	58.89
		9/24/14	119.97	61.58	58.39
		4/6/15	119.97	62.27	57.70
		10/9/15	119.97	63.04	56.93
		4/4/16	119.97	63.89	56.08
		10/6/16	**119.97**	**64.13**	**55.84**
MW-4	50 to 85	12/18/05	119.21	NM	NA
		5/22/06	119.21	55.93	63.28
		12/6/06	119.21	55.70	63.51
		6/2/07	121.33	55.07	66.26
		11/27/07	121.33	55.75	65.58
		7/14/08	121.33	56.72	64.61
		12/1/08	121.33	57.90	63.43
		6/15/09	121.33	58.40	62.93
		12/10/09	121.33	59.17	62.16
		6/16/10	121.33	59.70	61.63
		12/15/10	121.33	61.60	59.73
		6/3/11	121.33	60.60	60.73
		12/2/11	121.33	60.60	60.73
		5/18/12	121.33	60.60	60.73
		11/16/12	121.33	60.96	60.37
		3/19/13	121.33	61.10	60.23
		9/18/13	121.33	61.61	59.72
		4/21/14	121.33	62.41	58.92
		9/24/14	121.33	62.77	58.56
		4/6/15	121.33	63.69	57.64
		10/9/15	121.33	64.47	56.86
		4/4/16	121.33	65.39	55.94
		10/6/16	**121.33**	**66.10**	**55.23**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-5S	53 to 73	12/18/05	118.54	NM	NA
		5/22/06	118.54	55.19	63.35
		12/6/06	118.54	54.93	63.61
		6/2/07	120.26	54.85	65.41
		11/27/07	120.26	55.37	64.89
		7/14/08	120.26	56.00	64.26
		12/1/08	120.26	56.65	63.61
		6/15/09	120.26	57.19	63.07
		12/10/09	120.26	57.94	62.32
		6/16/10	120.26	58.40	61.86
		12/15/10	120.26	59.25	61.01
		6/3/11	120.26	59.25	61.01
		12/2/11	120.26	59.25	61.01
		5/18/12	120.26	59.20	61.06
		11/16/12	120.26	59.62	60.64
		3/19/13	120.26	59.70	60.56
		9/18/13	120.26	60.34	59.92
		4/21/14	120.26	61.11	59.15
		9/24/14	120.26	61.70	58.56
		4/6/15	120.26	62.42	57.84
		10/9/15	120.26	63.11	57.15
		4/4/16	120.26	64.00	56.26
		10/6/16	**120.26**	**64.69**	**55.57**
MW-5D	83 to 93	12/18/05	118.63	NM	NA
		5/22/06	118.63	55.51	63.12
		12/6/06	118.63	55.50	63.13
		6/2/07	120.26	54.90	65.36
		11/27/07	120.26	55.43	64.83
		7/14/08	120.26	56.04	64.22
		12/1/08	120.26	56.60	63.66
		6/15/09	120.26	57.20	63.06
		12/10/09	120.26	58.00	62.26
		6/16/10	120.26	58.55	61.71
		12/15/10	120.26	60.20	60.06
		6/3/11	120.26	59.75	60.51
		12/2/11	120.26	59.35	60.91
		5/18/12	120.26	59.28	60.98
		11/16/12	120.26	59.74	60.52
		3/19/13	120.26	59.90	60.36
		9/18/13	120.26	60.38	59.88
		4/21/14	120.26	61.26	59.00
		9/24/14	120.26	66.88	53.38
		4/6/15	120.26	62.47	57.79
		10/9/15	120.26	63.20	57.06
		4//4/16	120.26	64.11	56.15
		10/6/16	**120.26**	**64.76**	**55.50**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-6S	51 to 71	12/18/05	119.04	59.40	59.64
		5/22/06	119.04	55.86	63.18
		12/6/06	119.04	56.24	62.80
		6/2/07	121.17	56.17	65.00
		11/27/07	121.17	56.47	64.70
		7/14/08	121.17	57.10	64.07
		12/1/08	121.17	57.80	63.37
		6/15/09	121.17	58.30	62.87
		12/10/09	121.17	59.00	62.17
		6/16/10	121.17	59.55	61.62
		12/15/10	121.17	61.20	59.97
		6/3/11	121.17	60.35	60.82
		12/2/11	121.17	60.35	60.82
		5/18/12	121.17	60.35	60.82
		11/16/12	121.17	60.73	60.44
		3/19/13	121.17	60.86	60.31
		9/18/13	121.17	61.05	60.12
		4/21/14	121.17	61.88	59.29
		9/24/14	121.17	62.44	58.73
		4/6/15	121.17	63.26	57.91
		10/9/15	121.17	63.88	57.29
		4/4/16	121.17	64.84	56.33
		10/6/16	**121.17**	**65.57**	**55.60**
MW-6D	81 to 91	12/18/05	119.09	59.70	59.39
		5/22/06	119.09	56.45	62.64
		12/6/06	119.09	56.43	62.66
		6/2/07	121.21	56.18	65.03
		11/27/07	121.21	56.60	64.61
		7/14/08	121.21	57.30	63.91
		12/1/08	121.21	57.92	63.29
		6/15/09	121.21	58.45	62.76
		12/10/09	121.21	59.20	62.01
		6/16/10	121.21	59.70	61.51
		12/15/10	121.21	60.15	61.06
		6/3/11	121.21	60.45	60.76
		12/2/11	121.21	60.50	60.71
		5/18/12	121.21	60.45	60.76
		11/16/12	121.21	60.88	60.33
		3/19/13	121.21	61.12	60.09
		9/18/13	121.21	61.59	59.62
		4/21/14	121.21	62.44	58.77
		9/24/14	121.21	63.00	58.21
		4/6/15	121.21	63.68	57.53
		10/9/15	121.21	64.34	56.87
		4/4/16	121.21	65.16	56.05
		10/6/16	**121.21**	**66.10**	**55.11**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-7S	53 to 73	12/18/05	119.65	60.08	59.57
		5/22/06	119.65	57.04	62.61
		12/6/06	119.65	57.27	62.38
		6/2/07	122.21	57.41	64.80
		11/27/07	122.21	58.00	64.21
		7/14/08	122.21	58.51	63.70
		12/1/08	122.21	59.15	63.06
		6/15/09	122.21	59.65	62.56
		12/10/09	122.21	60.35	61.86
		6/16/10	122.21	60.87	61.34
		12/15/10	122.21	62.05	60.16
		6/3/11	122.21	61.60	60.61
		12/2/11	122.21	61.65	60.56
		5/18/12	122.21	61.70	60.51
		11/16/12	122.21	62.11	60.10
		3/19/13	122.21	62.28	59.93
		9/18/13	122.21	62.73	59.48
		4/21/14	122.21	63.54	58.67
		9/24/14	122.21	64.14	58.07
		4/6/15	122.21	64.82	57.39
		10/9/15	122.21	65.00	57.21
		4/4/16	122.21	66.67	55.54
		10/6/16	**122.21**	**67.35**	**54.86**
MW-7D	86 to 96	12/18/05	119.62	60.66	58.96
		5/22/06	119.62	57.21	62.41
		12/6/06	119.62	57.50	62.12
		6/2/07	122.24	57.72	64.52
		11/27/07	122.24	58.25	63.99
		7/14/08	122.24	58.84	63.40
		12/1/08	122.24	59.47	62.77
		6/15/09	122.24	59.96	62.28
		12/10/09	122.24	60.13	62.11
		6/16/10	122.24	61.25	60.99
		12/15/10	122.24	61.80	60.44
		6/3/11	122.24	62.00	60.24
		12/2/11	122.24	62.00	60.24
		5/18/12	122.24	62.04	60.20
		11/16/12	122.24	62.42	59.82
		3/19/13	122.24	62.62	59.62
		3/19/13	122.24	63.10	59.14
		4/21/14	122.24	63.92	58.32
		9/24/14	122.24	64.58	57.66
		4/6/15	122.24	65.22	57.02
		10/9/15	122.24	65.89	56.35
		4/4/16	122.24	66.83	55.41
		10/6/16	**122.24**	**67.49**	**54.75**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-8	86 to 96	12/18/05	119.09	59.85	59.24
		5/22/06	119.09	55.65	63.44
		12/6/06	119.09	56.60	62.49
		6/2/07	121.20	56.31	64.89
		11/27/07	121.20	56.80	64.40
		7/14/08	121.20	57.38	63.82
		12/1/08	121.20	58.10	63.10
		6/15/09	121.20	58.56	62.64
		12/10/09	121.20	59.35	61.85
		6/16/10	121.20	59.85	61.35
		12/15/10	121.20	60.30	60.90
		6/3/11	121.20	60.55	60.65
		12/2/11	121.20	60.60	60.60
		5/18/12	121.20	60.61	60.59
		11/16/12	121.20	61.00	60.20
		3/19/13	121.20	61.20	60.00
		9/18/13	121.20	61.72	59.48
		4/21/14	121.20	62.54	58.66
		9/24/14	121.20	63.14	58.06
		4/6/15	121.20	63.76	57.44
		10/9/15	121.20	65.44	55.76
		4/4/16	121.20	65.44	55.76
		10/6/16	**121.20**	**66.07**	**55.13**
MW-9	52 to 97	12/18/05	119.35	59.90	59.45
		5/22/06	119.35	56.57	62.78
		12/6/06	119.35	56.86	62.49
		6/2/07	121.49	56.55	64.94
		11/27/07	121.49	57.00	64.49
		7/14/08	121.49	57.52	63.97
		12/1/08	121.49	58.18	63.31
		6/15/09	121.49	58.76	62.73
		12/10/09	121.49	59.30	62.19
		6/16/10	121.49	59.88	61.61
		12/15/10	121.49	60.55	60.94
		6/3/11	121.49	60.35	61.14
		12/2/11	121.49	60.25	61.24
		5/18/12	121.49	60.17	61.32
		11/16/12	121.49	60.50	60.99
		3/19/13	121.49	60.75	60.74
		9/18/13	121.49	61.07	60.42
		4/21/14	121.49	61.68	59.81
		9/24/14	121.49	62.08	59.41
		4/6/15	121.49	62.71	58.78
		10/9/15	121.49	63.14	58.35
		4/4/16	121.49	64.00	57.49
		10/6/16	**121.49**	**64.72**	**56.77**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-10	52 to 97	12/18/05	119.93	60.66	59.27
		5/22/06	119.93	57.38	62.55
		12/6/06	119.93	57.39	62.54
		6/2/07	121.80	57.09	64.71
		11/27/07	121.80	57.39	64.41
		7/14/08	121.80	57.90	63.90
		12/1/08	121.80	58.40	63.40
		6/15/09	121.80	58.80	63.00
		12/10/09	121.80	59.45	62.35
		6/16/10	121.80	59.78	62.02
		12/15/10	121.80	60.10	61.70
		6/3/11	121.80	60.25	61.55
		12/2/11	121.80	60.20	61.60
		5/18/12	121.80	60.26	61.54
		11/16/12	121.80	60.62	61.18
		3/19/13	121.80	60.65	61.15
		9/18/13	121.80	61.20	60.60
		4/21/14	121.80	61.78	60.02
		9/24/14	121.80	62.24	59.56
		4/6/15	121.80	63.28	58.52
		10/9/15	121.80	64.72	57.08
		4/4/16	121.80	66.30	55.50
		10/6/16	**121.80**	**67.70**	**54.10**
MW-11	50 to 95	12/18/05	120.43	58.75	61.68
		5/22/06	120.43	51.29	69.14
		12/6/06	120.43	51.33	69.10
		6/2/07	122.37	53.38	68.99
		11/27/07	122.37	51.00	71.37
		7/14/08	122.37	54.12	68.25
		12/1/08	122.37	58.26	64.11
		6/15/09	122.37	60.10	62.27
		12/10/09	122.37	61.10	61.27
		6/16/10	122.37	61.60	60.77
		12/15/10	122.37	61.40	60.97
		6/3/11	122.37	62.30	60.07
		12/2/11	122.37	62.35	60.02
		5/18/12	122.37	62.40	59.97
		11/16/12	122.37	62.79	59.58
		3/19/13	122.37	62.92	59.45
		9/18/13	122.37	63.45	58.92
		4/21/14	122.37	64.24	58.13
		9/24/14	122.37	64.84	57.53
		4/6/15	122.37	65.48	56.89
		10/9/15	122.37	66.36	56.01
		4/4/16	122.37	67.12	55.25
		10/6/16	**122.37**	**67.86**	**54.51**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-12	40 to 75	12/18/05	NS	61.30	NA
		5/22/06	NS	57.92	NA
		12/6/06	NS	58.13	NA
		6/2/07	122.53	57.85	64.68
		11/27/07	122.53	58.21	64.32
		7/14/08	122.53	58.65	63.88
		12/1/08	122.53	59.32	63.21
		6/15/09	122.53	59.75	62.78
		12/10/09	122.53	60.45	62.08
		6/16/10	122.53	61.20	61.33
		12/15/10	122.53	62.25	60.28
		6/3/11	122.53	61.70	60.83
		12/2/11	122.53	61.50	61.03
		5/18/12	122.53	61.54	60.99
		11/16/12	122.53	61.82	60.71
		3/19/13	122.53	61.98	60.55
		9/18/13	122.53	62.25	60.28
		4/21/14	122.53	63.12	59.41
		9/24/14	122.53	63.68	58.85
		4/6/15	122.53	64.18	58.35
		10/9/15	122.53	64.61	57.92
		4/4/16	122.53	65.48	57.05
		10/6/16	**122.53**	**65.91**	**56.62**
MW-13A	50 to 70	5/17/12	121.99	59.40	62.59
		11/16/12	121.99	59.88	62.11
		3/19/13	121.99	60.00	61.99
		9/18/13	121.99	60.33	61.66
		4/21/14	121.99	59.99	62.00
		9/24/14	121.99	61.48	60.51
		4/6/15	121.99	61.97	60.02
		10/9/15	121.99	62.48	59.51
		4/4/16	121.99	63.30	58.69
		10/6/16	**121.99**	**63.85**	**58.14**
MW-13B	94 to 104	5/17/12	122.02	64.00	58.02
		11/16/12	122.02	64.36	57.66
		3/19/13[1]	122.02	65.04	56.98
		9/18/13	122.02	65.18	56.84
		4/21/14	122.02	65.94	56.08
		9/24/14	122.02	66.74	55.28
		4/6/15	122.02	67.53	54.49
		10/9/15	122.02	68.27	53.75
		4/4/16	122.02	69.14	52.88
		10/6/16	**122.02**	**69.96**	**52.06**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-13C	120 to 130	5/17/12	121.81	71.35	50.46
		11/16/12	121.81	72.04	49.77
		3/19/13	121.81	72.07	49.74
		9/18/13	121.81	73.00	48.81
		4/21/14	121.81	73.95	47.86
		9/24/14	121.81	75.04	46.77
		4/6/15	121.81	75.82	45.99
		10/9/15	121.81	76.82	44.99
		4/4/16	121.81	77.62	44.19
		10/6/16	**121.81**	**78.58**	**43.23**
MW-14A	55 to 70	5/17/12	121.61	58.24	63.37
		11/16/12	121.61	58.74	62.87
		3/19/13	121.61	58.93	62.68
		9/18/13	121.61	59.26	62.35
		4/21/14	121.61	60.02	61.59
		9/24/14	121.61	60.40	61.21
		4/6/15	121.61	60.88	60.73
		10/9/15	121.61	61.36	60.25
		4/4/16	121.61	61.73	59.88
		10/6/16	**121.61**	**61.92**	**59.69**
MW-14B	85 to 95	5/17/12	121.48	62.25	59.23
		11/16/12	121.48	62.74	58.74
		3/19/13	121.48	62.87	58.61
		9/18/13	121.48	63.42	58.06
		4/21/14	121.48	64.24	57.24
		9/24/14	121.48	64.88	56.60
		4/6/15	121.48	65.54	55.94
		10/9/15	121.48	63.70	57.78
		4/4/16	121.48	67.15	54.33
		10/6/16	**121.48**	**67.81**	**53.67**
MW-14C	119 to 129	5/17/12	121.62	73.15	48.47
		11/16/12	121.62	73.96	47.66
		3/19/13	121.62	74.06	47.56
		9/18/13	121.62	75.22	46.40
		4/21/14	121.62	76.21	45.41
		9/24/14	121.62	77.47	44.15
		4/6/15	121.62	78.16	43.46
		10/9/15	121.62	79.32	42.30
		4/4/16	121.62	80.07	41.55
		10/6/16	**121.62**	**81.12**	**40.50**
MW-15A	55 to 70	5/17/12	117.79	56.34	61.45
		11/16/12	117.79	56.82	60.97
		3/19/13	117.79	56.96	60.83
		9/18/13	117.79	57.47	60.32
		4/21/14	117.79	58.19	59.60
		9/24/14	117.79	58.71	59.08
		4/6/15	117.79	59.52	58.27
		10/9/15	117.79	59.83	57.96
		4/4/16	117.79	60.46	57.33
		10/6/16	**117.79**	**60.94**	**56.85**

Table 2. Summary of Groundwater Gauging Data
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well Identification	Screen Interval (feet)	Date	Top of Casing (ft amsl)	Depth to Groundwater (feet)	Groundwater Elevation (ft amsl)
MW-15B	80 to 90	5/17/12	117.88	57.54	60.34
		11/16/12	117.88	58.00	59.88
		3/19/13	117.88	58.16	59.72
		9/18/13	117.88	58.72	59.16
		4/21/14	117.88	59.54	58.34
		9/24/14	117.88	60.16	57.72
		4/6/15	117.88	60.84	57.04
		10/9/15	117.88	61.52	56.36
		4/4/16	117.88	62.34	55.54
		10/6/16	**117.88**	**63.00**	**54.88**
MW-16	108 to 118	5/17/12	121.84	74.72	47.12
		11/16/12	121.84	75.89	45.95
		3/19/13	121.84	75.76	46.08
		9/18/13	121.84	77.00	44.84
		4/21/14	121.84	78.08	43.76
		9/24/14	121.84	79.44	42.40
		4/6/15	121.84	80.00	41.84
		10/9/15	121.84	79.44	42.40
		4/4/16	121.84	82.03	39.81
		10/6/16	**121.84**	**83.22**	**38.62**
MW-16C	132 to 142	5/17/12	121.89	75.36	46.53
		11/16/12	121.89	75.44	46.45
		3/19/13	121.89	76.48	45.41
		9/18/13	121.89	77.82	44.07
		4/21/14	121.89	78.82	43.07
		9/24/14	121.89	80.22	41.67
		4/6/15	121.89	80.92	40.97
		10/9/15	121.89	82.00	39.89
		4/4/16	121.89	82.84	39.05
		10/6/16	**121.89**	**84.00**	**37.89**
MW-17A	56 to 71	10/9/15	120.84	63.27	57.57
		4/4/16	120.84	64.04	56.80
		10/6/16	**120.84**	**64.65**	**56.19**
MW-17B	80 to 90	10/9/15	120.90	63.35	57.55
		4/4/16	120.90	64.20	56.70
		10/6/16	**120.90**	**64.82**	**56.08**
MW-17C	114 to 124	10/9/15	120.92	82.00	38.92
		4/4/16	120.92	82.93	37.99
		10/6/16	**120.92**	**84.18**	**36.74**

Notes:

ft amsl Feet above mean sea level
NA Not applicable
NM Not measured
NS Not surveyed

1. Depth to groundwater elevation was revised based on field measurement taken during HydraSleeve™ retrieval; Retrieval DTW was consistent with historical levels and the DTW of 84.60 as previously reported should be considered anomalous

Table 3. Summary of Second Semi-Annual 2016 Groundwater Analytical Results (VOCs and Field Parameters)
Brenntag South Gate
4545 Ardine Street, South Gate, California

Well ID	MW-1	MW-2	MW-2[1] DUP	MW-3	MW-4	MW-5S	MW-5D	MW-6S	MW-6D	MW-6D DUP	MW-7S	MW-7D	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13A[1]	MW-13B[1]	MW-13C[1]	MW-14A	MW-14B	MW-14C	MW-15A[1]	MW-15B	MW-16	MW-16C[1]	MW-17A	MW-17B	MW-17C[2]
	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/26/2016	10/26/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/24/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016
VOCs by EPA Method 8260 B (µg/L)																														
Acetone	<25	<25	<25	<25	<250	<25	<25	<130	<50	<50	<25	<63	<25	<25	<25	<25	<25	<25	<25	32.2	<25	<63	18.5 J	<25	<25	<25	<25	<25	<25	<25
Benzene	1.7	0.21 J	0.22 J	<1.0	<10	<1.0	0.48 J	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.23 J	0.66 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromobenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromochloromethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Butanone (MEK)	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<25	<10	<10	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2.7 J	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	0.44 J	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	1.2 J	<1.0	5.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.6	4.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloroform	<1.0	<1.0	<1.0	1.6	5.1 J	<1.0	<1.0	<5.0	0.93 J	0.92 J	5.5	8.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	0.56 J	<1.0	<1.0	<1.0	<1.0
2-Chlorotoluene (o)	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4-Chlorotoluene (p)	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-Chloropropane	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<25	<10	<10	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dibromoethane	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dichlorobenzene (o)	0.33 J	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	68.6	<1.0	10.2	<1.0	0.82 J	<1.0	<1.0	<1.0	<1.0	0.91 J	447[b]	<1.0	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (m)	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	0.59 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.1 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (p)	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	10.4	<1.0	0.96 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	58.6	<1.0	0.70 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1-Dichloroethane	1.6	1.7	1.9	1.3	16.2	<1.0	<1.0	<5.0	0.93 J	0.82 J	5.6	3.9	<1.0	2.8	24.1	5.1	2.6	<1.0	5.1	0.68 J	11.5	2.4 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	2.5	2.7	1.1	15.5	<1.0	<1.0	<5.0	<2.0	<2.0	1.0	9.5	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	0.36 J	0.34 J	0.32 J	7.3	0.73 J	<1.0	3.2	<1.0	4.7	<1.0	<1.0	<1.0
1,1-Dichloroethylene	1.5	0.83 J	0.89 J	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	1.3	2.1 J	<1.0	1.0	4.1	3.8	5.3	<1.0	4.9	<1.0	1.2	4.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
c-1,2-Dichloroethene	1,020[a]	91.2	91.6	21.3	943	7.7	45.8	329	277[c]	259[c]	26.0	18.0	18.9	34.2	48.5	35.8	2.9	<1.0	11.0	0.33 J	27.4	186	<1.0	24.9	48.4	1.3	22.8	5.3	<1.0	3.0
t-1,2-Dichloroethene	22.5	4.9	4.8	<1.0	12.9	<1.0	1.3	<5.0	3.4	3.3	1.3	<2.5	0.64[a] J	1.5[a]	2.4[a]	1.8[a]	<1.0	<1.0	<1.0	<1.0	1.6	5.7	<1.0	1.6	12.9	<1.0	1.5	<1.0	<1.0	<1.0
1,2-Dichloropropane	11.3	<1.0	0.34 J	<1.0	15.8	<1.0	<1.0	3.8 J	4.0	3.7	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.98 J	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0
1,3-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-Dichloropropane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
c-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
t-1,3-Dichloropropene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	<10	<10	<10	<10	<100	<10	<10	<50	<20	<20	<10	<25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<10	<10	<10	<10
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<25	<10	<10	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-Pentanone	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<25	<10	<10	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<25	<10	<10	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<13	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0	5.6	4.3	<1.0	<1.0	<5.0	1.5 J	1.6 J	50.8	76.3	6.7	3.6	<1.0	5.4	<1.0	<1.0	<1.0	<1.0	<1.0	71.3	<1.0	<1.0	<1.0	15.1	<1.0	<1.0	<1.0	<1.0
Toluene	0.35 J	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.32 J	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	9.6	0.45 J	0.43 J	21.1	56.9	3.4	<1.0	21.8	32.3	33.0	94.4	174	14.7	14.9	13.6	84.4[b]	0.60 J	<1.0	<1.0	0.28 J	14.7	161	0.90 J	6.0	19.3	7.4	0.38 J	5.4	<1.0	2.0
Trichlorofluoromethane	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,3-Trichloropropane	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trimethylbenzene	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	<1.0	<2.0	<2.0	<2.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	0.86 J	<1.0	0.32 J	<1.0	<10	<1.0	0.93 J	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylenes (p/m-Xylene and o-Xylene)	<3.0	<3.0	<3.0	<3.0	<30	<3.0	<3.0	<15	<6.0	<6.0	<3.0	<7.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<7.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Methyl-t-Butyl Ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	<200	<20	<20	<100	<40	<40	<20	<50	<20	<20	<20	<20	<20	<20	<20	<20	<20	<50	<20	<20	<20	<20	<20	<20	<20	<20
Diisopropyl Ether (DIPE)	2.5	2.0	2.0	0.33 J	4.8 J	<1.0	0.31 J	<5.0	<2.0	<2.0	<1.0	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.59 J	1.9	<1.0	0.26 J	<1.0	3.4	<1.0	<1.0	0.34 J
Ethyl-t-Butyl Ether (ETBE)	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Tert-Amyl-Methyl Ether (TAME)	<2.0	<2.0	<2.0	<2.0	<20	<2.0	<2.0	<10	<4.0	<4.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Other Parameters																														
1,4 Dioxane by EPA Method 8270C (M)	0.96	1.8	1.8	0.36	0.74	0.19 J	2.2	0.16 J	<0.29	<0.29	2.5	3.0	0.41	2.6	197	14.1	16.1	<0.29	14.4	2.4	513	4.3	2.1	<0.29	3.1	1.1	0.59	<0.30	<0.28	<0.28
pH (Standard units)	--	7.51	--	6.73	7.10	6.91	6.73	7.68	7.60	--	--	--	--	--	--	--	7.42	8.06	7.16	--	--	8.30	8.66	--	6.97	6.93	7.16	--	6.61	6.85
Specific Conductance (milliSiemens per centimeter)	--	1.8	--	1.01	1.16	1.17	0.317	2.31	0.410	--	--	--	--	--	--	--	2.51	1.56	1.93	--	--	2.79	1.52	--	1.89	--	1.520	--	0.953	1.20
Oxidation Reduction Potential (ORP) (millivolts)	--	13	--	40	-2	-66	42	-119	39	--	--	--	--	--	--	--	-17	38	-31	--	--	9	-18	--	60	90	-44	--	88	-21
Dissolved Oxygen (DO) (mg/L)	--	3.3	--	4.11	8.29	3.7	7.7	1.74	4.00	--	--	--	--	--	--	--	1.80	4.08	8.60	--	--	2.61	2.82	--	3.59	2.50	2.58	--	4.05	3.18
Turbidity (NTUs)	--	0.0	--	8.9	0.0	0.0	0.0	19.7	40.5	--	--	--	--	--	--	--	360	701	93.4	--	--	830	67.5	--	294	66.9	66.8	--	349	65.4
Temperature (Degrees Celsius)	--	24.81	--	26.21	26.45	25.10	24.21	26.73	26.37	--	--	--	--	--	--	--	28.21	26.69	25.81	--	--	22.89	22.59	--	20.95	18.74	19.22	--	19.92	20.84

Notes:

µg/L	Micrograms per liter
<1.0	Not detected at or above indicated laboratory reporting limit
--	Not analyzed
VOCs	Volatile organic compounds
DUP	Duplicate sample
NTU	Nephelometric turbidity unit
MEK	Methyl Ether Ketone
EPA	Environmental Protection Agency
J	Indicates an estimated value
a	Result is from Run# 2
b	Result is from Run# 3
c	Sample re-analyzed beyond hold time
d	Associated CCV outside control limits
1	Methyl Chloride was detected in MW-2 (DUP) at a concentration of 0.82 J,d; in MW-13A at a concentration of 0.93 J,d; in MW-13B at a concentration of 0.75 J,c; in MW-13C at a concentration of 0.72 J,d; in MW-14C at a concentration of 2.4, in MW-15A at a concertation of 0.72 J, and in MW-16C at a concentration of 0.82 J
2	Sample vial(s) contained bubbles greater than 6mm; reported results are considered minimum values

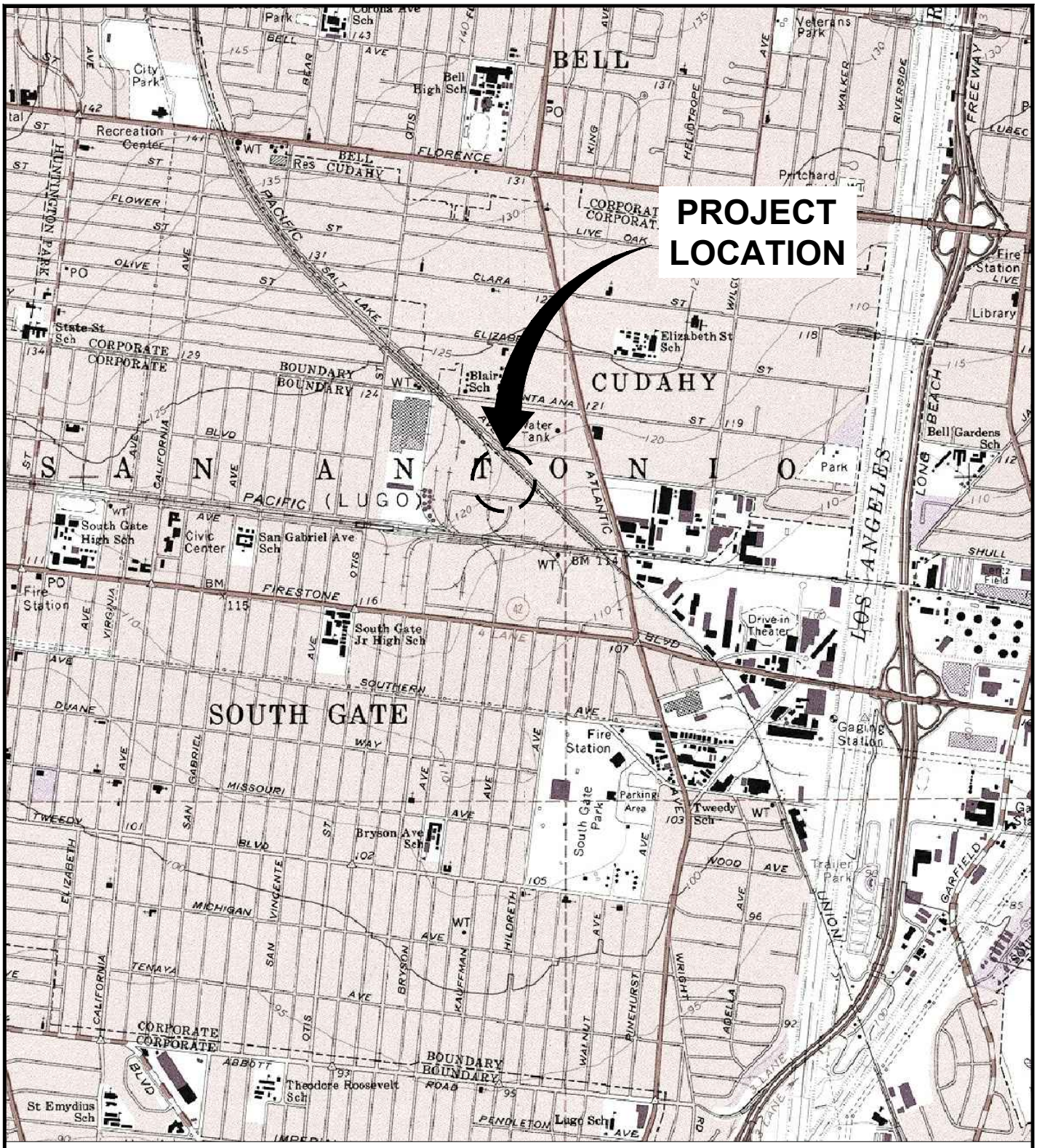
Table 4. Summary of Second Semi-Annual 2016 Groundwater Analytical Results (Metals and TPH)
Brenntag South Gate, South Gate, California
4545 Ardine Street, South Gate, California

Well ID	MW-1	MW-2	MW-2 DUP	MW-3	MW-4	MW-5S	MW-5D	MW-6S	MW-6D	MW-6D DUP	MW-7S	MW-7D	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13A	MW-13B	MW-13C	MW-14A	MW-14B	MW-14C	MW-15A	MW-15B	MW-16	MW-16C	MW-17A	MW-17B	MW-17C
Date Sampled	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/25/2016	10/25/2016	10/24/2016	10/26/2016	10/26/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/24/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016
Total Metals by EPA 6010/7000 (mg/L)																														
Antimony	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	**0.0070**	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	**0.0069**	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	**0.397**	**0.0291**	**0.0298**	**0.0113**	**0.0640**	**0.0123**	**0.0191**	**0.881**	**0.298**	**0.335**	<0.010	**1.04**	**1.10**	<0.010	<0.010	<0.010	<0.010	**0.0147**	<0.010	**0.0240**	**0.0196**	<0.010	**0.0510**	**0.0110**	**0.0100**	**5.40**	**0.0711**	<0.010	<0.010	<0.010
Barium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	**0.437**	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Cadmium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0117**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Chromium	**0.0173**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.0136**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.0702**	**0.0206**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.0184**	<0.010
Cobalt	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	**0.183**	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	**0.212**	**0.0657**	**0.104**	**0.0876**	**0.0286**	**0.0667**	<0.025	<0.025	**0.0280**	<0.025	<0.025	<0.025	<0.025	**0.105**	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Lead	**0.0242**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	**0.0227**	**0.0085**	**0.0288**	<0.0050	<0.0050	**0.0110**	<0.0050	<0.0050	**0.0052**	<0.0050	<0.0050	<0.0050	<0.0050	**0.0151**	**0.0061**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Mercury	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Molybdenum	**0.132**	<0.050	<0.050	<0.050	**0.0810**	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	**0.0561**	**0.0606**	**0.0789**	**0.0777**	**0.0624**	**0.0522**	<0.050	<0.050	<0.050	<0.050	<0.050	**0.0591**	**0.0630**	**0.105**	<0.050	**0.110**	<0.050	<0.050
Nickel	**0.359**	**0.0458**	**0.0467**	<0.040	**0.0969**	<0.040	<0.040	**0.0404**	<0.040	**0.0460**	**0.320**	**0.224**	<0.040	<0.040	**0.0819**	**0.304**	**0.0402**	<0.040	<0.040	<0.040	**0.120**	**0.104**	<0.040	<0.040	<0.040	**0.0928**	<0.040	<0.040	<0.040	<0.040
Selenium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	**0.0113**	<0.010	<0.010	**0.0114**	**0.0185**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Thallium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	**0.127**	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	**0.319**	**0.051**	**0.0511**	**0.132**	**0.113**	<0.020	**0.0229**	**0.316**	**0.306**	**0.449**	<0.020	**0.104**	**0.486**	<0.020	<0.020	**0.0425**	<0.020	**0.0226**	<0.020	**0.0509**	**0.310**	**0.0909**	**0.0408**	<0.020	<0.020	**0.0329**	<0.020	**0.0228**	**0.0609**	<0.020
TPH C6-C10 by EPA Method 8260 (µg/L); TPH C10-C40 by EPA Method 8015B (µg/L)																														
C6-C10	**579**	<100	**53.1 J**	<100	**601**	<100	<100	**176**	**202**	**184**	**70.5 J**	**130**	<100	<100	**66.8 J**	**69.5**	<100	<100	<100	<100	**61.8**	**246**	<200	<100	<100	<100	<100	<100	<100	<100
C10-C28	**971**	**217**	**168**	**62.9**	**446**	**39.3 J**	**203**	**1,020**	**515**	--	**420**	**644**	**519**	**491**	**218**	**250**	**2,180**	--	--	--	--	--	--	--	--	--	--	--	--	--
C28-C40	**747**	**207**	**59.7**	**31.2 J**	**84.0**	**22.6 J**	**92.0**	**501**	**359**	--	**181**	**218**	**186**	**234**	**124**	**123**	**292**	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

µg/L	Micrograms per liter
mg/L	Milligrams per liter
<0.0050	Not detected above indicated laboratory reporting limit
--	Not analyzed
NS	Not sampled
J	Indicates an estimated value
B	Indicates analyte found in associated method blank
Dup	Duplicate sample
EPA	Environmental Protection Agency
TPH	Total petroleum hydrocarbons

FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., SOUTH GATE, CALIFORNIA, 1964, PHOTOREVISED 1981

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

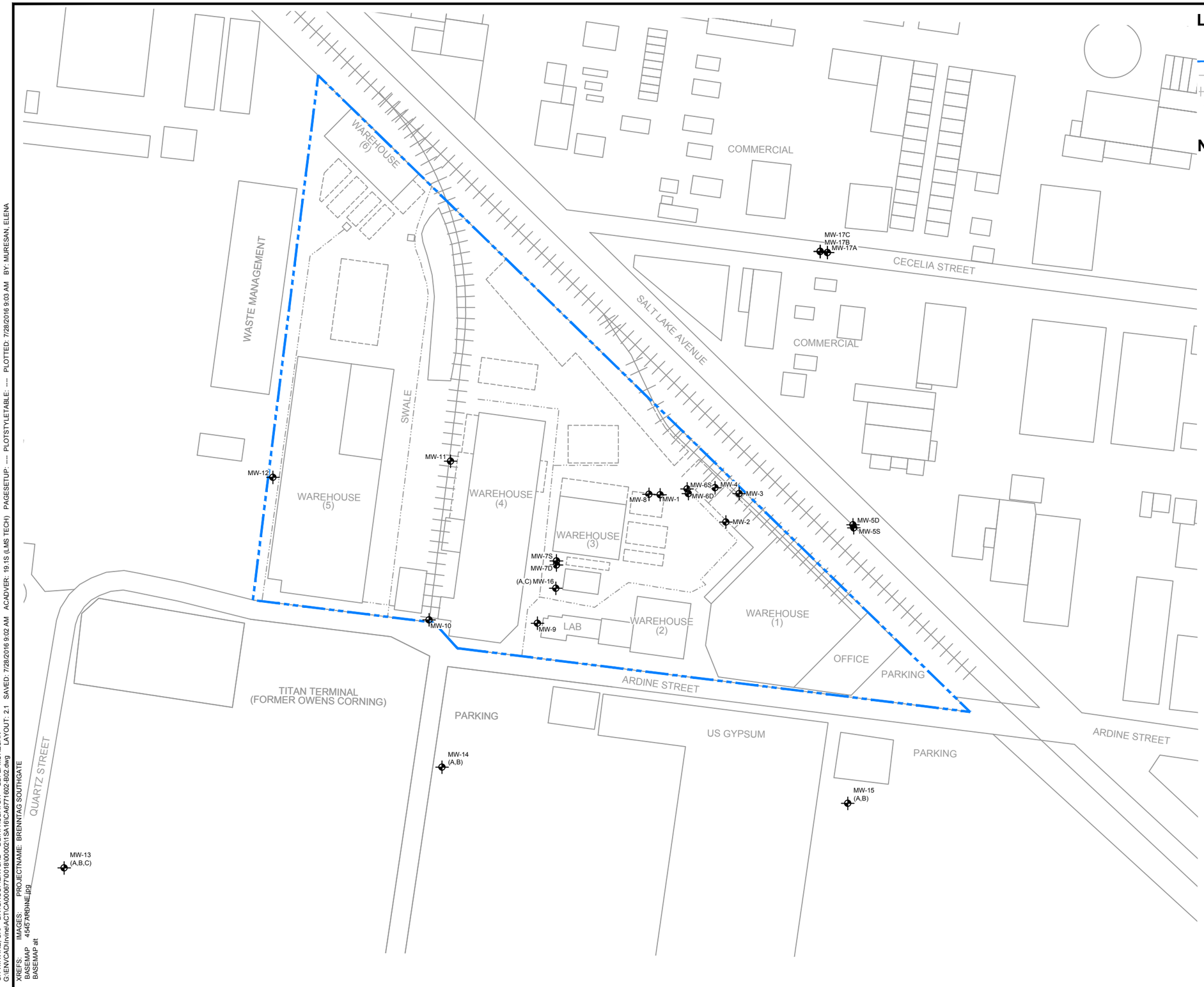
BRENNTAG SOUTH GATE, INC.
4545 ARDINE STREET, SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

CITY:LONG BEACH, CA DIV/GROUP:ENVDAD LD:R. HUBATCH LYR:(Opt)ON=*;OFF=*REF*
C:\ENVCAD\LONG BEACH\ACT\CA00667\00160000\2015 2SA\DWG\CA677160 2-B01.dwg LAYOUT: FIG 1 SAVED: 12/2/2015 9:51 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/4/2015 9:59 AM BY: HUBATCH, RICK
IMAGES: PROJECTNAME: Brenntah - South Gate
01_sitemap.JPG



LEGEND

- GROUNDWATER MONITORING WELL
- PROPERTY BOUNDARY
- CONCRETE SWALE
- RAILROAD TRACKS
- DRUM STORAGE AREA

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

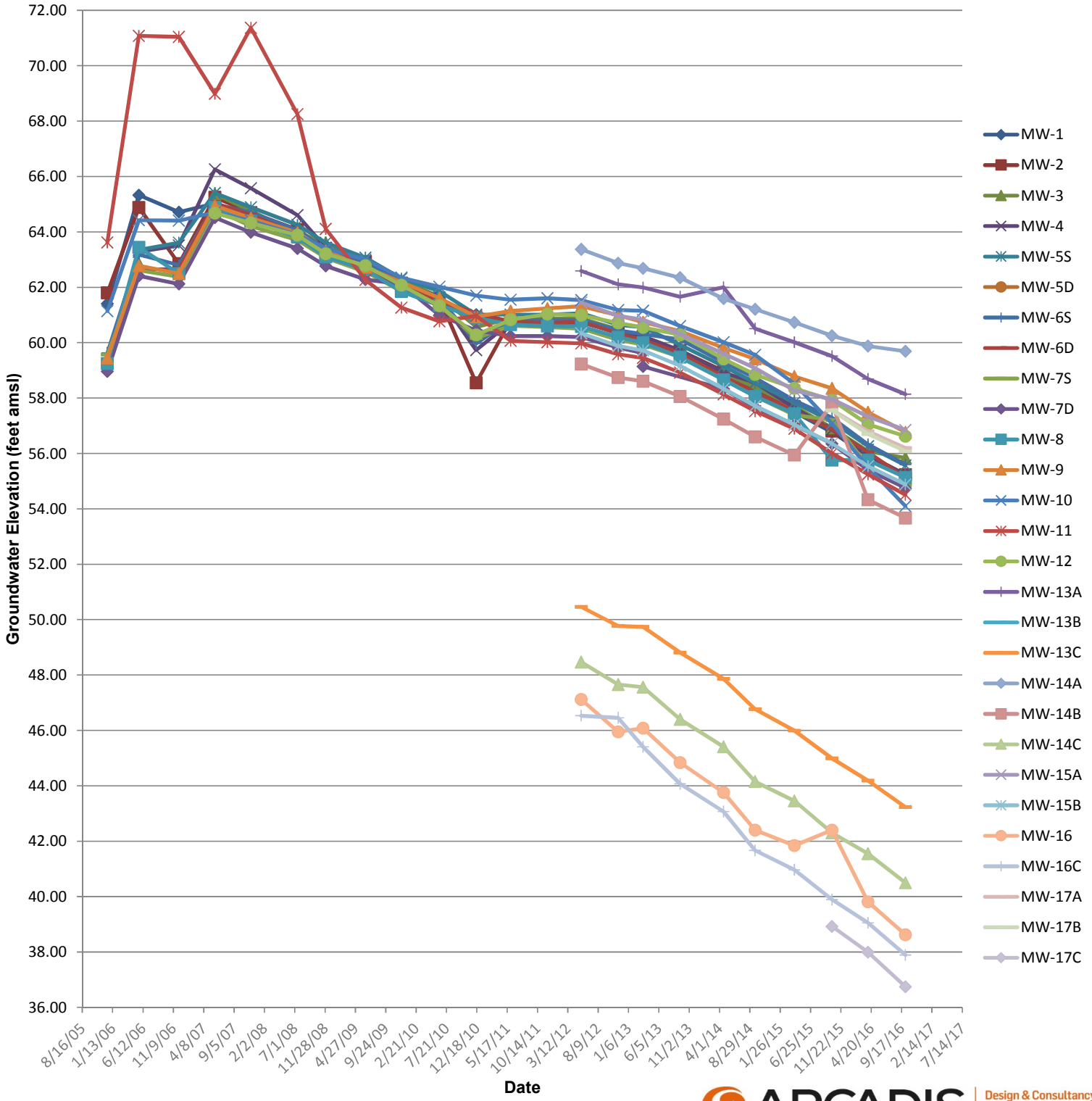
SITE PLAN SHOWING MONITORING WELL LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

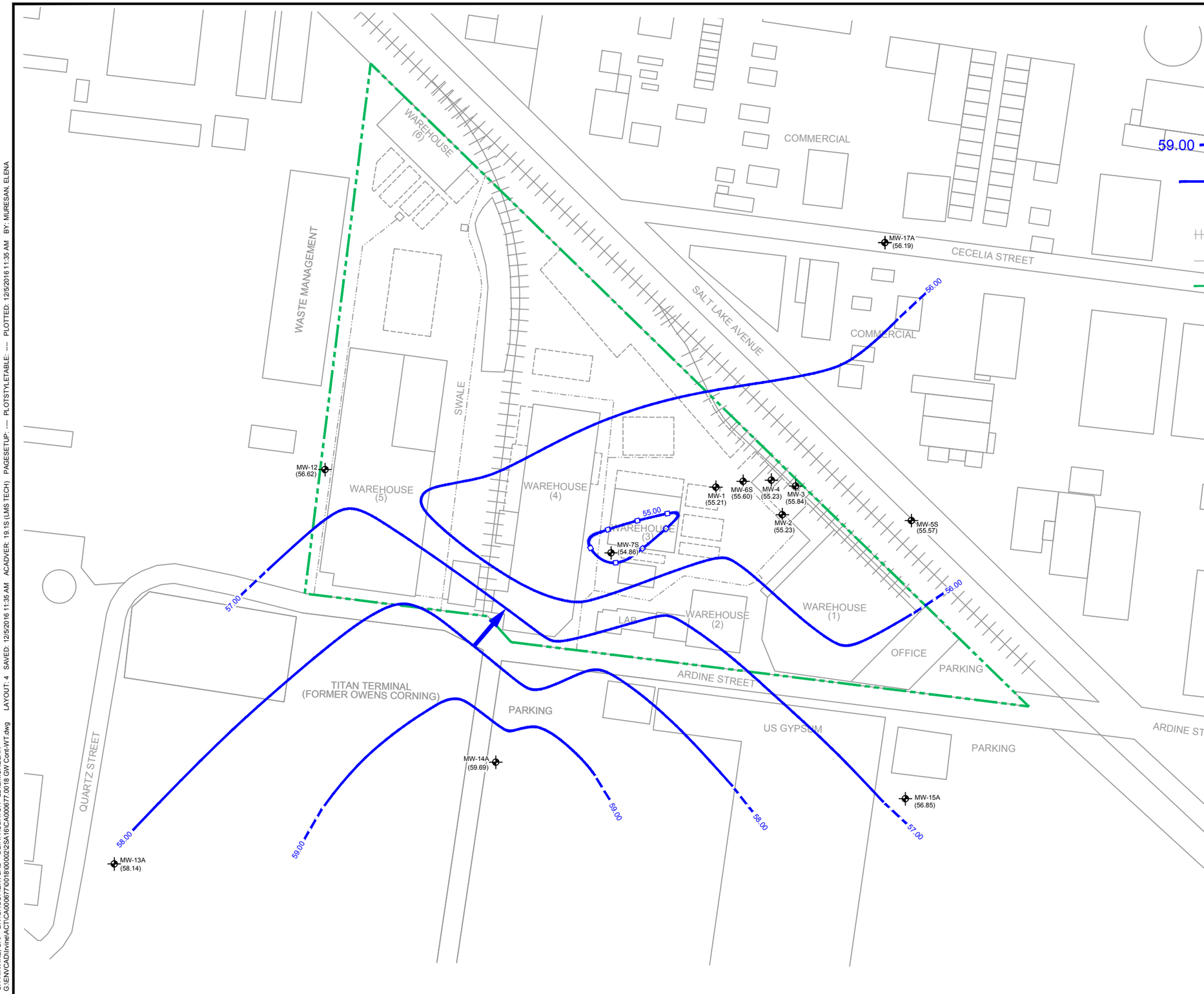
FIGURE
2

CITY:IRVINE, CA DIV/GROUP:ENVCAD DB:R. HUBATCH LD:E. MURESAN
G:\ENVCAD\Irvine\ACT\CA0008770\0190\00021\SA16\CA077\602-B02.dwg LAYOUT: 2.1 SAVED: 7/28/2016 9:02 AM ACADVER: 19.1S (LMS TECH) PAGESETUP:---- PLOTSTYLETABLE:---- PLOTTED: 7/28/2016 9:03 AM BY: MURESAN, ELENA
XREFS: IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE
BASEMAP 4545 ARDINE.jpg
BASEMAP alt

FIGURE 3
MONITORING WELL HYDROGRAPH
DECEMBER 2005 TO PRESENT
BRENNTAG SOUTH GATE
4545 ARDINE STREET, SOUTH GATE, CALIFORNIA



ARCADIS Design & Consultancy for natural and built assets



LEGEND

- GROUNDWATER MONITORING WELL
- (59.69) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 59.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- SEPARATE SYMBOLS INDICATES LOWER ELEVATION
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)
MW-17A (56-71)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

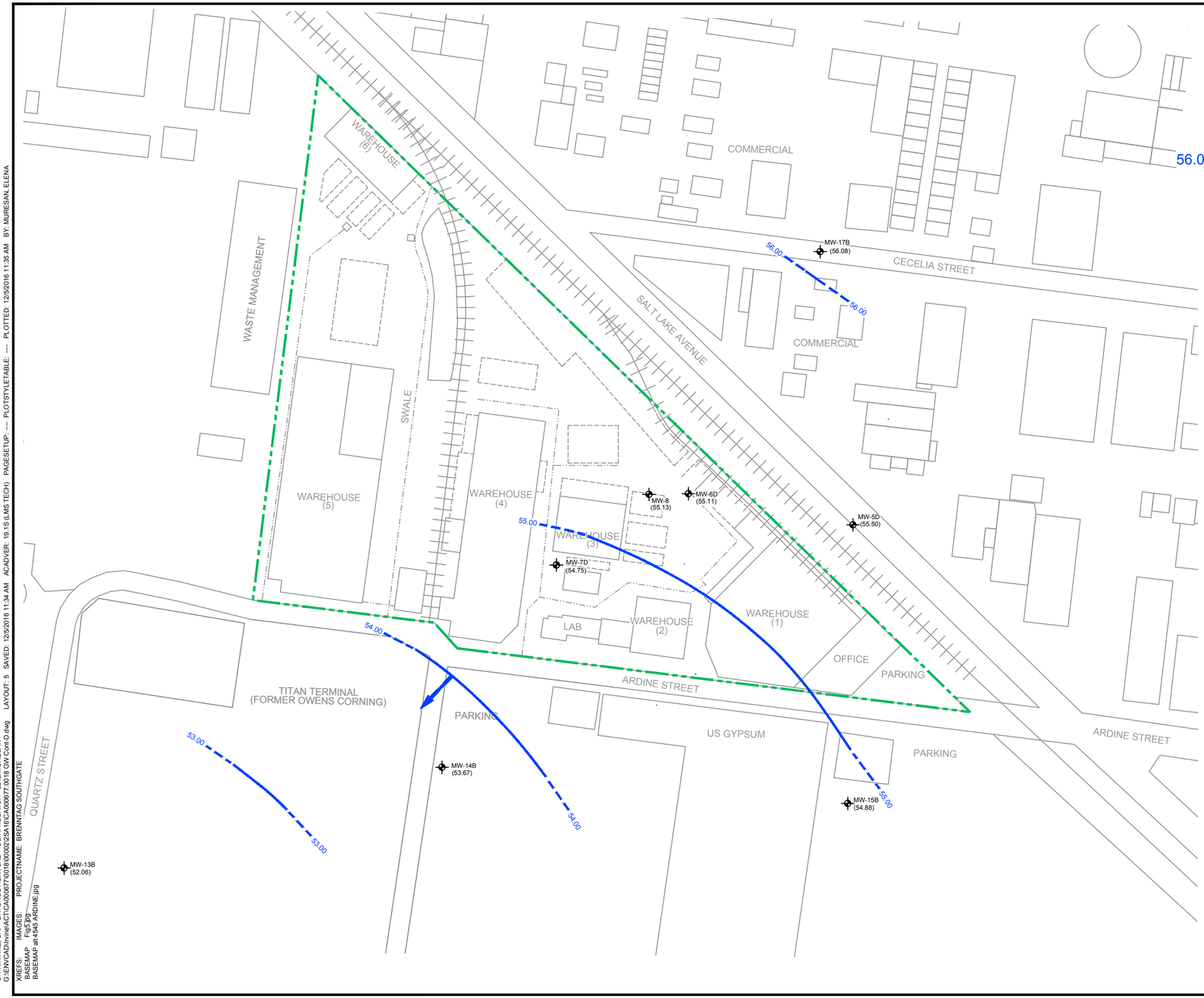
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE OCTOBER 6, 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY:IRVINE, CA DIV/GROUP:ENV/CAD DB:R. HUBATCH LD:E.MURESAN PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/5/2016 11:35 AM BY: MURESAN, ELENA
G:\ENVCAD\Irvine\ACT\CA00677\0018\00022\SA16\CA00677.0018 GW Cont-WT.dwg LAYOUT: 4 SAVED: 12/5/2016 11:35 AM ACADVER: 19.1S (LMS TECH)



LEGEND

- GROUNDWATER MONITORING WELL
- (56.08) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 56.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)
MW-17B (80-90)

WELL WITH SCREENS DEEPER THAN 105 FT BGS WERE NOT USED IN CONTOURING

* NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'
GRAPHIC SCALE

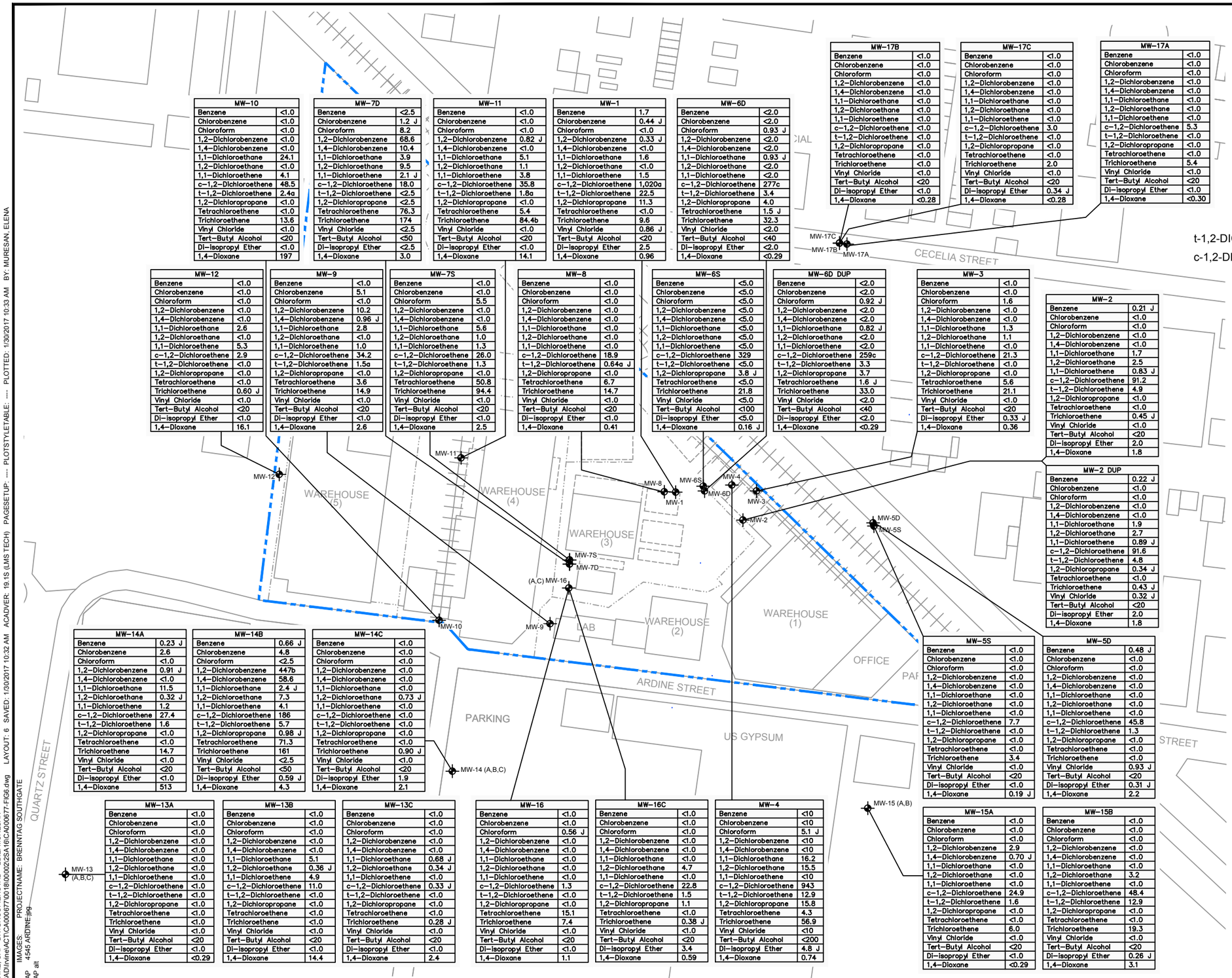
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS OCTOBER 6, 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5

CITY:IRVINE, CA DIV/GROUP:ENV/CAD DB:R. HUBATCH LD:E.MURESAN
G:\ENVCAD\Irvine\ACT\CA000877\0019\00002\2Sa16\CA000877.0019 GW Cont-D.dwg LAYOUT: 5 SAVED: 12/5/2016 11:34 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/5/2016 11:35 AM BY: MURESAN, ELENA
XREFS: BASEMAP BASEMAP alt 4545 ARDINE.jpg IMAGES: Fig5.jpg PROJECTNAME: BRENNTAG SOUTHGATE



MW-10	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	24.1
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	4.1
c-1,2-Dichloroethene	48.5
t-1,2-Dichloroethene	2.4a
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	13.6
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	197

MW-7D	
Benzene	<2.5
Chlorobenzene	1.2 J
Chloroform	8.2
1,2-Dichlorobenzene	68.6
1,4-Dichlorobenzene	10.4
1,1-Dichloroethane	3.9
1,2-Dichloroethane	9.5
1,1-Dichloroethene	2.1 J
c-1,2-Dichloroethene	18.0
t-1,2-Dichloroethene	<2.5
1,2-Dichloropropane	<2.5
Tetrachloroethene	76.3
Trichloroethene	174
Vinyl Chloride	<2.5
Tert-Butyl Alcohol	<50
Di-isopropyl Ether	<2.5
1,4-Dioxane	3.0

MW-11	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	0.82 J
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	5.1
1,2-Dichloroethane	1.1
1,1-Dichloroethene	3.8
c-1,2-Dichloroethene	35.8
t-1,2-Dichloroethene	1.8a
1,2-Dichloropropane	<1.0
Tetrachloroethene	5.4
Trichloroethene	84.4b
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	14.1

MW-1	
Benzene	1.7
Chlorobenzene	0.44 J
Chloroform	<1.0
1,2-Dichlorobenzene	0.33 J
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	1.6
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	1.5
c-1,2-Dichloroethene	1,020a
t-1,2-Dichloroethene	22.5
1,2-Dichloropropane	11.3
Tetrachloroethene	<1.0
Trichloroethene	9.6
Vinyl Chloride	0.86 J
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	2.5
1,4-Dioxane	0.96

MW-6D	
Benzene	<2.0
Chlorobenzene	<2.0
Chloroform	0.93 J
1,2-Dichlorobenzene	<2.0
1,4-Dichlorobenzene	<2.0
1,1-Dichloroethane	0.93 J
1,2-Dichloroethane	<2.0
1,1-Dichloroethene	<2.0
c-1,2-Dichloroethene	277c
t-1,2-Dichloroethene	3.4
1,2-Dichloropropane	4.0
Tetrachloroethene	1.5 J
Trichloroethene	32.3
Vinyl Chloride	<2.0
Tert-Butyl Alcohol	<40
Di-isopropyl Ether	<2.0
1,4-Dioxane	<0.29

MW-17B	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	<1.0
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	<1.0
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	<0.28

MW-17C	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	3.0
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	2.0
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	0.34 J
1,4-Dioxane	<0.28

MW-17A	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	5.3
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	5.4
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	<0.30

MW-12	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	2.6
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	5.3
c-1,2-Dichloroethene	2.9
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	0.60 J
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	16.1

MW-9	
Benzene	<1.0
Chlorobenzene	5.1
Chloroform	<1.0
1,2-Dichlorobenzene	10.2
1,4-Dichlorobenzene	0.96 J
1,1-Dichloroethane	2.8
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	1.0
c-1,2-Dichloroethene	34.2
t-1,2-Dichloroethene	1.5a
1,2-Dichloropropane	<1.0
Tetrachloroethene	3.6
Trichloroethene	14.9
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	2.6

MW-7S	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	5.5
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	5.6
1,2-Dichloroethane	1.0
1,1-Dichloroethene	1.3
c-1,2-Dichloroethene	26.0
t-1,2-Dichloroethene	1.3
1,2-Dichloropropane	<1.0
Tetrachloroethene	50.8
Trichloroethene	94.4
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	2.5

MW-8	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	18.9
t-1,2-Dichloroethene	0.64a J
1,2-Dichloropropane	<1.0
Tetrachloroethene	6.7
Trichloroethene	14.7
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	0.41

MW-6S	
Benzene	<5.0
Chlorobenzene	<5.0
Chloroform	<5.0
1,2-Dichlorobenzene	<5.0
1,4-Dichlorobenzene	<5.0
1,1-Dichloroethane	<5.0
1,2-Dichloroethane	<5.0
1,1-Dichloroethene	<5.0
c-1,2-Dichloroethene	329
t-1,2-Dichloroethene	<5.0
1,2-Dichloropropane	3.8 J
Tetrachloroethene	<5.0
Trichloroethene	21.8
Vinyl Chloride	<5.0
Tert-Butyl Alcohol	<100
Di-isopropyl Ether	<5.0
1,4-Dioxane	0.16 J

MW-6D DUP	
Benzene	<2.0
Chlorobenzene	<2.0
Chloroform	0.92 J
1,2-Dichlorobenzene	<2.0
1,4-Dichlorobenzene	<2.0
1,1-Dichloroethane	0.82 J
1,2-Dichloroethane	<2.0
1,1-Dichloroethene	<2.0
c-1,2-Dichloroethene	259c
t-1,2-Dichloroethene	3.3
1,2-Dichloropropane	3.7
Tetrachloroethene	1.6 J
Trichloroethene	33.0
Vinyl Chloride	<2.0
Tert-Butyl Alcohol	<40
Di-isopropyl Ether	<2.0
1,4-Dioxane	<0.29

MW-3	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	1.6
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	1.3
1,2-Dichloroethane	1.1
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	21.3
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	5.6
Trichloroethene	21.1
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	0.33 J
1,4-Dioxane	0.36

MW-2	
Benzene	0.21 J
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	1.7
1,2-Dichloroethane	2.5
1,1-Dichloroethene	0.83 J
c-1,2-Dichloroethene	91.2
t-1,2-Dichloroethene	4.9
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	0.45 J
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	2.0
1,4-Dioxane	1.8

MW-2 DUP	
Benzene	0.22 J
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	1.9
1,2-Dichloroethane	2.7
1,1-Dichloroethene	0.89 J
c-1,2-Dichloroethene	91.6
t-1,2-Dichloroethene	4.8
1,2-Dichloropropane	0.34 J
Tetrachloroethene	<1.0
Trichloroethene	0.43 J
Vinyl Chloride	0.32 J
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	2.0
1,4-Dioxane	1.8

MW-14A	
Benzene	0.23 J
Chlorobenzene	2.6
Chloroform	<1.0
1,2-Dichlorobenzene	0.91 J
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	11.5
1,2-Dichloroethane	0.32 J
1,1-Dichloroethene	1.2
c-1,2-Dichloroethene	27.4
t-1,2-Dichloroethene	1.6
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	14.7
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	513

MW-14B	
Benzene	0.66 J
Chlorobenzene	4.8
Chloroform	<2.5
1,2-Dichlorobenzene	447b
1,4-Dichlorobenzene	58.6
1,1-Dichloroethane	2.4 J
1,2-Dichloroethane	7.3
1,1-Dichloroethene	4.1
c-1,2-Dichloroethene	186
t-1,2-Dichloroethene	5.7
1,2-Dichloropropane	0.98 J
Tetrachloroethene	71.3
Trichloroethene	161
Vinyl Chloride	<2.5
Tert-Butyl Alcohol	<50
Di-isopropyl Ether	0.59 J
1,4-Dioxane	4.3

MW-14C	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	0.73 J
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	<1.0
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	0.90 J
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	1.9
1,4-Dioxane	2.1

MW-5S	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	7.7
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	3.4
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	0.19 J

MW-5D	
Benzene	0.48 J
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	45.8
t-1,2-Dichloroethene	1.3
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	<1.0
Vinyl Chloride	0.93 J
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	0.31 J
1,4-Dioxane	2.2

MW-13A	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	<1.0
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	<1.0
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	<0.29

MW-13B	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	5.1
1,2-Dichloroethane	0.36 J
1,1-Dichloroethene	4.9
c-1,2-Dichloroethene	11.0
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	<1.0
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	14.4

MW-13C	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	0.68 J
1,2-Dichloroethane	0.34 J
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	0.33 J
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	0.28 J
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	2.4

MW-16	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	0.56 J
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	<1.0
t-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Tetrachloroethene	15.1
Trichloroethene	7.4
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	1.1

MW-16C	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	4.7
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	22.8
t-1,2-Dichloroethene	1.5
1,2-Dichloropropane	1.1
Tetrachloroethene	<1.0
Trichloroethene	0.38 J
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	3.4
1,4-Dioxane	0.59

MW-4	
Benzene	<10
Chlorobenzene	<10
Chloroform	5.1 J
1,2-Dichlorobenzene	<10
1,4-Dichlorobenzene	<10
1,1-Dichloroethane	16.2
1,2-Dichloroethane	15.5
1,1-Dichloroethene	<10
c-1,2-Dichloroethene	943
t-1,2-Dichloroethene	12.9
1,2-Dichloropropane	15.8
Tetrachloroethene	4.3
Trichloroethene	56.9
Vinyl Chloride	<10
Tert-Butyl Alcohol	<200
Di-isopropyl Ether	4.8 J
1,4-Dioxane	0.74

MW-15A	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	2.9
1,4-Dichlorobenzene	0.70 J
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	24.9
t-1,2-Dichloroethene	1.6
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	6.0
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	<1.0
1,4-Dioxane	<0.29

MW-15B	
Benzene	<1.0
Chlorobenzene	<1.0
Chloroform	<1.0
1,2-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	3.2
1,1-Dichloroethene	<1.0
c-1,2-Dichloroethene	48.4
t-1,2-Dichloroethene	12.9
1,2-Dichloropropane	<1.0
Tetrachloroethene	<1.0
Trichloroethene	19.3
Vinyl Chloride	<1.0
Tert-Butyl Alcohol	<20
Di-isopropyl Ether	0.26 J
1,4-Dioxane	3.1

LEGEND

- GROUNDWATER MONITORING WELL
- PROPERTY BOUNDARY
- CONCRETE SWALE
- RAILROAD TRACKS
- DRUM STORAGE AREA

t-1,2-DICHLOROETHENE TRANS-1,2-DICHLOROETHENE
c-1,2-DICHLOROETHENE cis-1,2-DICHLOROETHENE

VOCs VOLATILE ORGANIC COMPOUNDS
<1.0 COMPOUND NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
A RESULT IS FRON RUN #2
B RESULT IS FRON RUN #3
C SAMPLE RE-ANALYZED BEYOND HOLD TIME
D ASSOCIATED CCV OUTSIDE CONTROL LIMITS
J INDICATES AN ESTIMATED VALUE
-- NOT ANALYZED
NS NOT SAMPLED

NOTES

1. ALL RESULTS EXPRESSED IN MICROGRAMS PER LITER.
2. FOR A FULL LIST OF DETECTIONS PLEASE SEE THE ANALYTICAL REPORT IN APPENDIX B OF THIS REPORT.

0 150' 300'
GRAPHIC SCALE

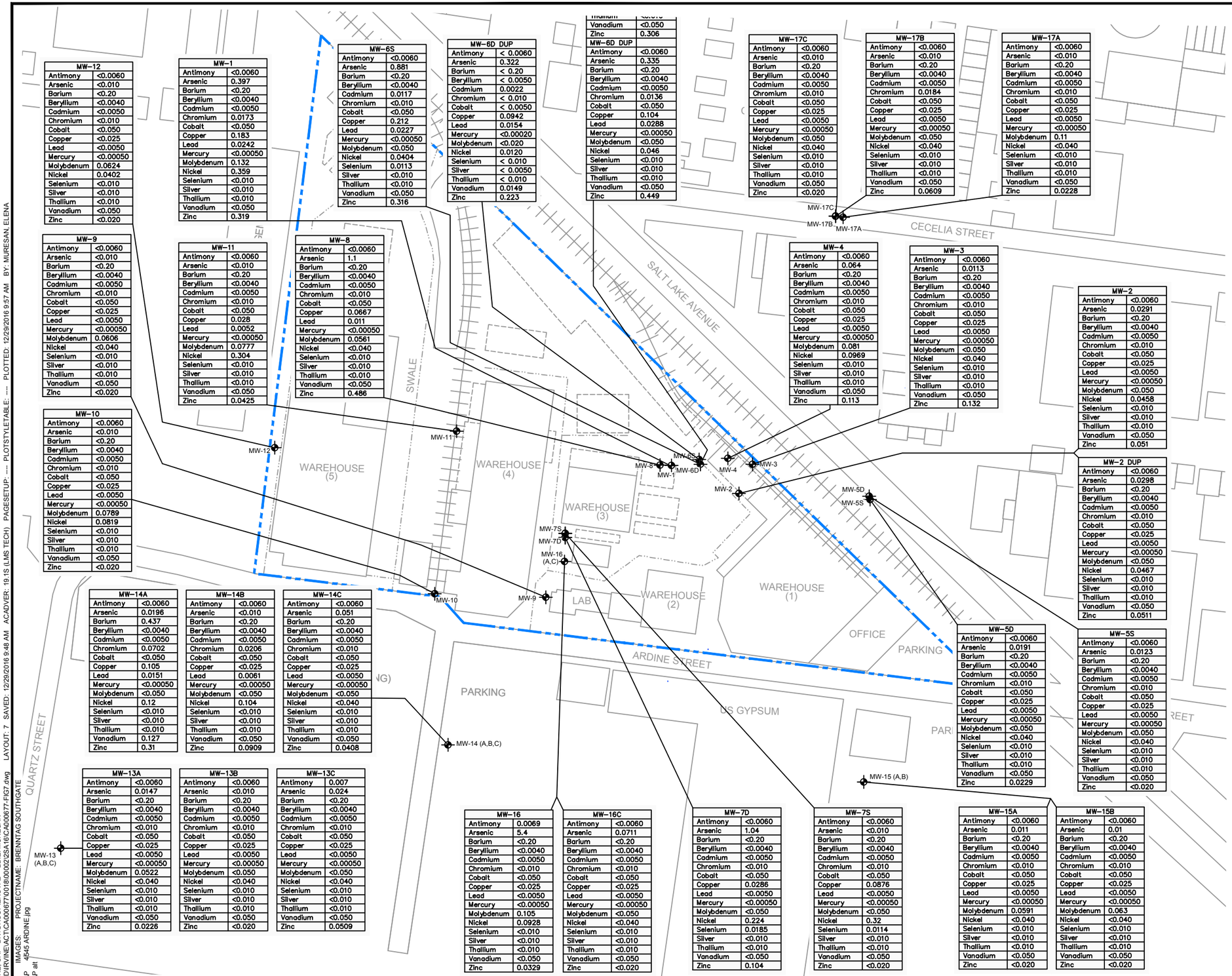
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016 GROUNDWATER MONITORING REPORT

DISTRIBUTION OF SELECT VOCs AND 1,4-DIOXANE IN GROUNDWATER OCTOBER 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
6

CITY: IRVINE, CA DIV/GROUP: ENCVAD LD: E. MURESAN
G:\ENVCAD\Irvine\ACT\CA0006770018\00002\2SA16\CA000677-FIG6.dwg LAYOUT: 6 SAVED: 1/30/2017 10:32 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/30/2017 10:33 AM BY: MURESAN, ELENA
XREFS: IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE
BASEMAP 4545 ARDINE.jpg
BASEMAP alt



MW-12	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.0624
Nickel	0.0402
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-1	
Antimony	<0.0060
Arsenic	0.397
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	0.0173
Cobalt	<0.050
Copper	0.183
Lead	0.0242
Mercury	<0.00050
Molybdenum	0.132
Nickel	0.359
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.319

MW-6S	
Antimony	<0.0060
Arsenic	0.881
Barium	<0.20
Beryllium	<0.0040
Cadmium	0.0117
Chromium	<0.010
Cobalt	<0.050
Copper	0.212
Lead	0.0227
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.0404
Selenium	0.0113
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.316

MW-6D DUP	
Antimony	< 0.0060
Arsenic	0.322
Barium	< 0.20
Beryllium	< 0.0050
Cadmium	0.0022
Chromium	< 0.010
Cobalt	< 0.0050
Copper	0.0942
Lead	0.0154
Mercury	<0.00020
Molybdenum	<0.020
Nickel	0.0120
Selenium	< 0.010
Silver	< 0.0050
Thallium	< 0.010
Vanadium	0.0149
Zinc	0.223

Vanadium	<0.050
Zinc	0.306

MW-6D DUP	
Antimony	<0.0060
Arsenic	0.335
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	0.0136
Cobalt	<0.050
Copper	0.104
Lead	0.0288
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.046
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.449

MW-17C	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-17B	
Antimony	<0.0060
Arsenic	<0.20
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	0.0184
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0609

MW-17A	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.11
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0228

MW-9	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.0606
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-11	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	0.028
Lead	0.0052
Mercury	<0.00050
Molybdenum	0.0777
Nickel	0.304
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0425

MW-8	
Antimony	<0.0060
Arsenic	1.1
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	0.0667
Lead	0.011
Mercury	<0.00050
Molybdenum	0.0561
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.486

MW-4	
Antimony	<0.0060
Arsenic	0.064
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.081
Nickel	0.0969
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.113

MW-3	
Antimony	<0.0060
Arsenic	0.0113
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.132

MW-2	
Antimony	<0.0060
Arsenic	0.0291
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.0458
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.051

MW-2 DUP	
Antimony	<0.0060
Arsenic	0.0298
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.0467
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0511

MW-10	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.0789
Nickel	0.0819
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-14A	
Antimony	<0.0060
Arsenic	0.0196
Barium	0.437
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	0.0702
Cobalt	<0.050
Copper	0.105
Lead	0.0151
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.12
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	0.127
Zinc	0.31

MW-14B	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	0.0206
Cobalt	<0.050
Copper	<0.025
Lead	0.0061
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.104
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0909

MW-14C	
Antimony	<0.0060
Arsenic	0.051
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0408

MW-5D	
Antimony	<0.0060
Arsenic	0.0191
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0229

MW-5S	
Antimony	<0.0060
Arsenic	0.0123
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-13A	
Antimony	<0.0060
Arsenic	0.0147
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.0522
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0226

MW-13B	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-13C	
Antimony	0.007
Arsenic	0.024
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0509

MW-16	
Antimony	0.0069
Arsenic	5.4
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.105
Nickel	0.0928
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.0329

MW-16C	
Antimony	<0.0060
Arsenic	0.0711
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-7D	
Antimony	<0.0060
Arsenic	1.04
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	0.0286
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.224
Selenium	0.0185
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	0.104

MW-7S	
Antimony	<0.0060
Arsenic	<0.010
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	0.0876
Lead	<0.0050
Mercury	<0.00050
Molybdenum	<0.050
Nickel	0.32
Selenium	0.0114
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-15A	
Antimony	<0.0060
Arsenic	0.011
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.0591
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

MW-15B	
Antimony	<0.0060
Arsenic	0.01
Barium	<0.20
Beryllium	<0.0040
Cadmium	<0.0050
Chromium	<0.010
Cobalt	<0.050
Copper	<0.025
Lead	<0.0050
Mercury	<0.00050
Molybdenum	0.063
Nickel	<0.040
Selenium	<0.010
Silver	<0.010
Thallium	<0.010
Vanadium	<0.050
Zinc	<0.020

LEGEND

- GROUNDWATER MONITORING WELL
- PROPERTY BOUNDARY
- CONCRETE SWALE
- RAILROAD TRACKS
- DRUM STORAGE AREA
- <0.050 — COMPOUND NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
- -- — NOT ANALYZED
- NS — NOT SAMPLED

NOTE

1. ALL RESULTS EXPRESSED IN MILLIGRAMS PER LITER.

0 150' 300'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA

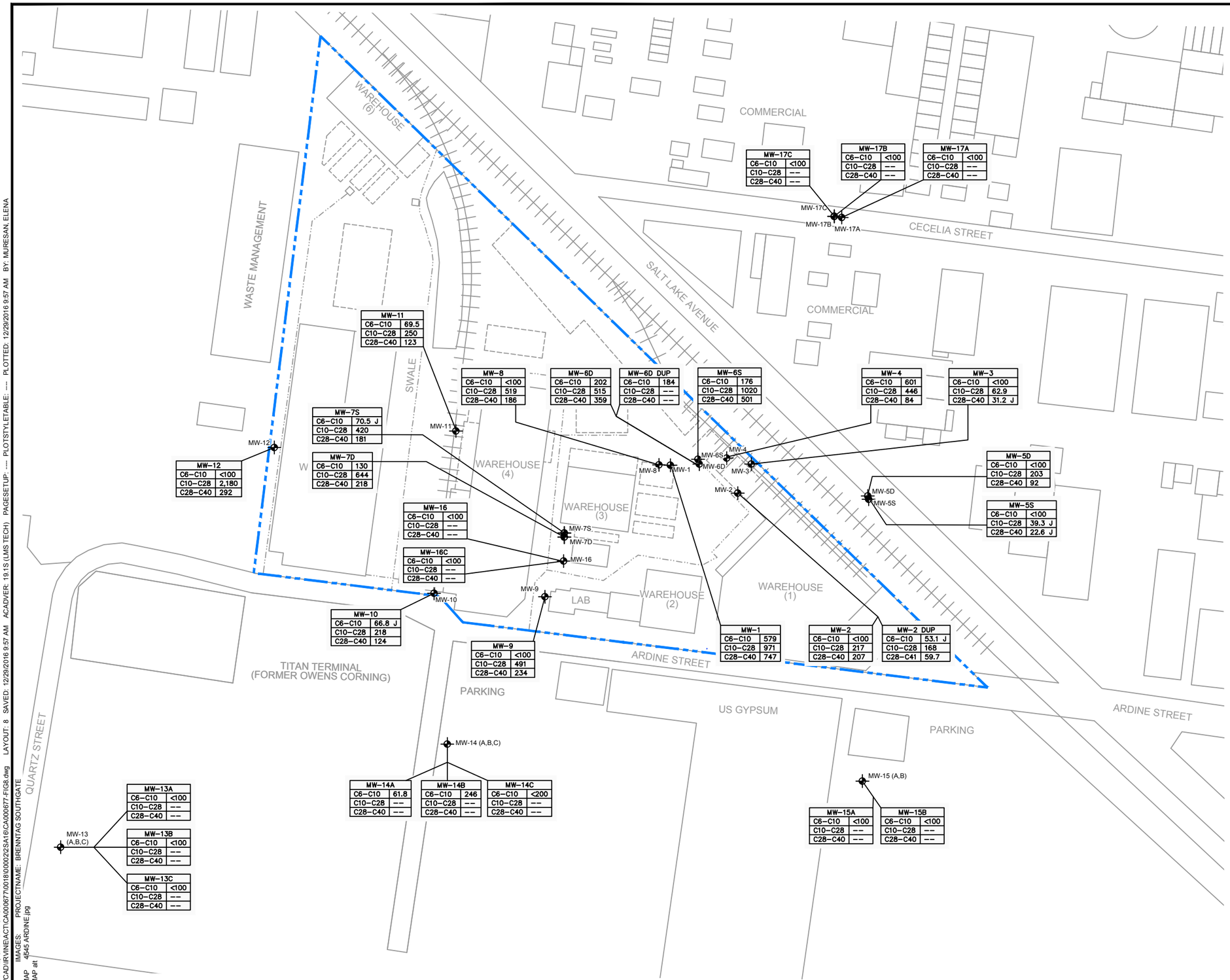
SECOND SEMI-ANNUAL 2016 GROUNDWATER MONITORING REPORT

DISTRIBUTION OF METALS IN GROUNDWATER OCTOBER 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE 7

CITY: IRVINE, CA DIV/GROUP: ENCVAD LD: E. MURESAN
C:\ENVCAD\IRVINE\ACT\CA000677\0018\00002\25A16\CA000677-FIG7.dwg LAYOUT: 7 SAVED: 12/29/2016 9:48 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/29/2016 9:57 AM BY: MURESAN, ELENA
XREFS: BASEMAP BASEMAP alt IMAGES: 4545 ARDINE.jpg PROJECTNAME: BRENNTAG SOUTHGATE



MW-17C	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-17B	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-17A	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-11	
C6–C10	69.5
C10–C28	250
C28–C40	123

MW-8	
C6–C10	<100
C10–C28	519
C28–C40	186

MW-6D	
C6–C10	202
C10–C28	515
C28–C40	359

MW-6D DUP	
C6–C10	184
C10–C28	--
C28–C40	--

MW-6S	
C6–C10	176
C10–C28	1020
C28–C40	501

MW-4	
C6–C10	601
C10–C28	446
C28–C40	84

MW-3	
C6–C10	<100
C10–C28	62.9
C28–C40	31.2 J

MW-7S	
C6–C10	70.5 J
C10–C28	420
C28–C40	181

MW-7D	
C6–C10	130
C10–C28	644
C28–C40	218

MW-12	
C6–C10	<100
C10–C28	2,180
C28–C40	292

MW-16	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-16C	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-10	
C6–C10	66.8 J
C10–C28	218
C28–C40	124

MW-9	
C6–C10	<100
C10–C28	491
C28–C40	234

MW-1	
C6–C10	579
C10–C28	971
C28–C40	747

MW-2	
C6–C10	<100
C10–C28	217
C28–C40	207

MW-2 DUP	
C6–C10	53.1 J
C10–C28	168
C28–C41	59.7

MW-5D	
C6–C10	<100
C10–C28	203
C28–C40	92

MW-5S	
C6–C10	<100
C10–C28	39.3 J
C28–C40	22.6 J

MW-14A	
C6–C10	61.8
C10–C28	--
C28–C40	--

MW-14B	
C6–C10	246
C10–C28	--
C28–C40	--

MW-14C	
C6–C10	<200
C10–C28	--
C28–C40	--

MW-15A	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-15B	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-13A	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-13B	
C6–C10	<100
C10–C28	--
C28–C40	--

MW-13C	
C6–C10	<100
C10–C28	--
C28–C40	--

LEGEND

	GROUNDWATER MONITORING WELL
	PROPERTY BOUNDARY
	CONCRETE SWALE
	RAILROAD TRACKS
	DRUM STORAGE AREA
C6-C10	GASOLINE RANGE HYDROCARBONS
C10-C28	DIESEL RANGE HYDROCARBONS
C28-C40	MOTOR OIL RANGE HYDROCARBONS
<50	COMPOUND NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMIT
J	INDICATES AN ESTIMATED VALUE
--	NOT ANALYZED
NS	NOT SAMPLED

NOTE

1. ALL RESULTS EXPRESSED IN MICROGRAMS PER LITER.

0 150' 300'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA

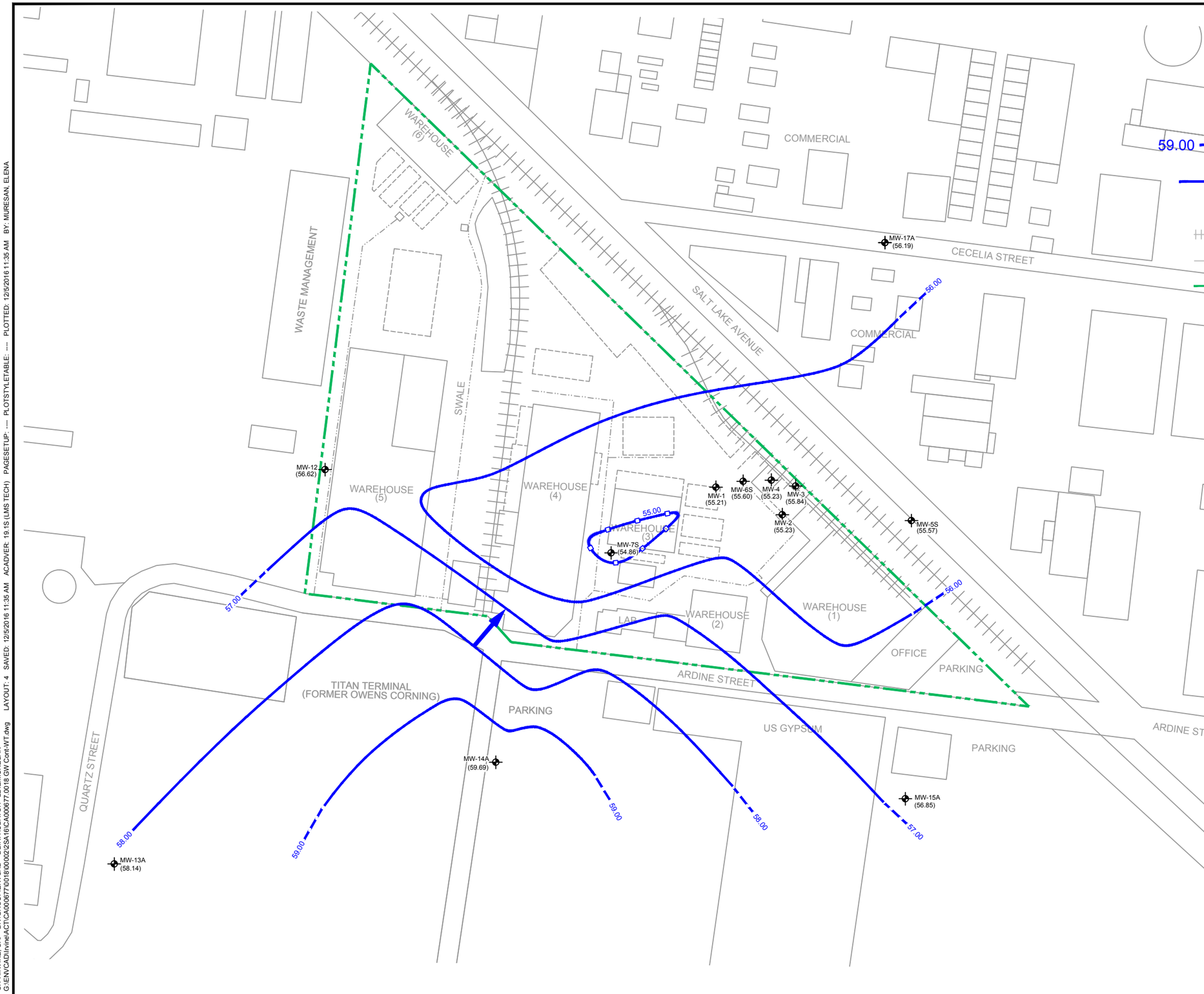
SECOND SEMI-ANNUAL 2016 GROUNDWATER MONITORING REPORT

DISTRIBUTION OF TOTAL PETROLEUM HYDROCARBONS IN GROUNDWATER OCTOBER 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE 8

CITY: IRVINE, CA. DIV/GROUP:ENCVAD LD:E. MURESAN
C:\ENVCAD\IRVINE\ACT\CA000677\00180\00022\SA16\CA000677-FIG8.dwg LAYOUT: 8 SAVED: 12/29/2016 9:57 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/29/2016 9:57 AM BY: MURESAN, ELENA
XREFS: IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE
BASEMAP 4545 ARDINE.jpg
BASEMAP alt



LEGEND

- GROUNDWATER MONITORING WELL
- (59.69) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 59.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- SEPARATE SYMBOLS INDICATES LOWER ELEVATION
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)
MW-17A (56-71)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

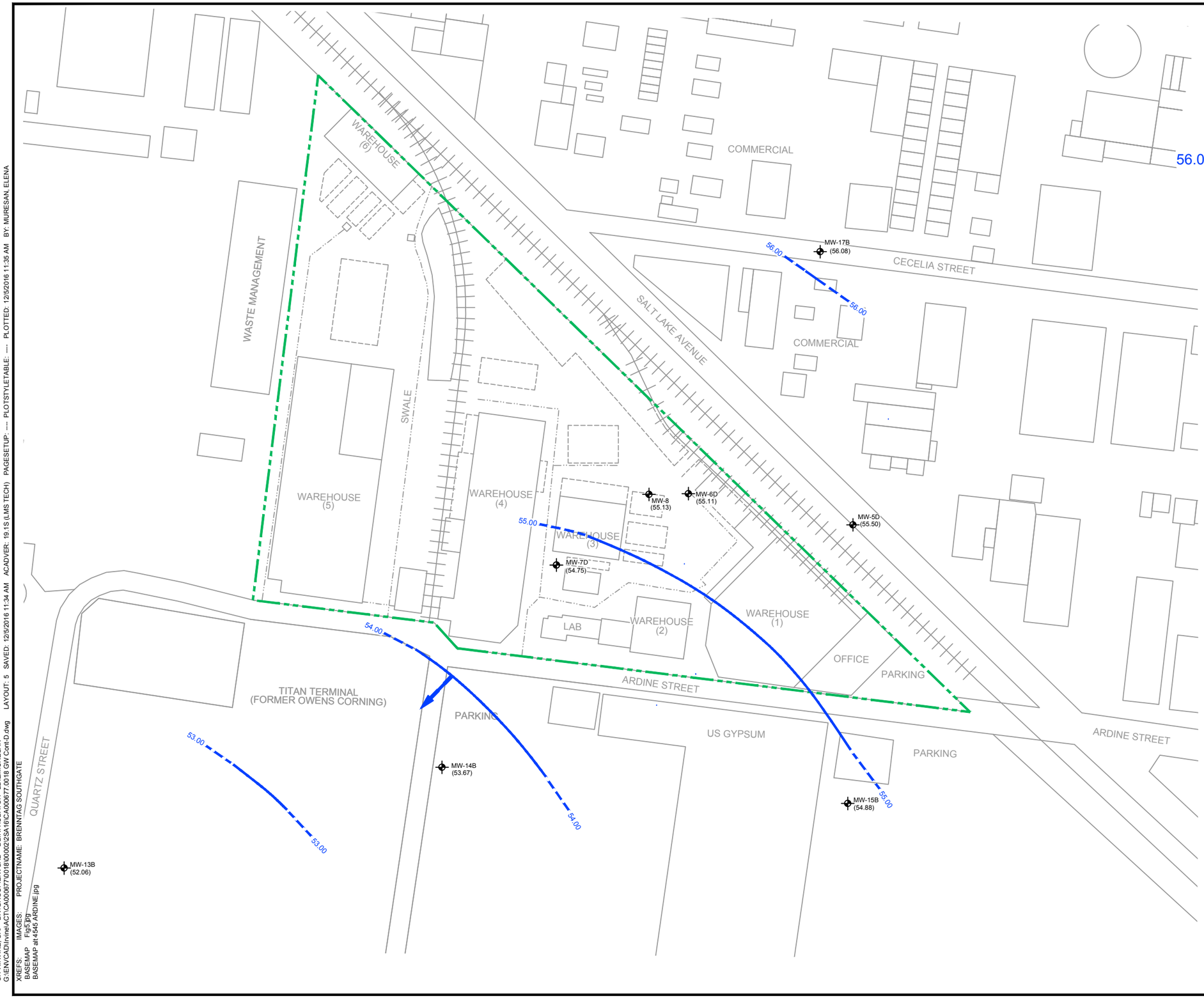
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE OCTOBER 6, 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY:IRVINE, CA DIV/GROUP:ENV/CAD DB:R. HUBATCH LD:E.MURESAN PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/5/2016 11:35 AM BY: MURESAN, ELENA
G:\ENVCAD\Irvine\ACT\CA00677\0018\00022\SA16\CA00677.0018 GW Cont-WT.dwg LAYOUT: 4 SAVED: 12/5/2016 11:35 AM ACADVER: 19.1S (LMS TECH)



LEGEND

- GROUNDWATER MONITORING WELL
- (56.08) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 56.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)
MW-17B (80-90)

WELL WITH SCREENS DEEPER THAN 105 FT BGS WERE NOT USED IN CONTOURING

* NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'
GRAPHIC SCALE

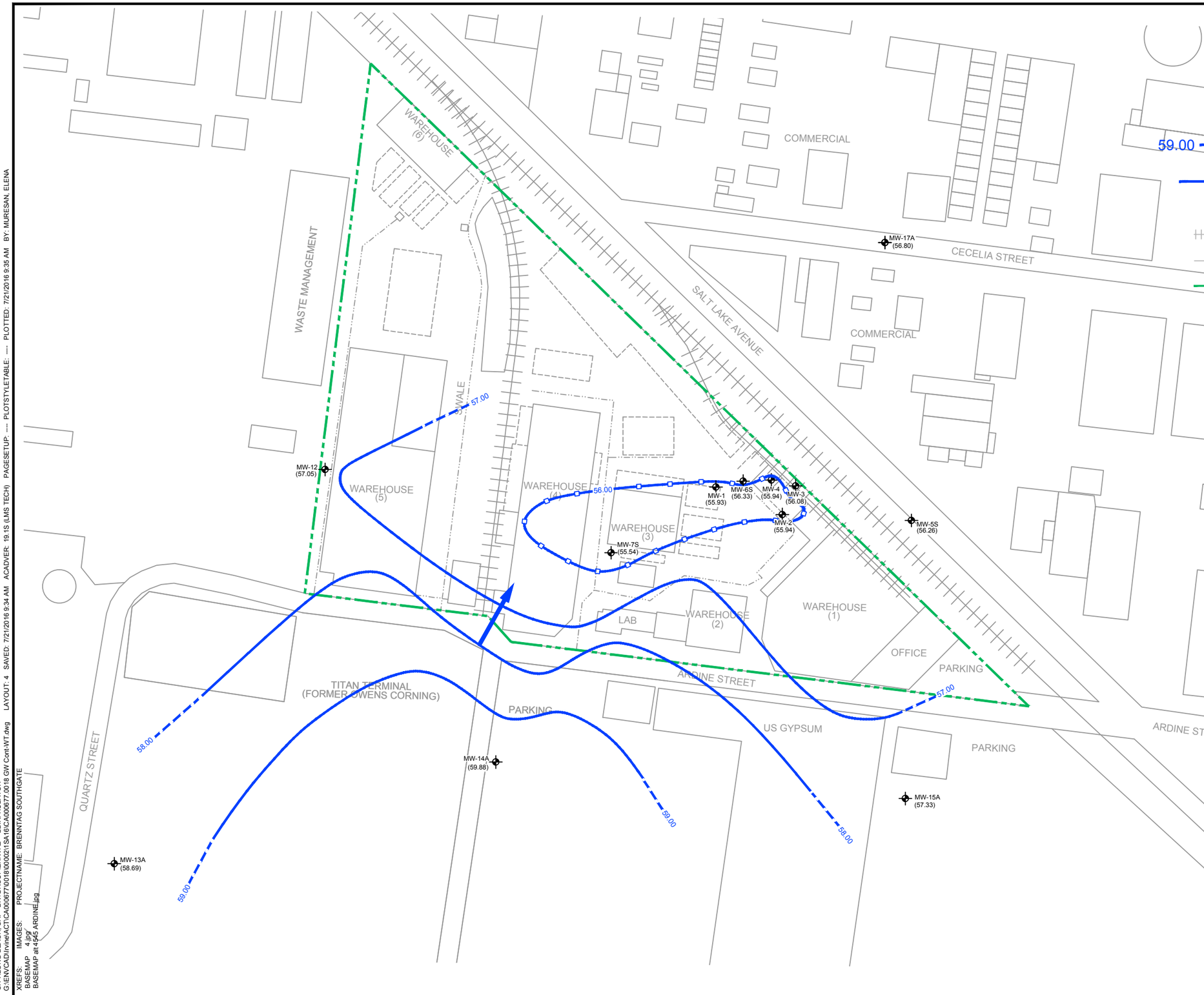
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS OCTOBER 6, 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5

CITY:IRVINE, CA DIV/GROUP:ENV/CAD DB:R. HUBATCH LD:E.MURESAN
G:\ENVCAD\Irvine\ACT\CA000877\0019\00002\2Sa16\CA000877.0019 GW Cont-D.dwg LAYOUT: 5 SAVED: 12/5/2016 11:34 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/5/2016 11:35 AM BY: MURESAN, ELENA
XREFS: BASEMAP BASEMAP alt 4545 ARDINE.jpg IMAGES: Fig5.jpg PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

- GROUNDWATER MONITORING WELL
- (59.88) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 59.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- SEPARATE SYMBOLS INDICATES LOWER ELEVATION
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)
MW-17A (56-71)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

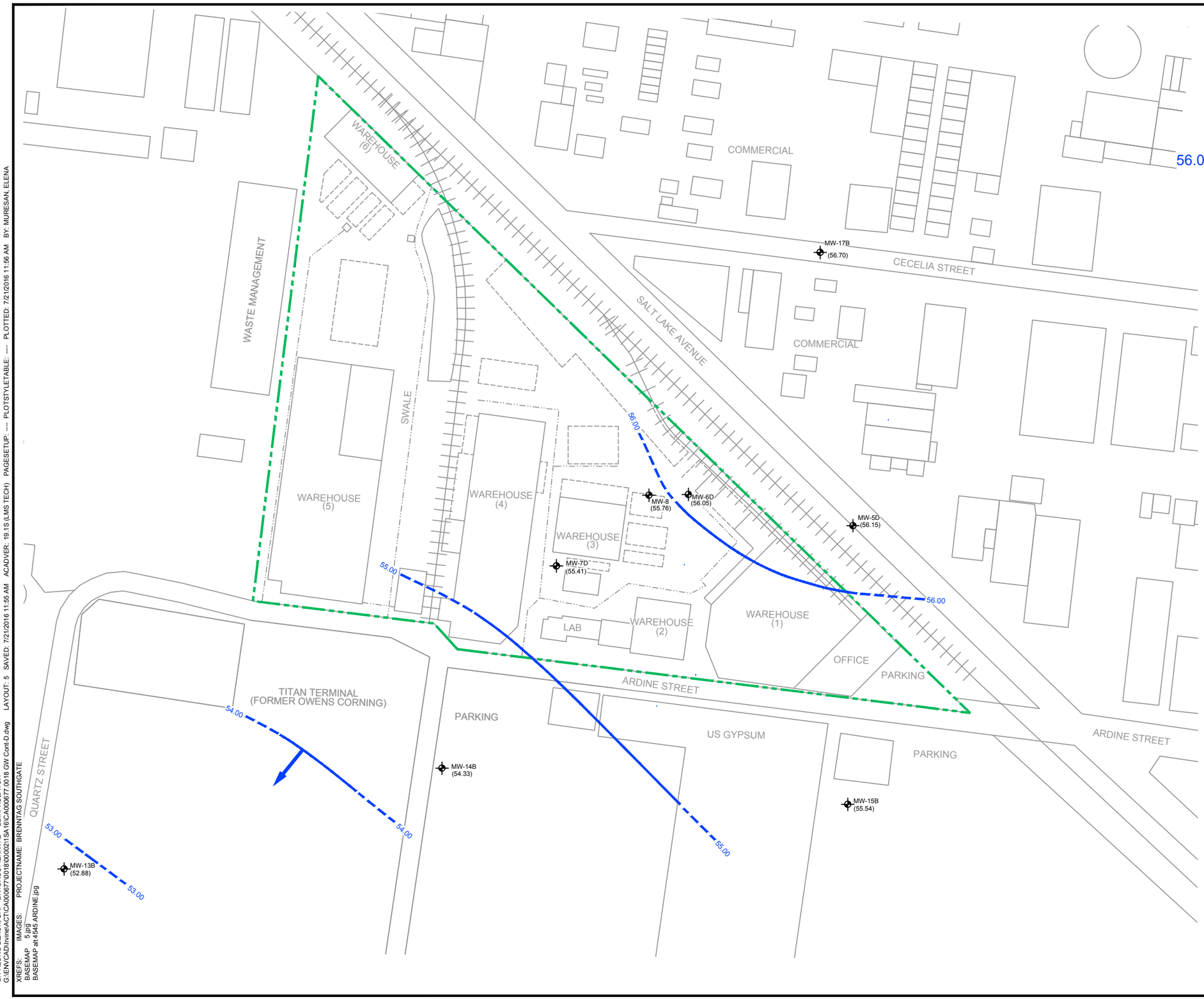
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
FIRST SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE APRIL 4, 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY:LONG BEACH,CA DIV/GROUP:ENRV/AD LDR: HUBATCH
G:\ENVCAD\Irvine\ACT\CA00607\00\B0002\1SA1\BCA00607.0018 GW Cont-WT.dwg LAYOUT: 4 SAVED: 7/21/2016 9:34 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/21/2016 9:35 AM BY: MURESAN, ELENA
XREFS: BASEMAP 4.jpg BASEMAP all 4545 ARDINE.jpg IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

- GROUNDWATER MONITORING WELL
- (56.70) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 56.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)
MW-17B (80-90)

WELL WITH SCREENS DEEPER THAN 105 FT BGS WERE NOT USED IN CONTOURING

* NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

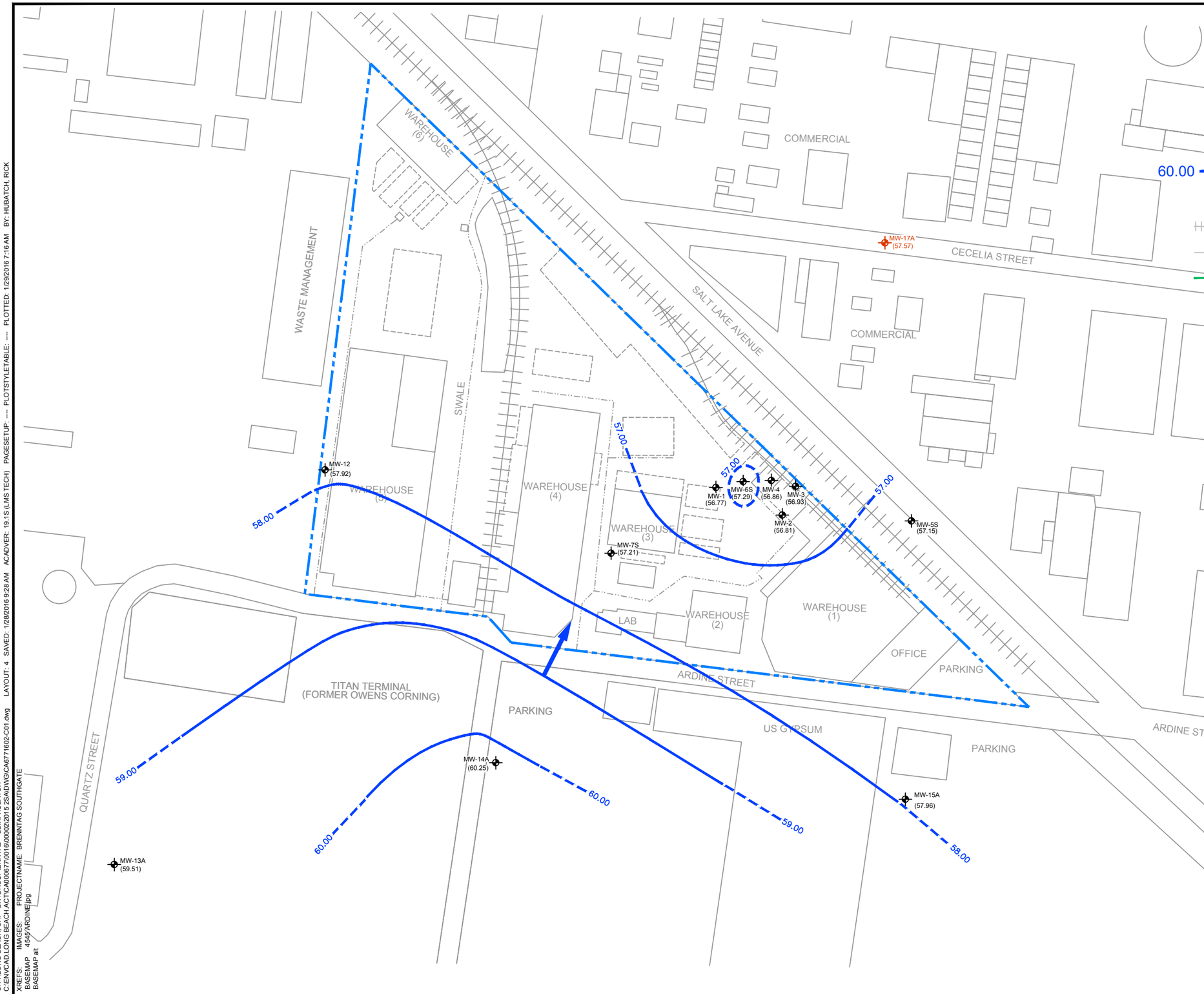
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
FIRST SEMI-ANNUAL 2016
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS APRIL 4, 2016

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5

CITY:LONG BEACH, CA DIV/GROUP:ENRVAD LD:R. HUBATCH
G:\ENVCAD\Irvine\ACT\CA000877\0018\00021\SA16\CA000877.0018 GW Cont-D.dwg LAYOUT: 5 SAVED: 7/21/2016 11:55 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/21/2016 11:56 AM BY: MURESAN, ELENA
XREFS: BASEMAP BASEMAP alt 4545 ARDINE.jpg IMAGES: 5.jpg PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

- GROUNDWATER MONITORING WELL
- GROUNDWATER MONITORING WELL (INSTALLED SEPTEMBER 2015)
- (60.25) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 60.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)
MW-17A (56-71)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

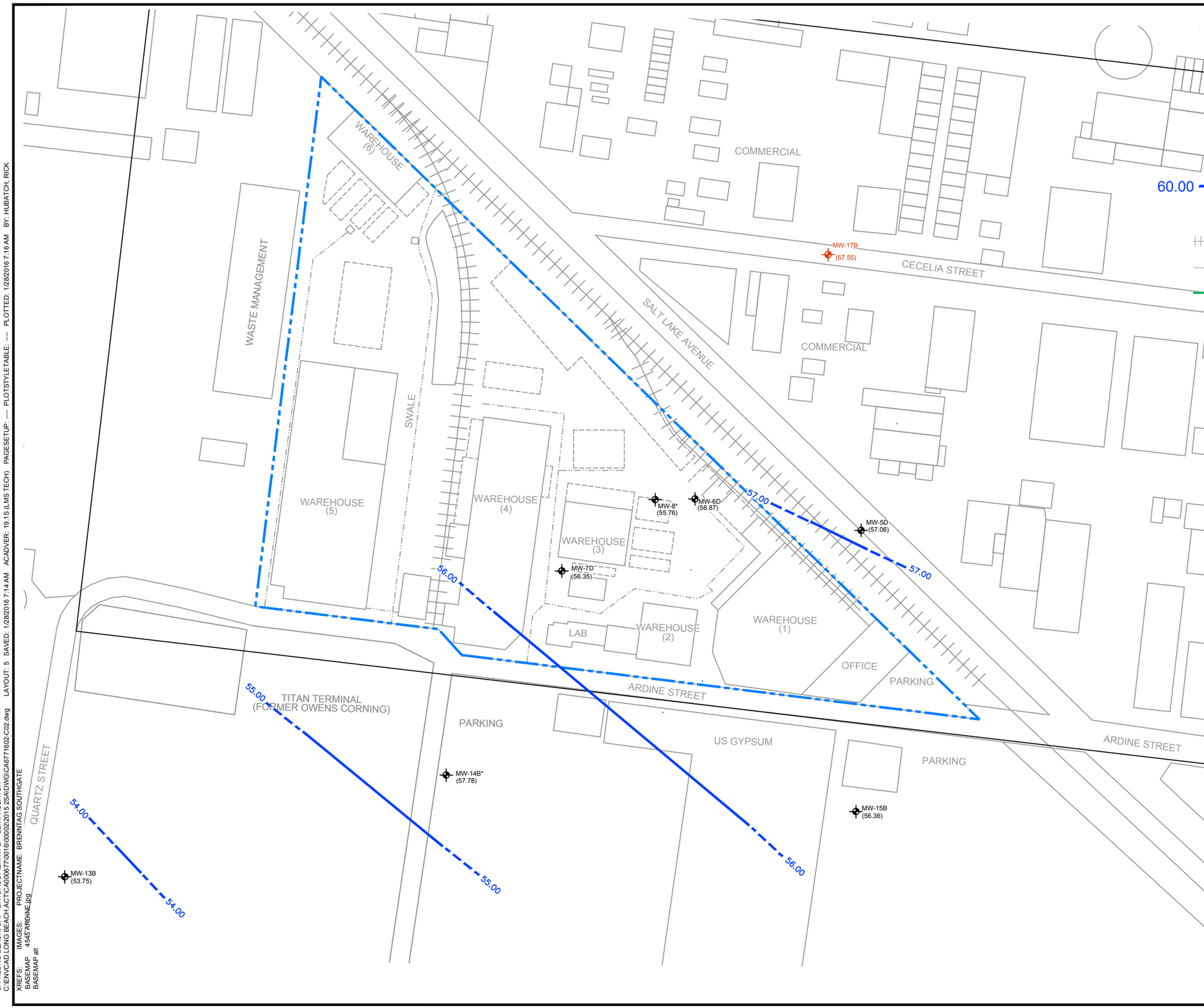
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA
SECOND SEMI-ANNUAL 2015
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE OCTOBER 9, 2015

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY:LONG BEACH, CA. DIV/GROUP:ENRVAD LD/R: HUBATCH
C:\ENVCAD\LONG BEACH ACT\CA0067700\160002\2015 2SA\DWG\CA6771602-C01.dwg LAYOUT: 4 SAVED: 1/28/2016 9:28 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/29/2016 7:16 AM BY: HUBATCH, RICK
XREFS: BASEMAP BASEMAP alt IMAGES: 4545ARDINE.jpg PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

- GROUNDWATER MONITORING WELL
- GROUNDWATER MONITORING WELL (INSTALLED SEPTEMBER 2015)
- (57.78) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 60.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)
MW-17B (80-90)

WELL WITH SCREENS DEEPER THAN 105 FT BGS WERE NOT USED IN CONTOURING

* NOT USED IN CONTOURING

NOTES

1. WELLS MW-1 TO MW-12 WERE SURVEYED IN JUNE 2007, WELLS MW-13 TO MW-16, WERE SURVEYED IN APRIL 2012, AND MW-17 WAS SURVEYED IN SEPTEMBER 2015.
2. REFERENCE SITE MAP DIGITIZED USING GOOGLE EARTH PRO IMAGE-ARCADIS G&M (2006).

0 150' 300'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET
SOUTH GATE, CALIFORNIA

SECOND SEMI-ANNUAL 2015 GROUNDWATER MONITORING REPORT

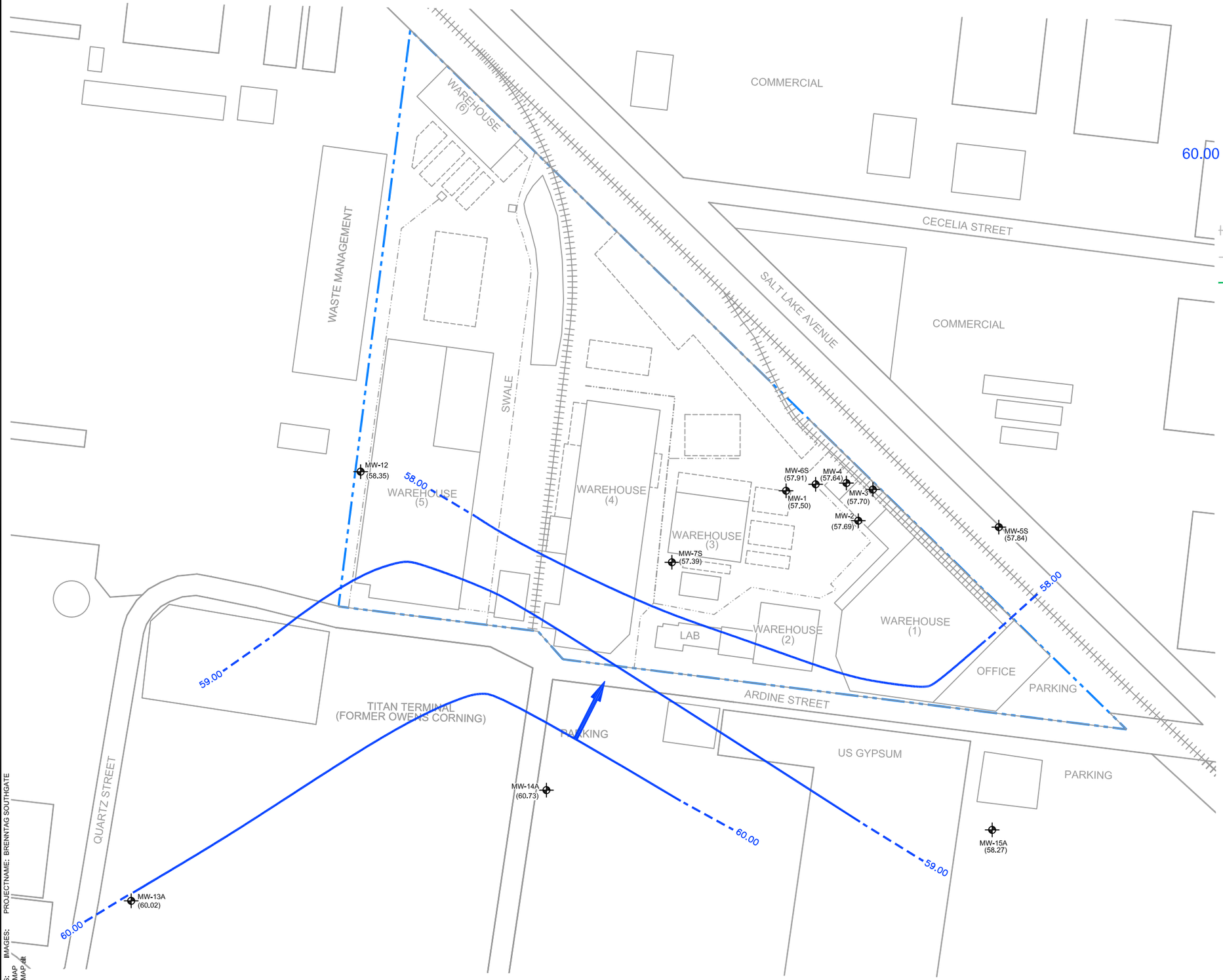
GROUNDWATER CONTOUR MAP DEEP WELLS OCTOBER 9, 2015

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

CITY:LONG BEACH CA DIV/GROUP:ENRVAD LD/R: HUBATCH
C:\ENVCAD\LONG BEACH\ACT\TCA00877\00\160002\2015 2SA\DWG\CA6771602-C02.dwg LAYOUT: 5 SAVED: 1/28/2016 7:14 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/28/2016 7:16 AM BY: HUBATCH, RICK

XREFS: BASEMAP BASEMAP alt IMAGES: 4545 ARDINE.jpg PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

MW-1 GROUNDWATER MONITORING WELL

(60.73) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL

DIRECTION OF GROUNDWATER GRADIENT

60.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

DRUM STORAGE AREA

RAILROAD TRACKS

DRAINAGE DITCH

PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

0 140' 280'

GRAPHIC SCALE

BRENNTAG SOUTH GATE, INC.
4545 ARDINE STREET, SOUTH GATE, CALIFORNIA
FIRST SEMI-ANNUAL 2015
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE APRIL 6, 2015

ARCADIS

FIGURE
4

CITY:LONG BEACH, CA. DIV/GROUP:ENVDAD LD:R. HUBATCH LYR:(Opt)ON=*;OFF=*REF*
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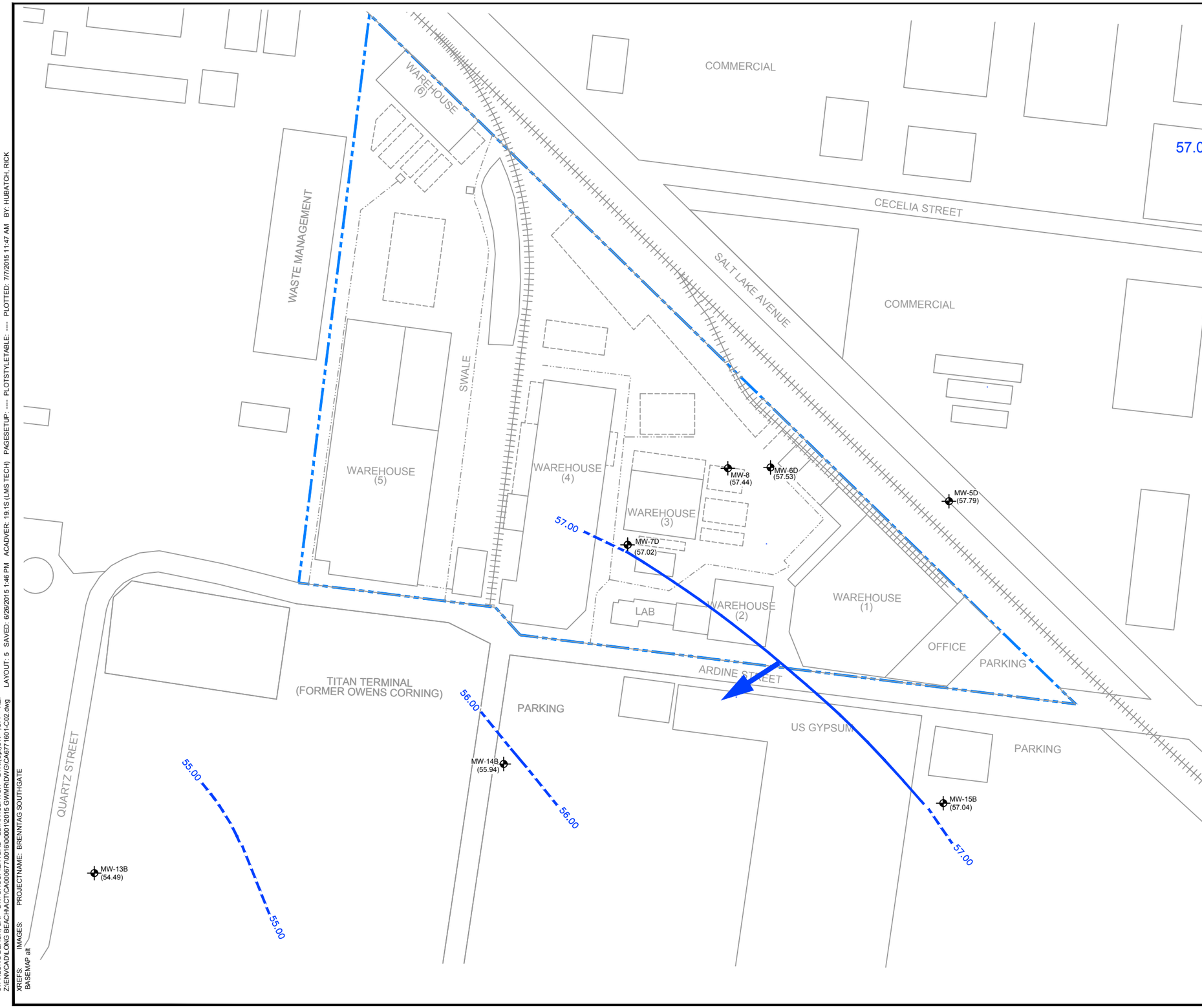

LEGEND

- MW-13 — GROUNDWATER MONITORING WELL
- (57.79) — GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
- DIRECTION OF GROUNDWATER GRADIENT
- 57.00 — GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- DRUM STORAGE AREA
- RAILROAD TRACKS
- DRAINAGE DITCH
- PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)

0 140' 280'
GRAPHIC SCALE

BRENNTAG SOUTH GATE, INC.
4545 ARDINE STREET, SOUTH GATE, CALIFORNIA
FIRST SEMI-ANNUAL 2015
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS APRIL 6, 2015

ARCADIS

FIGURE
5

CITY:LONG BEACH, CA. DIV/GROUP:ENVDAD LD:R. HUBATCH LYR:(Opt)ON=*;OFF=*REF*
Z:\ENVCAD\LONG BEACH\ACT\CA000677\0016\0000\12015 GWMR\DWG\CA677160 1-C02.dwg LAYOUT: 5 SAVED: 6/26/2015 1:46 PM ACADVER: 19.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/7/2015 11:47 AM BY: HUBATCH, RICK
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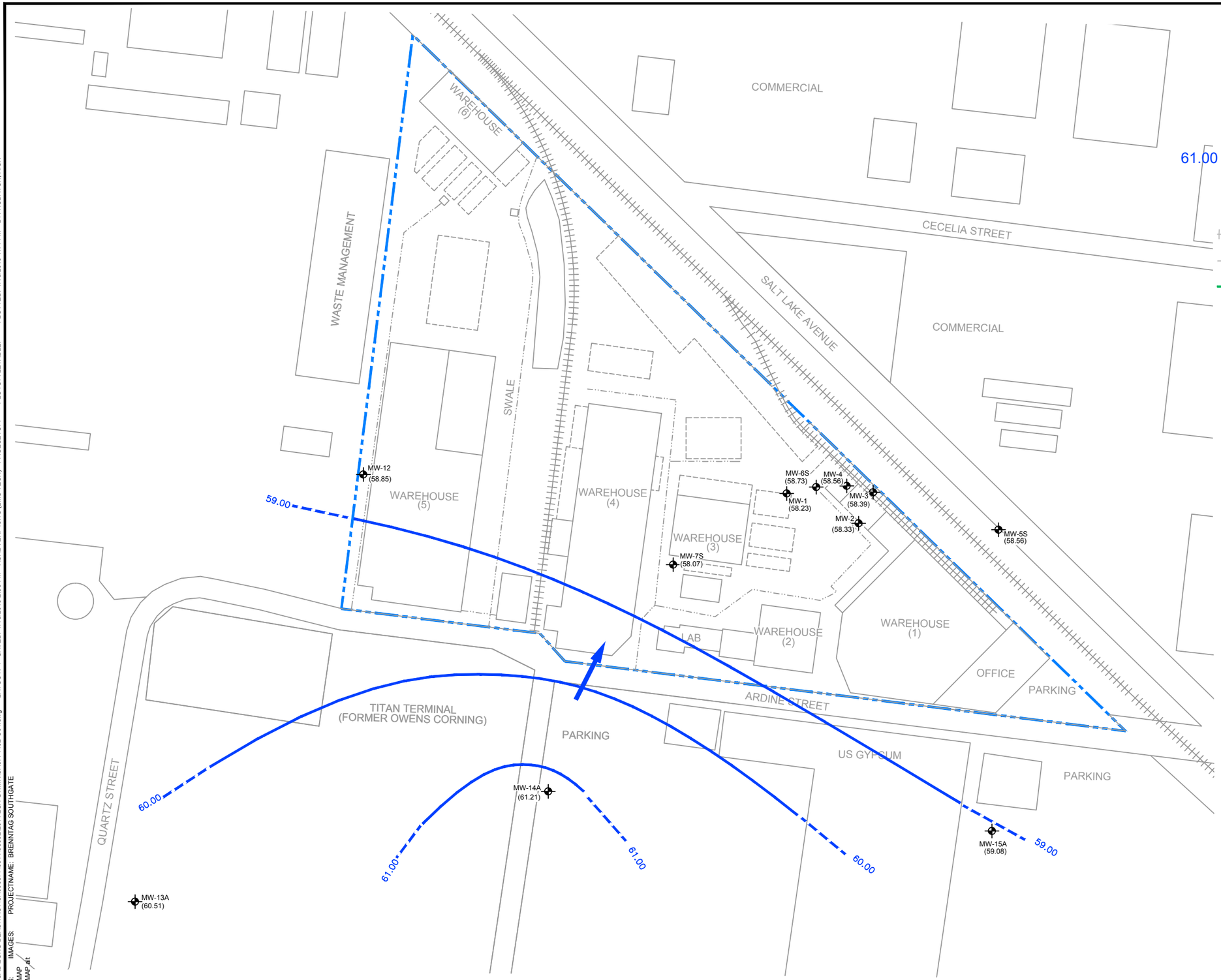


LEGEND

MW–1 GROUNDWATER MONITORING WELL

(60.21) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL

DIRECTION OF GROUNDWATER GRADIENT

61.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

DRUM STORAGE AREA

RAILROAD TRACKS

DRAINAGE DITCH

PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

0 140' 280'

GRAPHIC SCALE

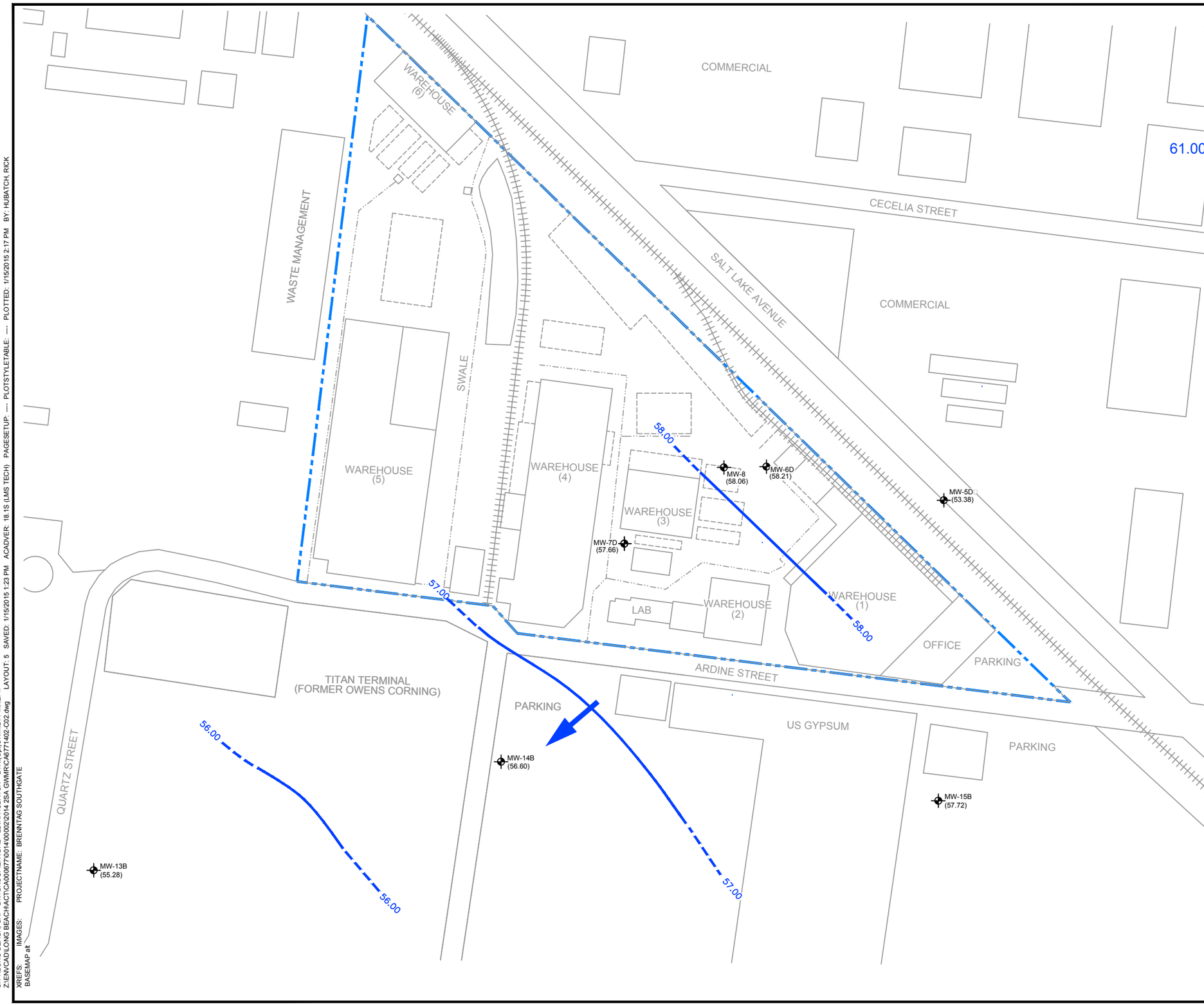
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
SECOND SEMI-ANNUAL 2014
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE SEPTEMBER 24, 2014

ARCADIS

FIGURE
4

CITY:LONG BEACH, CA. DIV/GROUP:ENVDAD LD:R.HUBATCH LYR:(Opt)ON:□OFF□REF□ PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/16/2015 1:11 PM BY: HUBATCH, RICK
Z:\ENVCAD\LONG BEACH\ACT\CA0067700\14\00002\2014 2SA GWMR\CA6771402-C01.dwg LAYOUT: 4 SAVED: 1/15/2015 2:36 PM ACADVER: 18.1S (LMS TECH)
XREFS: BASEMAP BASEMAP-alt IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

MW-13 GROUNDWATER MONITORING WELL

(61.21) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL

DIRECTION OF GROUNDWATER GRADIENT

61.00 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

NOT USED FOR CONTOURING

DRUM STORAGE AREA

RAILROAD TRACKS

DRAINAGE DITCH

PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)

0 140' 280'

GRAPHIC SCALE

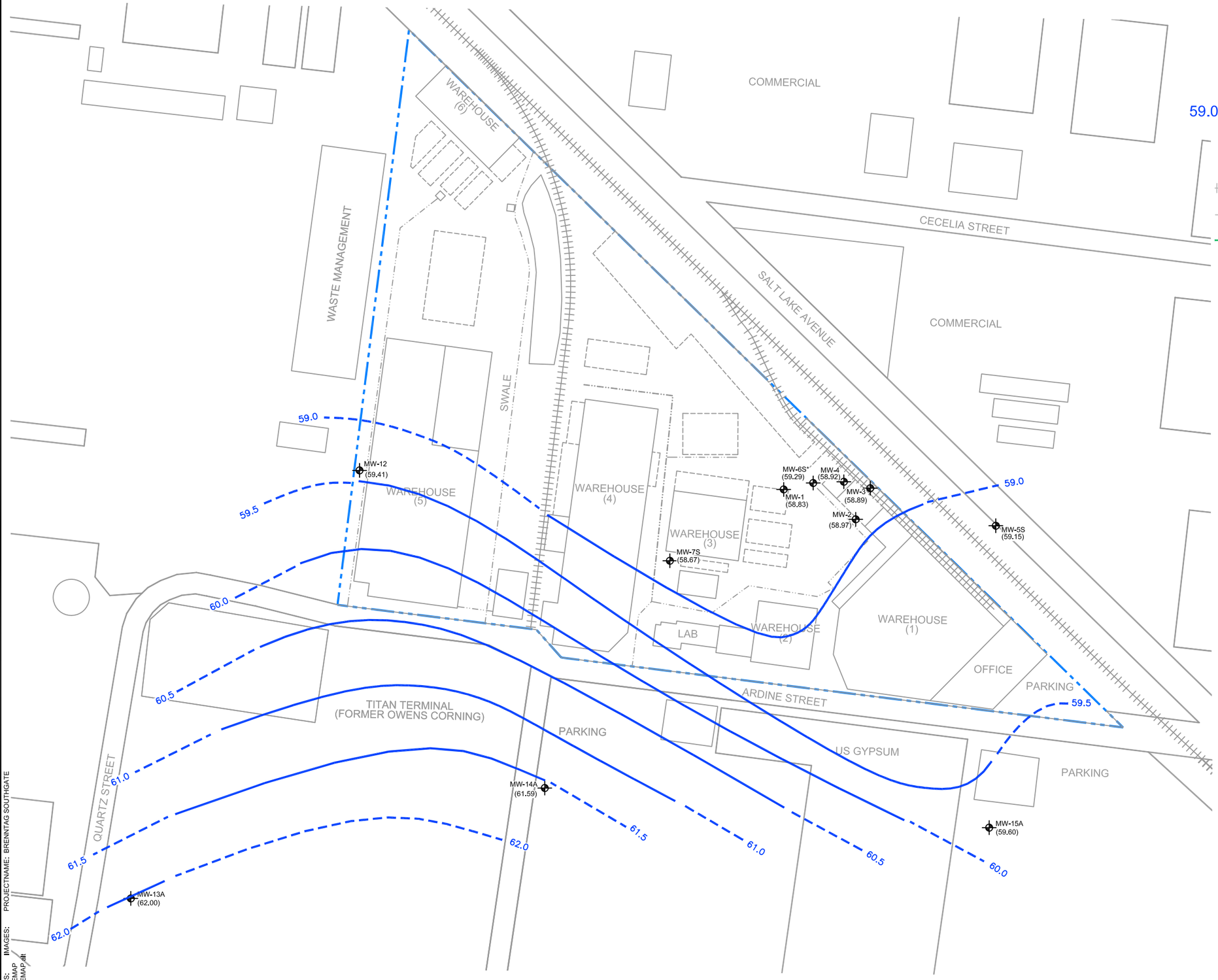
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
SECOND SEMI-ANNUAL 2014
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS SEPTEMBER 24, 2014

ARCADIS

FIGURE
5

CITY:LONG BEACH, CA DIV/GROUP:ENVDAD LD:R. HUBATCH LYR:(Opt)ON OFF REF
Z:\ENVCAD\LONG BEACH\ACT\CA0006770\0140002\2014 2SA GWMR\C\A6771402-C02.dwg LAYOUT: 5 SAVED: 1/15/2015 1:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/15/2015 2:17 PM BY: HUBATCH, RICK
XREFS: IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE
BASEMAP alt



LEGEND

MW-1 GROUNDWATER MONITORING WELL

(59.60) GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL

59.0 GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

* NOT USED FOR CONTOURING

DRUM STORAGE AREA

RAILROAD TRACKS

DRAINAGE DITCH

PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-1 (65-75)
MW-2 (50-85)
MW-3 (50-85)
MW-4 (50-85)
MW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13A (55-70)
MW-14A (55-70)
MW-15A (55-70)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

0 140' 280'

GRAPHIC SCALE

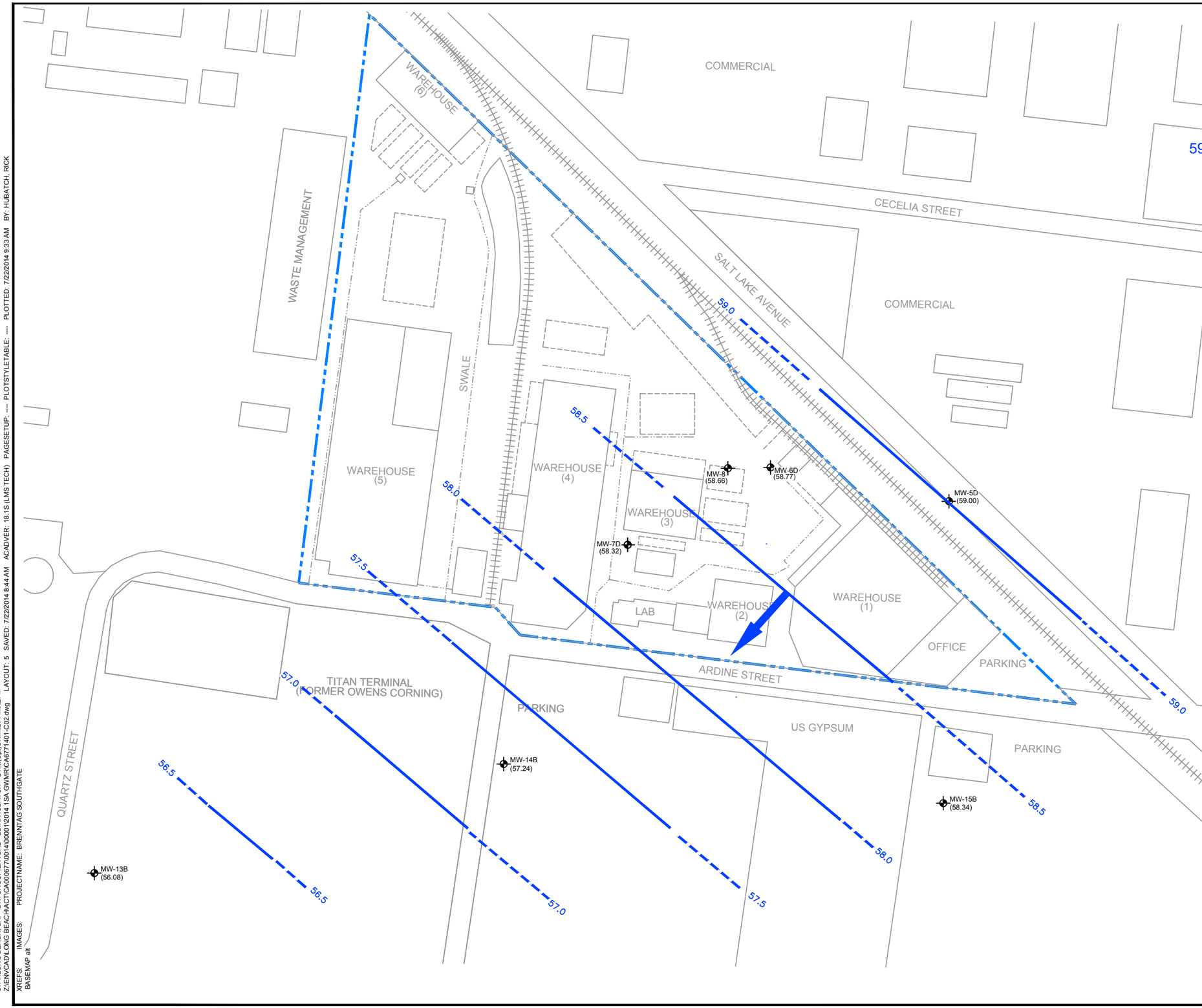
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
FIRST SEMI-ANNUAL 2014
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE APRIL 21, 2014

ARCADIS

FIGURE
4

CITY:LONG BEACH, CA. DIV/GROUP:ENVDAD LD:R. HUBATCH LYR:(Opt)ON=*;OFF=*REF* PAGESETUP: --- PLOTSTYLETABLE: --- PLOTTED: 7/22/2014 8:06 AM BY: HUBATCH, RICK
G:\ENVCAD\LONG BEACH\ACT\CA000677\0014\0000112014 1SA GWMR\CA677140 1-C01.dwg LAYOUT: 4 SAVED: 7/22/2014 7:49 AM ACADVER: 18.1S (LMS TECH)
XREFS: BASEMAP BASEMAP-alt IMAGES: PROJECTNAME: BRENNTAG SOUTHGATE



LEGEND

MW-13 — GROUNDWATER MONITORING WELL

(59.00) — GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL

DIRECTION OF GROUNDWATER GRADIENT

59.0 — GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

DRUM STORAGE AREA

RAILROAD TRACKS

DRAINAGE DITCH

PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOCIATED SCREEN INTERVAL IN FEET BELOW GROUND SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13B (94-104)
MW-14B (85-95)
MW-15B (80-90)

0 140' 280'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
FIRST SEMI-ANNUAL 2014
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS APRIL 21, 2014

ARCADIS

FIGURE **5**

CITY:LONG BEACH, CA. DIV/GROUP:ENVDAD LD:R. HUBATCH LYR:(Opt)ON=OFF=REF
Z:\ENVCAD\LONG BEACH\ACT\CA000677\00140\0001\2014 1\SA GWM\RICA6771401-C02.dwg LAYOUT: 5 SAVED: 7/22/2014 8:44 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/22/2014 9:33 AM BY: HUBATCH, RICK
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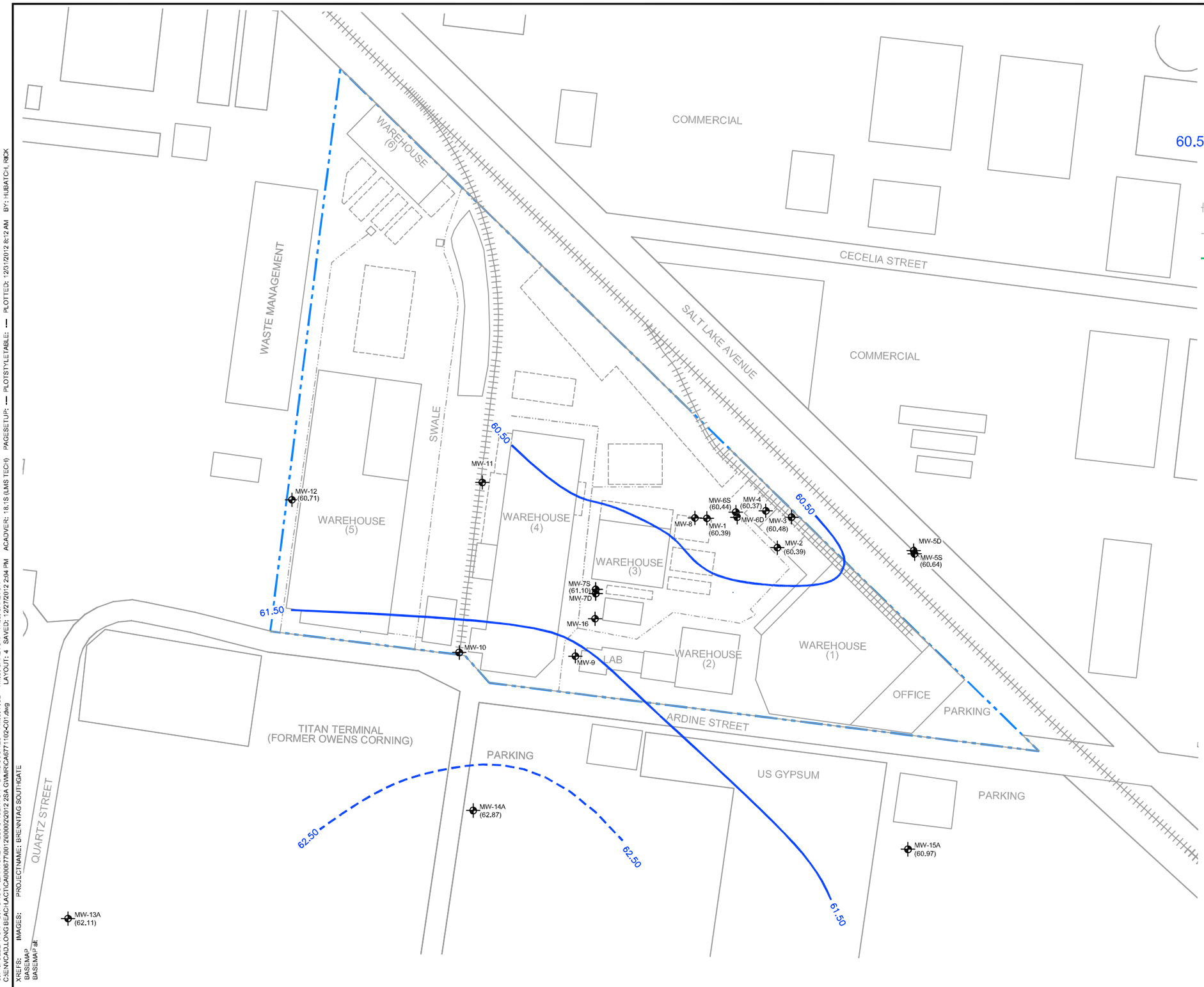
BASEMAP alt



LEGEND

MW-1 — GROUNDWATER MONITORING WELL

(60.97) — GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL

(NU) — NOT USED FOR CONTOURING

60.5 — GROUNDWATER CONTOUR (DASHED WHERE INFERRED)

DRUM STORAGE AREA

RAILROAD TRACKS

DRAINAGE DITCH

PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOSIATED SCREEN INTERVAL IN FEET BELOW GRADE SURFACE (FT BGS)

MW-1 (65-75)
SW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13 (55-70)
MW-14 (55-70)
MW-15 (55-70)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

0 140' 280'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
SECOND SEMI-ANNUAL 2012
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE NOVEMBER 2012

ARCADIS

FIGURE
4

CITY:FULLERTON DIV/GROUP:ENR4CAE4 LDR: HUBATCH BPM:A. JONES PM:G. HOL TM:G. CARLTON TR:G. CARLTON
C:\ENCADLONG BEACH\ACTICA0006\7000\2000002\01\2 25A GWMR\CA677110\24-001.dwg LAYOUT: 4 SAVED: 12/27/2012 2:04 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/31/2012 8:12 AM BY: HUBATCH, RICK
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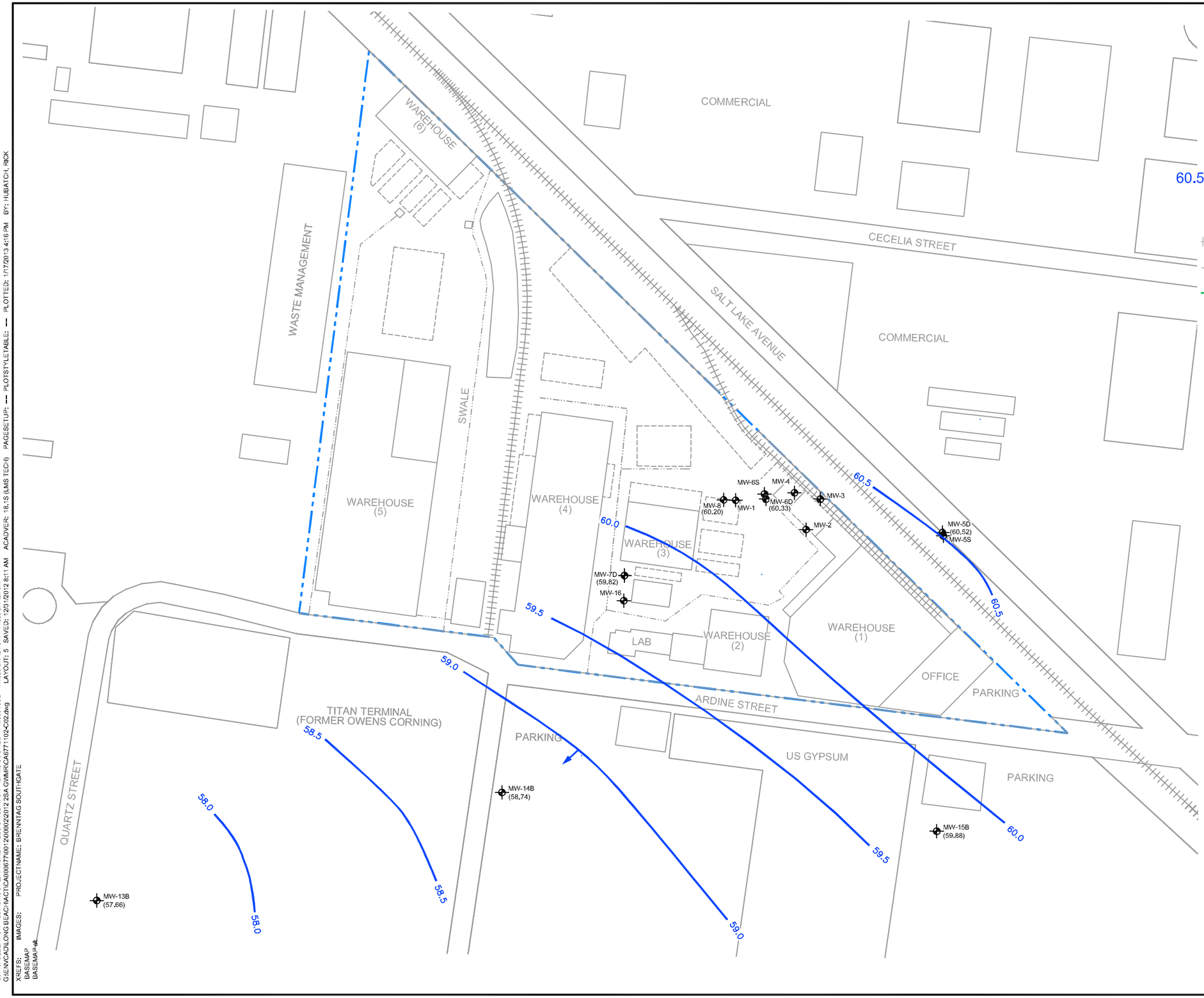

LEGEND

MW-13	GROUNDWATER MONITORING WELL
(60.52)	GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
(NU)	NOT USED FOR CONTOURING
	DIRECTION OF GROUNDWATER GRADIENT
60.5	GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
	DRUM STORAGE AREA
	RAILROAD TRACKS
	DRAINAGE DITCH
	PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOSIATED SCREEN INTERVAL IN FEET BELOW GRADE SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13 (94-104)
MW-14 (85-95)
MW-15 (80-90)

0 140' 280'
GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
SECOND SEMI-ANNUAL 2012
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS, NOVEMBER, 2012

ARCADIS

FIGURE
5

CITY:FULLERTON DIV/GROUP:ENR4CAE4 LDR: HUBATCH BPM:A. JONES PM:S. FIOL TM:S. CARLTON TRG: CARLTON
G:\ENVCAD\LONG BEACH\ACT\CA000677\00\29000\2012\29A GWMR\CA677110\24-02.dwg LAYOUT: 5 SAVED: 12/5/2012 8:11 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/17/2013 4:16 PM BY: HUBATCH, RICK
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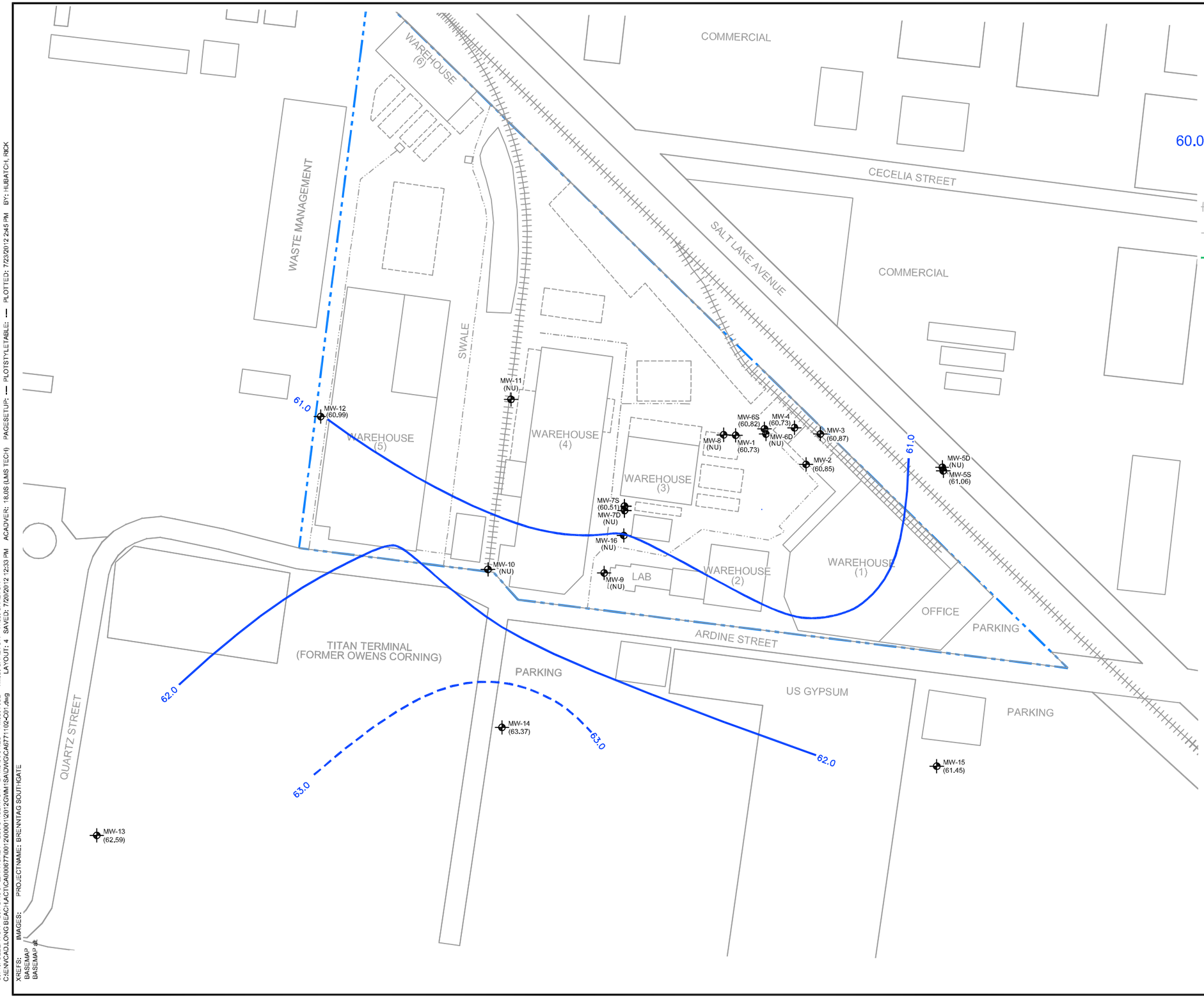
BASEMAP
BASEMAP-alt



LEGEND

MW-1	GROUNDWATER MONITORING WELL
(61.01)	GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
(NU)	NOT USED FOR CONTOURING
60.0	GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
	DRUM STORAGE AREA
	RAILROAD TRACKS
	DRAINAGE DITCH
	PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOSIATED SCREEN INTERVAL IN FEET BELOW GRADE SURFACE (FT BGS)

MW-1 (65-75)
SW-5S (53-73)
MW-6S (51-71)
MW-7S (53-73)
MW-12 (45-75)
MW-13 (55-70)
MW-14 (55-70)
MW-15 (55-70)

WELL WITH SCREENS DEEPER THAN 75 FT BGS WERE NOT USED IN CONTOURING

0 140' 280'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
FIRST SEMI-ANNUAL 2012
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP WELLS SCREENED IN THE WATER TABLE JUNE 2012

ARCADIS

FIGURE
4

CITY:FULLERTON DIV/GROUP:ENR4CAL4 LD:R. HUBATCH BPM:A. JONES PM:G. HIOL TM:G. CARLTON TR:G. CARLTON
C:\ENVCAD\LONG BEACH\ACTIVE\A0006677\000\120012\GWM\SAD\WGCA677\102-C01.dwg LAYOUT: 4 SAVED: 7/20/2012 12:33 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/23/2012 2:45 PM BY: HUBATCH, RICK
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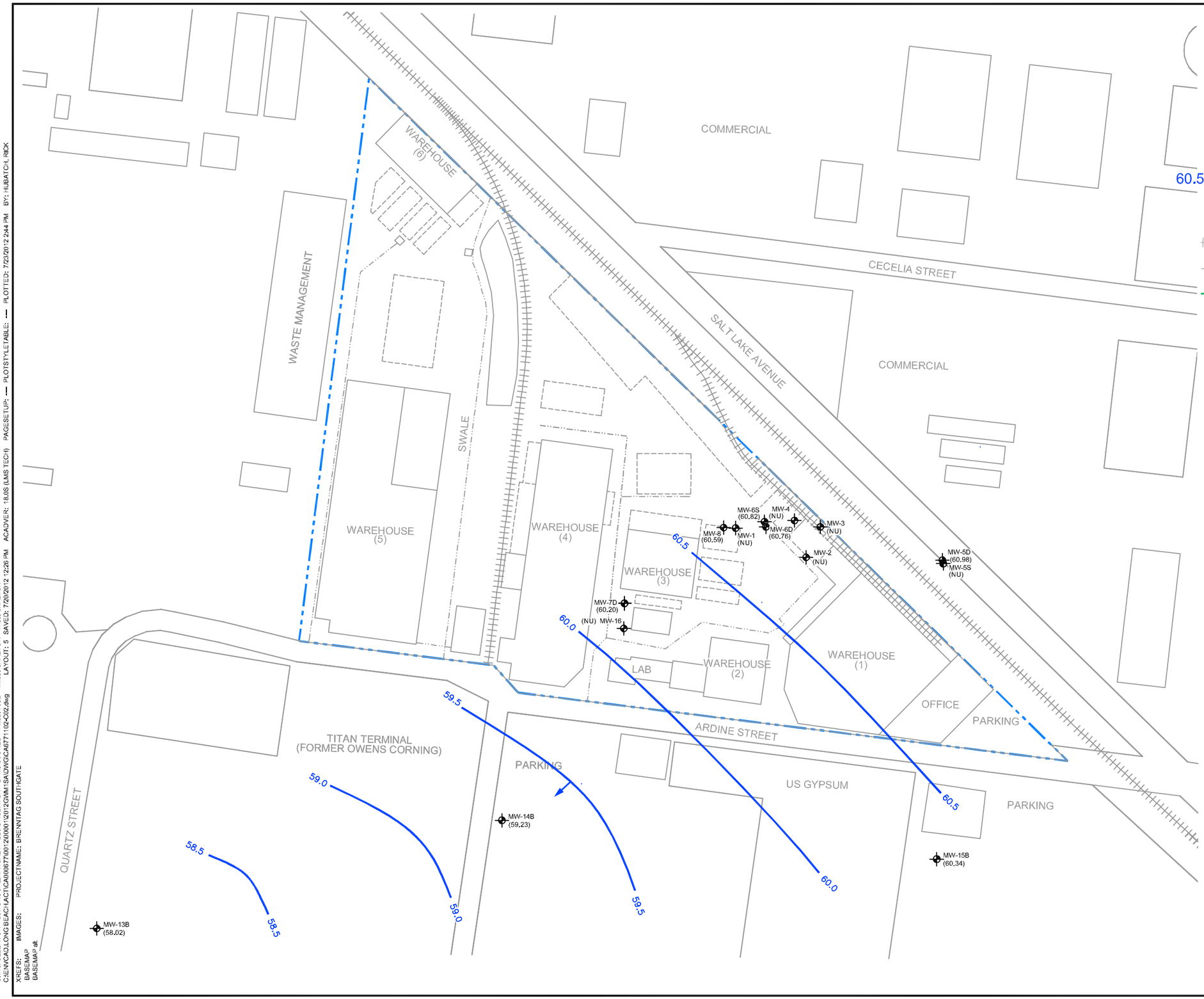

LEGEND

MW-13	GROUNDWATER MONITORING WELL
(58.02)	GROUNDWATER ELEVATION IN FEET MEAN SEA LEVEL
(NU)	NOT USED FOR CONTOURING
	DIRECTION OF GROUNDWATER GRADIENT
60.5	GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
	DRUM STORAGE AREA
	RAILROAD TRACKS
	DRAINAGE DITCH
	PROPERTY BOUNDARY

WELL SCREENS USED IN CONTOURING AND ASSOSIATED SCREEN INTERVAL IN FEET BELOW GRADE SURFACE (FT BGS)

MW-5D (83-93)
MW-6D (81-91)
MW-7D (86-96)
MW-8 (86-96)
MW-13 (94-104)
MW-14 (85-95)
MW-15 (80-90)

0 140' 280'

GRAPHIC SCALE

BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
FIRST SEMI-ANNUAL 2012
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP DEEP WELLS, JUNE 2012

ARCADIS

FIGURE
5

CITY:FULLERTON DIV/GROUP:ENR4CAE4 LD:R. HUBATCH BP:NDA_JONES PM:G. FIOL TM:G. CARLTON TR:G. CARLTON
C:\ENVCAD\LONG BEACH\ACT\CA0006770\01\200000\120126\MISA\DWG\CA6771102-02.dwg LAYOUT: 5 SAVED: 7/20/2012 2:26 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 7/20/2012 2:44 PM BY: HUBATCH, RICK
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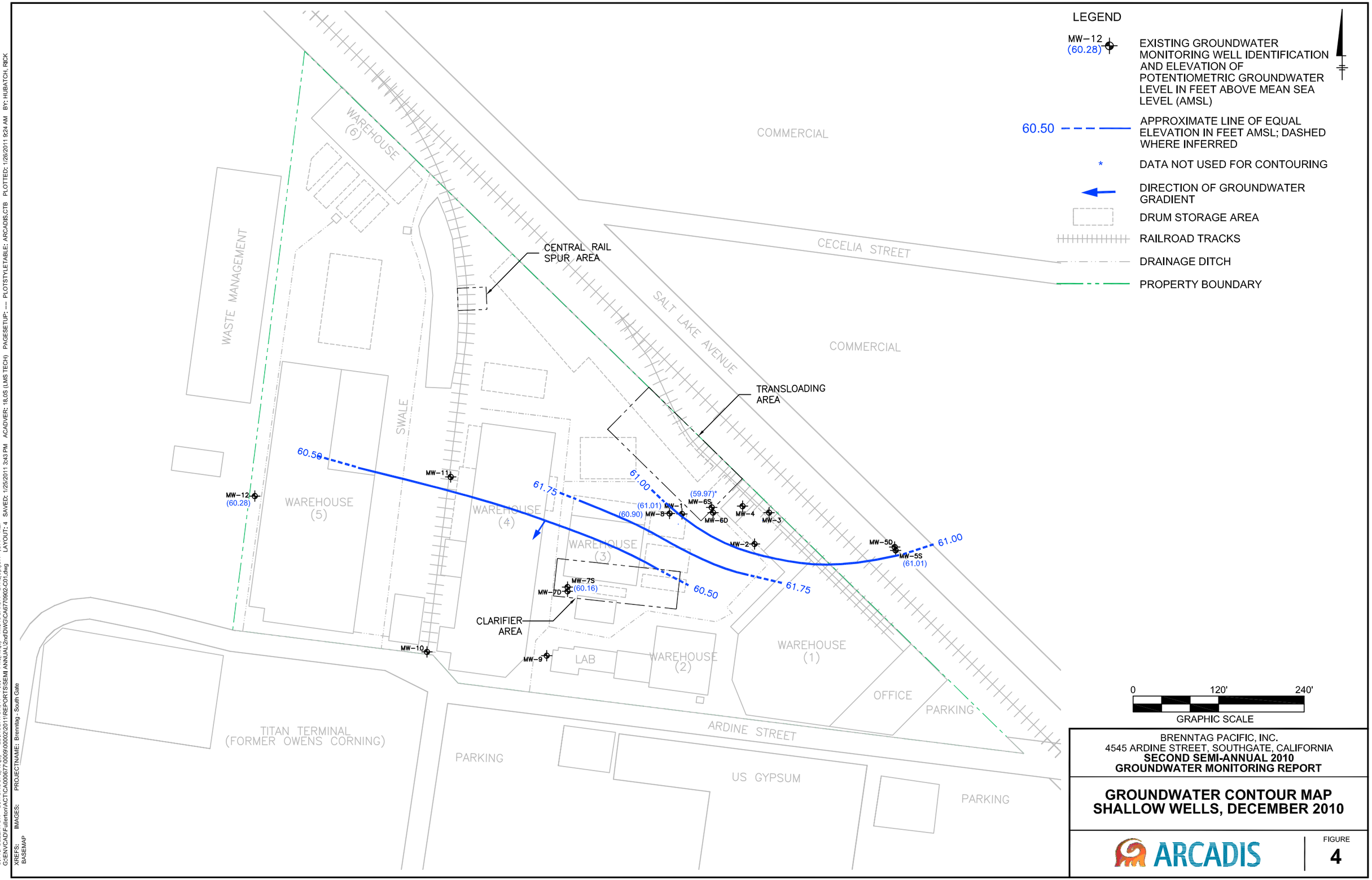


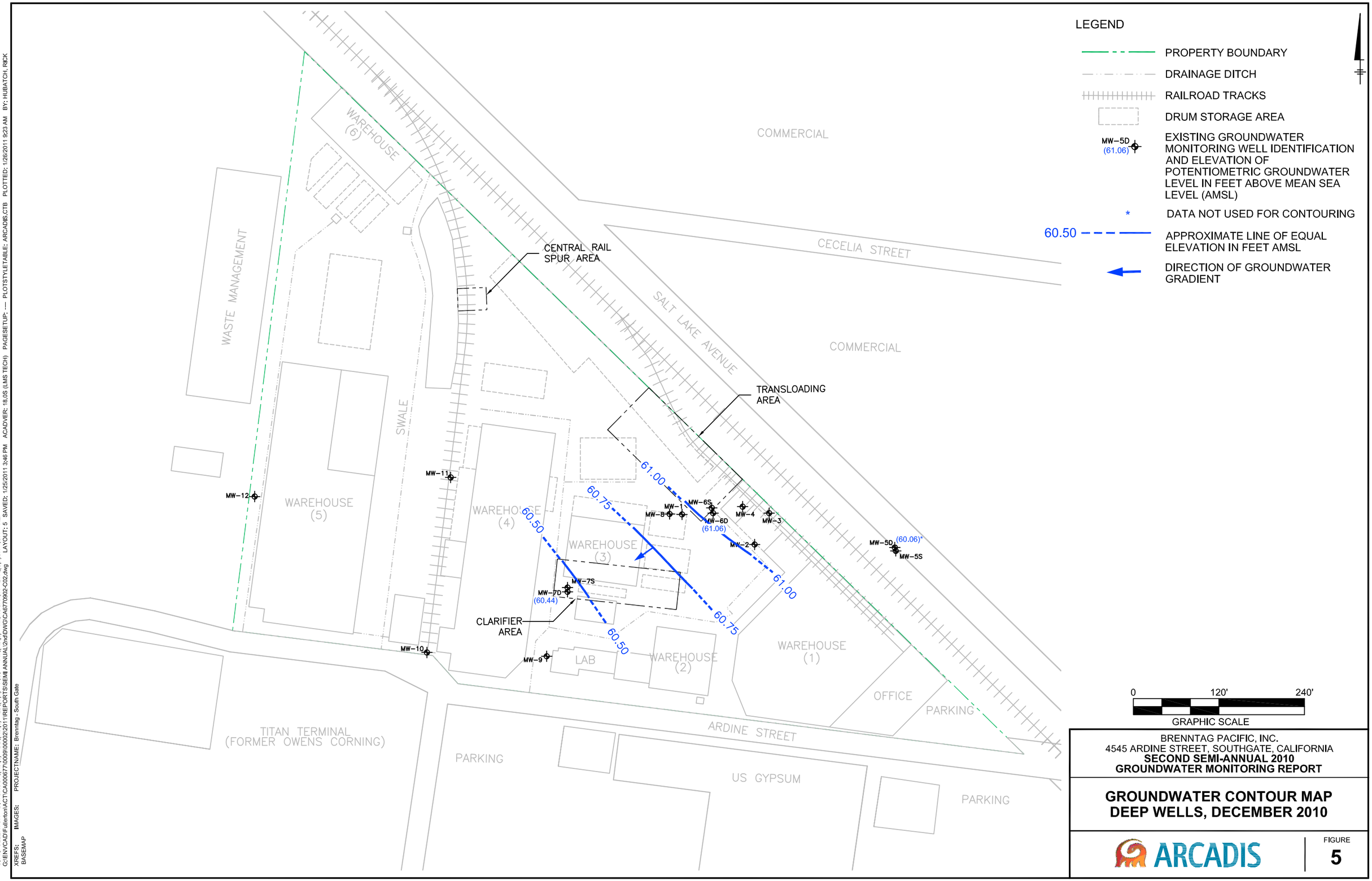
BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
SECOND SEMI-ANNUAL 2010
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP SHALLOW WELLS, DECEMBER 2010

ARCADIS

FIGURE
4

CITY:FULLERTON DIV/GROUP:(Reqd) LD:HUBATCH, R PIC:--- PM:(Reqd) TM:HOGAN, A LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Fullerton\ACT\CA000677\0009\00002\2011\REPORTS\SEMI ANNUAL\2nd\DWG\CA677090Z-C01.dwg LAYOUT: 4 SAVED: 1/25/2011 3:43 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 1/26/2011 9:24 AM BY: HUBATCH, RICK
XREFS: BASEMAP IMAGES: PROJECTNAME: Brenntag - South Gate



BRENNTAG PACIFIC, INC.
4545 ARDINE STREET, SOUTHGATE, CALIFORNIA
SECOND SEMI-ANNUAL 2010
GROUNDWATER MONITORING REPORT

GROUNDWATER CONTOUR MAP
DEEP WELLS, DECEMBER 2010

ARCADIS

FIGURE
5

CITY:FULLERTON DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:— PM:(Reqd) TM:HOGAN, A LYR:(Off)ON=*;OFF=*REF*
G:\ENVCAD\Fullerton\ACT\CA0067700\09\002\2011\REPORTS\SEMI ANNUAL\2nd\DWG\CA677092-C02.dwg LAYOUT: 5 SAVED: 1/25/2011 3:46 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 1/26/2011 9:23 AM BY: HUBATCH, RICK
XREFS: BASEMAP IMAGES: PROJECTNAME: Brenntag - South Gate

APPENDIX C

Summary of Groundwater Analytical Results

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-1										
Date	05/25/06	12/07/06	06/06/07	11/28/07	07/14/08	12/02/08	12/02/08 Dup	06/17/09	12/30/09	06/30/10	12/16/10
VOCs by EPA Method 8260 (µg/L)											
Acetone	12	<50	<50	<50	<50	<50	<100	<100	<50	<100	<80
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<20	<20	<10	<100	<80
Chloroform	130	3.9	35	6.8	2.9	<1.0	<2.0	<2.0	3.8	<5.0	<4.0
Naphthalene	<10	<10	<10	<10	<10	<10	<20	<20	<10	<25	<20
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<20	<20	<10	<100	<80
Methylene chloride	10	<10	<10	<10	<10	<10	<20	<20	<10	<100	<80
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<20	<20	<10	<100	<80
Benzene	<0.50	1.4	0.51	0.81	0.83	<1.0	<1.0	<1.0	<0.50	<5.0	<4.0
1,2-Dichlorobenzene (1,2-DCB)	1.9	19.0	3.1	13.0	15.0	4.8	5.3	5.3	<1.0	<5.0	<4.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	4.2	<1.0	2.7	3.1	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
1,2,3- Trichlorobenzene	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
1,2,4- Trichlorobenzene	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
Isopropylbenzene	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<25	<20
Total Xylenes (p/m- and o- xylene)	56	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	<20	NS	NS	NS	<40
Di isopropyl ether (DIPE)	<2.0	2.7	<2.0	<2.0	<2.0	<2.0	<4.0	NS	NS	NS	3.2 J
Tetrachloroethene (PCE)	9.7	48	11	9.7	5.6	5.4	4.8	<2.0	<1.0	<5.0	<4.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
Trichloroethene (TCE)	49	400	130	250	48	18	16	11	11	11	6
1,1-Dichloroethane (1,1-DCA)	1.3	4.5	1.8	2.1	2.1	<1.0	<2.0	<2.0	<1.0	1.6 J	<4.0
1,2-Dichloroethane (1,2-DCA)	1.1	4.2	1.9	2.9	2.2	<0.50	<1.0	1.0	<0.50	<5.0	<4.0
1,1-Dichloroethene (1,1-DCE)	2.3	6.9	3	4.6	5.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	130	210	110	140	330	160	180	250	32	213	244
trans-1,2-Dichloroethene (trans-1,2-DCE)	2.0	4.4	2.8	2.7	6.3	<2.0	3.6	4.2	<1.0	7.0	7.0

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-1										
Date	05/25/06	12/07/06	06/06/07	11/28/07	07/14/08	12/02/08	12/02/08 Dup	06/17/09	12/30/09	06/30/10	12/16/10
Vinyl Chloride	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<5.0	<4.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<5.0	<4.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<4.0
1,2-Dichloropropane (1,2-DCP)	<1.0	4	2	3.5	3.9	<2.0	<2.0	<2.0	<1.0	1.8 J	5.7
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	8.4	5.2	4.7	3.8	4.8	<2.0	<2.0	3.4	<2.0	0.95	0.88
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)											
C6-C10	--	--	--	--	--	--	--	--	--	242 J	312
C10-C28	--	--	--	--	--	--	--	--	--	--	1,720
C28-C40	--	--	--	--	--	--	--	--	--	--	4,730
C6	--	--	--	ND	ND	ND	ND	ND	ND	--	--
C7	--	53	38	66	ND	ND	ND	ND	ND	--	--
C8	--	21	5.1	8.9	ND	4.6	7.4	4.6	ND	--	--
C9-C10	--	15	8	43	ND	17	17	17	ND	--	--
C11-C12	--	4.7	20	26	ND	67	60	67	ND	--	--
C13-C14	--	18	55	25	ND	98	93	98	ND	--	--
C15-C16	--	13	79	28	ND	120	120	120	ND	--	--
C17-C18	--	19	120	40	ND	170	160	170	ND	--	--
C19-C20	--	22	110	24	ND	190	200	190	ND	--	--
C21-C22	--	11	100	24	ND	180	180	180	ND	--	--
C23-C24	--	10	120	13	ND	290	260	290	ND	--	--
C25-C28	--	3.7	220.0	3.1	ND	490	450.0	490	690	--	--
C29-C32	--	ND	180	ND	ND	410	350.0	410	710	--	--
C33-C36	--	ND	96	ND	ND	360	280.0	360	580	--	--
C37-C40	--	ND<500	28	ND	ND	370	270.0	370	ND	--	--
C41-C44	--	--	1.9	ND	ND	190	120.0	190	ND	--	--
C6-C44 Total	--	--	1,200	<500	<500	3000	2,500	3,000	3,300	--	--
Metals by EPA Method 6010B/7470A (mg/L)											
Antimony	--	<0.015	0.0162	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030
Arsenic	--	1.7	21.2	3.19	3.73	0.992	1.18	0.992	0.421	0.0697	0.919
Barium	--	0.0440	0.0507	0.0283	0.0297	0.0561	0.0684	0.0561	0.1410	0.0253	0.1410
Beryllium	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050
Cadmium	--	<0.005	0.01	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	0.0071	0.0085
Chromium	--	0.0091	0.0227	<0.00500	0.0055	0.0578	0.0636	0.0578	0.0353	0.0264	0.0245
Cobalt	--	0.0097	0.0245	0.0072	0.0054	0.0289	0.0342	0.0289	<0.0100	<0.0050	0.0070
Copper	--	0.0162	0.1360	0.0165	0.0361	0.0982	0.115	0.0982	0.186	0.235	0.310
Lead	--	0.0214	0.0810	<0.0100	0.0123	0.0185	0.0222	0.0185	0.0515	0.0353	0.0380
Mercury	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-1										
Date	05/25/06	12/07/06	06/06/07	11/28/07	07/14/08	12/02/08	12/02/08 Dup	06/17/09	12/30/09	06/30/10	12/16/10
Molybdenum	--	0.0455	0.0486	0.0491	0.0373	0.0239	0.0281	0.0239	0.0123	0.0134	0.0346
Nickel	--	0.483	0.372	0.493	0.364	0.1400	0.162	0.140	0.0344	0.154	0.282
Selenium	--	0.0229	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030
Silver	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050
Thallium	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030
Vanadium	--	<0.005	0.00739	<0.00500	<0.00500	0.0068	0.00753	0.0068	0.0237	0.0110	0.0105
Zinc	--	0.0747	0.609	0.0581	0.142	0.235	0.258	0.235	1.02	0.540	0.468
Field Measurements											
pH (Standard units)	6.62	7.09	8.22	7.72	6.60	6.75	--	7.29	5.34	7.08	6.79
Specific Conductance (milliSiemens per centimeter)	0.421	0.768	0.642	0.750	0.790	0.170	--	0.653	0.010	3.14	3.790
Oxidation-Reduction Potential (ORP) (millivolts)	-154.0	-91.0	-79.0	-133	-123	-120	--	-144	131	-111	-66
Dissolved Oxygen (DO) (mg/L)	0.72	1.43	5.36	0.00	0.88	1.70	--	5.31	10.26	2.00	7.67
Temperature (degrees Celsius)	27.00	24.10	25.88	24.36	31.00	22.80	--	27.81	13.99	23.70	18.54

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
1. Sampled at a depth of 76 feet
2. Sampled at a depth of 73 feet
3. Sampled at a depth of 63 feet

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-1											
Date	06/20/11	12/19/11	06/08/12	12/04/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15*	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)												
Acetone	<80	5.4 J	5.3 J	<20	<20	<200	<200	<400	<400	<1,000	<1,000	<25
2-Butanone (methyl ethyl ketone)	<80	<10	<10	<10	<10	<100	<100	--	<200	<500	<500	<5.0
Chloroform	<4.0	<1.0	<1.0	0.29 J	0.49 J	<10	<10	<20	<20	<50	<50	<1.0
Naphthalene	<20	<5.0	<5.0	<5.0	<5.0	<50	<50	<100	<100	<100	<100	<5.0
2-Hexanone (methyl butyl ketone)	<80	<10	<10	<10	<10	<100	<100	<200	<200	<500	<500	<10
Methylene chloride	<80	<1.0	<10	<10	<10	<10	<100	<400	<400	<50	<50	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<80	<10	<10	6.2 J	<10	<100	<100	<200	<200	79.6 J	<500	<5.0
Benzene	<4.0	<1.0	0.69 J	<1.0	1.30	<10	<10	<20	5.0 J	<50	<50	1.7
1,2-Dichlorobenzene (1,2-DCB)	<4.0	0.45 J	0.38 J	<1.0	0.29 J	<10	<10	<20	<20	14.8 J	<50	0.33 J
1,3-Dichlorobenzene (1,3-DCB)	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
Chlorobenzene	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	0.44 J
Ethylbenzene	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
1,2,3- Trichlorobenzene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<2.0
1,2,4- Trichlorobenzene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<2.0
n-Butylbenzene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
s-Butylbenzene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
t-Butylbenzene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
Isopropylbenzene	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
n-Propylbenzene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
Toluene	<4.0	<4.0	<1.0	<1.0	0.32 J	<10	<10	<20	<20	<50	<50	0.35 J
p-Isopropyltoluene	<20	<2.0	<2.0	<2.0	<2.0	<20	<20	<40	<40	<100	<100	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	<2.0	<4.0	<4.0	<4.0	<20	<20	<40	<40	<100	<100	<3.0
Methyl tert-butyl ether (MTBE)	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
Tert-Butyl Alcohol (TBA)	<40	<10	<10	<10	<10	<100	<100	<200	<200	<500	<500	<20
Di isopropyl ether (DIPE)	<20	<2.0	3.4	<2.0	1.8 J	3.2 J	3.3 J	4.8 J	4.5 J	<100	<100	2.5
Tetrachloroethene (PCE)	<4.0	0.56 J	0.59 J	1.8	3.1	<10	<10	<20	<20	<50	<50	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<4.0	<1.0	<1.0	<1.0	0.44 J	<10	<10	<20	<20	<50	<50	<1.0
Trichloroethene (TCE)	31	4	8	7.8	24	21	8.6 J	10.9 J	12.3 J	<50	27.8 J	9.6
1,1-Dichloroethane (1,1-DCA)	<4.0	<1.0	1.0	<1.0	1.1	<10	<10	<20	<20	<50	<50	1.6
1,2-Dichloroethane (1,2-DCA)	<4.0	<1.0	0.56 J	<1.0	0.48 J	<10	<10	<20	<20	<50	<50	<1.0
1,1-Dichloroethene (1,1-DCE)	<4.0	<1.0	1.4	<1.0	2.1	2.8 J	<10	<20	<20	<50	<50	1.5
cis-1,2-Dichloroethene (cis-1,2-DCE)	185	23	299	19.1	602	974	981	881	2,110	2,910	2,560	1,020a
trans-1,2-Dichloroethene (trans-1,2-DCE)	2.5 J	1.1	8.2	0.41 J	12.5	12.1	14.6	15.8 J	22.8	24.4 J	20.3 J	22.5

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4545 Ardine Street, South Gate, California

Well ID	MW-1											
Date	06/20/11	12/19/11	06/08/12	12/04/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15*	04/20/16	10/25/16
Vinyl Chloride	<4.0	<1.0	1.20	<1.0	2.10	3.2 J	<10	<20	<20	<50	<50	0.86 J
Carbon Tetrachloride	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
Styrene	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<1.0
1,2-Dibromomethane	<4.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<20	<50	<50	<2.0
1,2-Dichloropropane (1,2-DCP)	5.1	<1.0	2.2	<1.0	5.5	<10	7.8 J	10.0 J	11.8 J	<50	17.3 J	11.3
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	1.0	<0.95	0.62	<4.7	<4.8	0.96 J	<10	<3.8	<4.7	--	1.1 J	0.96
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)												
C6-C10	190 J	37.8	836	38	844	1,360	2,370	1,450	3,360	5,230	3,080	579
C10-C28	463	421	835	522	2,010	571	1,430	294	1,780	--	1,360	971
C28-C40	1,060	622	3,210	1,260	6,150	1,820	4,150	2,630	6,440	--	2,760	747
C6	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)												
Antimony	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	< 0.0060	< 0.0060	<0.0060	<0.0060	<0.0060
Arsenic	0.508	1.46	1.75	0.523	0.129	0.371	0.564	0.716	1.31	0.754	0.298	0.397
Barium	<0.20	<0.20	0.2860	<0.20	0.2040	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	0.0098	0.0088	0.0046	0.0023	0.0135	0.0050	0.0048	0.0100	0.0077	<0.0020	<0.0050
Chromium	0.0181	0.0256	0.0460	0.0468	0.0111	0.0177	0.0165	0.0268	0.0364	0.0277	<0.010	0.0173
Cobalt	0.0055	<0.0050	0.0074	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0077	<0.050
Copper	0.124	0.227	0.533	0.298	0.101	0.176	0.232	0.287	0.474	0.307	0.0839	0.183
Lead	0.0200	0.0477	0.0946	0.0813	0.0144	0.0321	0.0442	0.0530	0.0858	0.0559	0.0117	0.0242
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00027	<0.00020	0.00026	<0.00020	<0.00020	<0.00050

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-1											
Date	06/20/11	12/19/11	06/08/12	12/04/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15*	04/20/16	10/25/16
Molybdenum	<0.020	<0.020	0.0322	0.0229	<0.020	0.0456	0.0471	0.0593	0.0721	0.0362	0.0289	0.132
Nickel	0.280	0.0228	0.3130	0.0246	0.3470	0.3610	0.336	0.216	0.287	0.504	0.663	0.359
Selenium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0051	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	0.0112	0.0199	0.0243	<0.010	<0.010	<0.010	0.0124	0.0121	0.0110	<0.010	<0.050
Zinc	0.253	0.582	0.992	1.14	0.274	0.557	0.487	0.613	0.968	0.694	0.192	0.319
Field Measurements												
pH (Standard units)	7.11	7.47	7.12	7.76	7.73	6.45	6.50	6.62	6.72	7.56	6.57	--
Specific Conductance (milliSiemens per centimeter)	1.100	1.280	1.400	0.305	5.440	5.400	5.29	4.140	4.910	5.270	6.170	--
Oxidation-Reduction Potential (ORP) (millivolts)	-33	-103	-27	65	-111	-76	-23	-67	-77	-66	-23	--
Dissolved Oxygen (DO) (mg/L)	0.00	7.03	0.00	6.70	6.84	1.17	9.89	8.19	7.84	8.58	9.91	--
Temperature (degrees Celsius)	22.14	16.11	22.15	26.50	24.18	20.87	31.32	21.52	29.79	23.24	21.99	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
1. Sampled at a depth of 76 feet
2. Sampled at a depth of 73 feet
3. Sampled at a depth of 63 feet

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-2																		
Date	5/24/06 [1]	5/24/06 [2]	5/24/06 [3]	12/07/06	06/06/07	11/28/07	07/15/08	07/15/08 Dup	12/02/08	06/16/09	06/16/09 Dup	12/31/09	12/31/09 Dup	06/30/10	06/30/10 Dup	12/15/10	12/15/10 Dup	06/20/11	06/20/11 Dup
VOCs by EPA Method 8260 (µg/L)																			
Acetone	13	13	13	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<100	<100	<20	<20	<20	<20
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100	<100	<20	<20	<20	<20
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<10	<10	<25	<25	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100	<100	<20	<20	<20	<20
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<10	<10	<100	<100	<20	<20	<20	<20
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<10	<10	<10	<10	<100	<100	<20	<20	<20	<20
Benzene	1.1	1.1	1.0	1.0	0.7	0.6	0.62	0.62	<1.0	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	1.4	1.4	1.3	1.8	2.8	3.5	3.5	3.5	2.1	2.2	1.9	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	1.0	1.5	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<25	<25	<5.0	<5.0	<5.0	<5.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<10	<10
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	56	10	12	<10	<10	<10	<10	NS	NS	NS	NS	<50	<50	<10	<10	<10	<10
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5	NS	NS	NS	NS	<25	<25	<5.0	<5.0	<5.0	0.52 J
Tetrachloroethene (PCE)	4.1	3.9	4.0	3.3	2.5	1.3	1.6	<1.0	1.6	1.7	1.5	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	130	130	120	110	86	8.7	19	20	12	7.0	6.0	1.9	1.3	18.7	16.2	0.77 J	0.71 J	4.5	5.4
1,1-Dichloroethane (1,1-DCA)	4.4	4.6	4.6	3.3	2.7	2.6	3.0	3.0	11.0	6.2	5.0	8.6	8.4	5.2	4.8 J	<1.0	<1.0	1.1	1.3
1,2-Dichloroethane (1,2-DCA)	11	11	12	6.2	6.6	7.3	<0.50	<0.50	20.0	10.0	9.5	18.0	18.0	10.5	9.4	<1.0	<1.0	2.2	2.4
1,1-Dichloroethene (1,1-DCE)	4.0	4.0	3.9	2.9	2.2	2.3	1.9	1.7	5.9	1.2	<1.0	4.1	3.7	2.4 J	2.3 J	<1.0	0.22 J	0.75 J	0.95 J
cis-1,2-Dichloroethene (cis-1,2-DCE)	150	160	150	94	91	170	190	190	500	170	160	370	410	299	280	13.5	12.9	95.5	95.8
trans-1,2-Dichloroethene (trans-1,2-DCE)	4.0	4.3	3.8	3.4	2.2	2.6	<1.0	2.7	8.6	4.6	3.9	11.0	11.0	10.3	9.7	0.55 J	0.56 J	2.9	3.1
Vinyl Chloride	0.67	0.56	0.58	0.082	0.65	0.61	<0.50	<0.50	0.84	53.00	46.00	31.00	32.00	5.30	5.10	<1.0	<1.0	0.60 J	0.73 J
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane (1,2-DCP)	5.3	4.8	4.8	3.4	4.6	5.1	3.6	3.4	4.2	2.5	2.2	<1.0	<1.0	<5.0	2.0 J	<1.0	<1.0	0.48 J	0.63 J
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	61	59	59	120	230	170	48	49	61	25	25	24	23	6.3	7.8	<0.95	<2.0	3.2	3.2
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																			
C6-C10	--	--	--	--	--	--	--	--	--	--	--	--	--	350	318	<50	<50	128	135
C10-C28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	199	303	<94	<94
C28-C40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	214	345	<190	<190
C6	--	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C7	--	--	--	ND	38	12	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C8	--	--	--	ND	5.1	2.3	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C9-C10	--	--	--	12	47	69	ND	10	13	ND	ND	ND	ND	--	--	--	--	--	--
C11-C12	--	--	--	57	100	70	120	110	29	ND	ND	ND	ND	--	--	--	--	--	--
C13-C14	--	--	--	65	96	59	110	79	37	ND	ND	ND	ND	--	--	--	--	--	--
C15-C16	--	--	--	78	140	100	150	100	49	ND	ND	ND	ND	--	--	--	--	--	--
C17-C18	--	--	--	100	140	75	170	120	73	ND	ND	ND	ND	--	--	--	--	--	--
C19-C20	--	--	--	63	82	60	120	78	51	ND	ND	ND	ND	--	--	--	--	--	--
C21-C22	--	--	--	24	55	23	70	40	16	ND	ND	ND	ND	--	--	--	--	--	--
C23-C24	--	--	--	12	7.8	10	32	13	9	ND	ND	ND	ND	--	--	--	--	--	--
C25-C28	--	--	--	4.1	13	ND	61	16	4	ND	ND	ND	ND	--	--	--	--	--	--
C29-C32	--	--	--	ND	ND	ND	45	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C33-C36	--	--	--	ND	ND	ND	13	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C37-C40	--	--	--	ND<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C41-C44	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	730	<500	890	570	<500	<500	<500	<500	<500	--	--	--	--	--	--

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-2																		
Date	5/24/06 [1]	5/24/06 [2]	5/24/06 [3]	12/07/06	06/06/07	11/28/07	07/15/08	07/15/08 Dup	12/02/08	06/16/09	06/16/09 Dup	12/31/09	12/31/09 Dup	06/30/10	06/30/10 Dup	12/15/10	12/15/10 Dup	06/20/11	06/20/11 Dup
Metals by EPA Method 6010B/7470A (mg/L)																			
Antimony	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.0100	<0.030	<0.030	<0.0060	<0.0060
Arsenic	--	--	--	0.128	0.0937	0.114	0.117	0.11	0.0728	0.0593	0.0617	0.0476	0.0472	0.0367	0.0412	<0.030	<0.030	0.0245	0.024
Barium	--	--	--	0.0447	0.0369	0.0356	0.0376	0.0365	0.0278	0.0766	0.0773	0.0454	0.0441	0.675	0.0677	<0.10	<0.10	<0.20	<0.20
Beryllium	--	--	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cadmium	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Chromium	--	--	--	0.009	<0.005	<0.00500	<0.00500	<0.00500	0.00507	<0.00500	<0.00500	<0.0100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010
Cobalt	--	--	--	<0.005	0.0114	<0.00500	<0.00500	<0.00500	0.0057	<0.00500	<0.00500	<0.0100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Copper	--	--	--	0.0206	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	0.0496	0.0549	0.0127	<0.0100	0.0127	0.0141	0.0098	0.0098	0.0317	0.0195
Lead	--	--	--	0.0225	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	0.0152	0.0154	<0.0100	<0.0100	<0.0050	0.005	<0.010	<0.010	0.0195	0.019
Mercury	--	--	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	--	--	--	0.0231	0.0195	0.0233	0.0140	0.0132	0.0343	0.0138	0.014	0.0374	0.0373	0.0400	0.0383	<0.0050	<0.0050	0.0234	<0.020
Nickel	--	--	--	0.348	0.352	0.381	0.385	0.374	0.197	0.114	0.114	0.200	0.199	0.189	0.179	0.010	0.0099	0.0708	0.0583
Selenium	--	--	--	0.0384	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.0200	<0.030	<0.030	<0.010	<0.010
Silver	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050
Thallium	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.0200	<0.030	<0.030	<0.010	<0.010
Vanadium	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010
Zinc	--	--	--	0.0146	0.0255	0.0182	0.0197	0.0106	0.0116	0.0555	0.0561	0.0217	0.0187	0.0286	0.0413	0.116	0.111	0.139	0.153
Field Measurements																			
pH (Standard units)	6.87	6.87	6.87	7.06	8.22	7.71	7.00	--	6.61	7.29	--	6.53	--	7.15	--	7.89	--	7.00	--
Specific Conductance (milliSiemens per centimeter)	0.662	0.662	0.661	6210	0.666	0.709	0.760	--	0.460	0.310	--	4.170	--	1.050	--	0.244	--	1.860	--
Oxidation-Reduction Potential (ORP) (millivolts)	-158	-131	-128	-127	-143	-157	-124	--	-19	-150	--	-94	--	99	--	-37	--	-89	--
Dissolved Oxygen (DO) (mg/L)	2.15	1.65	2.02	0.92	0.00	0.00	1.11	--	1.50	4.97	--	2.35	--	2.40	--	9.51	--	1.46	--
Temperature (degrees Celsius)	27.20	27.70	29.31	25.30	22.51	23.44	27.80	--	24.00	28.70	--	17.07	--	24.50	--	18.44	--	26.86	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
a - Dilution required due to sample foaming
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
1. Sampled at a depth of 76 feet
2. Sampled at a depth of 73 feet
3. Sampled at a depth of 63 feet

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-2																					
Date	12/20/11	12/20/11 Dup	06/08/12	06/08/12 Dup	12/03/12	12/03/12 Dup	04/08/13	04/08/13 Dup	10/07/13	10/07/13 Dup	05/12/14	05/12/14 Dup	10/20/14	10/20/14 Dup	04/28/15	04/28/15 Dup	10/27/15[a]	10/27/15 Dup	04/20/16	04/20/16 Dup	10/25/16	10/25/16 Dup
VOCs by EPA Method 8260 (µg/L)																						
Acetone	<100	<100	<40	<20	<100	<100	<20	<100	<50	<50	<20	<20	<20	<20	<40	<20	<200	5.1 J	<200	<200	<25	<25
2-Butanone (methyl ethyl ketone)	<50	<50	<10	<10	<10	<10	<10	<10	<25	<25	<10	<10	--	--	<20	<10	<100	<10	<100	<100	<5.0	<5.0
Chloroform	<5.0	<4.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	0.35 J	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
Naphthalene	<25	<25	<10	<5.0	<25	<25	<5.0	<25	<13	<13	<5.0	<5.0	<5.0	<5.0	<10	<5.0	<50	<5.0	<50	<50	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<50	<50	<20	<10	<50	<50	<10	<50	<25	<25	<10	<10	<10	<10	<10	<10	<100	<10	<100	<100	<10	<10
Methylene chloride	<50	<50	<2.0	<10	<50	<5.0	<10	<5.0	<25	<25	<1.0	<1.0	<10	<1.0	<10	<1.0	<10	<1.0	<10	<10	<5.0	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<50	<50	<20	<10	<50	<5.0	<10	<5.0	<25	<25	<10	<10	<10	<10	<20	<10	<100	<10	<100	<100	<5.0	<5.0
Benzene	<5.0	<5.0	<2.0	0.20 J	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	0.22 J	<2.0	<1.0	<10	<1.0	<10	<10	0.21 J	0.22 J
1,2-Dichlorobenzene (1,2-DCB)	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
Chlorobenzene	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
Ethylbenzene	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<10	<10	<4.0	<2.0	<4.0	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<1.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<10	<10	<4.0	<2.0	<4.0	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<2.0	<2.0
1,2,3- Trichlorobenzene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<2.0	<2.0
1,2,4- Trichlorobenzene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<2.0	<2.0
n-Butylbenzene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<1.0	<1.0
s-Butylbenzene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<1.0	<1.0
t-Butylbenzene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<1.0	<1.0
Isopropylbenzene	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
n-Propylbenzene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<1.0	<1.0
Toluene	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
p-Isopropyltoluene	<10	<10	<4.0	<2.0	<10	<10	<2.0	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<1.0	<1.0
Total Xylenes (p/m- and o- xylene)	<10	<10	<8.0	<2.0	<8.0	<2.0	<8.0	<2.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.0	<20	<2.0	<20	<20	<3.0	<3.0
Methyl tert-butyl ether (MTBE)	<5.0	<5.0	<2.0	<1.0	<2.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<50	<50	<20	<10	<20	<50	<10	<50	<25	<25	<10	<10	<10	<10	<20	<10	<100	<10	<100	<100	<20	<20
Di isopropyl ether (DIPE)	2.2 J	2.3 J	0.99 J	1.0 J	1.8 J	1.6 J	0.56 J	2.0 J	3.4 J	3.4 J	0.54 J	0.41 J	1.1 J	1.8 J	1.3 J	1.4 J	<20	0.62 J	<20	<20	2.0	2.0
Tetrachloroethene (PCE)	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	3.7	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<5.0	<5.0	<2.0	<1.0	<10	<10	<1.0	<10	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<20	<1.0	<20	<20	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<5.0	<5.0	<2.0	<1.0	<10	<10	<1.0	<10	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
Trichloroethene (TCE)	14.6	14.3	2.0	2.3	1.0	<5.0	1.9	1.6 J	2.3 J	2.3 J	1.8	56.7	3.9	4.1	1.2 J	1.3	<10	0.39 J	<10	<10	0.45 J	0.43 J
1,1-Dichloroethane (1,1-DCA)	3.6 J	3.6 J	1.4 J	1.6	1.9 J	1.7 J	0.58 J	1.9 J	<2.5	<2.5	0.56 J	0.64 J	1.3	1.9	0.96 J	1.2	<10	0.53 J	<10	<10	1.7	1.9
1,2-Dichloroethane (1,2-DCA)	6.0	6.2	2.7	2.9	4.4 J	4.1 J	1.4	4.1	6.4	6.4	1.4	0.62 J	2.7	3.9	2.2	2.5	<10	0.97 J	<10	<10	2.5	2.7
1,1-Dichloroethene (1,1-DCE)	3.2 J	2.9 J	1.0 J	1.3	1.3 J	1.2 J	0.35 J	1.5 J	2.0 J	2.0 J	0.40 J	<1.0	1.0	1.5	0.64 J	0.81 J	<10	<1.0	<10	<10	0.83 J	0.89 J
cis-1,2-Dichloroethene (cis-1,2-DCE)	379	385	144	131	217	203	53.4	190	248	248	53.3	15.8	157	111	82.6	82.7	31.2	42.7	8.5 J	6.2 J	91.2	91.6
trans-1,2-Dichloroethene (trans-1,2-DCE)	12.5	13.1	5.2	6.1	7.5	7.4	2.3	7.3	10.5	10.5	2.3	1.0	5.1	8.1	3.4	4.0	<10	1.5	<10	<10	4.9	4.8
Vinyl Chloride	<5.0	<5.0	<2.0	0.43 J	<2.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	0.26 J	<2.0	0.39 J	<10	0.24 J	<10	<10	<1.0	0.32 J
Carbon Tetrachloride	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
Styrene	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<10	<10	<1.0	<1.0
1,2-Dibromomethane	<5.0	<5.0	<2.0	<1.0	<5.0	<5.0	<1.0	<5.0	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<10	<1.0	<10	<10	<2.0	<2.0
1,2-Dichloropropane (1,2-DCP)	1.5 J	1.5 J	0.53 J	0.62 J	<5.0	<5.0	<1.0	0.56 J	0.77 J	0.77 J	<1.0	<1.0	0.38 J	0.52 J	<2.0	0.31 J	<10	<1.0	<10	<10	<1.0	0.34 J
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	5.5	5.4	2.0	0.7	2.7	2.2	1.6	2.6	3.4	3.4	1.4	0.25 J	2.9	2.5	0.94	0.90	--	--	0.085 J	0.13	1.8	1.8
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																						
C6-C10	412	426	280	395	300	279	124	389	360	360	124	165	228	333	90.2 J	167	<500	<50	<500	<500	<100	53.1 J
C10-C28	252	322	205	433	316	201	--	--	--	--	--	--	300	284	359	342	--	--	298	290	217	168
C28-C40	<190	<190	156	718	193	161	--	171 J	140 J	140 J	451	87.0	225	181 J	460	305	--	--	305	327	207	59.7
C6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-2																					
Date	12/20/11	12/20/11 Dup	06/08/12	06/08/12 Dup	12/03/12	12/03/12 Dup	04/08/13	04/08/13 Dup	10/07/13	10/07/13 Dup	05/12/14	05/12/14 Dup	10/20/14	10/20/14 Dup	04/28/15	04/28/15 Dup	10/27/15[a]	10/27/15 Dup	04/20/16	04/20/16 Dup	10/25/16	10/25/16 Dup
Metals by EPA Method 6010B/7470A (mg/L)																						
Antimony	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	0.0382	0.0365	0.0249	0.0213	0.0267	0.015	0.0229	0.022	0.0245	0.0245	0.0233	0.0144	0.0247	0.0267	0.0169	0.0175	<0.010	<0.010	0.0149	0.0158	0.0291	0.0298
Barium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040	<0.0040
Cadmium	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.050
Copper	0.01	<0.010	<0.010	<0.010	0.033	<0.010	0.0125	<0.010	<0.010	<0.010	0.0161	0.0419	<0.010	<0.010	0.0116	0.0126	0.0121	0.014	0.0122	0.0133	<0.025	<0.025
Lead	0.0135	0.0126	<0.010	<0.010	0.0269	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050	<0.00050
Molybdenum	0.0584	0.056	0.0353	0.0348	0.06	0.0576	<0.020	0.049	0.0656	0.0656	0.0255	0.0461	0.0571	0.0584	0.0388	0.0426	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050
Nickel	0.237	0.232	0.0695	0.0649	0.130	0.127	0.0193	0.103	0.0887	0.0887	0.0245	0.0686	0.0798	0.0805	0.0273	0.0298	0.0103	0.0104	0.0064	0.0063	0.0458	0.0467
Selenium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010
Thallium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.050
Zinc	0.046	0.0536	0.0301	0.0308	0.173	0.0326	0.106	0.0411	<0.020	<0.020	0.102	0.0689	0.0317	0.0299	0.093	0.0777	0.135	0.145	0.238	0.228	0.0507	0.0511
Field Measurements																						
pH (Standard units)	6.96	--	7.81	--	7.26	--	7.26	--	--	--	--	--	7.18	--	7.19	--	8.24	--	6.84	--	7.51	--
Specific Conductance (milliSiemens per centimeter)	4.050	--	1.750	--	2.510	--	1.980	--	--	--	--	--	2.830	--	1.760	--	0.663	--	0.345	--	1.8	--
Oxidation-Reduction Potential (ORP) (millivolts)	-49	--	-159	--	-82	--	-97	--	--	--	--	--	-66	--	-91	--	-193	--	98	--	13	--
Dissolved Oxygen (DO) (mg/L)	5.93	--	9.91	--	0.28	--	14.07	--	--	--	--	--	0.32	--	9.17	--	8.45	--	9.81	--	3.3	--
Temperature (degrees Celsius)	18.22	--	24.43	--	23.23	--	30.16	--	--	--	--	--	21.30	--	20.55	--	26.53	--	27.75	--	24.81	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
a - Dilution required due to sample foaming
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
1. Sampled at a depth of 76 feet
2. Sampled at a depth of 73 feet
3. Sampled at a depth of 63 feet

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-3											
Date	5/24/06 [1]	5/24/06 [2]	5/24/06[3]	12/06/06	06/06/07	11/27/07	07/16/08	12/03/08	06/15/09	01/11/10	06/30/10	12/15/10
VOCs by EPA Method 8260 (µg/L)												
Acetone	<10	<10	34	--	<50	NS	<50	<50	<50	<50	<100	<100
2-Butanone (methyl ethyl ketone)	<10	<10	<10	--	<10	NS	<10	<10	<10	<10	<100	<100
Chloroform	3.1	3.5	8.1	--	1.3	NS	2.3	<1.0	<1.0	1.4	<5.0	<5.0
Naphthalene	<10	<10	<10	--	<10	NS	<10	<10	<10	<10	<25	<25
2-Hexanone (methyl butyl ketone)	<10	<10	<10	--	<10	NS	<10	<10	<10	<10	<100	<100
Methylene chloride	<10	<10	<10	--	<10	NS	<10	<10	<10	<10	<100	<100
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	--	<10	NS	<10	<10	<10	<10	<100	<100
Benzene	2.7	<0.50	<0.50	--	<0.50	NS	<0.50	<0.50	1.0	<0.50	<5.0	<5.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
Chlorobenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
Ethylbenzene	2.3	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
n-Butylbenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
s-Butylbenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
t-Butylbenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
Isopropylbenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
n-Propylbenzene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
Toluene	10	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<25	<25
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	--	<10	NS	<10	<10	NS	NS	<50	<50
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	--	<2.0	NS	<2.0	<2.0	NS	NS	<25	<25
Tetrachloroethene (PCE)	7.0	6.0	6.1	--	6.3	NS	2.1	13	5.8	4.2	9.2	21.5
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
Trichloroethene (TCE)	56	48	54	--	27	NS	27	150	63	13	52.3	271
1,1-Dichloroethane (1,1-DCA)	1.7	1.6	2	--	1.2	NS	1.8	1.0	8.3	1.9	3.7 J	3.2 J
1,2-Dichloroethane (1,2-DCA)	1.1	1.1	1	--	<0.50	NS	<0.50	<0.50	6.6	0.5	3.0 J	2.9 J
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	5.7	<1.0	2.6 J	2.0 J
cis-1,2-Dichloroethene (cis 1,2-DCE)	76	80	91	--	23	NS	55	45	620	68	303	159
trans-1,2-Dichloroethene (trans 1,2-DCE)	2.0	<1.0	<1.0	--	<1.0	NS	1.0	<1.0	6.4	<1.0	6.0	4.2 J
Vinyl Chloride	<0.50	<0.50	<0.50	--	<0.50	NS	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	--	<0.50	NS	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0
Styrene	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	--	<1.0	NS	<1.0	<1.0	3	<1.0	<5.0	<5.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	26	24	23	--	4.8	NS	9.2	<2.0	16	<2.0	2.5	2.3
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)												
C6-C10	--	--	--	--	--	--	--	--	--	--	377	571
C10-C28	--	--	--	--	--	--	--	--	--	--	--	<190
C28-C40	--	--	--	--	--	--	--	--	--	--	--	<380
C6	--	--	--	--	--	NS	ND	8.9	ND	ND	--	--
C7	--	--	--	--	ND	NS	ND	73.0	ND	ND	--	--
C8	--	--	--	--	ND	NS	ND	20.0	ND	ND	--	--

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-3											
Date	5/24/06 [1]	5/24/06 [2]	5/24/06[3]	12/06/06	06/06/07	11/27/07	07/16/08	12/03/08	06/15/09	01/11/10	06/30/10	12/15/10
C9-C10	--	--	--	--	4.0	NS	ND	30.0	ND	ND	--	--
C11-C12	--	--	--	--	ND	NS	ND	2.9	ND	ND	--	--
C13-C14	--	--	--	--	11	NS	ND	ND	ND	ND	--	--
C15-C16	--	--	--	--	15	NS	ND	ND	ND	ND	--	--
C17-C18	--	--	--	--	20	NS	ND	ND	ND	ND	--	--
C19-C20	--	--	--	--	33	NS	ND	ND	ND	ND	--	--
C21-C22	--	--	--	--	28	NS	ND	ND	ND	ND	--	--
C23-C24	--	--	--	--	22	NS	ND	ND	ND	ND	--	--
C25-C28	--	--	--	--	13	NS	ND	ND	ND	ND	--	--
C29-C32	--	--	--	--	33	NS	ND	ND	ND	ND	--	--
C33-C36	--	--	--	--	32	NS	ND	ND	ND	ND	--	--
C37-C40	--	--	--	--	19	NS	ND	ND	ND	ND	--	--
C41-C44	--	--	--	--	3.2	NS	ND	ND	ND	ND	--	--
C6-C44 Total	--	--	--	--	ND	NS	<500	<500	<500	<500	--	--
Metals by EPA Method 6010B/7470A (mg/L)												
Antimony	--	--	--	--	<0.015	NS	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030
Arsenic	--	--	--	--	<0.010	NS	<0.0100	0.0	0.0519	<0.0100	<0.0100	<0.030
Barium	--	--	--	--	0.0633	NS	0.120	0.169	0.170	0.055	0.052	<0.10
Beryllium	--	--	--	--	<0.001	NS	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050
Cadmium	--	--	--	--	<0.005	NS	<0.00500	<0.00500	<0.00500	<0.0100	<0.0020	0.0026
Chromium	--	--	--	--	0.0187	NS	<0.00500	0.0290	0.0103	<0.0100	<0.0050	<0.0050
Cobalt	--	--	--	--	0.0171	NS	<0.00500	<0.00500	0.0186	<0.0100	<0.0050	0.0096
Copper	--	--	--	--	0.0217	NS	0.0257	0.0636	0.114	0.022	0.025	0.045
Lead	--	--	--	--	<0.010	NS	<0.0100	<0.0100	0.0145	<0.0100	<0.0050	<0.010
Mercury	--	--	--	--	<0.0005	NS	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020
Molybdenum	--	--	--	--	0.0118	NS	0.00538	0.00750	0.115	0.0129	0.0879	0.0979
Nickel	--	--	--	--	0.166	NS	0.191	0.0309	0.507	0.0184	0.317	0.382
Selenium	--	--	--	--	<0.015	NS	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030
Silver	--	--	--	--	<0.005	NS	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050
Thallium	--	--	--	--	<0.015	NS	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030
Vanadium	--	--	--	--	<0.005	NS	<0.00500	0.0059	0.00545	<0.0100	<0.0050	0.00720
Zinc	--	--	--	--	0.0574	NS	0.0453	0.1830	0.217	0.069	0.041	0.066
Field Measurements												
pH (Standard units)	7.07	7.08	7.07	--	8.32	NS	7.00	6.94	7.38	7.04	7.07	7.19
Specific Conductance (milliSiemens per centimeter)	0.471	0.473	0.447	--	0.450	NS	0.510	56	0.433	0.814	3.350	2.900
Oxidation-Reduction Potential (ORP) (millivolts)	68	85	98	--	87	NS	43	-65	-103	-113	-43	-63
Dissolved Oxygen (DO) (mg/L)	2.41	4.42	5.69	--	4.93	NS	1.04	2.70	6.54	3.32	1.93	9.39
Temperature (degrees Celsius)	21.82	23.17	23.67	--	22.32	NS	26.50	21.10	23.24	23.26	22.70	17.78

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
1 - sampled at a depth of 76 feet
2 - sampled at a depth of 73 feet
3 - sampled at a depth of 63 feet

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-3											
Date	06/21/11	12/19/11	07/02/12	12/04/12	04/08/13	10/08/13	05/15/14	10/21/14	05/04/15	10/29/15	04/18/16	10/24/16
VOCs by EPA Method 8260 (µg/L)												
Acetone	<20	<200	<80	<20	<20	<20	<20	<20	<20	6.4 J	<20	<25
2-Butanone (methyl ethyl ketone)	<20	<100	<40	<10	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	0.59 J	<10	0.89 J	1.1	0.46 J	0.31 J	0.35 J	0.35 J	1.1	0.77 J	1.3	1.6
Naphthalene	<5.0	<50	<20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<20	<100	<40	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<20	<100	<40	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<20	<100	<40	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,3- Trichlorobenzene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<5.0	<20	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Total Xylenes (p/m- and o- xylene)	<10	<10	<16.0	<16.0	<16.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether (MTBE)	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<100	<40	<10	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	0.93 J	<20	0.92 J	<2.0	0.83 J	0.75 J	0.41 J	6.7	<2.0	<2.0	<2.0	0.33 J
Tetrachloroethene (PCE)	5.4	27.1	23.1	10.8	2.5	12.0	3.7	3.3	5.1	6.1	3.2	5.6
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<10	<4.0	0.40 J	<1.0	<1.0	<1.0	<1.0	0.32 J	0.22 J	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	48.7	396	224	43.9	10.1	144	57	129	19.1	19.0	12.7	21.1
1,1-Dichloroethane (1,1-DCA)	1.1	2.5 J	2.6 J	1.2	0.77 J	<1.0	0.64 J	2.3	0.87 J	1.2	0.67 J	1.3
1,2-Dichloroethane (1,2-DCA)	0.70 J	2.6 J	2.1 J	0.38 J	0.59 J	1.4	0.62 J	4.9	<1.0	<1.0	0.38 J	1.1
1,1-Dichloroethene (1,1-DCE)	0.33 J	<10	1.6 J	<1.0	0.38 J	0.75 J	<1.0	2.2	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis 1,2-DCE)	18.7	30	99.8	14.1	25.2	23.2	15.8	150	12.9	14.2	10.2	21.3
trans-1,2-Dichloroethene (trans 1,2-DCE)	0.47 J	<10	3.0 J	0.38 J	0.58 J	1.5	1.0	13.8	0.49 J	0.39 J	0.43 J	<1.0
Vinyl Chloride	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<10	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<10	<4.0	<1.0	<1.0	0.40 J	<1.0	0.53 J	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	<0.97	1.3	1.7	0.14 J	0.19 J	0.83	0.25 J	1.6	<0.47	--	0.31	0.36
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)												
C6-C10	115	627	357	94.5	92.3	331	165	600	62.2	81.5	68.8	<100
C10-C28	<94	1,150	165	96.5	31.9 J	112	57.8	74.4 J	51.8 J	--	63.2 J	62.9
C28-C40	<190	2,130	<0.19	76.2	<47	176	87.0	57.0 J	97.9 J	--	110 J	31.2 J
C6	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--	--	--

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-3											
Date	06/21/11	12/19/11	07/02/12	12/04/12	04/08/13	10/08/13	05/15/14	10/21/14	05/04/15	10/29/15	04/18/16	10/24/16
C9-C10	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)												
Antimony	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.010	0.0126	<0.010	<0.010	<0.010	0.0144	<0.010	<0.010	0.0146	0.0122	0.0113
Barium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.0050	<0.0050	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	<0.010	0.067	0.0485	<0.010	<0.010	0.024	0.0419	0.0197	0.0209	<0.010	0.0159	<0.025
Lead	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	0.036	0.112	0.0913	<0.020	0.0386	0.0904	0.0461	0.121	<0.020	<0.020	<0.020	<0.050
Nickel	0.0280	0.284	0.249	0.0222	0.0386	0.0904	0.0461	0.1210	<0.020	<0.020	<0.020	<0.050
Selenium	<0.010	<0.010	<0.010	<0.010	0.017	0.158	0.0686	0.102	0.0068	0.0058	<0.0050	<0.040
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	0.116	0.021	0.0479	0.108	0.0311	<0.020	0.069	<0.020	0.0641	0.122	0.165	0.132
Field Measurements												
pH (Standard units)	8.70	7.44	9.80	8.50	7.79	7.45	6.11	7.44	7.31	7.84	8.60	6.73
Specific Conductance (milliSiemens per centimeter)	1.320	3.330	1.190	0.609	0.837	3.140	1.300	2.180	0.726	0.335	0.692	1.01
Oxidation-Reduction Potential (ORP) (millivolts)	24	98	122	-32	129	213	18	113	13	-39	116	40
Dissolved Oxygen (DO) (mg/L)	1.98	6.50	0.00	6.77	7.44	8.53	1.77	6.12	9.47	8.21	9.82	4.11
Temperature (degrees Celsius)	26.08	17.37	24.43	21.97	27.40	23.68	27.11	22.11	20.28	26.03	20.52	26.21

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
1 - sampled at a depth of 76 feet
2 - sampled at a depth of 73 feet
3 - sampled at a depth of 63 feet

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-4														MW-4							
Date	05/24/06	12/07/06	06/06/07	11/28/07	07/16/08	12/03/08	06/15/09	12/31/09	07/01/10	12/15/10	06/21/11	12/20/11	06/07/12	12/04/12	04/08/13	10/09/13	05/13/14	10/21/14	04/28/15	10/27/15[a]	04/19/16	10/24/16
VOCs by EPA Method 8260 (µg/L)																						
Acetone	54	<50	<50	<50	<50	<50	290	<50	<40	<20	<80	54.2 J	66.9 J	<40	<40	<100	<100	41.7 J	<200	<200	<200	<250
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<80	<40	<10	<20	<20	<50	<50	--	<100	<100	<100	<50
Chloroform	2.8	2.8	33	<1.0	<1.0	<1.0	<1.0	2.6	2.4	1.3	<4.0	<4.0	<4.0	<2.0	0.76 J	<5.0	1.8	<10	<10	<10	4.4 J	5.1 J
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<20	<20	<20	<10	<10	<25	<25	<50	<50	<50	<50	<50
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<80	<40	<40	<20	<20	<50	<50	<100	<100	<100	<100	<100
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<80	<40	<40	<20	<20	<5.0	<5.0	<10	<10	<10	<10	<50
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<80	<40	<40	<20	<20	<50	<50	<100	<100	<100	<100	<50
Benzene	0.95	1.0	<0.50	0.76	0.60	0.54	<0.50	<0.50	<2.0	<1.0	<4.0	0.99 J	<4.0	0.68 J	0.67 J	1.2 J	<5.0	<10.0	<10	<10	2.2 J	<10
1,2-Dichlorobenzene (1,2-DCB)	3.3	4.2	2.1	3.1	2.1	1.9	1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	0.54 J	0.54 J	<5.0	<5.0	<10	<10	<10	<10	<10
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	0.38 J	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
1,4-Dichlorobenzene (1,4-DCB)	2.5	3.2	1.5	2.0	1.5	1.7	<1.0	<1.0	<2.0	0.36 J	<4.0	<4.0	<4.0	0.76 J	0.78 J	<5.0	<5.0	<10	<10	<10	<10	<10
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	0.49 J	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<8.0	<8.0	<10	<10	<20	<20	<20	<20	<10
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<8.0	<8.0	<10	<10	<20	<20	<20	<20	<10
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<20
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<20
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<10
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<10
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<10
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<10
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	4.0 J	<5.0	<10	<10	<10	<10	<10
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<20	<8.0	<8.0	<4.0	<4.0	<10	<10	<20	<20	<20	<20	<10
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<4.0	<16.0	<16.0	<16.0	<10	<10	<20	<20	<20	<20	<30
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	NS	NS	<20	<10	<40	<40	<40	<20	5.3 J	<50	<50	<100	<100	<100	<100	<200
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	<10	3.0 J	3.2 J	3.1 J	2.5 J	2.8 J	3.4 J	3.4 J	2.7 J	3.2 J	3.4 J	3.9 J	3.4 J	4.8 J
Tetrachloroethene (PCE)	6.3	7.8	4.8	1.6	1.8	1.8	2.2	3.5	<2.0	<1.0	<4.0	8.2	10.1	4.5	8.8	8.8	1.7 J	13.2	<10	<10	<10	4.3
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.62 J	0.23 J	<4.0	<4.0	<4.0	<2.0	<2.0	<10	<10	<20	<20	<20	<20	<10
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.82 J	1.1	<4.0	<4.0	1.0 J	0.72 J	0.92 J	<5.0	1.8 J	<10	2.6 J	<20	2.8 J	<10
Trichloroethene (TCE)	97	110	68	11	10	13	37	39	27.1	<1.0	5.7	121	118	79	135	158	13	253	30	7.7 J	12.9	56.9
1,1-Dichloroethane (1,1-DCA)	1.2	1.2	<1.0	<1.0	1.1	1.9	3.2	4.4	6.3	9.8	9.8	10.4	8.7	10.0	10.1	10.0	11.9	15.4	13.0	12.9	16.9	16.2
1,2-Dichloroethane (1,2-DCA)	1.8	1.4	0.7	1.1	1.1	<0.50	2.7	2.6	3.8	6.9	7.7	10.6	8.3	10.2	11.9	11.2	13.1	18.1	16.6	15.9	14.3	15.5
1,1-Dichloroethene (1,1-DCE)	3.4	2.6	1.5	1.9	<1.0	<1.0	1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	0.59 J	1.1 J	<5.0	<10	<10	<10	2.7 J	<10
cis-1,2-Dichloroethene (cis-1,2-DCE)	49	72	41	110	88	110	150	160	137	47	222	274	242	119	199	284	601	585	689	79	888	943
trans-1,2-Dichloroethene (trans-1,2-DCE)	3.7	5.6	2.8	4.1	2.5	2.7	3.0	2.1	3.0	3.9	4.4	3.7 J	3.1 J	3.9	4.1	5.0	5.1	4.2 J	6.0 J	5.8 J	8.6 J	12.9
Vinyl Chloride	<0.50	<0.50	<0.50	1.0	<0.50	4.4	1.4	0.6	37.6	13.9	7.7	0.84 J	2.1 J	3.4	4.3	6.4	9.7	2.6 J	10.1	21.0	7.6 J	<10
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<10
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<5.0	<5.0	<10	<10	<10	<10	<20
1,2-Dichloropropane (1,2-DCP)	2.4	2.0	<1.0	1.1	<1.0	1.6	2.0	<1.0	3.7	5.7	6.3	7.3	6.5	7.4	8.2	7.6	10.6	14.8	12.8	12.1	16.7	15.8
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	20	46	5	61	77	50	19	5.7	4.4	3.9	5.0	3.0	2.9	3.0	2.3	1.7	1.4	1.2	0.79	--	0.87	0.74
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)															**TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)**							
C6-C10	--	--	--	--	--	--	--	--	192	124	359	465	734	286	479	884	1,370	1,400	1,010	<500	1,680	601
C10-C28	--	--	--	--	--	--	--	--	--	461	486	1,290	672	477	943	722	594	1,230	936	--	880	446
C28-C40	--	--	--	--	--	--	--	--	--	174	134 J	259	334	139	522	406	308	103 J	97.2 J	--	351	84.0
C6	--	--	--	ND	ND	21.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	ND	31	ND	ND	46.0	12.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	ND	9.3	4.3	ND	16.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	15	15	59	ND	50	220	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	66	78	100	ND	56	1,900	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	74	66	80	ND	50	750	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	100	110	100	ND	54	350	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	86	120	110	ND	63	1,600	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	77	100	54	ND	30	100	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	23	90	25	ND	11	76	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	14	110	9.3	ND	10.0	32.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	4.4	130	3.3	ND	20.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	ND	100	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	ND	160	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	ND<500	190	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	130	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	1,400	550	<500	<500	5,100	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-4														MW-4							
Date	05/24/06	12/07/06	06/06/07	11/28/07	07/16/08	12/03/08	06/15/09	12/31/09	07/01/10	12/15/10	06/21/11	12/20/11	06/07/12	12/04/12	04/08/13	10/09/13	05/13/14	10/21/14	04/28/15	10/27/15[a]	04/19/16	10/24/16
Metals by EPA Method 6010B/7470A (mg/L)																						
Antimony	--	<0.015	0.0277	<0.0150	<0.0150	<0.0150	0.0234	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	0.0270	0.0335	0.0322	<0.0100	0.04090	0.0971	<0.0100	<0.0100	<0.030	<0.010	<0.010	0.0115	0.0268	<0.010	<0.010	<0.010	0.0168	0.0190	0.0111	0.0375	0.0640
Barium	--	0.0197	0.0284	0.0175	0.0177	0.0275	0.0911	0.0191	0.0302	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	<0.005	0.0128	<0.00500	0.0110	0.00513	<0.00500	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00210	<0.0020	<0.0020	0.00500	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	--	0.0135	0.00953	<0.00500	<0.00500	0.0232	0.0133	<0.0100	0.0114	0.0115	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	0.0207	0.0300	0.0148	0.00894	0.00694	<0.00500	<0.0100	0.00730	0.00620	0.00590	<.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	0.162	0.154	0.108	0.0302	0.118	0.319	0.0461	0.00990	0.0150	<0.010	0.0105	0.0166	0.0138	0.0254	0.0168	0.0212	0.0451	0.0480	0.0166	0.0888	<0.025
Lead	--	<0.010	<0.010	<0.0100	<0.0100	<0.0100	0.0589	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0137	<0.010	<0.010	<0.0050
Mercury	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	0.000898	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	0.0211	0.0157	0.0204	0.0120	0.0132	0.235	0.0662	0.0135	0.00790	<0.020	0.0214	<0.020	<0.020	0.0261	0.0293	<0.020	0.0316	0.0225	0.0407	0.0505	0.0810
Nickel	--	1.15	0.702	1.03	0.836	0.752	0.292	0.195	0.256	0.280	0.253	0.219	0.166	0.156	0.121	0.0891	0.0839	0.0801	0.0799	0.0776	0.0784	0.0969
Selenium	--	0.0287	<0.0150	<0.0150	<0.0150	<0.0150	0.170	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	0.0087	0.00675	0.00659	0.00679	0.00645	0.00841	<0.0100	0.0129	0.0112	0.0139	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0117	0.0107	<0.010	0.0106	<0.050
Zinc	--	0.0584	0.400	1.48	0.0822	0.504	2.96	0.424	0.159	0.113	0.0451	0.0721	0.146	0.225	0.235	0.191	0.251	0.235	0.554	0.158	0.667	0.113
Field Measurements																						
pH (Standard units)	12.32	6.89	8.80	8.06	7.20	6.76	10.57	8.04	8.93	7.33	8.84	9.24	8.23	9.38	10.00	9.00	6.70	8.88	7.52	7.86	6.94	7.10
Specific Conductance (milliSiemens per centimeter)	1.68	0.924	0.690	0.919	0.870	0.810	0.762	4.620	6.000	3.790	5.370	7.430	6.250	6.540	6.360	5.090	4.420	4.730	6.000	4.230	5.640	1.16
Oxidation-Reduction Potential (ORP) (millivolts)	-147	-62	-61	-127	-105	-165	-311	-167	7	-69	230	-363	-296	-141	-254	-276	-116	-630	-97	-172	17	-2
Dissolved Oxygen (DO) (mg/L)	2.47	0.84	0.97	2.91	0.87	1.70	6.20	1.31	4.45	9.43	1.18	5.68	8.72	5.62	11.85	0.37	10.23	0.87	8.07	8.62	11.27	8.29
Temperature (degrees Celsius)	23.98	23.4	22.17	22.27	26.70	20.90	22.51	28.34	21.20	17.91	28.89	21.39	27.18	23.62	26.32	18.19	24.58	23.10	20.49	25.47	20.90	26.45

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
a - Dilution required due to sample foaming
1. Historical metal results have been corrected to show significant figures.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-5S																					
Date	05/23/06	12/07/06	06/04/07	11/28/07	07/15/08	12/02/08	06/16/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/09/13	10/08/13	05/13/14	10/20/14	04/29/15	10/26/15*	04/18/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																						
Acetone	<20	<100	<100	<50	<50	<50	<50	<50	<40	<40	<40	<40	<40	<50	<50	<100	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<20	<20	<20	<10	<10	<10	<10	<10	<40	<40	<40	<40	<10	<25	<25	<50	<10	--	<10	<10	<10	<5.0
Chloroform	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<13	<13	<25	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<20	<20	<20	<10	<10	<10	<10	<10	<40	<40	<40	<40	<20	<25	<25	<50	<10	<10	<10	<10	<10	<10
Methylene chloride	<20	<20	<20	<10	<10	<10	<10	<10	<40	<40	<40	<40	<20	<2.5	<2.5	<5.0	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<20	<20	<20	<10	<10	<10	<10	<10	<40	<40	<40	<40	<20	<25	<25	<50	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<4.0	<8.0	<8.0	<8.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<20	<20	<20	<10	<10	<10	NS	NS	<20	<20	<20	<20	<20	<25	<25	<50	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	NS	NS	<10	<10	<10	<10	<4.0	<5.0	<5.0	<10	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	4.2	6.7	5.0	4.3	4.5	4.2	2.4	3.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	200	200	170	150	160	140	140	110	163	177	138	191	175	191	219	120	52.6	38.1	17.5	10.0	5.4	3.4
1,1-Dichloroethane (1,1-DCA)	2	2.2	<2.0	1.6	1.6	1.8	1.8	1.3	1.7 J	1.9 J	1.4 J	1.8 J	1.6 J	1.6 J	1.9 J	<5.0	0.38 J	0.33 J	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	2.4	2.6	3	2.1	1.3	1.8	1.5	<1.0	1.4 J	1.7 J	<2.0	1.5 J	1.1 J	<2.5	0.69 J	<5.0	<1.0	0.48 J	0.37 J	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	15	18	16	13	16	18	19	15	19.9	22.8	17.6	23.5	21.8	20.5	25.1	19.5	14.8	19.6	11.9	10.4	8.9	7.7
trans-1,2-Dichloroethene (trans-1,2-DCE)	<2.0	<2.0	<2.0	1.1	<1.0	<1.0	1.1	<1.0	1.4 J	1.4 J	<2.0	1.3 J	1.4 J	1.4 J	1.6 J	<5.0	0.49 J	0.71 J	0.48 J	<1.0	0.30 J	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	1	<0.50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.95	<1.0	<0.97	2.9	0.42 J	0.81 J	0.68	0.71	0.29 J	0.30 J	0.23 J	--	0.22	0.19 J

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-5S																					
Date	05/23/06	12/07/06	06/04/07	11/28/07	07/15/08	12/02/08	06/16/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/09/13	10/08/13	05/13/14	10/20/14	04/29/15	10/26/15*	04/18/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																						
C6-C10	--	--	--	--	--	--	--	--	201	251	125	300	373	349	480	267	134	94.7	<50	33.1 J	43.7 J	<100
C10-C28	--	--	--	--	--	--	--	--	--	<100	<100	63.7 J	90.9	113.0	40.01 J	<95	<94	<94	58.0 JB	--	--	39.3 J
C28-C40	--	--	--	--	--	--	--	--	--	<200	<200	<190	<0.19	147.0	<48	76.2 J	--	<190	84.1 JB	--	--	22.6 J
C6	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	ND	57	40	ND	36	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	ND	2	2.2	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	ND	12	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	ND	39	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	ND	25	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	ND	29	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	ND	28	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	ND	10	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	ND	8	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	ND	6	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	ND	14	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																						
Antimony	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	0.0159	<0.010	0.0118	0.0105	0.0185	<0.0100	<0.0100	<0.0100	<0.030	<0.010	<0.010	0.0145	<0.010	0.0108	0.0113	0.011	0.0109	0.0114	0.0114	0.0123	0.0123
Barium	--	0.0205	0.0252	0.0208	0.0358	0.0539	0.0638	0.0375	0.0389	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	--	<0.005	0.0170	0.00663	<0.00500	0.01410	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	<0.005	0.0141	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	<0.005	0.0053	0.00522	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	--	0.0106	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	0.0709	0.0671	0.0620	0.0688	0.0493	0.0672	0.0534	0.0650	0.0580	0.0635	0.0533	0.0472	0.0628	0.0835	0.0717	0.0525	0.0589	0.0619	0.0507	0.0513	<0.050
Nickel	--	0.0082	0.0196	0.0109	0.0109	0.0182	0.0101	<0.0100	0.0080	0.0073	0.0059	0.0089	0.0052	0.0217	0.0082	0.0077	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.040
Selenium	--	0.0445	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	0.0095	0.0124	0.00985	0.01100	0.01210	0.00973	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	--	0.0286	0.0397	0.0141	0.0336	0.0217	<0.0100	<0.0100	<0.0100	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0488	<0.020
Field Measurements																						
pH (Standard units)	7.04	7.25	8.14	7.83	7.20	6.82	7.33	7.41	7.20	7.61	7.20	7.52	--	7.02	8.11	7.78	--	6.88	7.48	8.21	7.01	6.91
Specific Conductance (milliSiemens per centimeter)	0.105	0.186	0.181	0.186	0.190	0.180	0.182	1.760	1.770	0.617	7.790	1.710	--	1.100	1.580	1.290	--	4.110	0.996	0.783	0.799	1.17
Oxidation-Reduction Potential (ORP) (millivolts)	100	44	70.0	83.0	91.0	39.0	88.0	21.0	85.0	-142.0	-150.0	147.0	--	-55.0	125.0	49.0	--	66.0	34.0	-82.0	173	-66
Dissolved Oxygen (DO) (mg/L)	3.10	3.14	3.89	3.41	7.38	4.10	6.20	3.79	0.00	9.01	0.00	6.92	--	5.83	11.11	3.44	--	6.93	7.48	8.40	8.94	3.7
Temperature (degrees Celsius)	24.67	24.50	24.28	23.11	25.30	20.70	23.37	14.50	24.10	17.15	28.10	16.90	--	20.40	25.32	20.37	--	22.16	28.51	29.97	28.24	25.10

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-5D																					
Date	05/23/06	12/06/06	06/04/07	11/27/07	07/14/08	12/02/08	06/17/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/09/13	10/08/13	05/13/14	10/20/14	04/29/15	10/27/15*	04/18/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																						
Acetone	<10	<10	<10	<50	<50	<50	<50	<50	<40	<40	<20	<20	<20	<20	7.5 J	<20	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<20	<20	<10	<10	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<0.50	0.72	0.54	0.76	0.90	1.10	1.10	1.30	1.1 J	1.4 J	1.10	1.10	0.66 J	0.41 J	0.48 J	0.52 J	0.60 J	0.34 J	0.43 J	0.28 J	0.29 J	0.48 J
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<20	<20	<20	<10	<10	<10	NS	NS	<20	<20	<5.0	<10	4.1 J	<10	<10	<10	<10	2.6 J	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	NS	NS	<10	<10	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	0.27 J	<2.0	<2.0	<2.0	0.58 J	0.31 J
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	9.9	3.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	0.34 J	0.31 J	0.35 J	<1.0	0.56 J	0.35 J	0.31 JB	<1.0	<1.0
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	1.1	0.99	0.70	0.70	0.60	0.71	0.65	0.72	<2.0	<2.0	0.41 J	0.47 J	0.35 J	<1.0	0.24 J	0.21 J	0.23 J	<1.0	0.23 J	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.60 J	0.72 J	<1.0	0.65 J	0.42 J	<1.0	0.20 J	<1.0	<1.0	<1.0	0.32 J	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	1.8	38	39	50	74	82	89	99	78	99	84	91.1	55	34.4	47.9	45.3	55.0	37.2	40.8	32.2	27.4	45.8
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0	<1.0	1.4	1.1	1.5	1.4	1.4 J	1.5 J	1.5	1.6	1.2	0.77 J	1.1	0.99 J	1.3	1.3	1.2	0.76 J	0.80 J	1.30
Vinyl Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	1	<0.50	0.85 J	0.64 J	0.51 J	1.1	1.1	0.35 J	0.89 J	0.50 J	0.66 J	0.31 J	1.0	0.46 J	0.35 J	0.93 J
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	<2.0	3.7	4.3	7.9	12	14	21	29	18.7	10.7	11.6	4.2	5.5	4.5	3.0	2.4	1.3	1.5	1.1	--	0.39	2.2

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-5D																					
Date	05/23/06	12/06/06	06/04/07	11/27/07	07/14/08	12/02/08	06/17/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/09/13	10/08/13	05/13/14	10/20/14	04/29/15	10/27/15*	04/18/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																						
C6-C10	--	--	--	--	--	--	--	--	87.0 J	123	91.0	131	120	65.5	116	88.9	135	79.6	74.9	79.3	69.7	<100
C10-C28	--	--	--	--	--	--	--	--	--	111	<95	123	187	159	145	130	<96	80.4 J	137	--	73.3 J	203
C28-C40	--	--	--	--	--	--	--	--	--	<190	<190	<190	<0.19	84	<48	185 J	<190	<190	104 JB	--	47.6 J	92.0
C6	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	ND	9.3	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	ND	8.6	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	ND	10	ND	8.9	3.7	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	ND	75	65	55	92	64	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	83	30	17	20	24	16	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	3.5	17.0	ND	7.8	8.3	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	ND	16	1.4	2.0	2.4	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	ND	10	2.7	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	ND	10	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																						
Antimony	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	<0.010	<0.010	0.0231	0.0362	0.0247	0.0119	0.0136	0.0123	<0.030	<0.010	0.019	0.0361	0.0268	0.0174	0.0207	0.0106	0.0249	0.0121	0.0168	<0.010	0.0191
Barium	--	0.0843	0.0766	0.0761	0.0835	0.0799	0.0755	0.0796	0.0660	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	--	<0.005	<0.005	<0.00500	<0.00500	0.00690	0.00736	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	<0.005	0.0181	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	--	<0.010	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	0.0705	0.0623	0.0620	0.0539	0.0564	0.0526	0.0520	0.0449	0.0513	0.0452	0.0386	0.0272	0.0327	0.0402	0.0345	0.0378	0.0310	0.0348	0.0324	0.0404	<0.050
Nickel	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.040
Selenium	--	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	--	0.0209	0.0201	0.0163	0.0490	0.0126	<0.0100	<0.0100	0.0218	<0.010	<0.020	<0.020	<0.020	0.0214	<0.020	<0.020	<0.020	0.0325	<0.020	0.0482	0.0630	0.0229
Field Measurements																						
pH (Standard units)	7.11	7.52	8.17	7.76	7.10	6.91	7.62	7.61	6.98	7.58	8.82	7.72	7.82	7.63	8.13	7.53	--	6.95	7.51	9.13	6.66	6.73
Specific Conductance (milliSiemens per centimeter)	0.187	0.104	0.101	0.105	0.120	98.000	0.948	0.595	2.300	0.713	0.963	0.905	0.756	0.701	0.637	0.555	--	0.397	0.892	0.666	0.673	0.317
Oxidation-Reduction Potential (ORP) (millivolts)	127	-162	-134	-169.0	-161.0	-145.0	-190.0	-98.0	22.4	-137.0	-164.0	-173.0	-114.0	-35.0	-73.0	-97.0	--	-33.0	-98.0	-122.0	119.0	42
Dissolved Oxygen (DO) (mg/L)	2.73	6.99	0.00	0.00	1.87	2.60	5.92	6.14	0.00	9.23	1.35	6.56	8.07	6.14	8.90	0.82	--	1.11	7.91	8.52	10.43	7.7
Temperature (degrees Celsius)	21.53	24.70	24.35	22.51	29.10	20.70	24.47	17.07	23.70	16.95	28.91	18.03	23.40	21.90	20.12	21.27	--	22.11	28.50	25.46	28.60	24.21

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-6S														
Date	05/25/06	12/08/06	06/06/07	11/29/07	07/16/08	12/03/08	12/03/08 Dup	06/17/09	06/17/09 Dup	12/31/09	12/31/09 Dup	07/01/10	07/01/10 Dup	12/16/10	12/16/10 Dup
VOCs by EPA Method 8260 (µg/L)															
Acetone	12	<1,000	<1,000	<250	<500	<500	<500	<50	<50	<50	<50	<100	<100	<40	<40
2-Butanone (methyl ethyl ketone)	<10	<200	<200	<50	<100	<100	<100	<10	<10	<10	<10	<100	<100	<40	<40
Chloroform	75	30	22	15	15	<10	<10	3.8	4.1	1.5	1.5	<5.0	<5.0	<2.0	<2.0
Naphthalene	<10	<200	<200	<50	<100	<100	<100	<5.0	<10	<10	<10	<25	<25	<10	<10
2-Hexanone (methyl butyl ketone)	<10	<200	<200	<50	<100	<100	<100	<10	<10	<10	<10	<100	<100	<40	<40
Methylene chloride	<10	<200	<200	<50	<100	<100	<100	<5.0	<10	<10	<10	<100	<100	<40	<40
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<200	<200	<50	<100	<100	<100	<5.0	<10	<10	<10	<100	<100	<40	<40
Benzene	51	17	<10	5.8	<5.0	<5.0	<5.0	1.8	2.1	<0.50	<0.50	<5.0	<5.0	0.61 J	<2.0
1,2-Dichlorobenzene (1,2-DCB)	7.0	<20	<20	6.5	23.0	<10	<10	3.2	3.4	1.3	1.1	<5.0	<5.0	<2.0	<2.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	0.86 J	0.80 J
1,4-Dichlorobenzene (1,4-DCB)	3.6	<20	<20	<5.0	<10	<10	<10	1.7	1.7	1.1	1.1	<5.0	<5.0	<2.0	<2.0
Chlorobenzene	1.4	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
Ethylbenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
1,2,3- Trichlorobenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
1,2,4- Trichlorobenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
n-Butylbenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
s-Butylbenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
t-Butylbenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
Isopropylbenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
n-Propylbenzene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
Toluene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
p-Isopropyltoluene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<25	<25	<10	<10
Total Xylenes (p/m- and o- xylene)	3.2	<20	<20	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10
Methyl tert-butyl ether (MTBE)	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
Tert-Butyl Alcohol (TBA)	<10	<200	<200	<50	<100	<100	<100	NS	NS	NS	NS	<50	<50	<20	<20
Di isopropyl ether (DIPE)	<2.0	<40	<40	<4.0	<20	<20	<20	NS	NS	NS	NS	3.4 J	3.3 J	1.4 J	1.4 J
Tetrachloroethene (PCE)	76	120.0	87.0	100	70	59	65	29	29	16	17	2.7 J	2.6 J	<2.0	<2.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
1,1,2-Trichloroethane (1,1,2-TCA)	6.2	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
Trichloroethene (TCE)	390	460.0	310	290	230	210	230	220	220	38	38	19	19	1.7 J	1.7 J
1,1-Dichloroethane (1,1-DCA)	2.9	<20	<20	<5.0	<10	<10	<10	1.6	1.6	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
1,2-Dichloroethane (1,2-DCA)	<0.50	<10	<10	<2.5	<5.0	<5.0	<5.0	1.1	1.1	<0.50	<0.50	<5.0	<5.0	<2.0	<2.0
1,1-Dichloroethene (1,1-DCE)	9.9	<20	<20	<5.0	<10	<10	<10	3.4	3.4	<1.0	<1.0	<5.0	<5.0	0.73 J	0.67 J
cis-1,2-Dichloroethene (cis-1,2-DCE)	4800	2,300	1,600	990	960	710	730	500	500	100	100	255	249	147	146
trans-1,2-Dichloroethene (trans-1,2-DCE)	7	<20	<20	<5.0	<10	<10	<10	5.7	5.7	1.1	1.1	2.6 J	2.6 J	1.8 J	1.7 J
Vinyl Chloride	<0.50	<10	<10	<2.5	<5.0	<5.0	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<2.0	<2.0
Carbon Tetrachloride	<0.50	<10	<10	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	<0.50	<0.50	<5.0	<5.0	<2.0	<2.0
Styrene	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
1,2-Dibromomethane	<1.0	<20	<20	<5.0	<10	<10	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<2.0	<2.0
1,2-Dichloropropane (1,2-DCP)	20	<20	<20	7.1	<10	<10	<10	5.2	5.2	<1.0	<1.0	2.1 J	2.0 J	1.1 J	1.1 J
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	8.6	14.0	12.0	12	13	10	10	4.2	4.4	<2.0	<2.0	0.55 J	0.48 J	<0.95	<0.96

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-6S														
Date	05/25/06	12/08/06	06/06/07	11/29/07	07/16/08	12/03/08	12/03/08 Dup	06/17/09	06/17/09 Dup	12/31/09	12/31/09 Dup	07/01/10	07/01/10 Dup	12/16/10	12/16/10 Dup
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)															
C6-C10	--	--	--	--	--	--	--	--	--	--	--	324	318	186	177
C10-C28	--	--	--	--	--	--	--	--	--	--	--	--	--	564	391
C28-C40	--	--	--	--	--	--	--	--	--	--	--	--	--	392	297
C6	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
C7	--	ND	ND	72	ND	110	62	27	31	ND	ND	--	--	--	--
C8	--	ND	ND	26	ND	21	45	6.0	6.7	ND	ND	--	--	--	--
C9-C10	--	ND	9.3	77	ND	48	50	ND	ND	ND	ND	--	--	--	--
C11-C12	--	ND	8.6	46	ND	42	7.3	ND	14	ND	ND	--	--	--	--
C13-C14	--	ND	9.5	67	ND	62	32	41	ND	ND	ND	--	--	--	--
C15-C16	--	ND	75	81	ND	65	45	27	41	ND	ND	--	--	--	--
C17-C18	--	83	30	120	ND	90	90	ND	87	ND	ND	--	--	--	--
C19-C20	--	3.5	17	48	ND	50	62	190	95	ND	ND	--	--	--	--
C21-C22	--	ND	16	35	ND	42	34	30	67	ND	ND	--	--	--	--
C23-C24	--	ND	10	13	ND	17	28	21	42	ND	ND	--	--	--	--
C25-C28	--	ND	10	ND	ND	15.0	6.2	19	26	ND	ND	--	--	--	--
C29-C32	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
C33-C36	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
C37-C40	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
C41-C44	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--
C6-C44 Total	--	--	--	590	<500	560	<500	<500	<500	<500	<500	324	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)															
Antimony	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.0100	<0.030	<0.030
Arsenic	--	<0.010	<0.010	2.95	2.34	2.41	2.39	2.47	2.40	0.826	0.848	4.51	4.43	1.07	0.985
Barium	--	0.0843	0.0766	<0.0100	0.0127	0.0198	0.0197	0.152	0.134	0.0331	0.0257	0.129	0.127	<0.10	<0.10
Beryllium	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050
Cadmium	--	<0.005	<0.005	<0.00500	0.00924	0.01200	0.01200	0.00852	0.00909	0.01120	0.01120	0.0393	0.0389	0.0125	0.0134
Chromium	--	<0.005	<0.005	0.159	0.177	0.170	0.166	0.0512	0.0532	0.0108	<0.0100	0.0147	0.0143	0.0053	0.006
Cobalt	--	<0.005	0.0181	0.0306	0.0208	0.0229	0.0224	0.0324	0.0345	<0.0100	<0.0100	0.0144	0.0142	0.0103	0.0099
Copper	--	<0.005	<0.005	0.411	0.313	0.397	0.406	0.351	0.374	0.056	0.044	0.0653	0.0649	0.0261	0.0298
Lead	--	<0.010	<0.010	<0.0100	<0.0100	0.02020	0.02000	0.0316	0.0299	0.0152	0.0139	0.0172	0.0172	<0.010	<0.010
Mercury	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.000200	<0.00020	<0.00020
Molybdenum	--	0.0705	0.0623	0.0268	0.0157	0.0243	0.0243	0.0414	0.0412	<0.0100	<0.0100	0.0216	0.0211	0.0106	0.0095
Nickel	--	<0.005	<0.005	1.75	1.68	1.57	1.59	0.685	0.709	0.029	0.0279	0.235	0.233	0.123	0.111
Selenium	--	<0.015	<0.015	0.02170	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.0200	<0.030	<0.030
Silver	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050
Thallium	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.0200	<0.030	<0.030
Vanadium	--	<0.005	<0.005	0.0433	0.0388	0.0376	0.0374	0.0251	0.0265	<0.0100	<0.0100	0.0055	0.0054	0.0052	0.0055
Zinc	--	0.0209	0.0201	0.173	0.124	0.195	0.194	0.655	0.640	0.364	0.315	0.246	0.240	0.164	0.19
Field Measurements															
pH (Standard units)	7.15	7.10	8.43	7.85	7.20	6.67	6.67	7.13	7.13	6.22	6.22	6.95	--	7.12	--
Specific Conductance (milliSiemens per centimeter)	0.747	1.27	0.912	0.959	0.950	0.870	0.870	0.704	0.704	5.180	5.180	3.78	--	0.581	--
Oxidation-Reduction Potential (ORP) (millivolts)	-15	-45	68	92	114	-16	-16	53	53	-90	-90	-109	--	-10	--
Dissolved Oxygen (DO) (mg/L)	0.59	0.94	0.78	0.00	0.82	1.50	1.50	5.19	5.19	1.99	1.99	3.380	--	7.15	--
Temperature (degrees Celsius)	26.99	27.3	27.03	22.29	26.40	25.80	25.80	28.60	28.60	18.02	18.02	22.00	--	18.10	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-6S															
Date	06/21/11	06/21/11 Dup	12/19/11	12/19/11 Dup	06/07/12	06/07/12 Dup	12/04/12	12/04/12 Dup	04/09/13	10/08/13	05/13/14	10/21/14	04/28/15	10/27/15*	04/20/16	10/24/16
VOCs by EPA Method 8260 (µg/L)																
Acetone	<20	<20	9.3 J	9.5 J	<40	5.5 J	<20	<20	4.7 J	<20	<100	<50	<100	<100	<100	<130
2-Butanone (methyl ethyl ketone)	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<50	--	<50	<50	<50	<25
Chloroform	<1.0	<1.0	1.7 J	1.6 J	<2.0	<1.0	0.26 J	0.25 J	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
Naphthalene	<5.0	<5.0	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<25	<13	<25	<25	<25	<25
2-Hexanone (methyl butyl ketone)	<20	<20	<20	<20	<20	<10	<10	<10	<10	<10	<50	<25	<50	<50	<50	<50
Methylene chloride	<20	<20	<20	<20	<20	<10	<10	<10	<10	<1.0	<50	<25	<50	<50	<50	<25
4-Methyl-2-pentanone (methyl isobutyl ketone)	<20	<20	<20	<20	<20	<10	<10	<10	<10	<10	<50	<25	<50	<50	<50	<25
Benzene	0.38 J	0.39 J	0.40 J	<2.0	0.76 J	0.81 J	<1.0	<1.0	1.20	1.30	1.9 J	2.4 J	2.4 J	<5.0	<5.0	<5.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<2.0	<2.0	0.50 J	0.55 J	<1.0	<1.0	0.82 J	0.75 J	<5.0	0.76 J	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<2.0	<2.0	<2.0	0.35 J	<1.0	<1.0	0.54 J	0.51 J	<5.0	0.51 J	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
1,2,3- Trichlorobenzene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<10
1,2,4- Trichlorobenzene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<10
n-Butylbenzene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
s-Butylbenzene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
t-Butylbenzene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
Isopropylbenzene	<1.0	<1.0	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
n-Propylbenzene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
Toluene	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
p-Isopropyltoluene	<5.0	<5.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<5.0	<10	<10	<10	<5.0
Total Xylenes (p/m- and o- xylene)	<10	<10	<10	<10	<8.0	<4.0	<8.0	<4.0	<8.0	<2.0	<10	<5.0	<10	<10	<10	<15
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
Tert-Butyl Alcohol (TBA)	<10	<10	<20	<20	<20	<10	<10	<10	<10	<10	<50	<25	<50	<50	<50	<100
Di isopropyl ether (DIPE)	1.7 J	1.8 J	1.8 J	1.7 J	3.7 J	4.0	0.33 J	0.32 J	5.9	5.6	11.8	15.8	17.2	3.7 J	2.8 J	<5.0
Tetrachloroethene (PCE)	0.71 J	0.69 J	2	2	<2.0	<1.0	0.41 J	0.41 J	<1.0	0.39 J	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
Trichloroethene (TCE)	13	12	31	29	4.0	4.3	8.4	8.3	5.9	13	4.9 J	6.5	4.2 J	4.8 J	5.3	21.8
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	0.53 J	0.52 J	0.89 J	0.96 J	<1.0	<1.0	0.99 J	1.2	1.3 J	1.7 J	1.6 J	<5.0	<5.0	<5.0
1,2-Dichloroethane (1,2-DCA)	<1.0	<1.0	<2.0	<2.0	<2.0	0.40 J	<2.0	<1.0	0.62 J	0.83 J	1.2 J	1.9 J	1.3 J	<5.0	<5.0	<5.0
1,1-Dichloroethene (1,1-DCE)	0.32 J	0.32 J	0.65 J	0.64 J	0.97 J	1.0	<1.0	<1.0	1.2	1.8	1.5 J	2.5	2.1 J	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	75.8	75.8	150	142	243	246	43.7	43.3	300	359	435	353	553	244	258	329
trans-1,2-Dichloroethene (trans-1,2-DCE)	1.2	1.1	2.7	2.7	4.9	5.3	0.43 J	0.43 J	6.1	4.5	7.3	11.3	13.6	4.3 J	4.5 J	<5.0
Vinyl Chloride	<1.0	<1.0	<2.0	<2.0	7.9	9.1	<1.0	<1.0	8.9	7.9	9.1	5.9	3.0 J	<5.0	4.4 J	<5.0
Carbon Tetrachloride	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
Styrene	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<5.0
1,2-Dibromomethane	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<5.0	<5.0	<5.0	<10
1,2-Dichloropropane (1,2-DCP)	0.69 J	0.69 J	1.4 J	1.4 J	2.2	2.6	0.24 J	0.23 J	2.7	7.1	7.9	11.4	8.9	2.4 J	1.9 J	3.8 J
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	<0.98	<0.96	<0.96	<0.95	0.12 J	0.17 J	<0.94	<4.7	0.32 J	0.78 J	0.74 J	0.80	0.32 J	--	0.25 J	0.16 J

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-6S															
Date	06/21/11	06/21/11 Dup	12/19/11	12/19/11 Dup	06/07/12	06/07/12 Dup	12/04/12	12/04/12 Dup	04/09/13	10/08/13	05/13/14	10/21/14	04/28/15	10/27/15*	04/20/16	10/24/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																
C6-C10	132	130	241	232	516	643	60.1	60.3	601	537	931	998	1,250	406	333	176
C10-C28	452	710	740	914	752	711	867	1,540	696	743	--	818	819	--	791	1,020
C28-C40	826	1,530	793	1,110	790	770	1,740	3,750	894	634	--	763	748	--	1,580	501
C6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																
Antimony	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	0.535	0.52	0.729	0.727	1.18	1.20	0.284	0.488	1.49	1.24	1.36	1.56	1.59	0.81	1.37	0.881
Barium	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	0.0032	0.0023	0.0091	0.009	0.0226	0.0232	0.015	0.0257	0.006	0.0401	<0.0020	<0.0020	0.0025	0.0049	0.0095	0.0117
Chromium	<0.010	<0.010	0.0142	0.0138	<0.010	<0.010	0.0155	0.0283	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	0.0067	0.0065	0.0055	0.0055	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	0.0415	0.0381	0.127	0.125	0.0373	0.0407	0.115	0.239	<0.010	0.0556	0.0166	0.0255	0.0228	<0.010	0.107	0.212
Lead	0.0197	0.0180	0.1310	0.1250	0.0142	0.0170	0.0703	0.146	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0281	0.0227
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00032	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.027	0.0472	0.079	0.0608	0.0399	0.0578	<0.050
Nickel	0.057	0.0563	0.0961	0.0952	0.132	0.133	0.0958	0.161	0.231	0.751	0.834	0.515	0.364	0.151	0.168	0.0404
Selenium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0113
Silver	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0141	<0.010	<0.010	<0.030	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	0.253	0.25	0.275	0.273	0.0814	0.0897	0.652	0.832	0.0248	0.0451	0.0314	0.0471	0.0346	<0.020	0.358	0.316
Field Measurements																
pH (Standard units)	8.29	--	7.21	--	7.11	--	--	--	8.61	6.81	6.07	6.79	7.07	7.81	6.66	7.68
Specific Conductance (milliSiemens per centimeter)	1.060	--	0.566	--	0.877	--	--	--	2.400	5.590	5.120	5.190	3.630	1.650	2.370	2.31
Oxidation-Reduction Potential (ORP) (millivolts)	-112	--	110	--	-111	--	--	--	-132	-99	-89	-114	24	-72	36	-119
Dissolved Oxygen (DO) (mg/L)	2.72	--	7.99	--	1.12	--	--	--	9.14	1.93	7.00	1.10	8.00	8.35	8.28	1.74
Temperature (degrees Celsius)	25.23	--	18.60	--	26.99	--	--	--	19.95	19.16	22.97	20.12	27.91	24.30	32.31	26.73

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-6D																														
Date	05/25/06	12/07/06	06/06/07	11/28/07	07/15/08	12/02/08	06/15/09	12/30/09	06/30/10	12/16/10	06/21/11	12/19/11	06/07/12	12/04/12	04/09/13	04/08/13 Dup	10/08/13	10/08/13 Dup	05/13/14	05/13/14 Dup	10/21/14	10/21/14 Dup	04/28/15	04/28/15 Dup	10/27/15*	10/27/15 Dup*	04/20/16	04/20/16 Dup	10/26/16	10/26/16 Dup
VOCs by EPA Method 8260 (µg/L)																															
Acetone	<10	<50	<50	<50	<50	<50	<50	<50	<20	<20	<20	<20	8.8 J	<20	5.9 J	7.6 J	<20	<4.0	<20	<20	<20	<20	<20	<20	<20	<20	<20	4.2 J	<50	<50
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	--	--	<10	<10	<10	<10	<10	<10	<10	<10
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.24 J	0.25 J	0.26 J	0.24 J	0.62 J	0.62 J	1.1	1.1	0.93 J	0.92 J
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	4.4 J	<10	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	6.0	3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	1.3	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
Ethylbenzene	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<4.0	<2.0	<4.0	<2.0	<4.0	<2.0	<4.0	<2.0	<4.0	<2.0	<4.0	<6.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	NS	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	0.84 J	0.71 J	1.1 J	<5.0	0.59 J	<2.0	<2.0	<2.0	0.25 J	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Tetrachloroethene (PCE)	76	76.0	1.9	2.5	2.5	1.8	<1.0	<1.0	0.33 J	0.23 J	0.39 J	1.1	0.44 J	0.61 J	0.60 J	0.56 J	0.58 J	0.60 J	1.7	1.6	3.2	3.1	3.1	2.8	3.3	3.5	3.4	3.3	1.5 J	1.6 J
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
1,1,2-Trichloroethane (1,1,2-TCA)	6.2	6.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
Trichloroethene (TCE)	3.1	3.3	16	19	10	5.3	<1.0	1.5	8.8	9	5.1	9.7	4.1	4.6	5.1	4.9	6.6	6.8	17	16.5	32.2	30.9	31.8	26.4	37.5	43.2	45.6	45.0	32.3	33.0
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.41 J	0.35 J	0.49 J	<1.0	0.23 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.24 J	0.23 J	0.28 J	0.26 J	0.46 J	0.52 J	0.94 J	0.94 J	0.93 J	0.82 J
1,2-Dichloroethane (1,2-DCA)	0.58	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.64 J	0.46 J	0.65 J	<1.0	0.31 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.21 J	<1.0	0.26 J	0.22 J	<1.0	<1.0	<2.0	<2.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.26 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	28	6.4	8.9	11	9.1	7.9	13.0	12.0	37.4	35.4	45.1	15.2	23.5	3.1	3.3	3.6	9.1	9.5	11.2	11.5	17.5	17.7	31.2	27.8	90.7	96.0 b	334	343	277c	259c
trans-1,2-Dichloroethene (trans-1,2-DCE)	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	1.4	2.0	0.85 J	1.3	<1.0	<1.0	<1.0	0.44 J	0.44 J	0.70 J	0.68 J	1.1	1.1	1.1	1.1	1.5	1.7	3.6	3.5	3.4	3.3
Vinyl Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<4.0	<4.0	<4.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.69 J	0.88 J	0.50 J	0.57 J	0.33 J	<1.0	<1.0	<1.0	1.6	1.7	5.1	5.2	10.7	10.5	8.1	6.6	8.0	9.5	4.2	4.1	4.0	3.7
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	0.58 J	<0.95	<0.99	<0.96	0.21 J	<0.47	<0.47	0.17 J	0.24 J	0.18 J	0.27 J	0.16 J	0.22 J	0.17 J	0.18 J	0.21 J	--	--	<0.19	0.027 JB	<0.29	<0.29

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-6D																												
Date	05/25/06	12/07/06	06/06/07	11/28/07	07/15/08	12/02/08	06/15/09	12/30/09	06/30/10	12/16/10	06/21/11	12/19/11	06/07/12	12/04/12	04/09/13	04/08/13 Dup	10/08/13	10/08/13 Dup	05/13/14	05/13/14 Dup	10/21/14	10/21/14 Dup	04/28/15	04/28/15 Dup	10/27/15*	10/27/15 Dup*	04/20/16	04/20/16 Dup	10/26/16	10/26/16 Dup
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																														
C6-C10	--	--	--	--	--	--	--	--	61.8	60.8	90.0	45.2	59.0	<50	46.2 J	44.7 J	40.9 J	41.2 J	80.5	74.9	112	108	150	87.7	225	164	428	428	202	184
C10-C28	--	--	--	--	--	--	--	--	--	284	<94	211	187	265	207	90.8 J	197	57.3 J	--	251	130	106	50.6 J	36.4 J	--	--	431	444	515	--
C28-C40	--	--	--	--	--	--	--	--	--	271	140	236	552	299	482	276.0	699	176 J	--	442	244	238	145 J	101 J	--	--	719	699	359	--
C6	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	3.1	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	2.9	ND	ND	6.1	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	26	18	ND	2.8	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	48	35	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	23	26	0.54	13.00	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	35	27	19	13	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	44	33	26	25	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	11	13	5.1	12.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	9.5	18	ND	12.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	6.8	9.4	ND	10.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	10	4.6	ND	3.7	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	ND	<500	<500	<500	<500	<500	62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																														
Antimony	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	< 0.0060	<0.0060	< 0.0060	<0.0060	< 0.0060	<0.0060	< 0.0060	<0.0060	<0.0060
Arsenic	--	--	<0.0100	0.0279	0.0185	0.0343	0.0110	<0.0100	0.0339	0.0335	0.0188	0.0880	0.0906	0.0307	0.0236	0.0244	0.0126	0.0127	0.0775	0.0754	0.0776	0.0681	0.0805	0.0466	0.0575	0.0595	0.325	0.322	0.298	0.335
Barium	--	--	0.0721	0.0796	0.0767	0.0913	0.0667	0.0507	0.0227	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	< 0.20	<0.20	< 0.20	<0.20	< 0.20	<0.20	< 0.20	<0.20	<0.20
Beryllium	--	--	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	0.07960	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0040	<0.0040
Cadmium	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	0.00880	0.00820	0.00350	0.00320	0.00260	0.00260	<0.0020	<0.0020	<0.0020	<0.0020	0.00500	0.00390	0.00510	0.00480	0.00300	<0.0020	0.00230	0.00210	0.00280	0.00220	<0.0050	<0.0050
Chromium	--	--	<0.005	0.00653	<0.00500	0.01270	0.00662	<0.0100	<0.0050	0.00540	<0.010	<0.010	<0.010	0.01020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	0.01360
Cobalt	--	--	0.0136	<0.00500	<0.00500	0.00704	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.050	<0.050
Copper	--	--	<0.005	0.01510	<0.00500	0.01400	0.00603	<0.0100	0.00700	0.01310	0.0188	0.0416	0.0369	0.0298	0.0259	0.0272	0.0184	0.0163	0.0599	0.0579	0.0915	0.0761	0.0607	0.0378	0.0296	0.0297	0.0956	0.0942	0.0657	0.104
Lead	--	--	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	0.0367	0.0158	0.0212	<0.010	<0.010	<0.010	<0.010	0.0178	0.0158	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	0.0141	0.0154	0.0085	0.0288
Mercury	--	--	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	<0.00020	< 0.00020	<0.00020	< 0.00020	<0.00020	< 0.00020	<0.00050	<0.00050
Molybdenum	--	--	0.0447	0.0486	0.0465	0.0481	0.0434	0.0407	0.0137	0.0150	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0201	0.0268	<0.020	<0.020	<0.020	0.0200	0.0278	0.0338	0.0299	0.0297	<0.020	<0.020	<0.050	<0.050
Nickel	--	--	0.00665	0.00672	<0.00500	0.0112	0.00725	0.0122	0.0434	0.0368	0.0332	0.00900	0.0138	0.0054	0.00530	0.00550	0.0108	0.00890	0.0163	0.0160	0.0212	0.0175	0.0174	0.0110	0.0189	0.0176	0.0123	0.0120	<0.040	0.0460
Selenium	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	<0.010
Silver	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.0050	< 0.0050	<0.010	<0.010
Thallium	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	<0.010
Vanadium	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	<0.010	< 0.010	<0.010	< 0.010	0.0154	0.0149	<0.050	<0.050
Zinc	--	--	0.0546	0.106	0.0250	0.0814	0.0340	0.0336	0.0760	0.134	0.166	0.197	0.0696	0.222	0.220	0.218	0.0555	0.0463	0.0163	0.285	0.354	0.310	0.240	0.140	0.184	0.188	0.226	0.223	0.306	0.449
Field Measurements																														
pH (Standard units)	--	--	8.32	7.77	7.20	6.48	7.30	7.42	7.11	6.19	8.64	7.78	7.97	8.18	7.92	--	7.17	--	6.65	--	7.15	--	7.35	--	7.85	--	6.05	--	7.60	--
Specific Conductance (milliSiemens per centimeter)	--	--	0.105	0.117	0.120	0.120	0.109	1.150	1.070	0.415	0.701	0.395	1.190	0.277	0.509	--	0.368	--	0.622	--	0.188	--	0.998	--	0.715	--	0.276	--	0.410	--
Oxidation-Reduction Potential (ORP) (millivolts)	--	--	-109	-117	-65	-109	-94	124	-104	-1	-65	114	-249	67	21	--	-82	--	-37	--	-47	--	18	--	-38	--	234	--	39	--
Dissolved Oxygen (DO) (mg/L)	--	--	1.71	0.11	1.35	2.30	6.08	3.45	6.70	8.17	2.36	8.13	8.79	6.66	8.52	--	0.62	--	7.03	--	0.12	--	9.22	--	8.51	--	7.93	--	4.00	--
Temperature (degrees Celsius)	--	--	21.65	22.92	26.40	25.60	25.81	16.13	23.80	18.24	23.13	18.59	27.75	25.52	20.18	--	19.63	--	24.10	--	21.57	--	27.53	--	23.70	--	31.24	--	26.37	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID																									
Date	05/25/06	5/25/06 Dup	12/08/06	06/06/07	06/06/07 Dup	11/28/07	11/28/07 Dup	07/15/08	12/02/08	06/17/09	12/31/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/29/15	10/26/15*	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																									
Acetone	13	23	<250	<250	<250	<100	<100	<100	<100	<50	<100	<80	<50	<50	<50	<40	<40	<40	<20	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<50	<50	<50	<20	<20	<20	<20	<10	<20	<80	<50	<50	<50	<10	<10	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	64	49	60	43	43	42	45	25	31	27	31	16.5	17.5	14.5	12.9	10.1	6.3	6.9	1.9	3.0	3.2	1.5	2.5	3.1	5.5
Naphthalene	<10	<10	<50	<50	<50	<20	<20	<20	<20	<10	<20	<20	<13	<13	<13	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<50	<50	<50	<20	<20	<20	<20	<10	<20	<80	<50	<50	<50	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	<10	<50	<50	<50	<20	<20	<20	<20	<10	<20	<80	<50	<50	<50	<20	<20	<20	<10	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<50	<50	<50	<20	<20	<20	<20	<10	<20	<80	<50	<50	<50	<20	<20	<20	<10	<10	<10	<10	<10	<10	<5.0
Benzene	2.0	1.4	<2.5	<2.5	<2.5	1.6	1.7	1.2	1.2	1.0	1.1	<4.0	0.92 J	<2.5	<2.5	<2.0	<2.0	0.25 J	0.22 J	<1.0	0.21 J	<1.0	0.24 J	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	71	58	110	79	81	83	83	62	38	29	22	<4.0	<2.5	<2.5	6.2	10.5	4.3	7.4	22.2	12.8	27.0	23.1	2.2	0.93 J	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	16.5	16.4	8.3	<2.5	<2.0	<2.0	<2.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	7.2	6.0	12	8.2	8.4	9.1	8.4	<2.0	4.7	3.0	<2.0	1.3 J	1.4 J	0.94 J	1.8 J	1.4 J	2.2	2.4	2.4	1.4	2.6	2.6	1.4	0.26 J	<1.0
Chlorobenzene	2.9	2.3	<5.0	<5.0	<5.0	2.5	2.5	<2.0	<2.0	<1.0	<2.0	1.4 J	1.6 J	<2.5	0.80 J	0.70 J	0.76 J	0.66 J	0.74 J	0.41 J	0.77 J	0.66 J	0.51 J	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<4.0	<2.5	<2.5	<5.0	<8.0	<8.0	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<50	<50	<50	<20	<20	<20	<20	NS	NS	<40	<25	<25	<25	<20	<20	<20	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<10	<10	<10	<10	<10	<4.0	<4.0	NS	NS	<20	<13	<13	<13	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	82	77	140	91	93	85	88	74	54	37	34	45	51	44	53	49.5	40.4	47.9	32.0	27.0	34.4	27.8	34.4	37.9	50.8
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	420	360	490	330	330	330	350	300	260	240	230	187	224	118	160	118	85.8	94.1	68.2	51.6	72.6	56.4	69.2	77.7	94.4
1,1-Dichloroethane (1,1-DCA)	8.5	7	11.0	8.3	8.6	8.0	8.5	6.5	6.6	5.7	6.3	3.6 J	4.9	2.9	5.1	3.8	4.7	5.3	5.0	3.8	5.7	5.1	5.8	5.8	5.6
1,2-Dichloroethane (1,2-DCA)	14	10	15.0	12.0	12.0	13	14	<1.0	6.2	5.2	5.2	3.0 J	3.6	1.6 J	1.8 J	0.94 J	0.64 J	0.65 J	0.31 J	0.20 J	0.27 J	0.23 J	0.42 J	0.68 J	1.0
1,1-Dichloroethene (1,1-DCE)	7.8	5.8	11.0	7.1	7.5	10	10	7.3	8.7	6.7	5.5	3.3 J	4.3	2.0 J	2.7	1.9 J	1.8 J	2.0	2.4	1.4	2.6	2.4	2.6	1.9	1.3
cis-1,2-Dichloroethene (cis-1,2-DCE)	8.4	5.9	9.8	7.1	7.6	9.1	10	28	11	17	13	9.6	12.6	5.7	14.1	10.4	14.1	13.2	11.5	9.5	15.4	14.5	18.1	25.0	26.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	0.82 J	<2.5	0.82 J	0.63 J	0.89 J	0.87 J	0.77 J	0.53 J	0.97 J	0.94 J	1.0	1.2	1.3
Vinyl Chloride	<0.50	<0.50	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<0.50	<1.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	0.25 J	<1.0	<1.0	0.27 J	<1.0	<1.0	<1.0
Carbon Tetrachloride	<0.50	<0.50	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0	<0.50	<1.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<4.0	<2.5	<2.5	<2.5	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	13	11	11	11	10	10	10	7.8	3.1	8.5	4.0	3.6	2.5	2.9	1.8	2.1	1.3	1.3	0.95	1.3	1.1	2.7	--	1.1	2.5

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID																									
Date	05/25/06	5/25/06 Dup	12/08/06	06/06/07	06/06/07 Dup	11/28/07	11/28/07 Dup	07/15/08	12/02/08	06/17/09	12/31/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/29/15	10/26/15*	04/20/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																									
C6-C10	--	--	--	--	--	--	--	--	--	--	--	276	391	190	339	338	209	365	173	183	197	149	214	201	70.5 J
C10-C28	--	--	--	--	--	--	--	--	--	--	--	--	70.6 J	<94	171	305	184	327	143	468	365	421	--	354	420
C28-C40	--	--	--	--	--	--	--	--	--	--	--	--	<190	<190	<200	150	53	129 J	144 J	366	291	302	--	209	181
C6	--	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	100	110	93	94	ND	62	33	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	43	31	31	30	ND	16	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	67	84	83	83	ND	24	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	38	56	18	21	90	1	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	56	22	22	19	39	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	27	34	24	19	37	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	42	31	14	14	18	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	18	13	4	8.0	16.0	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	9.7	13	5.7	1.1	12.0	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	3.1	5.6	ND	ND	7.9	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	6.8	19	ND	ND	29.0	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	ND	ND	<500	<500	<500	<500	<500	<500	276	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																									
Antimony	--	--	--	0.0176	0.0166	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	--	0.0583	0.0182	<0.0100	<0.0100	0.01000	0.02590	<0.0100	<0.0100	<0.0100	<0.030	0.01170	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	--	--	--	0.0140	0.0137	0.0129	0.0133	0.0152	0.0174	0.0168	0.0179	0.0149	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	--	0.0299	0.0298	0.0196	0.0204	0.0221	0.0239	0.0240	0.0187	0.0206	0.0225	0.0089	0.0080	0.0086	0.0031	0.0067	0.0060	0.0109	0.0064	0.0064	0.0059	0.0057	<0.0050
Chromium	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	0.00748	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	--	--	0.0361	0.0353	0.0245	0.0255	0.0215	0.0248	0.0246	0.0262	0.0198	0.0203	0.0137	0.0117	0.0081	0.0067	0.0060	0.0071	<0.0050	0.0071	0.0072	0.0083	0.0082	<0.050
Copper	--	--	--	0.460	0.453	0.455	0.470	0.438	0.464	0.503	0.538	0.442	0.508	0.247	0.223	0.180	0.124	0.162	0.160	0.154	0.163	0.177	0.188	0.178	0.0876
Lead	--	--	--	<0.010	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	--	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	--	0.0361	0.0366	0.0371	0.0385	0.0341	0.0431	0.0488	0.0568	0.0494	0.0399	0.0377	0.0438	<0.020	0.0461	0.0455	0.0450	0.0419	0.0415	0.0385	0.0364	0.0378	<0.050
Nickel	--	--	--	0.466	0.463	0.457	0.473	0.437	0.441	0.448	0.468	0.370	0.402	0.270	0.273	0.162	0.177	0.200	0.203	0.198	0.214	0.232	0.258	0.285	0.320
Selenium	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	0.01560	<0.0150	<0.0200	<0.030	<0.010	<0.010	0.01240	0.01810	<0.010	<0.010	<0.010	0.01000	<0.010	<0.010	<0.010	0.0114
Silver	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	--	0.0128	0.0129	0.0140	0.0140	0.0129	0.0145	0.0141	0.0135	0.0114	0.0124	0.0131	<0.010	<0.010	<0.010	<0.010	0.0125	<0.010	0.0149	0.0139	0.0158	0.0182	<0.050
Zinc	--	--	--	0.0910	0.0313	0.0206	0.0233	0.0248	0.0221	0.0178	0.0409	<0.0100	0.0124	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0241	<0.020	<0.020	<0.020	<0.020
Field Measurements																									
pH (Standard units)	7.10	7.10	7.40	8.53	8.53	8.06	8.06	7.40	6.83	7.41	7.26	7.21	7.28	7.82	7.43	--	7.11	7.78	7.56	7.27	7.17	--	8.04	6.87	--
Specific Conductance (milliSiemens per centimeter)	0.410	0.410	0.528	0.489	0.489	0.514	0.514	0.510	0.470	0.502	5.730	4.600	3.610	4.420	4.350	--	4.100	3.920	4.150	4.140	4.090	--	4.110	4.890	--
Oxidation-Reduction Potential (ORP) (millivolts)	93	93	13	37	37	-3.0	-3.0	65	-19	106	47	142	129	83	166	--	22	32	60	-135	75	--	124	236	--
Dissolved Oxygen (DO) (mg/L)	0.74	0.74	1.7	0.88	0.88	0.00	0.00	1.35	2.00	5.77	4.78	0.00	9.04	8.36	6.51	--	3.81	8.10	0.82	9.40	7.50	--	7.17	9.90	--
Temperature (degrees Celsius)	23.31	23.31	22.5	25.21	25.21	23.23	23.23	30.20	23.60	23.89	11.48	25.30	18.87	22.29	16.85	--	22.95	22.63	25.08	29.50	22.38	--	32.04	20.31	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; Metals samples were analyzed for dissolved metals

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-7D																							
Date	05/25/06	12/08/06	06/06/07	11/28/07	07/16/08	7/16/08 Dup	12/03/08	06/17/09	12/31/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/29/15	10/26/15*	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																								
Acetone	<10	<1,000	<1,000	<500	<500	<100	<500	<50	<250	<400	<400	<400	<400	<200	<200	<200	<200	<200	<20	<100	<100	<100	<63
2-Butanone (methyl ethyl ketone)	<10	<200	<200	<100	<100	<20	<100	<10	<50	<400	<400	<400	<400	<10	<10	<10	<100	<100	--	<50	<50	<50	<13
Chloroform	3.0	<20	<20	<10	<10	11.0	<10	<1.0	8.4	9.5 J	<20	<20	<20	6.2 J	21.6	26.1	4.3 J	7.1 J	19.4	1.1 J	4.6 J	6.1	8.2
Naphthalene	<10	<200	<200	<100	<100	<20	<100	<10	<50	<100	<100	<100	<100	<50	<50	<50	<50	<50	<5.0	<25	<25	<25	<13
2-Hexanone (methyl butyl ketone)	<10	<200	<200	<100	<100	<20	<100	<10	<50	<400	<400	<400	<400	<100	<100	<100	<100	<100	<10	<10	<10	<10	<25
Methylene chloride	<10	<200	<200	<100	<100	<20	<100	<10	<50	<400	<400	<400	<400	<100	<100	<100	<100	<100	<10	<50	<50	<50	<13
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<200	<200	<100	<100	<20	<100	<10	<50	<400	<400	<400	<400	<100	<100	<100	<100	<100	<10	<50	<50	<50	<13
Benzene	<0.50	<10	<10	<5.0	<5.0	2.2	<5.0	0.7	<2.5	<20	<20	<20	<20	4.2 J	<10	<10	<10	<10	0.55 J	<5.0	<5.0	<5.0	<2.5
1,2-Dichlorobenzene (1,2-DCB)	270	220	180	180	210	230	130	28	66	<20	<20	<20	507	770	380	367	284	242	195	223	144	106	69
1,3-Dichlorobenzene (1,3-DCB)	1.8	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	173	257	253	<20	4.6 J	2.8 J	2.9 J	2.2 J	<10	1.4	1.2 J	<5.0	<5.0	0.59 J
1,4-Dichlorobenzene (1,4-DCB)	38.0	30.0	24.0	23.0	28.0	27.0	18.0	3.0	8.4	19.3 J	27.3	27.6	52.7	83.8	45.4	46.9	37.8	27.0	27.1	22.7	14.5	13.4	10.4
Chlorobenzene	9.1	<20	<20	<10	<10	2.9	<10	2.0	<5.0	<20	<20	<20	<20	4.3 J	2.4 J	<10	2.2 J	2.2 J	1.5	1.6 J	2.8 J	1.6 J	1.2 J
Ethylbenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<20	<20	<20	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<2.5
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<2.0	<10	<10	<10	<2.5
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<2.0	<10	<10	<10	<2.5
1,2,3- Trichlorobenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<2.0	<10	<10	<10	<5.0
1,2,4- Trichlorobenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<2.0	<10	<10	<10	<5.0
n-Butylbenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<20	<10	<10	<10	<2.5
s-Butylbenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<20	<10	<10	<10	<2.5
t-Butylbenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<20	<10	<10	<10	<2.5
Isopropylbenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<20	<20	<20	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<2.5
n-Propylbenzene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<2.0	<10	<10	<10	<2.5
Toluene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<20	<20	<20	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<2.5
p-Isopropyltoluene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<100	<20	<20	<20	<20	<20	<2.0	<10	<10	<10	<2.5
Total Xylenes (p/m- and o- xylene)	<1.0	<20	<1.0	<1.0	<10	<2.0	<2.0	<2.0	<2.0	<20	<20	<20	<40	<40	<40	<40	<20	<20	<2.0	<10	<10	<10	<7.5
Methyl tert-butyl ether (MTBE)	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<20	<20	<20	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<2.5
Tert-Butyl Alcohol (TBA)	<10	<200	<200	<100	<100	<20	<100	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<50	<50	<50
Di isopropyl ether (DIPE)	3.9	<40	<40	<20	<20	<4.0	<20	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<10	<10	<2.5
Tetrachloroethene (PCE)	150	110	94	70	65	60	56	19	45	124	143	126	137	118	94	95.6	66.5	91.1	96.0	64.9	93.3	77.1	76.3
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<100	<100	<100	<20	<10	<10	<10	<10	<10	0.23 J	<5.0	<5.0	<5.0	<2.5
1,1,2-Trichloroethane (1,1,2-TCA)	6.9	<20	<20	<10	<10	2.3	<10	3	<5.0	<100	<100	<100	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<2.5
Trichloroethene (TCE)	1900	1200	950	900	700	660	700	670	850	965	1,080	882	983	705	362	290	410	319	214	227	420	232	174
1,1-Dichloroethane (1,1-DCA)	50	36	27	28	18	15	19	18	21	14.2 J	15.8 J	12.9 J	12.2 J	8.5 J	4.6 J	3.6 J	4.4 J	4.8 J	4.6	5.2	6.2	4.9 J	3.9
1,2-Dichloroethane (1,2-DCA)	370	170	150	180	93	81	74	69	95	67.9	73.2	65.8	62.9	45.8	22.4	16.7	18.7	14.7	8.7	14.5	29.7	13.3	9.5
1,1-Dichloroethene (1,1-DCE)	21	<20	<20	17	10	8.9	11	10	13	10.5 J	13.4 J	<20	11.7 J	9.7 J	4.7 J	3.5 J	6.2 J	3.3 J	3.3	3.7 J	5.9	2.8 J	2.1 J
cis-1,2-Dichloroethene (cis-1,2-DCE)	160	200	160	160	130	120	160	180	130	45	53.3	35.1	46.9	46.1	25.4	20.7	32.7	23	15	20.2	35.9	17.2	18.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	7.6	<20	<20	<10	<10	4.6	<10	6.7	6.5	<20	<20	<20	<20	3.4 J	<10	<10	2.5 J	<10	1.1	1.6 J	<5.0	1.3 J	<2.5
Vinyl Chloride	1.8	<10	<10	<5.0	<5.0	1.10	<5.0	1	<2.5	<20	<20	<20	<20	<10	<10	<10	<10	<10	0.26 J	<5.0	<5.0	<5.0	<2.5
Carbon Tetrachloride	<0.50	<10	<10	<5.0	<5.0	<1.0	<5.0	<0.50	<2.5	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<2.5
Styrene	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<20	<20	<20	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<2.5
1,2-Dibromomethane	<1.0	<20	<20	<10	<10	<2.0	<10	<1.0	<5.0	<20	<20	<20	<20	<10	<10	<10	<10	<10	<1.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane (1,2-DCP)	26	22	<20	18	11	9	13	15	<5.0	<20	<20	<20	<20	3.2 J	<10	<10	<10	<10	0.60 J	1.0 J	1.9 J	<5.0	<2.5
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	93	64	40	46	37	37	39	28	26	18.3	12.7	22.6	15.4	10.7	6.0	14.4	6.7	5.7	4.0	0.76	--	4.0	3.0

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-7D																						
Date	05/25/06	12/08/06	06/06/07	11/28/07	07/16/08	7/16/08 Dup	12/03/08	06/17/09	12/31/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/29/15	10/26/15*	04/20/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																							
C6-C10	--	--	--	--	--	--	--	--	--	1,270	1,700	913 J	1,690	1,760	726	623	849	886	712	383	967	457	130
C10-C28	--	--	--	--	--	--	--	--	--	--	170	62.4 J	443	587	653	594	149	337	448	248	--	488	644
C28-C40	--	--	--	--	--	--	--	--	--	--	<190	<190	<190	115	<190	142 J	106 J	73.0 J	235	274	--	197	218
C6	--	--	--	ND	ND	ND	44	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	300	310	91	67	250	100	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	86	23	23	11	6	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	180	180	28	ND	77	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	76	29	86	130	87	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	41	27	ND	2.1	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	44	31	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	68	29	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	22	9.8	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	14	1.7	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	8.1	ND	22	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	9.4	ND	2.8	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	850	640	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																							
Antimony	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	0.0149	0.0082	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	0.127	0.239	4.09	4.79	0.0795	0.0341	0.972	1.26	0.319	0.744	0.717	0.953	3.04	2.29	0.516	0.951	1.58	<0.010	0.133	1.58	1.04
Barium	--	--	0.0190	0.01900	0.0289	0.0309	0.0203	0.0220	0.0245	0.0232	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	0.0174	0.0159	<0.0020	0.00620	0.0223	0.0154	0.0145	0.0178	0.00540	0.00600	0.00530	0.00370	0.00300	<0.0050
Chromium	--	--	<0.005	<0.00500	<0.00500	<0.00500	0.00579	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	--	0.0224	0.0149	0.0234	0.0243	0.0085	0.0059	0.0108	0.0251	0.0291	0.0241	0.0184	0.0271	0.0186	0.0167	0.0157	0.0064	0.0086	0.0096	0.0081	0.0064	<0.050
Copper	--	--	0.0457	0.0474	0.0726	0.0721	0.0610	0.0369	0.0771	0.2570	0.3300	0.1650	0.0830	0.2330	0.1080	0.0898	0.0577	0.0894	0.1000	0.0969	0.0783	0.0614	0.0286
Lead	--	--	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	--	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	0.0396	0.0472	0.0348	0.0346	0.0444	0.0573	0.0553	0.0505	0.0506	0.0447	0.0418	<0.020	0.0380	0.0400	0.0457	0.0449	0.0441	0.0417	0.0415	0.0407	<0.050
Nickel	--	--	0.2910	0.316	0.184	0.154	0.272	<0.0150	0.290	0.331	0.413	0.323	0.270	0.291	0.225	0.262	0.206	0.217	0.192	0.232	0.267	0.264	0.224
Selenium	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0185
Silver	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	<0.005	<0.00500	0.0362	0.0424	<0.00500	<0.00500	<0.0100	0.0124	0.0061	<0.010	<0.010	<0.010	0.0232	0.0194	<0.010	<0.010	0.0130	<0.010	<0.010	0.0161	<0.050
Zinc	--	--	0.0632	0.05330	0.144	0.175	0.028	0.0217	0.0722	0.0730	0.0282	0.0460	0.0358	0.0480	0.162	0.116	0.0243	0.0314	0.102	<0.020	<0.020	0.204	0.104
Field Measurements																							
pH (Standard units)	7.06	7.04	8.12	7.69	6.60	6.60	6.61	7.23	7.13	7.13	7.18	8.24	7.14	7.48	7.07	7.48	7.81	7.28	6.93	6.90	7.88	6.68	--
Specific Conductance (milliSiemens per centimeter)	0.515	0.501	0.472	0.487	0.510	0.510	0.480	0.538	5.180	5.180	3.780	4.870	4.550	4.560	4.540	4.570	4.570	4.820	4.290	4.510	4.240	5.170	--
Oxidation-Reduction Potential (ORP) (millivolts)	-65	-55	-65	-107.0	60.0	60.0	-69.0	-42.0	-99.0	-99.0	70.0	37.0	113.0	28.0	3.0	52.0	-11.0	-67.0	109.0	78.0	68.0	240.0	--
Dissolved Oxygen (DO) (mg/L)	0.66	1.62	0.18	0.00	2.54	2.54	1.70	5.90	1.70	1.70	8.70	2.97	6.06	7.75	4.90	7.92	0.67	10.39	8.01	10.64	8.12	9.43	--
Temperature (Degrees Celsius)	25.03	20.50	23.92	22.58	25.30	25.30	21.80	26.22	17.78	17.78	19.07	23.44	18.63	25.42	23.71	24.58	24.58	27.63	22.72	26.13	29.29	20.38	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-8																					
Date	05/23/06	12/06/06	06/04/07	11/27/07	07/15/08	12/03/08	06/16/09	12/31/09	06/30/10	12/16/10	06/20/11	12/20/11	06/08/12	12/05/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15*	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																						
Acetone	<10	<10	<50	<50	<50	<50	<50	<50	<20	<20	<20	<20	5.3 J	--	<20	<20	25	15.1 J	8.8 J	4.9 J	6.0 J	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<10	<10	--	<10	<2.0	10	--	<10	<10	<10	<5.0
Chloroform	<1.0	<1.0	2.0	<1.0	2.1	2.8	<1.0	1.7	1.7	10.3	0.47 J	0.46 J	3.7	--	1.9	<1.0	4.7	1.5 J	5.9	6.0	8.1	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<10	<10	--	<10	<10	<10	<20	<20	<1.0	<1.0	<10
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<10	<10	--	<10	<10	<10	<2.0	<2.0	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<10	<10	--	<10	<10	2.6 J	<20	1.6 J	1.2 J	<10	<5.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<2.0	<2.0	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	--	--	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	NS	NS	<10	<10	<10	<10	<10	--	<10	<10	<10	<20	<20	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	<5.0	<5.0	<5.0	<2.0	0.32 J	--	<2.0	<2.0	<2.0	<4.0	<4.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	4.9	5.8	5.9	17.0	16.0	6.0	<1.0	2.7	24.7	1.4	13.9	16.0	--	8.3	<1.0	39.5	6.3	23.8	26.6	36.2	6.7
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	1.5	9.8	10	7.6	36.0	46.0	7.0	5.4	13.6	89.8	6.1	20.2	47.5	--	21.2	1.1	87.8	20.8	66.4	73.7	77.8	14.7
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.33 J	<1.0	<1.0	0.30 J	--	<1.0	<1.0	0.49 J	<2.0	0.69 J	0.76 J	1.2	<1.0
1,2-Dichloroethane (1,2-DCA)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	1.1	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.34 J	--	<1.0	<1.0	0.35 J	<2.0	0.30 J	<1.0	0.71 J	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	<1.0	1.2	2.0	1.5	6.4	12.0	4.4	7.7	7.8	55.4	5.0	4.9	44.7	--	17.1	<1.0	79.0	55.2	188	127 b	126	18.9
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.55 J	<1.0	0.25 J	1.4	--	0.47 J	<1.0	2.3	0.66 J	3.9	2.7	5.0	0.64a J
Vinyl Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.66 J	<1.0	<1.0	0.51 J	--	0.31 J	<1.0	0.82 J	0.43 J	1.4	1.3	2.4	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<0.95	<0.95	<0.99	<0.95	0.14 J	--	0.23 J	0.37 J	0.49	0.83	<1.9	--	1.0	0.41

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-8																					
Date	05/23/06	12/06/06	06/04/07	11/27/07	07/15/08	12/03/08	06/16/09	12/31/09	06/30/10	12/16/10	06/20/11	12/20/11	06/08/12	12/05/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15*	04/20/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																						
C6-C10	--	--	--	--	--	--	--	--	28.0 J	225	<50	47.9 J	214	--	69.6	<50	509	139	444	523	489	<100
C10-C28	--	--	--	--	--	--	--	--	--	230	85.4 J	968	186	--	136	83.8 J	177	534	610	--	1,280	519
C28-C40	--	--	--	--	--	--	--	--	--	369	300	1,160	509	--	602	269	295	311	1,130	--	2,380	186
C6	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	3.0	ND	ND	47.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	2.4	ND	ND	17.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	21	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	41	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	12	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	17	9.8	ND	ND	1.8	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	64	23	36	ND	33	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	9.0	ND	4.6	ND	4.4	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	8.2	ND	6.0	ND	50.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	8.1	ND	ND	ND	130.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	13	ND	ND	ND	290.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	ND	ND	ND	ND	910.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	ND	ND	ND	ND	610.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	ND	ND	ND	ND	580.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	ND	ND	ND	ND	450.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	ND	<500	<500	<500	3,100	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																						
Antimony	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	--	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	0.205	0.139	0.263	0.445	0.139	0.524	0.161	0.855	0.197	0.421	0.294	--	0.102	0.136	0.136	0.0510	0.140	0.027	22.4	1.10
Barium	--	--	0.0821	0.0837	0.106	0.103	0.525	0.110	0.089	<0.10	<0.20	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0020	0.0188	<0.0020	0.00350	<0.0020	--	0.00200	0.00470	0.00200	<0.0020	<0.0020	<0.0020	0.00500	<0.0050
Chromium	--	--	0.00101	<0.00500	<0.00500	0.01060	0.0168	<0.0100	<0.0050	0.0126	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	--	0.0388	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	--	<0.005	0.00554	<0.00500	<0.00500	0.1250	0.01030	0.00570	0.0769	<0.010	0.0433	0.0135	--	0.0107	0.0121	0.0289	0.0150	0.0434	<0.010	0.0208	0.0667
Lead	--	--	<0.010	<0.0100	<0.0100	0.0141	0.0666	<0.0100	<0.0050	0.0232	<0.010	0.02340	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0110
Mercury	--	--	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	0.0421	0.0407	0.0440	0.0414	0.0496	0.0447	0.0467	0.0088	0.0468	<0.020	0.0222	--	0.0547	0.0408	0.0341	0.0482	0.0536	0.0716	0.0481	0.0561
Nickel	--	--	0.00814	<0.00500	<0.00500	0.00517	0.00814	<0.0100	<0.0050	0.01180	<0.0050	0.0088	0.0157	--	<0.0050	0.00880	0.01830	0.01200	<0.0050	<0.0050	0.249	<0.040
Selenium	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	<0.005	<0.00500	<0.00500	<0.00500	0.00713	<0.0100	<0.0050	0.00640	<0.010	<0.010	<0.010	--	<0.010	<0.010	0.01440	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	--	--	0.0126	0.0187	<0.0100	0.0247	0.609	0.0410	0.0410	0.823	0.0569	0.541	0.331	--	0.120	0.0452	0.451	0.0906	0.154	0.0231	0.447	0.486
Field Measurements																						
pH (Standard units)	7.27	7.34	7.70	7.23	7.30	6.80	7.32	7.21	7.01	6.05	8.88	6.71	7.79	--	7.83	7.16	6.70	6.72	7.06	8.00	6.52	--
Specific Conductance (milliSiemens per centimeter)	0.098	0.105	0.101	0.102	0.110	0.110	0.105	1.100	1.830	0.134	1.140	0.333	0.813	--	0.775	0.677	0.935	1.020	1.000	0.801	1.760	--
Oxidation-Reduction Potential (ORP) (millivolts)	-77	-89	-33	-105	-94	-105	-112	-104	67	15	-82	11	-32	--	-31	-69	-12	-82	-43	-108	3	--
Dissolved Oxygen (DO) (mg/L)	0.062	1.54	0.33	1.26	0.87	2.30	5.22	2.07	0.00	7.75	1.86	2.67	8.74	--	9.45	0.87	10.44	8.33	10.45	8.41	9.56	--
Temperature (degrees Celsius)	26.89	22.6	26.30	23.96	30.90	21.00	28.47	20.20	22.10	19.27	27.83	18.18	22.51	--	23.52	21.72	28.50	20.91	28.45	24.39	21.58	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample
* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-9																							
Date	5/23/06 [1]	5/23/06 [2]	5/23/06[3]	12/06/06	06/05/07	11/27/07	07/14/08	12/02/08	06/16/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/08/13	10/07/13	05/13/14	10/20/14	04/29/15	10/26/15*	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																								
Acetone	<10	<10	<10	<10	<10	<50	<50	<50	<50	<50	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	16	16	17	43	38	40	41	42	27	20	22.7	19.4	16.3	18.4	19.3	16	18.5	17.4	18.6	26.7	23.9	17.0	17.2	10.2
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	4.1	4.1	2.9	6.8	6.7	7.2	8.1	8.1	4.0	2.6	2.7	1.8	1.2	1.3	1.3	0.99 J	1.1	0.96 J	0.97 J	1.4	1.5	1.8	1.8	0.96 J
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.37 J	0.43 J	0.49 J	0.34 J	<1.0	<1.0	<1.0	0.28 J	0.60 J	0.41 J	3.5	5.5	5.1
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	<10	<10	NS	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	3.8	3.6	3.2	7.0	5.6	7.0	4.9	5.3	4.1	1.8	2.8	2.2	2.4	3.2	2.8	2.5	2.9	2.3	2.1	2.5	2.4	2.8	2.9	3.6
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	16	17	16	19	15	16	14	15	14	14	19.1	19.2	18.2	23.9	21	18.9	17.3	16.1	16.2	19.4	14.4	15.6	14.9	14.9
1,1-Dichloroethane (1,1-DCA)	2.0	1.9	<1.0	1.7	1.8	1.4	1.7	1.6	16.0	1.9	1.6	1.7	1.4	1.9	1.5	1.1	1.3	1.2	1.2	1.7	1.6	2.2	2.3	2.8
1,2-Dichloroethane (1,2-DCA)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	1.2	1.1	1.1	1.2	1.5	1.1	1.1	1.4	1.1	1.4	1.1	1.2	1.1	1.4	1.3	1.1	0.83 J	0.94 J	0.85 J	1.2	1.1	1.3	1.1	1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	4.9	5.2	5.2	6.6	9.0	8.0	12.0	12.0	14.0	18.0	22.4	28.4	27.2	37.1	36.8	28.3	28.7	27.4	28.7	33.9	20.1	38.2	39.6	34.2
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	1.4	1.5	1.8	1.9	1.5	1.4	1.4	1.4	1.7	1.1	1.7	1.6	1.5a
Vinyl Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	0.38 J	<1.0	<1.0	0.29 J	<1.0	0.24 J	0.29 J	<1.0	0.35 J	<1.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	3.0	2.9	3.1	4.8	2.6	2.7	2.8	2.3	2.3	<2.0	0.89 J	0.58 J	0.64 J	0.57 J	0.56	0.51	0.45 J	0.37 J	0.22 J	0.39 J	0.26 J	--	1.5	2.6

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-9																							
Date	5/23/06 [1]	5/23/06 [2]	5/23/06[3]	12/06/06	06/05/07	11/27/07	07/14/08	12/02/08	06/16/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/08/13	10/07/13	05/13/14	10/20/14	04/29/15	10/26/15*	04/20/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																								
C6-C10	--	--	--	--	--	--	--	--	--	--	50.2	67.2	45.4 J	86.4	105	77.3	112	80.7	100	93.3	32.1 J	98.5	84.6	<100
C10-C28	--	--	--	--	--	--	--	--	--	--	--	103	<95	143	177	154	158	109	111	176	214	--	306	491
C28-C40	--	--	--	--	--	--	--	--	--	--	--	<190	<190	<190	174	59.3	142 J	131 J	84.0 J	153 J	238	--	209	234
C6	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	ND	36	ND	34	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	7.3	1.3	ND	2.8	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	39	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	18	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	14	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	12	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	7.9	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	11	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	10	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	ND	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																								
Antimony	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	--	--	<0.010	<0.0100	<0.0100	0.0156	<0.0100	<0.0100	<0.0100	<0.030	<0.010	<0.010	<0.010	0.0127	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	--	--	--	--	0.0292	0.0293	0.0295	0.0334	0.0386	0.0350	0.0343	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	--	--	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00450	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	--	--	--	--	<0.005	<0.00500	<0.00500	0.00501	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	--	--	--	0.0142	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	--	--	--	0.0327	0.0339	0.0265	0.0261	0.0221	0.0173	0.0169	0.0148	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	--	--	--	--	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	--	--	--	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	--	--	0.0466	0.0476	0.0457	0.0489	0.0557	0.0572	0.0609	0.0651	0.0597	0.0627	0.0525	0.0663	0.0665	0.0666	0.0651	0.0609	0.0572	0.0597	0.0642	0.0606
Nickel	--	--	--	--	0.0732	0.0659	0.0614	0.0589	0.0505	0.0429	0.0350	0.0323	0.0234	0.0220	<0.0050	0.0138	0.0156	0.0121	0.0093	0.0128	0.0145	0.0174	0.0251	<0.040
Selenium	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	--	--	--	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	--	--	0.0148	0.0141	0.0139	0.0147	0.0150	0.0147	0.0139	0.0156	0.0152	0.0155	0.0168	0.0170	0.0177	0.0164	<0.010	0.0160	0.0134	0.0146	0.0151	<0.050
Zinc	--	--	--	--	<0.010	0.0154	0.0505	<0.0100	<0.0100	0.0140	<0.0100	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Field Measurements																								
pH (Standard units)	7.34	7.37	7.38	7.43	8.44	7.93	6.90	6.30	7.43	7.56	7.12	6.85	8.84	7.44	7.65	7.64	7.77	7.60	7.07	7.02	7.36	8.02	6.79	--
Specific Conductance (milliSiemens per centimeter)	0.269	0.266	0.276	0.273	0.266	0.275	0.300	0.260	0.265	2.460	2.420	2.210	2.460	2.350	2.180	2.180	2.230	2.260	2.490	2.180	2.630	2.26	2.55	--
Oxidation-Reduction Potential (ORP) (millivolts)	103	100	103	-101	-58	-76	-54	-48	-120	156	15	-5	40	132	105	103	147	82	8	77	87	113	1.51	--
Dissolved Oxygen (DO) (mg/L)	1.41	3.02	1.41	6.25	3.03	0.00	0.77	1.50	5.89	2.42	4.74	9.23	1.45	6.38	8.12	9.16	7.05	0.64	6.46	0.47	7.91	7.60	10.45	--
Temperature (degrees Celsius)	26.81	28.35	26.81	23.90	21.87	23.22	31.20	21.90	23.15	17.89	23.00	16.95	29.72	18.02	22.25	20.48	20.35	24.69	26.11	22.79	28.18	32.71	29.82	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-10																							
Date	5/23/06 [1]	5/23/06 [2]	5/23/06 [3]	12/07/06	06/05/07	11/28/07	07/15/08	12/02/08	06/15/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/09/13	10/07/13	05/12/14	10/20/14	04/29/15	10/26/15*	04/19/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																								
Acetone	<10	<10	<10	<50	<50	<50	<50	<50	<50	<50	<40	<40	<40	<40	<40	<50	<50	<50	<50	<50	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<40	<40	<10	<25	<25	<25	<25	--	<10	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<13	<13	<13	<13	<13	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<40	<40	<20	<25	<25	<25	<25	<25	<10	<10	<10	<10
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<40	<40	<20	<25	<25	<2.5	<25	<25	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<40	<40	<40	<20	<25	<25	<25	<25	<25	<10	<10	<10	<5.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	0.62	0.66 J	0.76 J	<2.0	<2.0	0.59 J	0.71 J	0.68 J	0.58 J	<2.5	<2.5	0.26 J	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	7.0	5.4	5.2	7.9	6.1	6.6	7.9	7.2	5.5	6.0	5.4	4.3	2.9	2.6	2.2	2.3 J	2.4	2.1 J	2.0 J	1.6 J	0.94 J	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.77 J	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	2.6	2.3	2.2	3.5	2.2	2.4	<1.0	3.7	4.8	7.3	8.1	7.1	5.4	5.4	5.9	12.7	15.6	<2.5	3.8	1.8 J	0.29 J	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<4.0	<8.0	<8.0	<8.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	<10	<10	NS	NS	<20	<20	<20	<20	<20	<25	<25	<25	<25	<25	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	<10	<10	<10	<10	<4.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	25	21	22	25	18	18	18	19	21	21	27.6	26.4	21.9	24.7	22.0	25.7	26.7	20.3	15.7	15.7	13.6	14.3	13.0	13.6
1,1-Dichloroethane (1,1-DCA)	2.1	1.8	1.8	1.8	1.4	1.3	1.7	2.5	2.9	4.0	4.0	5.0	5.1	6.6	5.4	5.7	6.0	5.7	5.9	7.0	10.0	16.7	22.8	24.1
1,2-Dichloroethane (1,2-DCA)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	4.8	4.1	4.0	4.4	4.0	3.8	3.5	4.5	3.6	3.8	3.4	3.7	3.4	3.7	3.3	3.3	3.0	2.9	2.4 J	2.7	3.1	4.7	3.9	4.1
cis-1,2-Dichloroethene (cis-1,2-DCE)	71	64	64	57	40	37	44	52	73	110	112	133	119	139	152	154	171	142	105	78.4	67.8	65.3	55.7	48.5
trans-1,2-Dichloroethene (trans-1,2-DCE)	3.6	3.2	3.2	3.1	2.1	2.5	<1.0	2.6	3.9	5.0	6.2	5.6	5.5	5.6	6.8	6.7	7.7	5.5	4.3	3.5	3.2	3.4	2.9	2.4a
Vinyl Chloride	0.60	0.56	0.61	0.65	0.61	1	1	1	1	1	0.76 J	0.60 J	<2.0	0.74 J	0.96 J	0.75 J	<2.5	<2.5	<2.5	<2.5	0.77 J	0.70 J	0.63 J	<1.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.5	<2.5	<2.5	<2.5	<2.5	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	15	15	16	15	8.8	8.9	11	4.8	13	13	6.8	5.7	9.7	6.2	7.0	3.8	3.4	4.0	5.1	8.5	16.1	--	125	197

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-10																							
Date	5/23/06 [1]	5/23/06 [2]	5/23/06 [3]	12/07/06	06/05/07	11/28/07	07/15/08	12/02/08	06/15/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/04/12	04/09/13	10/07/13	05/12/14	10/20/14	04/29/15	10/26/15*	04/19/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																								
C6-C10	--	--	--	--	--	--	--	--	--	--	166	215	156	227	348	283	434	267	266	259	124	149	112	66.8 J
C10-C28	--	--	--	--	--	--	--	--	--	--	--	66.6	73.2 J	253	342	353	421	258	190	131	260	--	53.0 J	218
C28-C40	--	--	--	--	--	--	--	--	--	--	--	<190	<190	<190	170	111	220	197	60.8 J	<190	282	--	56.1 J	124
C6	--	--	--	--	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	ND	2.2	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	8.9	14.0	ND	34.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	35	6.2	ND	2.8	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	14	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	14	14.0	2.1	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	46	42.0	21.0	ND	15	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	9.4	11.0	1.6	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	9.1	8.5	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	11	7.0	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	11	2.5	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	15	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	ND	<500	<500	<500	<500	<500	166	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																								
Antimony	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	--	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	--	--	<0.010	<0.0100	<0.0100	<0.0100	--	<0.0100	<0.0100	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	--	--	--	--	0.0307	0.0266	0.0294	0.0353	--	0.0387	0.0343	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	--	--	<0.001	<0.00100	<0.00100	<0.00100	--	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	--	--	<0.005	<0.00500	<0.00500	<0.00500	--	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.00260	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	--	--	--	--	<0.005	<0.00500	<0.00500	<0.00500	--	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	--	--	--	0.01620	<0.00500	<0.00500	<0.00500	--	<0.0100	<0.0050	<0.0050	0.00540	<0.0050	0.00510	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	--	--	--	0.00913	0.00919	0.00595	0.00723	--	<0.0100	0.00810	0.00730	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	--	--	--	--	<0.010	<0.0100	<0.0100	<0.0100	--	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	--	--	--	<0.0005	<0.000500	<0.000500	<0.000500	--	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00026	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	--	--	0.0717	0.0717	0.0764	0.0795	--	0.0915	0.0927	0.0929	0.0898	0.0930	0.0797	0.0976	0.0934	0.0860	0.0997	0.0968	0.0811	0.0797	0.0771	0.0789
Nickel	--	--	--	--	0.0612	0.0516	0.0562	0.0562	--	0.0621	0.0599	0.0631	0.0607	0.0622	0.0416	0.0523	0.0512	0.0423	0.0450	0.0478	0.0483	0.0516	0.0673	0.0819
Selenium	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	--	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	--	--	--	<0.005	<0.00500	<0.00500	<0.00500	--	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	--	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	--	--	0.00533	<0.00500	<0.00500	0.00630	--	<0.0100	<0.0050	0.00550	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	--	--	--	--	0.13600	0.01380	<0.0100	<0.0100	--	0.02640	<0.0100	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0359	<0.020
Field Measurements																								
pH (Standard units)	7.23	7.26	7.28	7.27	8.43	7.92	7.00	6.83	7.44	7.30	7.18	7.26	8.69	7.40	7.44	7.58	7.77	7.42	7.10	7.40	7.19	7.87	7.76	--
Specific Conductance (milliSiemens per centimeter)	0.29	0.294	0.276	0.350	0.292	0.298	0.300	0.290	0.301	3.000	3.620	2.140	2.950	2.760	2.500	2.470	2.530	2.500	2.750	2.180	2.710	2.300	2.590	--
Oxidation-Reduction Potential (ORP) (millivolts)	-80	24.0	118.0	-52.0	-61.0	-66.0	-34.0	-70.0	-48.0	80.0	9.0	-10.0	-18.0	-23.0	59.0	16.0	152.0	102.0	-8.0	101.0	110.0	106.0	167.0	--
Dissolved Oxygen (DO) (mg/L)	0.92	1.64	4.09	1.32	0.70	0.43	2.20	2.50	6.97	8.22	2.61	9.31	1.76	6.57	9.76	6.47	7.45	0.58	10.77	0.88	8.08	7.61	10.59	--
Temperature (degrees Celsius)	25.71	26.38	27.47	21.1	22.62	20.76	22.10	21.60	25.69	15.10	23.30	18.46	32.24	18.09	25.50	21.90	22.69	24.93	24.69	22.80	25.69	30.55	29.26	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-11																								
Date	5/23/06 [1]	5/23/06 [2]	5/23/06 [3]	12/07/06	06/05/07	11/28/07	07/15/08	12/02/08	06/15/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15	04/19/16	10/25/16
VOCs by EPA Method 8260 (µg/L)																									
Acetone	<10	<10	<10	<50	<50	<50	<50	<50	<50	<50	<40	<20	<20	<20	<20	<20	<20	<20	<20	<20	16.9 J	5.4 J	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<20	<20	<10	5.3 J	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.6	1.4	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<40	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.63 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.28 J	0.29 J	0.40 J	0.27 J	<1.0	0.23 J	0.82 J
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.21 J	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.21 J	<1.0	0.57 J	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	<10	<10	NS	NS	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	<10	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	0.24 J	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	1.1	<1.0	3.2	2.1	3.7	3.5	3.7	2.1	1.1	2.0	1.0	0.80 J	<1.0	0.54 J	<1.0	0.53 J	0.87 J	0.46 J	0.52 J	0.49 J	0.64 J	1.3	5.4
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	37	44	45	60	43	46	45	40	48	45	98.6	27.9	37	5.6	34.4	4.1	36.7	67.6	47.3	52.9	25.5	19.7	31.5	84.4b
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.2	2.0	0.36 J	0.85 J	<1.0	0.74 J	<1.0	0.72 J	1.9	1.9	4.6	3.1	1.4	2.2	5.1
1,2-Dichloroethane (1,2-DCA)	2.1	2.2	2.4	1.8	1.3	1.9	2.3	2.1	4.0	3.8	6.6	0.98 J	2.5	<1.0	1.6	<1.0	1.7	3.2	1.4	1.4	0.56 J	0.24 J	0.39 J	1.1
1,1-Dichloroethene (1,1-DCE)	1.3	1.3	1.7	2.0	1.9	1.5	1.1	<1.0	1.0	1.2	2.6	0.64 J	1.4	<1.0	1.7	<1.0	1.5	3.8	2.3	3.7	1.9	0.67 J	1.3	3.8
cis-1,2-Dichloroethene (cis-1,2-DCE)	4.8	5.3	5.3	5.0	4.0	3.6	3.6	3.0	3.5	3.7	7.1	1.7	4.3	0.58 J	4.3	0.35 J	4.7	16.5	39.4	69.2	31.3	11.1	15.3	35.8
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.83 J	<1.0	<1.0	<1.0	0.48 J	<1.0	0.45 J	1.2	1.8	2.9	1.5	0.54 J	0.80 J	1.8a
Vinyl Chloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.36 J	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	<2.0	<2.0	<2.0	2.3	<2.0	2.2	2.5	2.2	3.4	3	1.9	0.43	1.7	<0.95	1.4	<0.94	2.2	1.5	2	5.7	6.4	--	6.9	14.1

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-11																							
Date	5/23/06 [1]	5/23/06 [2]	5/23/06 [3]	12/07/06	06/05/07	11/28/07	07/15/08	12/02/08	06/15/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/27/15	04/19/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																								
C6-C10	--	--	--	--	--	--	--	--	--	--	121	42.0 J	29.4 J	<50	78.4	<50	67.4	155	179	197	122	68.2	67.7	69.5
C10-C28	--	--	--	--	--	--	--	--	--	--	--	56.0 J	<94	232	70.8	420.0	81.2 J	113	86.3 J	147	81.7 J	--	64.8 J	250
C28-C40	--	--	--	--	--	--	--	--	--	--	--	<190	<190	148	<0.19	745.0	<100	194	60.5 J	110 J	79.3 J	--	106 J	123
C6	--	--	--	--	0.0	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	8.6	13	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	ND	2.9	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	8.7	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	43	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	18	11	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	16	15	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	44	53	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	9.3	16	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	9.6	17	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	11	0.10	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	14	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	ND	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																								
Antimony	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	--	--	<0.010	0.0185	0.0143	0.0176	0.0725	0.0146	<0.0100	<0.030	<0.010	<0.010	0.0116	0.0253	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	--	--	--	--	0.0163	0.0327	0.0577	0.190	1.10	<0.0100	0.0234	<0.10	<0.20	<0.20	<0.20	0.297	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	--	--	<0.001	<0.00100	<0.00100	<0.00100	<0.0100	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	--	--	0.0344	0.0243	0.0241	0.0403	0.285	<0.0100	0.0217	0.0025	<0.0020	<0.0020	0.0028	0.0882	0.0056	0.0068	0.0107	0.0029	<0.0020	0.0028	<0.0020	<0.0050
Chromium	--	--	--	--	0.0283	0.0253	0.0246	0.0749	0.107	0.0169	0.0160	0.0065	0.0130	0.0206	<0.010	0.0389	0.0106	<0.010	<0.020	<0.010	0.0130	<0.010	<0.010	<0.010
Cobalt	--	--	--	--	0.114	0.0942	0.0732	0.0690	0.0655	0.0276	0.0348	0.0060	0.0170	<0.0050	0.0082	0.0114	0.0090	0.0213	0.0105	0.0166	0.0075	0.0121	0.0111	<0.050
Copper	--	--	--	--	0.777	0.755	0.552	0.584	1.45	0.167	0.201	0.0475	0.0686	0.0140	0.0605	0.291	0.0572	0.0681	0.0363	0.0361	0.0145	0.0260	0.0261	0.0280
Lead	--	--	--	--	0.01120	<0.0100	<0.0100	0.04280	0.41300	<0.0100	0.00640	<0.010	<0.010	<0.010	<0.010	0.181	<0.010	<0.010	<0.010	<0.010	<0.010	0.0113	<0.010	0.00520
Mercury	--	--	--	--	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	--	--	0.00875	0.00153	0.00761	<0.00500	<0.00500	0.01250	0.01770	0.00810	<0.020	<0.020	<0.020	0.10900	<0.020	0.0536	0.0446	0.0645	0.0388	0.0774	0.0293	0.0777
Nickel	--	--	--	--	0.463	0.464	0.402	0.399	0.464	0.318	0.546	0.0944	0.270	0.0191	0.138	0.118	0.229	0.524	0.321	0.295	0.142	0.191	0.155	0.304
Selenium	--	--	--	--	<0.015	<0.0150	<0.0150	0.01810	0.150	<0.0150	<0.0200	<0.030	<0.010	<0.010	0.0136	0.0457	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	--	--	--	<0.005	<0.00500	<0.00500	<0.00500	0.0145	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	0.0128	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	--	--	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	--	--	0.0200	0.0340	0.0517	0.108	0.446	0.0137	0.0172	0.0098	0.0114	<0.010	<0.010	0.0880	0.0281	0.0160	<0.010	0.0138	<0.010	0.0132	0.0105	<0.050
Zinc	--	--	--	--	0.0403	0.0686	0.0791	0.0659	0.8130	0.0345	0.0708	0.0586	0.0291	0.0698	0.0480	0.910	0.102	<0.020	<0.020	0.0457	0.0619	0.0928	0.0714	0.0425
Field Measurements																								
pH (Standard units)	7.00	7.06	7.14	7.07	8.46	7.83	7.10	6.97	7.40	6.97	7.18	7.42	8.65	7.51	7.35	6.60	7.48	7.36	6.69	7.00	7.08	8.10	6.75	--
Specific Conductance (milliSiemens per centimeter)	0.72	0.762	0.783	0.840	0.776	0.800	0.850	0.780	0.780	5.510	6.510	1.520	5.130	0.802	3.690	0.290	3.360	3.300	4.310	3.880	3.170	2.690	2.900	--
Oxidation-Reduction Potential (ORP) (millivolts)	90	133	132	155	110	120	105	83	102	117	131	96	50	115	28	89	64	26	43	41	-22	33	227	--
Dissolved Oxygen (DO) (mg/L)	1.77	5.41	28.29	2.72	4.74	0.30	6.51	5.00	6.69	8.96	3.29	9.10	6.18	6.45	9.06	4.88	7.76	0.71	10.39	7.97	10.96	8.45	9.63	--
Temperature (degrees Celsius)	24.57	26.11	29.26	18.80	21.25	17.93	29.20	22.10	22.72	15.43	22.90	18.50	27.11	18.49	25.55	28.99	24.81	25.19	26.53	20.95	35.49	25.78	19.73	--

Notes:
-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-12																									
Date	05/23/06	5/23/06 Dup	12/06/06	06/05/07	06/05/07 Dup	11/27/07	11/27/07 Dup	07/15/08	12/02/08	06/16/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/26/15	04/18/16	10/24/16
VOCs by EPA Method 8260 (µg/L)																										
Acetone	<10	<10	<10	<50	<10	<50	<50	<50	<50	<50	<50	<20	<20	<20	<20	5.7 J	<20	7.0 J	<20	<20	<20	<20	<20	4.1 J	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	4.1	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20	<20	<20	<20	<10	<10	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<4.0	<4.0	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<10	<10	<10	<10	<10	<10	<10	NS	NS	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	NS	<5.0	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	1.4	1.3	1.6	1.3	1.4	1.6	1.4	1.6	1.3	<1.0	1.1	1.1	0.78 J	0.92 J	0.79 J	0.70 J	0.62 J	0.61 J	0.57 J	0.54 J	0.70 J	0.58 J	0.61 J	0.75 J	0.60 J
1,1-Dichloroethane (1,1-DCA)	14	14	19	15	15	11	10	9.3	7.7	5.7	5.2	3.5	3.7	3.1	3.2	2.8	2.9	3.5	2.7	2.3	2.6	1.8	3.2	3.8	2.6
1,2-Dichloroethane (1,2-DCA)	<0.50	<0.50	0.54	0.56	0.55	0.53	0.62	<0.50	<0.50	0.50	<0.50	<1.0	0.39 J	<1.0	0.43 J	0.28 J	0.34 J	0.33 J	<1.0	<1.0	<1.0	<1.0	0.22 J	0.22 J	<1.0
1,1-Dichloroethene (1,1-DCE)	18	17	19	18	18	15	15	16	17	13	10	8.2	10	7.3	11	8.2	8.5	8.6	7.3	4.6	4.2	2.3	8.7	8.4	5.3
cis-1,2-Dichloroethene (cis-1,2-DCE)	4.1	4.0	6.6	7.2	7.2	8.2	8.4	11.0	9.9	7.0	3.0	2.3	2.5	1.3	1.9	1.5	2.0	2.3	1.9	1.4	1.3	0.68 J	2.8	3.8	2.9
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.20 J	<1.0
Vinyl Chloride	1.1	1.3	1.2	1.1	1.1	1.0	0.84	1.00	1.20	0.90	0.74	0.49 J	0.47 J	<1.0	0.50 J	0.46 J	0.45 J	<1.0	<1.0	<1.0	<1.0	<1.0	0.37 J	0.51 J	<1.0
Carbon Tetrachloride	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	44	44	82	110	120	170	170	260	260	97	49	22.9	18.8	18.1	19.9	16.8	15.9	15.8	16.2	6.6	6.0	3.0	--	14.7	16.1

Appendix C - Summary of Groundwater Analytical Results, 2006 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-12																								
Date	05/23/06	5/23/06 Dup	12/06/06	06/05/07	06/05/07 Dup	11/27/07	11/27/07 Dup	07/15/08	12/02/08	06/16/09	12/30/09	06/30/10	12/15/10	06/20/11	12/19/11	06/07/12	12/03/12	04/08/13	10/07/13	05/12/14	10/20/14	04/28/15	10/26/15	04/18/16	10/24/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)																									
C6-C10	--	--	--	--	--	--	--	--	--	--	--	<50	<50	<50	<50	29.4	<50	33.3 J	<25	--	--	<50	<50	32.2 J	<100
C10-C28	--	--	--	--	--	--	--	--	--	--	--	--	66.5 J	<94	652	169	735	1,540	1,330	1,900	1,720	598	--	1,590	2,180
C28-C40	--	--	--	--	--	--	--	--	--	--	--	--	<190	<190	<190	88.4	112.0	695 J	356	671	665	434	--	513	292
C6	--	--	--	0.0	0.0	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	ND	ND	10	10	ND	10	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	ND	ND	3.7	4.9	ND	4.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	ND	ND	ND	ND	ND	15.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	ND	ND	ND	ND	ND	19.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	ND	ND	ND	ND	ND	19.0	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	ND	ND	ND	ND	ND	7.6	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	ND	ND	ND	ND	ND	6.8	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	ND	ND	3.6	ND	ND	6.8	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	ND	ND	ND	ND	ND	6.4	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	ND	ND	<500	<500	<500	<500	<500	<500	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)																									
Antimony	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0100	<0.030	<0.0060	<0.0060	<0.0060	<0.0060	--	--	--	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	--	--	--	<0.010	<0.010	<0.0100	<0.0100	<0.0100	0.0138	<0.0100	<0.0100	<0.0100	<0.030	<0.010	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	--	--	--	0.0883	0.0710	0.0767	0.0762	0.120	0.108	0.117	0.0852	0.119	0.153	<0.20	<0.20	<0.20	<0.20	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	--	--	--	<0.001	<0.001	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	--	--	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	--	--	--	0.00962	0.0103	<0.00500	<0.00500	<0.00500	<0.00500	0.00615	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	--	--	--	0.0202	0.0301	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	--	--	--	0.0582	<0.0005	<0.00500	<0.00500	<0.00500	0.00723	<0.00500	<0.0100	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	--	--	--	<0.010	<0.010	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	--	--	--	<0.0005	<0.0005	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000500	<0.000200	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	--	--	--	0.0644	0.0627	0.0612	0.0621	0.0611	0.0633	0.0634	0.0721	0.0639	0.0575	0.0624	0.0537	0.0289	0.0242	--	--	--	0.0668	0.0648	0.0530	0.0673	0.0624
Nickel	--	--	--	0.0567	0.0557	0.0620	0.0615	0.0748	0.0824	0.0692	0.0213	0.0179	0.0302	<0.0050	0.0137	0.0086	0.0062	--	--	--	<0.0050	<0.0050	0.0290	0.0331	0.0402
Selenium	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	--	--	--	<0.005	<0.005	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	--	--	--	<0.015	<0.015	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150	<0.0200	<0.030	<0.010	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	--	--	--	<0.005	<0.005	<0.00500	<0.00500	0.00516	<0.00500	<0.00500	<0.0100	<0.0050	0.00740	0.01700	<0.010	<0.010	<0.010	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	--	--	--	0.0215	0.0285	0.0222	0.0220	0.0171	0.0109	<0.0100	0.0131	<0.0100	<0.010	0.0251	<0.020	0.103	<0.020	--	--	--	0.0228	<0.020	<0.020	<0.020	<0.020
Field Measurements																									
pH (Standard units)	7.18	7.18	7.27	8.26	8.26	7.66	7.66	7.30	6.76	7.35	6.97	7.10	6.85	7.09	7.19	7.36	6.71	7.13	7.33	6.87	7.00	7.21	7.87	5.58	7.42
Specific Conductance (milliSiemens per centimeter)	0.254	0.254	0.295	0.274	0.274	0.299	0.299	0.300	0.290	0.319	2.470	1.630	2.210	2.930	2.910	2.660	2.940	3.000	31.030	2.970	2.520	7.520	2.540	0.924	2.51
Oxidation-Reduction Potential (ORP) (millivolts)	-119	-119	-109	-100	-100	-126	-126	-59	-107	-89	-13	-100	-5	-5	-28	-31	-35	-24	-98	-40	-58	-81	-21	272	-17
Dissolved Oxygen (DO) (mg/L)	4.41	4.41	1.07	5.69	5.69	0.00	0.00	2.32	2.70	5.27	8.35	97.00	9.23	9.44	6.79	9.51	0.20	7.62	1.25	18.23	9.03	7.81	8.42	10.07	1.80
Temperature (degrees Celsius)	22.40	22.40	23.00	20.73	20.73	23.01	23.01	25.20	20.90	25.52	17.78	23.00	16.95	20.47	17.21	20.45	19.58	19.02	25.23	24.23	21.24	27.47	31.09	30.04	28.21

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

1. Methyl bromide was detected in the sample collected on 4/18/16 at a concentration of 0.22 J.

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-13A									
Date	06/08/12	12/05/12	04/09/13	10/09/13	05/13/14	10/21/14	04/27/15	10/29/15	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	5.1 J	--	5.1 J	<20	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	--	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	0.28 J	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	--	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	--	0.20 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	0.45 J	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane (1,1-DCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	0.23 J	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	0.29 J	--	0.20 J	0.21 J	<1.0	<1.0	<1.0	0.24 J	0.23 J	<1.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	0.6	--	0.33 J	0.30 J	0.69	--	--	--	0.12	<0.29

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-13A									
Date	06/08/12	12/05/12	04/09/13	10/09/13	05/13/14	10/21/14	04/27/15	10/29/15	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	<50	--	<50	<50	<50	--	<50	<50	<50	<100
C10-C28	--	--	--	--	--	--	--	--	--	--
C28-C40	--	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	--	--	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	0.0148	--	--	--	--	0.0172	0.0193	0.0161	0.0193	0.0147
Barium	<0.20	--	--	--	--	0.230	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	--	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	0.0224	--	--	--	--	0.0265	0.0159	<0.010	<0.010	<0.010
Cobalt	0.0097	--	--	--	--	0.0112	0.0067	0.0057	<0.0050	<0.050
Copper	0.0332	--	--	--	--	0.0366	0.0237	0.0177	0.0148	<0.025
Lead	0.0115	--	--	--	--	0.0171	0.0137	<0.010	<0.010	<0.0050
Mercury	<0.00020	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	0.0507	--	--	--	--	0.0536	0.0519	0.0453	0.0546	0.0522
Nickel	0.0204	--	--	--	--	0.0214	0.0128	0.0103	0.00650	<0.040
Selenium	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	0.0548	--	--	--	--	0.0570	0.0274	0.0211	0.0131	<0.050
Zinc	0.0834	--	--	--	--	0.100	0.0519	0.0549	0.0331	0.0226
Field Measurements										
pH (Standard units)	7.71	--	7.93	--	--	--	--	7.85	6.42	8.06
Specific Conductance (milliSiemens per centimeter)	2.19	--	2.02	--	--	--	--	1.86	2.02	1.56
Oxidation-Reduction Potential (ORP) (millivolts)	-117	--	-109	--	--	--	--	-174	96	38
Dissolved Oxygen (DO) (mg/L)	7.21	--	7.38	--	--	--	--	8.77	9.13	4.08
Temperature (degrees Celsius)	26.58	--	26.64	--	--	--	--	21.99	33.21	26.69

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-13B									
Date	06/08/12	12/05/12	04/09/13	10/09/13	05/13/14	10/21/14	04/27/15	10/29/15	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	<20	--	<20	<20	<20	<20	<20	4.7 J	<20	<25
2-Butanone (methyl ethyl ketone)	<10	--	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	--	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	4.2 J	4.8 J	<10	2.5 J	<10	<10	<10	<20
Di isopropyl ether (DIPE)	0.55 J	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	3.7	--	8.9	9.8	9.0	0.69 J	0.63 J	<1.0	<1.0	<1.0
1,1-Dichloroethane (1,1-DCA)	1.0	--	5.2	6.6	6.5	6.8	6.9	11.1	7.0	5.1
1,2-Dichloroethane (1,2-DCA)	5.1	--	0.44 J	0.45 J	0.44 J	0.42 J	0.33 J	0.48 J	0.35 J	0.36 J
1,1-Dichloroethene (1,1-DCE)	0.61 J	--	3.4	4.7	4.7	4.8	5.7	7.5	6.1	4.9
cis-1,2-Dichloroethene (cis-1,2-DCE)	3.0	--	7.1	10.8	10.7	16.6	15.4	21.1	14.6	11.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	0.30 J	--	0.31 J	0.40 J	0.35 J	0.36 J	0.26 J	0.48 J	0.45 J	<1.0
Vinyl Chloride	<1.0	--	0.81 J	0.61 J	0.78 J	0.50 J	0.64 J	0.68 J	0.49 J	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	17.9	--	40.4	57.1	48.4	--	--	--	19.4	14.4

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-13B									
Date	06/08/12	12/05/12	04/09/13	10/09/13	05/13/14	10/21/14	04/27/15	10/29/15	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	<50	--	53.1	63.3	73.3	52.3	49.3 J	64.2	53.4	<100
C10-C28	856	--	--	--	--	--	--	--	--	--
C28-C40	<190	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	--	--	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	<0.20	--	--	--	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	--	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	--	--	--	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	<0.020	--	--	--	--	0.0678	0.0659	0.0269	0.0462	<0.050
Nickel	0.117	--	--	--	--	0.0526	0.0517	0.0290	0.0191	<0.040
Selenium	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	--	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	--	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	<0.020	--	--	--	--	0.0272	0.0274	0.0368	0.0292	<0.020
Field Measurements										
pH (Standard units)	7.67	--	8.05	7.46	--	--	--	7.86	6.40	7.16
Specific Conductance (milliSiemens per centimeter)	3.13	--	2.76	2.74	--	--	--	2.16	2.09	1.93
Oxidation-Reduction Potential (ORP) (millivolts)	-235	--	-150	-180	--	--	--	-189	26	-31
Dissolved Oxygen (DO) (mg/L)	8.63	--	8.36	1.18	--	--	--	8.55	9.40	8.60
Temperature (degrees Celsius)	24.96	--	25.63	18.43	--	--	--	21.93	28.82	25.81

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-13C									
Date	06/08/12	12/05/12	04/09/13	10/09/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	9.0 J	--	5.8 J	7.0 J	<20	6.0 J	17.2 J	<200	<200	32.2
2-Butanone (methyl ethyl ketone)	<10	--	<10	<10	<10	--	2.2 J	<100	<100	2.7 J
Chloroform	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<50	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<100	<100	<10
Methylene chloride	0.33 J	--	0.63 J	<1.0	<10	0.32 J	0.64 J	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<100	<100	<5.0
Benzene	0.28 J	--	0.31 J	0.24 J	0.24 J	<1.0	<1.0	<10	<10	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Chlorobenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<1.0
s-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<1.0
t-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<1.0
Toluene	7.8	--	4.9	3.4	2.9	<1.0	0.41 J	<10	<10	0.32 J
p-Isopropyltoluene	<4.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	1.1
Total Xylenes (p/m- and o- xylene)	<1.0	--	--	<2.0	<2.0	<2.0	<2.0	<20	<20	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	<10	<10	<10	<10	<10	<100	<100	<20
Di isopropyl ether (DIPE)	5.0	--	2.3	1.6 J	1.9 J	<2.0	<2.0	<20	<20	<1.0
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<20	<20	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Trichloroethene (TCE)	2.6	--	0.99 J	0.90 J	0.83 J	0.54 J	0.59 J	<10	<10	0.28 J
1,1-Dichloroethane (1,1-DCA)	0.52 J	--	0.53 J	0.43 J	0.47 J	0.33 J	0.58 J	<10	<10	0.68 J
1,2-Dichloroethane (1,2-DCA)	16	--	7.1	5.4	6.4	0.50 J	0.45 J	<10	<10	0.34 J
1,1-Dichloroethene (1,1-DCE)	0.36 J	--	0.22 J	0.28 J	<1.0	<1.0	<1.0	<10	<10	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	14.5	--	5.3	4.5	4.9	0.39 J	0.53 J	<10	<10	0.33 J
trans-1,2-Dichloroethene (trans-1,2-DCE)	1.2	--	0.38 J	0.34 J	0.28 J	<1.0	<1.0	<10	<10	<1.0
Vinyl Chloride	<1.0	--	0.24 J	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<2.0
1,2-Dichloropropane (1,2-DCP)	1.9	--	0.72 J	0.57 J	0.64 J	<1.0	<1.0	<10	<10	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	1.4	--	2.9	1.7	2.0	--	--	--	2.6	2.4

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-13C									
Date	06/08/12	12/05/12	04/09/13	10/09/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	79.6	--	50.8	43.0 J	52.5	--	26.3 J	<500	<500	<100
C10-C28	27.4	--	--	--	--	--	--	--	--	--
C28-C40	<190	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	<0.0060	--	<0.0060	<0.0060	<0.0060	0.00950	0.00700
Arsenic	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	0.0363	0.0240
Barium	<0.20	--	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	<0.0020	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	0.0274	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	<0.010	--	--	<0.010	--	<0.010	0.016	0.0153	0.0183	<0.025
Lead	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	--	--	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	<0.020	--	--	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.050
Nickel	0.0069	--	--	0.0093	--	0.0066	0.011	0.0123	0.0153	<0.040
Selenium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	0.0131	--	--	<0.010	--	<0.010	0.0102	0.0139	<0.010	<0.050
Zinc	0.0321	--	--	<0.020	--	0.0483	0.0494	0.0417	0.0497	0.0509
Field Measurements										
pH (Standard units)	8.29	--	12.04	9.89	--	--	--	--	9.71	--
Specific Conductance (milliSiemens per centimeter)	1.82	--	1.34	0.906	--	--	--	--	0.924	--
Oxidation-Reduction Potential (ORP) (millivolts)	-176	--	-121	-223	--	--	--	--	2	--
Dissolved Oxygen (DO) (mg/L)	7.95	--	9.07	1.64	--	--	--	--	8.57	--
Temperature (degrees Celsius)	24.16	--	25.89	17.56	--	--	--	--	30.79	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-14A									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/29/15	04/19/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	<20	--	<20	<4.0	<20	<20	<20	4.4 J	NS	<25
2-Butanone (methyl ethyl ketone)	<10	--	<10	<10	<1.0	--	<10	<10	NS	<5.0
Chloroform	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	NS	<10
Methylene chloride	<10	--	<10	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	NS	<5.0
Benzene	<1.0	--	<1.0	<1.0	0.33	0.25 J	0.25 J	0.29 J	NS	0.23 J
1,2-Dichlorobenzene (1,2-DCB)	1.3	--	1	1.5	2.1	2.8	2.5	0.76 J	NS	0.91 J
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
1,4-Dichlorobenzene (1,4-DCB)	0.26 J	--	0.27 J	0.39 J	0.48 J	0.68 J	0.65 J	0.21 J	NS	<1.0
Chlorobenzene	4.5	--	1.5	<1.0	6.2	6.2	5.8	4	NS	2.6
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
s-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
t-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
Toluene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
p-Isopropyltoluene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	<10	<10	<10	<10	<10	<10	NS	<20
Di isopropyl ether (DIPE)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.5	<1.0	<1.0	<1.0	<1.0	NS	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	NS	<1.0
Trichloroethene (TCE)	7.2	--	2.6	7.6	20.3	14	13.9	26.4	NS	14.7
1,1-Dichloroethane (1,1-DCA)	19.6	--	7.0	6.8	13.5	10.9	11.2	17.3	NS	11.5
1,2-Dichloroethane (1,2-DCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	0.26 J	NS	0.32 J
1,1-Dichloroethene (1,1-DCE)	1.5	--	<1.0	0.80 J	1.9	1.3	1.3	2.8	NS	1.2
cis-1,2-Dichloroethene (cis-1,2-DCE)	95.6	--	28.6	29.5	49.8	41.3	36.9	51.3	NS	27.4
trans-1,2-Dichloroethene (trans-1,2-DCE)	4.7	--	1.2	1.5	3.0	2.4	2.0	2.7	NS	1.6
Vinyl Chloride	0.68 J	--	<1.0	<1.0	<1.0	<1.0	<1.0	0.61 J	NS	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NS	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	4.1	--	8.1	56.7	141	--	--	--	NS	513

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-14A									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/29/15	04/19/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	186	--	93.6	78.5	199	124	122	59.2	NS	61.8
C10-C28	--	--	--	--	--	--	--	--	NS	--
C28-C40	--	--	--	--	--	--	--	--	NS	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	<0.0060	--	<0.0060	<0.0060	<0.0060	NS	<0.0060
Arsenic	0.0229	--	--	0.0254	--	0.0249	0.0126	0.0125	NS	0.0196
Barium	0.266	--	--	0.625	--	0.501	<0.20	<0.20	NS	0.437
Beryllium	0.0073	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	NS	<0.0040
Cadmium	<0.0020	--	--	<0.0020	--	<0.0020	<0.0020	<0.0020	NS	<0.0050
Chromium	0.0367	--	--	0.102	--	0.0991	0.0183	<0.010	NS	0.0702
Cobalt	0.0156	--	--	0.0398	--	0.0377	0.0091	0.0056	NS	<0.050
Copper	0.0455	--	--	0.0724	--	0.0986	0.0226	<0.010	NS	0.105
Lead	<0.010	--	--	0.0203	--	0.0319	<0.010	<0.010	NS	0.0151
Mercury	<0.00020	--	--	<0.00020	--	0.00048	<0.00020	<0.00020	NS	<0.00050
Molybdenum	0.0265	--	--	0.0379	--	0.0342	0.0251	0.0216	NS	<0.050
Nickel	0.0397	--	--	0.0950	--	0.0940	0.0937	0.0851	NS	0.1200
Selenium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	NS	<0.010
Silver	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	NS	<0.010
Thallium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	NS	<0.010
Vanadium	0.0758	--	--	0.171	--	0.185	0.0360	<0.010	NS	0.127
Zinc	0.111	--	--	0.263	--	0.415	0.0667	0.0353	NS	0.310
Field Measurements										
pH (Standard units)	7.5	--	8.09	--	--	--	--	8.12	6.85	--
Specific Conductance (milliSiemens per centimeter)	2.14	--	1.91	--	--	--	--	1.91	2.14	--
Oxidation-Reduction Potential (ORP) (millivolts)	-110	--	144	--	--	--	--	-77	172	--
Dissolved Oxygen (DO) (mg/L)	8.6	--	8.71	--	--	--	--	8.94	9.1	--
Temperature (degrees Celsius)	24.05	--	25.96	--	--	--	--	21.19	27.7	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-14B									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/29/15	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	<40	--	4.2 J	<20	<40	<20	<20	6.5 J	<200	<63
2-Butanone (methyl ethyl ketone)	<10	--	<10	<10	<20	--	<10	<10	<10	<13
Chloroform	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
Naphthalene	<10	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<50	<13
2-Hexanone (methyl butyl ketone)	<20	--	<10	<10	<20	<10	<10	<10	<100	<25
Methylene chloride	<20	--	<10	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<13
4-Methyl-2-pentanone (methyl isobutyl ketone)	<20	--	<10	<10	<20	<10	<10	<10	<100	<13
Benzene	<2.0	--	<1.0	0.34 J	<2.0	<1.0	<1.0	0.96 J	<10	0.66 J
1,2-Dichlorobenzene (1,2-DCB)	38	--	15.3	69.9	150	6.4	6.4	453 b	344	447b
1,3-Dichlorobenzene (1,3-DCB)	<2.0	--	<1.0	0.31 J	0.72 J	<1.0	<1.0	1.7	<10	2.1 J
1,4-Dichlorobenzene (1,4-DCB)	6.3	--	2.5	11.1	23.5	1.2	1.2	65.8	47.1	58.6
Chlorobenzene	5.6	--	2.8	<1.0	2.6	1.2	0.97 J	6.1	5.0 J	4.8
Ethylbenzene	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
1,2,4-Trimethylbenzene (1,2,4-TMB)	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
1,3,5-Trimethylbenzene (1,3,5-TMB)	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
1,2,3- Trichlorobenzene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<5.0
1,2,4- Trichlorobenzene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<5.0
n-Butylbenzene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
s-Butylbenzene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
t-Butylbenzene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
Isopropylbenzene	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
n-Propylbenzene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
Toluene	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
p-Isopropyltoluene	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<2.5
Total Xylenes (p/m- and o-xylene)	<8.0	--	--	<2.0	<4.0	<2.0	<2.0	<2.0	<20	<7.5
Methyl tert-butyl ether (MTBE)	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
Tert-Butyl Alcohol (TBA)	<20	--	<10	<2.4	<20	<10	<10	34.0	<100	<50
Di isopropyl ether (DIPE)	<4.0	--	<2.0	<2.0	<4.0	<2.0	<2.0	2.7	<20	0.59 J
Tetrachloroethene (PCE)	15.7	--	1.4	14.9	23.4	0.85 J	0.54 J	75.6	35.2	71.3
1,1,1-Trichloroethane (1,1,1-TCA)	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<20	<2.5
1,1,2-Trichloroethane (1,1,2-TCA)	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	0.39 J	<10	<2.5
Trichloroethene (TCE)	110	--	50.8	117	243	6	3	265 b	107	161
1,1-Dichloroethane (1,1-DCA)	16.4	--	15	10.8	4.0	7.4	6.1	4.8	2.8 J	2.4 J
1,2-Dichloroethane (1,2-DCA)	3.4	--	2.6	12.4	9.6	1.5	1.4	17.6	8.2 J	7.3
1,1-Dichloroethene (1,1-DCE)	2.1	--	1.4	4.3	3.0	0.60 J	0.40 J	6.6	4.5 J	4.1
cis-1,2-Dichloroethene (cis-1,2-DCE)	82.6	--	89.3	163	80.1	51.8	46.2	279 b	260	186
trans-1,2-Dichloroethene (trans-1,2-DCE)	4.3	--	3.2	3.3	3.5	1.7	1.3	9.9	5.3 J	5.7
Vinyl Chloride	0.41 J	--	<1.0	<1.0	<2.0	<1.0	<1.0	0.29 J	<10	<2.5
Carbon Tetrachloride	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
Styrene	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<2.5
1,2-Dibromomethane	<2.0	--	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<10	<5.0
1,2-Dichloropropane (1,2-DCP)	0.54 J	--	0.26 J	1.2	0.81 J	<1.0	<1.0	3.30	<10	0.98 J
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	5.4	--	4.9	3.6	3.0	--	--	--	3.5	4.3

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-14B									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/29/15	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	368	--	299	510	644	121	101	1,170 b	831	246
C10-C28	127	--	--	--	--	--	--	--	--	--
C28-C40	<190	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	<0.0060	--	<0.0060	<0.0060	0.0106	<0.0060	<0.0060
Arsenic	0.0143	--	--	<0.010	--	0.0141	0.0142	0.0436	<0.010	<0.010
Barium	<0.20	--	--	<0.20	--	<0.20	<0.20	1.970	<0.20	<0.20
Beryllium	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	<0.0020	--	<0.0020	<0.0020	0.00580	<0.0020	<0.0050
Chromium	0.0127	--	--	<0.010	--	<0.010	<0.010	0.296	<0.010	0.0206
Cobalt	0.0068	--	--	0.0058	--	<0.0050	<0.0050	0.189	<0.0050	<0.050
Copper	0.0105	--	--	<0.010	--	0.0105	<0.010	0.489	0.0118	<0.025
Lead	<0.010	--	--	<0.010	--	<0.010	<0.010	0.117	<0.010	0.00610
Mercury	<0.00020	--	--	<0.00020	--	<0.00020	<0.00020	0.00120	<0.00020	<0.00050
Molybdenum	0.0243	--	--	<0.020	--	0.0349	0.0330	0.0277	0.0383	<0.050
Nickel	0.0306	--	--	0.101	--	0.0492	0.0509	0.461	0.150	0.104
Selenium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	0.0228	--	--	0.0164	--	<0.010	<0.010	0.694	0.0119	<0.050
Zinc	0.0448	--	--	<0.020	--	0.100	0.0420	1.06	0.0357	0.0909
Field Measurements										
pH (Standard units)	7.53	--	8.77	--	--	--	--	8.12	8.58	8.30
Specific Conductance (milliSiemens per centimeter)	2.27	--	1.57	--	--	--	--	2.78	3.11	2.79
Oxidation-Reduction Potential (ORP) (millivolts)	-114	--	-137	--	--	--	--	-68	20	9
Dissolved Oxygen (DO) (mg/L)	7.57	--	8.25	--	--	--	--	9.99	10.39	2.61
Temperature (degrees Celsius)	25.1	--	24.58	--	--	--	--	19.52	25.99	22.89

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-14C									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	5.8 J	--	4.4 J	<20	<20	<20	<20	4.6 J	6.2 J	18.5 J
2-Butanone (methyl ethyl ketone)	<10	--	<10	<1.0	<1.0	--	<10	<10	<10	<5.0
Chloroform	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	0.93 J	--	<10	<10	<10	2.4	2.4	2.9	2.1	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	0.49 J	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	0.67 J	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	4.3	--	2.8	3.8	3	1.7 J	1.6 J	2.3	1.6 J	1.9
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.0	<1.0	0.30 J	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	0.68 J	--	1.1	<1.0	0.63 J	1.3	1.5	1.1	0.85 J	0.90 J
1,1-Dichloroethane (1,1-DCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	0.20 J	0.21 J	<1.0
1,2-Dichloroethane (1,2-DCA)	0.82 J	--	0.85 J	<1.0	0.44 J	0.62 J	0.48 J	0.60 J	0.41 J	0.73 J
1,1-Dichloroethene (1,1-DCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	0.64 J	--	0.87 J	0.50 J	0.41 J	0.59 J	0.57 J	0.49 J	0.38 J	<1.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	0.57	--	0.8	0.84	1.1	--	--	--	1.7	2.1

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-14C									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	<50	--	38.1 J	<50	29	32.7 J	32.9 J	<50	33.8 J	<200
C10-C28	69.6	--	--	--	--	--	--	--	--	--
C28-C40	<190	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	<0.0060	--	<0.0060	0.0085	<0.0060	<0.0060	<0.0060
Arsenic	0.0146	--	--	<0.010	--	<0.010	0.0101	<0.010	0.0514	0.0510
Barium	<0.20	--	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	<0.0020	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	<0.010	--	--	<0.010	--	0.0152	0.0188	<0.010	<0.010	<0.010
Cobalt	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	<0.010	--	--	<0.010	--	<0.010	0.0255	<0.010	<0.010	<0.025
Lead	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	--	--	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	<0.020	--	--	<0.020	--	<0.020	<0.020	<0.020	<0.020	<0.050
Nickel	0.0112	--	--	<0.0050	--	0.0068	0.0122	<0.0050	0.0054	<0.040
Selenium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	0.0857	--	--	<0.020	--	0.0463	0.0774	<0.020	0.0481	0.0408
Field Measurements										
pH (Standard units)	7.7	--	7.77	--	--	--	--	--	9.22	8.66
Specific Conductance (milliSiemens per centimeter)	1.8	--	2.23	--	--	--	--	--	1.58	1.52
Oxidation-Reduction Potential (ORP) (millivolts)	-136	--	-140	--	--	--	--	--	-11	-18
Dissolved Oxygen (DO) (mg/L)	2.98	--	7.78	--	--	--	--	--	9.67	2.82
Temperature (degrees Celsius)	23.33	--	24.96	--	--	--	--	--	30.75	22.59

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-15A									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	<20	--	<20	<20	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	--	<10	<10	<10	--	<10	<10	<10	<5.0
Chloroform	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	3	--	3.2	2.9	3.8	1.9	2.5	2.4	1.5	2.9
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	0.69 J	--	0.74 J	0.65 J	0.82 J	0.44 J	0.55 J	0.56 J	0.38 J	0.70 J
Chlorobenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	--	<2.0	<0.20	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	--	<2.0	<0.20	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	10.6	--	8.6	7.9	8.7	6.2	6.8	6.2	4.4	6.0
1,1-Dichloroethane (1,1-DCA)	0.42 J	--	0.33 J	<1.0	0.28 J	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	1.1	--	0.80 J	0.86 J	0.76 J	0.54 J	0.68 J	0.68 J	0.40 J	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	60.1	--	50.1	40.8	46.8	27	35.4	35.3	22.7	24.9
trans-1,2-Dichloroethene (trans-1,2-DCE)	3.6	--	3.2	2.4	2.9	2.3	2.1	2.4	1.6	1.6
Vinyl Chloride	0.23 J	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	0.28 J	--	0.25 J	0.20 J	<0.63	--	--	--	--	<0.29

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-15A									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	108	--	132	83.6	115	97.2	79.6	<50	55.5	<100
C10-C28	--	--	--	--	--	--	--	--	--	--
C28-C40	--	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	<0.0060	--	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	0.0120	--	--	0.0140	--	0.0182	0.0264	0.0210	0.0326	0.0110
Barium	<0.20	--	--	0.267	--	0.266	0.306	<0.20	0.466	<0.20
Beryllium	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	<0.0020	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	<0.010	--	--	0.0362	--	0.0371	0.0445	<0.010	0.0706	<0.010
Cobalt	<0.0050	--	--	0.0145	--	0.0130	0.0159	<0.0050	0.0249	<0.050
Copper	0.0115	--	--	0.0454	--	0.0569	0.0651	<0.010	0.127	<0.025
Lead	<0.010	--	--	0.0136	--	0.026	0.0324	<0.010	0.0432	<0.0050
Mercury	<0.00020	--	--	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	0.0487	--	--	0.0607	--	0.0718	0.0664	0.0654	0.0656	0.0591
Nickel	0.0063	--	--	0.0359	--	0.0319	0.0344	0.0054	0.0546	<0.040
Selenium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	0.0168	--	--	0.072	--	0.0746	0.0805	<0.010	0.139	<0.050
Zinc	0.0219	--	--	0.134	--	0.115	0.115	<0.020	0.193	<0.020
Field Measurements										
pH (Standard units)	7.71	--	7.77	--	--	--	--	--	--	--
Specific Conductance (milliSiemens per centimeter)	1.74	--	1.67	--	--	--	--	--	--	--
Oxidation-Reduction Potential (ORP) (millivolts)	-114	--	9.95	--	--	--	--	--	--	--
Dissolved Oxygen (DO) (mg/L)	9.87	--	7.76	--	--	--	--	--	--	--
Temperature (degrees Celsius)	25.86	--	23.69	--	--	--	--	--	--	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-15B									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	<20	--	4.3 J	<20	<20	<20	<20	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	--	<10	<2.0	<2.0	--	<10	<10	<10	<5.0
Chloroform	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<10
Methylene chloride	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	--	<10	<10	<10	<10	<10	<10	<10	<5.0
Benzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	0.41 J	--	0.48 J	0.33 J	0.38 J	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Toluene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	--	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	--	<10	<10	<10	<10	<10	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	--	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	0.26 J
Tetrachloroethene (PCE)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	3.9	--	3.6	3.1	2.3	12.8	11.9	13.9	9.3	19.3
1,1-Dichloroethane (1,1-DCA)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	<1.0	--	<1.0	<1.0	<1.0	2	1.7	2.5	1.6	3.2
1,1-Dichloroethene (1,1-DCE)	0.71 J	--	0.60 J	0.64 J	0.29 J	<1.0	<1.0	0.75 J	0.27 J	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	33.7	--	31.9	26.3	20.0	20.4	18.9	72.2	24.7	48.4
trans-1,2-Dichloroethene (trans-1,2-DCE)	1.8	--	1.7	1.4	1.2	3.5	3.0	15.0	5.5	12.9
Vinyl Chloride	<1.0	--	<1.0	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	0.19 J	--	0.16 J	0.20 J	<0.48	--	--	--	3.5	3.1

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-15B									
Date	06/08/12	12/05/12	04/09/13	10/08/13	05/13/14	10/21/14	04/27/15	10/26/15*	04/18/16	10/26/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	57.9	--	85.5	57.1	50.2	101	66.7	47.5 J	79.4	<100
C10-C28	324	--	--	--	--	--	--	--	--	--
C28-C40	104	--	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	--	--	<0.0060	--	<.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	0.0116	--	--	<0.010	--	0.0940	0.0588	<0.010	0.0419	0.0100
Barium	<0.20	--	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	--	--	<0.0020	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	<0.010	--	--	<0.010	--	0.0255	0.0188	<0.010	<0.010	<0.010
Cobalt	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	--	--	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	0.0634	--	--	0.0843	--	0.0646	0.0582	0.0674	0.0641	0.0630
Nickel	<0.0050	--	--	0.0058	--	0.0110	0.0110	0.0150	0.0141	<0.040
Selenium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	--	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	--	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	<0.020	--	--	<0.020	--	0.0215	<0.020	<0.020	<0.020	<0.020
Field Measurements										
pH (Standard units)	7.64	--	7.83	--	--	--	--	--	7.15	6.97
Specific Conductance (milliSiemens per centimeter)	1.91	--	1.81	--	--	--	--	--	1.86	1.89
Oxidation-Reduction Potential (ORP) (millivolts)	-109	--	-120	--	--	--	--	--	165	60
Dissolved Oxygen (DO) (mg/L)	7.81	--	9.14	--	--	--	--	--	8.98	3.59
Temperature (degrees Celsius)	25.45	--	24.56	--	--	--	--	--	34.42	20.95

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-16									
Date	06/08/12	12/03/12	04/09/13	10/07/13	05/12/14	10/20/14	04/29/15	10/27/15	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	6.9 J	<20	<20	<20	<20	<20	<20	<1,000	<200	<25
2-Butanone (methyl ethyl ketone)	<10	<1.0	<10	<10	<10	--	<10	<500	<100	<5.0
Chloroform	0.29 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	0.56 J
Naphthalene	<5.0	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<100	<50	<5.0
2-Hexanone (methyl butyl ketone)	<10	<1.0	<10	<10	<10	<10	<10	<500	<100	<10
Methylene chloride	0.23 J	<1.0	<10	<10	<10	<10	<10	<50	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<10	<10	<10	<10	<10	<500	<100	<5.0
Benzene	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,2-Dichlorobenzene (1,2-DCB)	0.39 J	<2.0	0.22 J	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<2.0	w3	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	0.2 J	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
1,2,3- Trichlorobenzene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<2.0
1,2,4- Trichlorobenzene	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<2.0
n-Butylbenzene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
s-Butylbenzene	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
t-Butylbenzene	<2.0	0.22 J	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
n-Propylbenzene	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
Toluene	0.34 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
p-Isopropyltoluene	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	0.37 J	<4.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Tert-Butyl Alcohol (TBA)	<10	0.72 J	<10	<10	<10	<10	<10	<500	<100	<20
Di isopropyl ether (DIPE)	<2.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<100	<20	<1.0
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	7.2 J	15.1
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<20	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Trichloroethene (TCE)	2.1	<1.0	1.5	1.1	0.85 J	0.69 J	0.35 J	<50	<10	7.4
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,2-Dichloroethane (1,2-DCA)	0.45 J	<1.0	0.39 J	0.31 J	0.30 J	0.29 J	0.25 J	<50	<10	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	0.95 J	<10	0.71 J	<1.0	0.79 J	1.1	1.3	<50	<10	1.3
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Vinyl Chloride	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Carbon Tetrachloride	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
Styrene	<1.0	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,2-Dibromomethane	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<10	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	0.36 J	19.47	0.42 J	0.32 J	0.34 J	--	--	--	1.0	1.1

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-16									
Date	06/08/12	12/03/12	04/09/13	10/07/13	05/12/14	10/20/14	04/29/15	10/27/15	04/20/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	<50	<50	26.2 J	<50	--	--	<50	<2,500	<500	<100
C10-C28	303	156	--	--	--	--	--	--	--	--
C28-C40	146	<190	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	<0.0060	--	<0.0060	--	<0.0060	<0.0060	0.0319	0.0185	0.00690
Arsenic	<0.010	<0.010	--	<0.010	--	<0.010	0.0170	7.20	6.03	5.40
Barium	<0.20	<0.20	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	<0.0020	--	<0.0020	--	<0.0020	<0.0020	0.0335	<0.0020	<0.0050
Chromium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	0.0232	<0.010	<0.010
Cobalt	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	0.0069	0.0069	<0.050
Copper	0.0135	<0.010	--	<0.010	--	<0.010	0.0102	0.0318	0.0150	<0.025
Lead	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	<0.00020	--	<0.00020	--	<0.00020	<0.00020	0.00034	<0.00021	<0.00050
Molybdenum	0.0654	0.0474	--	0.0322	--	0.0258	<0.020	0.0540	0.0500	0.105
Nickel	0.0067	0.0057	--	0.0115	--	0.0120	0.0218	0.0159	0.106	0.0928
Selenium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	0.0238	<0.010	<0.050
Zinc	0.106	0.0221	--	<0.020	--	<0.020	0.0619	0.0803	0.654	0.0329
Field Measurements										
pH (Standard units)	7.99	6.65	7.97	7.26	7.38	--	7.30	7.47	6.24	6.93
Specific Conductance (milliSiemens per centimeter)	1.320	0.685	0.993	1.46	1.80	--	1.63	2.11	2.72	--
Oxidation-Reduction Potential (ORP) (millivolts)	-221	-42	-194	-189	-197	--	-188	-82	213	90
Dissolved Oxygen (DO) (mg/L)	8.77	0	7.5	1.78	19.96	--	8.42	8.18	8.79	2.50
Temperature (degrees Celsius)	21.86	19.47	20.35	22.75	28.32	--	20.75	26.23	30.93	18.74

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-16C									
Date	06/08/12	12/03/12	04/09/13	10/07/13	05/12/14	10/21/14	04/29/15	10/27/15*	04/20/16	10/25/16
VOCs by EPA Method 8260 (µg/L)										
Acetone	4.2 J	<20	<20	<20	<20	<20	<20	<20	<100	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<10	<10	<10	--	<10	<10	<50	<5.0
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
Naphthalene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
Methylene chloride	1.2	<10	<10	<10	<10	<10	<10	<10	<50	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	1.5 J	<10	<10	<10	<10	<10	<50	<5.0
Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	0.35 J	0.23 J	3.2	2.9	3.8	<1.0	<1.0	<1.0	<5.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	0.74 J	0.65 J	0.82 J	<1.0	<1.0	<1.0	<5.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<1.0
1,2,3- Trichlorobenzene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<2.0
1,2,4- Trichlorobenzene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<2.0
n-Butylbenzene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<1.0
s-Butylbenzene	<2.0	<2.0	<2.0	<0.20	<2.0	<2.0	<2.0	<2.0	<10	<1.0
t-Butylbenzene	<2.0	**<2.0**	<2.0	<0.20	<2.0	<2.0	<2.0	<2.0	<10	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
n-Propylbenzene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<1.0
Toluene	0.49 J	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
p-Isopropyltoluene	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<1.0
Total Xylenes (p/m- and o- xylene)	<4.0	**<4.0**	<4.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	**<10**	<10	<10	<10	<10	<10	<10	<50	<20
Di isopropyl ether (DIPE)	1.8 J	0.86 J	0.87 J	1.2 J	1.2 J	1.9 J	1.6 J	6.2	<10	3.4
Tetrachloroethene (PCE)	<1.0	**<1.0**	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
Trichloroethene (TCE)	3.2	1.9	1.2	0.33 J	0.36 J	0.29 J	0.23 J	3.8	<5.0	0.38 J
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,2-Dichloroethane (1,2-DCA)	1.6	0.91 J	0.86 J	1.1	1.1	1.7	1.2	9.5	1.3 J	4.7
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	7.3	4	4.5	5.8	6.3	10.1	8.3	40.1	5.4	22.8
trans-1,2-Dichloroethene (trans-1,2-DCE)	0.36 J	<1.0	<1.0	0.23 J	0.22 J	0.44 J	0.25 J	2.8	<5.0	1.5
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.49 J	<5.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
Styrene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.0
1,2-Dichloropropane (1,2-DCP)	0.44 J	0.27 J	0.21 J	0.31 J	0.30 J	0.48 J	<1.0	1.8	<5.0	1.1
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	0.59	--	0.42 J	0.38 J	0.34 J	--	--	--	0.31	0.59

Appendix C - Summary of Groundwater Analytical Results, 2012 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-16C									
Date	06/08/12	12/03/12	04/09/13	10/07/13	05/12/14	10/21/14	04/29/15	10/27/15*	04/20/16	10/25/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)										
C6-C10	29.4	<50	30.9 J	32.7 J	31.2 J	39.1 J	35.2 J	105	<500	<100
C10-C28	169	155	--	--	--	--	--	--	--	--
C28-C40	88.4	<190	--	--	--	--	--	--	--	--
C6	--	--	--	--	--	--	--	--	--	--
C7	--	--	--	--	--	--	--	--	--	--
C8	--	--	--	--	--	--	--	--	--	--
C9-C10	--	--	--	--	--	--	--	--	--	--
C11-C12	--	--	--	--	--	--	--	--	--	--
C13-C14	--	--	--	--	--	--	--	--	--	--
C15-C16	--	--	--	--	--	--	--	--	--	--
C17-C18	--	--	--	--	--	--	--	--	--	--
C19-C20	--	--	--	--	--	--	--	--	--	--
C21-C22	--	--	--	--	--	--	--	--	--	--
C23-C24	--	--	--	--	--	--	--	--	--	--
C25-C28	--	--	--	--	--	--	--	--	--	--
C29-C32	--	--	--	--	--	--	--	--	--	--
C33-C36	--	--	--	--	--	--	--	--	--	--
C37-C40	--	--	--	--	--	--	--	--	--	--
C41-C44	--	--	--	--	--	--	--	--	--	--
C6-C44 Total	--	--	--	--	--	--	--	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)										
Antimony	<0.0060	<0.0060	--	<0.0060	--	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	0.0128	0.339	0.0711
Barium	<0.20	<0.20	--	<0.20	--	<0.20	<0.20	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	<0.0020	--	<0.0020	--	<0.0020	<0.0020	<0.0020	<0.0020	<0.0050
Chromium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Copper	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.025
Lead	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.0050
Mercury	<0.00020	<0.00020	--	<0.00020	--	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050
Molybdenum	0.0289	0.0242	--	<0.020	--	<0.020	<0.020	<0.020	0.0224	<0.050
Nickel	0.0086	0.0062	--	0.007	--	<0.0050	<0.0050	<0.0050	0.00830	<0.040
Selenium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	--	<0.0050	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.010
Vanadium	<0.010	<0.010	--	<0.010	--	<0.010	<0.010	<0.010	<0.010	<0.050
Zinc	0.103	<0.020	--	<0.020	--	<0.020	<0.020	<0.020	0.0593	<0.020
Field Measurements										
pH (Standard units)	8.1	6.11	8.11	7.25	7.48	--	7.49	--	6.64	7.16
Specific Conductance (milliSiemens per centimeter)	0.911	0.699	0.763	1.330	1.470	--	1.56	--	0.754	1.52
Oxidation-Reduction Potential (ORP) (millivolts)	-208	-35	-218	-177	-206	--	-167	--	73	-44
Dissolved Oxygen (DO) (mg/L)	8.42	0	10.43	0.77	10.02	--	12.26	--	8.48	2.58
Temperature (degrees Celsius)	19.72	21.12	20.60	22.30	28.30	--	20.25	--	27.90	19.22

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

* - Split samples were collected by EPA during 2SA2015 Groundwater Monitoring Event; metals samples were analyzed for dissolved metals.

Appendix C - Summary of Groundwater Analytical Results, 2015 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-17A		
Date	10/26/15	04/18/16	10/24/16
VOCs by EPA Method 8260 (µg/L)			
Acetone	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0
Naphthalene	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10
Methylene chloride	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<5.0
Benzene	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<5.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o-xylene)	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	6.9 J	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0
Trichloroethene (TCE)	7.1	4.9	5.4
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	5.3	3.6	5.3
trans-1,2-Dichloroethene (trans-1,2-DCE)	0.42 J	0.31 J	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	--	0.063 J	<0.30

Appendix C - Summary of Groundwater Analytical Results, 2015 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-17A		
Date	10/26/15	04/18/16	10/24/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)			
C6-C10	30.3 J	30.8 J	<100
C10-C28	--	24.3 J	--
C28-C40	--	<190	--
C6	--	--	--
C7	--	--	--
C8	--	--	--
C9-C10	--	--	--
C11-C12	--	--	--
C13-C14	--	--	--
C15-C16	--	--	--
C17-C18	--	--	--
C19-C20	--	--	--
C21-C22	--	--	--
C23-C24	--	--	--
C25-C28	--	--	--
C29-C32	--	--	--
C33-C36	--	--	--
C37-C40	--	--	--
C41-C44	--	--	--
C6-C44 Total	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)			
Antimony	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.010	<0.010
Barium	0.205	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	<0.0020	<0.0050
Chromium	0.0211	0.0122	<0.010
Cobalt	0.0077	<0.0050	<0.050
Copper	0.0274	0.0215	<0.025
Lead	0.0105	<0.010	<0.0050
Mercury	<0.00020	<0.00020	<0.00050
Molybdenum	0.104	0.101	0.110
Nickel	0.0126	0.0072	<0.040
Selenium	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	<0.010
Vanadium	0.0370	0.0216	<0.050
Zinc	0.0675	0.0648	0.0228
Field Measurements			
pH (Standard units)	6.93	6.6	--
Specific Conductance (milliSiemens per centimeter)	1.18	1.32	--
Oxidation-Reduction Potential (ORP) (millivolts)	164	296	--
Dissolved Oxygen (DO) (mg/L)	9.22	8.78	--
Temperature (degrees Celsius)	23.70	25.31	--

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds
EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2015 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-17B		
Date	10/26/15	04/18/16	10/24/16
VOCs by EPA Method 8260 (µg/L)			
Acetone	<20	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<5.0
Chloroform	<1.0	<1.0	<1.0
Naphthalene	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10
Methylene chloride	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<5.0
Benzene	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o-xylene)	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<20
Di isopropyl ether (DIPE)	<2.0	<2.0	<1.0
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0
Trichloroethene (TCE)	<1.0	<1.0	<1.0
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	<1.0	<1.0	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (ci- 1,2-DCE)	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	--	0.026 J	<0.28

Appendix C - Summary of Groundwater Analytical Results, 2015 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-17B		
Date	10/26/15	04/18/16	10/24/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)			
C6-C10	<50	<50	<100
C10-C28	--	--	--
C28-C40	--	--	--
C6	--	--	--
C7	--	--	--
C8	--	--	--
C9-C10	--	--	--
C11-C12	--	--	--
C13-C14	--	--	--
C15-C16	--	--	--
C17-C18	--	--	--
C19-C20	--	--	--
C21-C22	--	--	--
C23-C24	--	--	--
C25-C28	--	--	--
C29-C32	--	--	--
C33-C36	--	--	--
C37-C40	--	--	--
C41-C44	--	--	--
C6-C44 Total	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)			
Antimony	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.010	<0.010
Barium	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	<0.0020	<0.0050
Chromium	<0.010	<0.010	0.0184
Cobalt	<0.0050	<0.0050	<0.050
Copper	<0.010	<0.010	<0.025
Lead	<0.010	<0.010	<0.0050
Mercury	<0.00020	<0.00020	<0.00050
Molybdenum	0.0528	0.0611	<0.050
Nickel	<0.0050	<0.0050	<0.040
Selenium	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	<0.010
Vanadium	0.0111	<0.010	<0.050
Zinc	0.0299	0.0314	0.0609
Field Measurements			
pH (Standard units)	7.81	6.69	6.61
Specific Conductance (milliSiemens per centimeter)	0.677	0.689	0.953
Oxidation-Reduction Potential (ORP) (millivolts)	-108	92	88
Dissolved Oxygen (DO) (mg/L)	9	9.3	4.05
Temperature (degrees Celsius)	25.04	25.48	19.92

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Appendix C - Summary of Groundwater Analytical Results, 2015 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-17C		
Date	10/26/15	04/18/16	10/24/16
VOCs by EPA Method 8260 (µg/L)			
Acetone	4.6 J	<20	<25
2-Butanone (methyl ethyl ketone)	<10	<10	<5.0
Chloroform	0.28 J	0.23 J	<1.0
Naphthalene	<5.0	<5.0	<5.0
2-Hexanone (methyl butyl ketone)	<10	<10	<10
Methylene chloride	<10	<10	<5.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	<10	<10	<5.0
Benzene	<1.0	<1.0	<1.0
1,2-Dichlorobenzene (1,2-DCB)	<1.0	<1.0	<1.0
1,3-Dichlorobenzene (1,3-DCB)	<1.0	<1.0	<1.0
1,4-Dichlorobenzene (1,4-DCB)	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene (1,2,4-TMB)	<2.0	<2.0	<1.0
1,3,5-Trimethylbenzene (1,3,5-TMB)	<2.0	<2.0	<1.0
1,2,3- Trichlorobenzene	<2.0	<2.0	<2.0
1,2,4- Trichlorobenzene	<2.0	<2.0	<2.0
n-Butylbenzene	<2.0	<2.0	<1.0
s-Butylbenzene	<2.0	<2.0	<1.0
t-Butylbenzene	<2.0	<2.0	<1.0
Isopropylbenzene	<1.0	<1.0	<1.0
n-Propylbenzene	<2.0	<2.0	<1.0
Toluene	<1.0	<1.0	<1.0
p-Isopropyltoluene	<2.0	<2.0	<1.0
Total Xylenes (p/m- and o-xylene)	<2.0	<2.0	<3.0
Methyl tert-butyl ether (MTBE)	<1.0	<1.0	<1.0
Tert-Butyl Alcohol (TBA)	<10	<10	<20
Di isopropyl ether (DIPE)	0.26 J	0.24 J	0.34 J
Tetrachloroethene (PCE)	<1.0	<1.0	<1.0
1,1,1-Trichloroethane (1,1,1-TCA)	<1.0	<1.0	<1.0
1,1,2-Trichloroethane (1,1,2-TCA)	<1.0	<1.0	<1.0
Trichloroethene (TCE)	1.3	0.72 J	2.0
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0
1,2-Dichloroethane (1,2-DCA)	0.34 J	0.25 J	<1.0
1,1-Dichloroethene (1,1-DCE)	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene (cis-1,2-DCE)	2.1	1.7	3.0
trans-1,2-Dichloroethene (trans-1,2-DCE)	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
Carbon Tetrachloride	<1.0	<1.0	<1.0
Styrene	<1.0	<1.0	<1.0
1,2-Dibromomethane	<1.0	<1.0	<2.0
1,2-Dichloropropane (1,2-DCP)	<1.0	<1.0	<1.0
1,4-Dioxane by EPA Method 8270C (M) (µg/L)	--	0.052 J	<0.28

Appendix C - Summary of Groundwater Analytical Results, 2015 to Present
Brenntag – South Gate (Former L.A. Chemical Facility)
4545 Ardine Street, South Gate, California

Well ID	MW-17C		
Date	10/26/15	04/18/16	10/24/16
TPH C6-C10 by EPA Method 8260B (µg/L); TPH C10-C44 by EPA Method 8015B (µg/L)			
C6-C10	<50	25.2 J	<100
C10-C28	--	--	--
C28-C40	--	--	--
C6	--	--	--
C7	--	--	--
C8	--	--	--
C9-C10	--	--	--
C11-C12	--	--	--
C13-C14	--	--	--
C15-C16	--	--	--
C17-C18	--	--	--
C19-C20	--	--	--
C21-C22	--	--	--
C23-C24	--	--	--
C25-C28	--	--	--
C29-C32	--	--	--
C33-C36	--	--	--
C37-C40	--	--	--
C41-C44	--	--	--
C6-C44 Total	--	--	--
Metals by EPA Method 6010B/7470A (mg/L)			
Antimony	<0.0060	<0.0060	<0.0060
Arsenic	<0.010	<0.010	<0.010
Barium	<0.20	<0.20	<0.20
Beryllium	<0.0050	<0.0050	<0.0040
Cadmium	<0.0020	<0.0020	<0.0050
Chromium	<0.010	<0.010	<0.010
Cobalt	<0.0050	<0.0050	<0.050
Copper	0.0112	<0.010	<0.025
Lead	<0.010	<0.010	<0.0050
Mercury	<0.00020	<0.00020	<0.00050
Molybdenum	0.0220	<0.020	<0.050
Nickel	0.0064	<0.0050	<0.040
Selenium	<0.010	<0.010	<0.010
Silver	<0.0050	<0.0050	<0.010
Thallium	<0.010	<0.010	<0.010
Vanadium	0.0176	<0.010	<0.050
Zinc	0.0460	0.0227	<0.020
Field Measurements			
pH (Standard units)	8.05	6.8	6.85
Specific Conductance (milliSiemens per centimeter)	0.975	1.1	1.20
Oxidation-Reduction Potential (ORP) (millivolts)	-190	125	-21
Dissolved Oxygen (DO) (mg/L)	8.56	10.77	3.18
Temperature (degrees Celsius)	25.88	27.09	20.84

Notes:

-- - Not analyzed
mg/L - Milligrams per liter
ug/L - Micrograms per liter
ND; <0.00500 - Non-detect
NS - Not sampled
TPH - Total petroleum hydrocarbons
VOCs - Volatile organic compounds

EPA - U.S. Environmental Protection Agency
J - Indicates an estimated value
D - Data qualified from a diluted sample
B - Indicates analyte found in associated method blank
Dup - Duplicate sample

Reference:
AwwaRF, 2006

Contaminant Transport Through Aquitards: Technical Guidance for Aquitard Assessment

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CHAPTER 2
FACTORS IN AQUITARD VULNERABILITY

This chapter provides a brief overview of the geologic, hydraulic, and contaminant properties that affect flow and chemical transport between aquitards and aquifers. *Contaminant Transport Through Aquitards: A State-of-the-Science Review*, the companion report to this technical guidance, includes a detailed review of these topics and relevant examples from the scientific literature.

TYPES OF AQUITARDS

Aquitards typically consist of *unlithified*, fine-grained sediments such as clay and silt, or *lithified*, low-*permeability* rock formations, such as shale or mudstone. Unlithified aquitards are often the focus of hydrogeologic investigations at contamination sites, because they are usually encountered at shallow depths. Bedrock aquitards may be positioned deeper in the subsurface, where they are more likely to effect regional groundwater flow systems.

Very few aquitards are geologically *homogeneous*; most aquitards contain sediment or rock of various *lithologies.* For example, aquitards may be composed of layers of clay interbedded with sand and gravel lenses, or layers of shale or siltstone interbedded with sandstone layers. Although aquitards are often lithologically *heterogeneous*, they yield relatively small volumes of groundwater and impede groundwater flow to aquifers. Geologically heterogeneous aquitards may be treated as a single hydrogeologic unit in the analysis of the regional flow system or for the purposes of well design and construction. However, the specific effects of these heterogeneities must be evaluated when contaminant migration is of interest.

Another significant characteristic of aquitards is the occurrence of *fractures*. Fractures are critical to the risk of contaminant transport to a well because through-going fractures can act as a preferential pathway, providing rapid transport of contaminants through an otherwise low-permeability formation.

SUSCEPTIBILITY OF REGIONAL AQUIFERS AND WELLS

Aquitards generally restrict groundwater flow, but no geologic formations are completely impermeable; some groundwater flows across even the lowest conductivity aquitards. Aquitards decrease the susceptibility of aquifers and wells to contamination by increasing both the time of travel and the flow path length from a contaminant source. Long travel times to a well may be associated with increases in dilution, retardation and degradation of groundwater contaminants. An unfractured, clayey aquitard only tens of feet thick can cause delays of up to thousands of years, but the transport time scale may be reduced to years or less if substantial, through-going fractures exist.

When siting a new well, system managers are likely constrained by several very practical considerations, such as locating the well in proximity to the area of water demand, or the acquisition cost of a particular land parcel. The total and cased depth of a new well may be constrained by cost, or by the well yield necessary to meet demand. However, if the long-term preservation of high quality groundwater is of concern, the relationship of the site and well design to the hydrogeologic setting is of primary importance. Figure 1.1 illustrates the significance of well location and design relative to the groundwater flowpaths in a complex (but

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realistic) hydrogeologic setting. In Figure 1.1, well A receives some groundwater from the west, but also receives a portion of its flow directly from recharge from the near-by land surface. Because well A is completed in a surficial aquifer with no overlying aquitard, it is extremely susceptible to contamination. Well B is less susceptible because it is cased through a surficial aquitard, and the flow paths to the well (from the east) are longer, providing more distance (and therefore, more time) for contamination to dissipate along the flow path. Although located close to well B, well C is drilled and cased deeper in the flow system. Groundwater pumped from well C originates from a different source area than that pumped from well B, and may be of a very different quality.

Flowpaths can diverge around the edge of the aquitard, providing recharge to the underlying aquifer. The resulting flow path from the surface to the deeper system provides a route of contaminant migration around the edge of the aquitard to the deeper aquifer. As illustrated in Figure 1.1, although well D is cased into the bedrock formation, the upper, uncased portion of the well receives groundwater from the same region as well C, which is open to the unlithified aquifer only. Well D is also open to the deeper bedrock aquifer, resulting in a blend of waters from the upper unlithified formations and the very deep flow system. The water quality at wells C and D may be very different due to this blending. Wells D and E may cost significantly more money to drill and construct than wells A, B and C, but may have very different groundwater quality than the shallower wells. Wells D and E are less susceptible to contamination than wells A, B and C. Well E receives the maximum protection possible from overlying aquitards. It is significantly less susceptible to contamination than well D because the additional casing depth restricts flow from the upper portions of the system.

The time of travel through or around aquitards can range from less than a year to thousands of years, depending on the type of contaminant pathway present and the hydraulic properties of the system. The time of travel of groundwater to a pumping well is a function of the well's position in the flow field relative to an aquitard, as illustrated in Figure 2.1. In the absence of an overlying aquitard, there is a rapid time of travel from the ground surface to a pumping well completed in an unconfined aquifer and the well is very susceptible to contamination (Figure 2.1a).

Figure 2.1b illustrates a well completed below a fractured aquitard. In this case, only a small volume of water may travel through the aquitard along the preferential pathway (the fracture), but the time of travel to the well is very rapid. Several factors will determine if the aquitard, although fractured, provides adequate protection for the well. These include the contaminant concentration migrating through the fracture, the concentration of the contaminant that is of regulatory concern, and the degree of dilution provided from mixing with groundwater from other flow paths to the well.

Figure 2.1c illustrates a third case, wherein contaminated water reaches the well via a relatively long flow path around the edge of the aquitard. In this case, the longer time of groundwater travel to the well may favor attenuation of contaminant concentrations by processes such as *dilution*, and chemical or biological *degradation*.

Pumping from wells can reverse the direction of hydraulic gradients and flow within the groundwater system, and thereby decrease the natural protection afforded by an overlying aquitard. As illustrated in Figure 1.1 at wells F, G, H and I, vertical gradients near a regional discharge area will be upwards from an underlying aquifer to a surface water body. However, pumping from a deep aquifer can reverse the natural gradient across an aquitard, promoting contaminant migration through fractures or windows in the aquitard. Well F is located relatively

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far west of the eastern edge of the lower unlithified aquitard. Under natural conditions well F receives all of its flow from the west, and is more susceptible to contamination than well I. If the drawdown in groundwater levels is large due to pumping from well I, the natural upward direction of groundwater flow may be reversed near the well. In this case, well I may receive some groundwater from the east and is more susceptible than well F to surface contamination via flow around the eastern edge of the aquitard. Well H would be more expensive to construct but vulnerability to contamination would be minimized. The well yield of well H may be significantly different than wells F, G, and I, depending on the transmissivities of the aquifers.

TRANSPORT PATHWAYS

Discrete pathways for groundwater flow and contaminant transport across aquitards are common in many settings. These include fractures and *macropores,* or large openings, caused by tree roots or burrowing animals. Human-constructed pathways such as uncased or abandoned wells, or wells constructed with an ineffective seal between the well casing and borehole wall, also provide pathways across aquitards.

Windows

Geologic processes that occurred tens of thousands of years ago may result in high-permeability *windows* within an aquitard. For example, laterally extensive deposits of low permeability glacial till or lake sediments often contain discontinuous lenses of sand and gravel. Erosional processes may result in large-scale removal of, or incision through, an otherwise extensive aquitard. Understanding the geologic history of a region provides insight into the likelihood of windows or preferential flowpaths in the aquitard.

Fractures and sink holes

Here, we use the term “fracture” to refer to an open feature that allows water flow. Many other fractures may exist that are closed. Fractures form due to imposed stresses at some point in geologic time, and they may be open or closed at the present time depending on geologic conditions subsequent to their formation.

Several processes cause fractures in fine-grained unlithified aquitards. Unsaturated aquitards with lower clay content are particularly susceptible to extensive fracturing by geologic stresses or deformation. Where unlithified aquitards are subject to weathering, shrinking and drying of the sediments can cause fractures to form, particularly in the unsaturated zone above the water table. The density of fractures in these settings typically decreases significantly with depth below the weathered portion of the aquitard, but fractures can extend to depths on the order of 30 to 150 ft below the water table. Deposits with higher percentages of clay may be relatively plastic. The plasticity can promote fracture closure at depth, at some later time, if sand or silt has not been washed into the fracture.

In some near-surface settings, aquitards consisting of relatively soluble carbonate rock, such as limestone, are vulnerable to the formation of *karst* features. *Karst* terrain is characterized by fractures, caves and sinkholes that may breach the integrity of the aquitard.

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Multi-aquifer wells

Some relatively deep water supply wells and other subsurface borings are constructed with an open, un-cased borehole across more than one aquifer. This design may maximize well yield and minimize the cost of casing material, but it can create a pathway for contaminant transport across an aquitard. The borehole of these multi-aquifer wells provides a "short circuit" across an aquitard that would otherwise restrict the hydraulic connection between overlying and underlying aquifers. A borehole open to two aquifers is a transport pathway when the head in the upper aquifer is greater than the head in the lower aquifer, inducing flow from the upper to the lower aquifer (Figure 2.2).

Relatively few multi-aquifer wells are required to significantly increase the effective K_v of an aquitard. For example, Hart and Bradbury (2006) estimated the volume of flow through an open-borehole well in Wisconsin to be 2.6×10^5 gallons/day (1000 m^3/day). Very rapid transport of contaminants to the underlying aquifer can occur in these boreholes, across an otherwise protective aquitard. Similar to a poorly grouted well casing, this preferential pathway provides an opening that can facilitate transport of *particulate* and *aqueous* contaminants.

CONTAMINANT TYPES

Three general types of contaminants in groundwater include aqueous contaminants (those that are dissolved in water), non-aqueous phase liquid (NAPL, typically petroleum products or chlorinated solvents) and particulate matter (*colloidal* size particles that may be inert or biologically active). The fate and transport behaviour of each type of contaminant in a groundwater system depends on their respective chemical properties, such as their density, solubility, or reactivity. There is also considerable variability in the concentration at which various types of contaminants pose significant threats to human health (for example, the drinking water maximum concentration limit (MCL) for nitrate is 10 parts per million, while the MCL for carbon tetrachloride is 5 parts per billion).

Aqueous Contaminants

Aqueous contaminants include inorganic major ions (e.g. sulfate and chloride), nutrients (e.g. nitrate and phosphate), trace elements (e.g. chromium, arsenic, and lead) and dissolved portions of organic contaminants (e.g. trichloroethylene (TCE), benzene). Aqueous contaminants are transported along with the *advective* flow of groundwater, following groundwater flow paths governed by the hydrologic system. Some aqueous phase contaminants, such as chloride, are non-reactive, meaning that they do not degrade as they are transported in the groundwater system. As non-reactive contaminants migrate, their concentrations are influenced only by flow (*advection*) and *dilution* due to mixing (molecular diffusion and/or mechanical dispersion).

Some aqueous contaminants tend to sorb onto geologic sediments. *Sorption* does not reduce the total chemical mass in the hydrogeologic system, but it does delay ("*retard*") the transport of contaminant mass through the groundwater flow system. Examples of contaminants strongly influenced by sorption are lead and the soluble portion of polychlorinated biphenyls (PCBs).

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Some aqueous contaminants are subject to biological, chemical or radioactive *degradation* in the groundwater system. These processes result in chemical transformations that can reduce the overall contaminant mass in, and retard the rate of migration through, the flow system. A contaminant may degrade to a product that is also a contaminant, such as when TCE transforms to cis, 1,1 dichloroethylene or vinyl chloride. In this case, the degradation of TCE may, overall, cause an increase in the severity of the groundwater contamination.

NAPLs

NAPLs include liquids that are less dense than water (light non-aqueous phase liquids (LNAPLs), such as gasoline and fuel oil) and those that are denser than water (dense non-aqueous phase liquids (DNAPLs), such as chlorinated solvents, creosote and PCB liquids). NAPLs move through the subsurface under the influence of their density, which can lead to the migration of the liquid product in directions different from groundwater flow.

Due to their higher density, DNAPLs have the greatest propensity to migrate through fractured aquitards. Typical chlorinated solvent DNAPLs readily flow downward through small fractures, including fractures so small that they cause the K_{bv} to be only slightly (and often imperceptibly) larger than unfractured conditions. If aquitards have preferential pathways such as through-going networks of fractures, DNAPLs may migrate downward through the aquitard even where groundwater hydraulic gradients are upward.

In very low-permeability unfractured aquitards, aqueous contaminants can move by molecular diffusion downward even if the groundwater gradients are upward, but, the downward migration may be very limited. In an area of upward hydraulic gradients across an aquitard, these gradients would prevent particulate contaminants from being transported downward. In this case, the aquitard would have generally good integrity with respect to particulate and aqueous contaminants, but could have poor integrity for DNAPLs.

Within the class of NAPLS, there are extreme differences in subsurface behaviour due to differing degrees of solubility, sorption and reactivity. For example, TCE poses a much greater potential to cause widespread groundwater contamination than PCBs because TCE is moderately soluble in water and PCBs are nearly insoluble relative to their MCLs. Also, TCE is much less strongly sorbed to aquifer and aquitard solids than PCBs. Dissolved TCE can be transported large distances relatively quickly by groundwater flow, and this is the primary reason why TCE is commonly found in groundwater and PCBs are not.

NAPL contaminants are present in the aqueous phase, as well as the undissolved ("product") phase, because all NAPLs are soluble in water to some degree. Solubilized portions of NAPL contaminants behave similarly to other aqueous contamination in that they are transported by the flow of groundwater.

Particulates

Particulate contaminants include extremely small, *colloidal*-sized particles occurring in two categories. The first is comprised of mineral matter or organic matter typically derived from plants, wood or coal. These particles are usually not contaminants on their own, however, they may cause contaminant migration by carrying attached (sorbed) contaminants. For example, a mobile colloid composed of mineral matter may carry sorbed molecules of hazardous metals such as cadmium. A second category of particulate contaminants includes bacteria and viruses,

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which are biologically active. The potential for transport of bacteria and viruses across aquitards is reviewed in the companion report, *Contaminant Transport Through Aquitards: A State-of-the-Science Review*. We have included much of this review and specific references here, because this material is not widely disseminated amongst hydrogeologists and water supply engineers. Viruses have been detected in groundwater at depths up to 67 meters (Keswick and Gerba 1980), and they have been reported to move laterally as far as 408 m in glacial till and 1600 m in fractured limestone (Keswick and Gerba 1980; Robertson and Edberg 1997). Transport of viruses through aquifers is further evidenced by their widespread occurrence in drinking water wells (Gerba and Rose 1990). In one study of 448 groundwater sites in 35 states, 141 sites (31.5%) were positive for at least one virus type (Abbaszadegan et al. 2003).

Particulate contaminants are transported in the same general manner as aqueous contaminants, along with the advective flow of groundwater. However, transport of particulates may be limited by filtration at small pore sizes between mineral grains in rock or sediments, or by sorption to rock or sediments.

Some features in the subsurface, such as fractures and root holes in clayey aquitards, may be large enough to facilitate the transport of viruses into underlying aquifers. Viruses can pass through fractured clay till in openings as small as 3 to 5 microns. Preferential flow along fractures or other pathways results in colloids moving substantially faster than aqueous contaminants. Several studies have documented virus transport through clay fractures at velocities ranging from 2 to 360 meters/day (McKay et al. 1993, Hinsby et al. 1996). Poorly grouted well casings may also provide a preferential pathway for viruses to reach an aquifer.

In order for a well to become virus contaminated there must be a fecal source nearby. Leaking sanitary sewer lines, septic systems, landfills, field-applied sludge or septage, effluent holding ponds, wastewater infiltration or irrigation facilities, and surface waters that recharge groundwater, are potential sources of viruses to the groundwater system.

The greater the fecal loading onto or into the ground the greater the opportunity for the underlying groundwater to become virus contaminated. A well located in the middle of a large city underlain with leaking sanitary sewers stands a greater chance of becoming pathogen contaminated than a well adjacent to a few septic systems. Intuitively, the greater the level of fecal loading near the ground surface, the greater the level of viruses reaching the upper boundary of an aquitard, and the greater the opportunity for viral movement through the aquitard.

Preventing virus contamination of a confined aquifer begins with decreasing fecal loading above the aquifer and increasing the distance from a fecal source to a drinking water well. There are many uncertainties in predicting viral transport, so determining an effective distance between a fecal source and a well drawing from an unconfined aquifer is largely educated guesswork. Consideration of an aquitard, for which there is even less virus transport information, in determining the appropriate setback distance between fecal source and a well completed in a confined aquifer, is more uncertain. The presence of an aquitard should increase protection from viruses for properly constructed wells. Viruses were detected in samples collected from wells completed in a confined aquifer during field studies conducted as a part of this research project (Borchardt et al., in review; Chapter 9).

For people to become virally infected from drinking contaminated groundwater not only do the viruses need to be transported to the well, they must also survive the transport process and remain infectious. Treatment systems at the wellhead, such as disinfection, may inactivate viruses. The most important determinant of virus inactivation in groundwater is temperature, as temperature increases so does the inactivation rate (Hurst et al. 1980, Yates et al. 1985, Yates

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and Yates 1988). Therefore, confined aquifers in arid regions with warm groundwater temperatures (e.g. 20°C) may be less prone to contamination with infectious viruses. The travel time for a virus to reach a well is also an important factor. If the travel time is greater than the virus survival time, it is unlikely that a virus reaching the well would be infectious. Although the upper limit for survival time in groundwater has not been determined for many viruses, water that has a travel time to a pumping well on the order of a year would be more likely to transport an infectious virus than waters with travel times on the order of 10 to 100 years.

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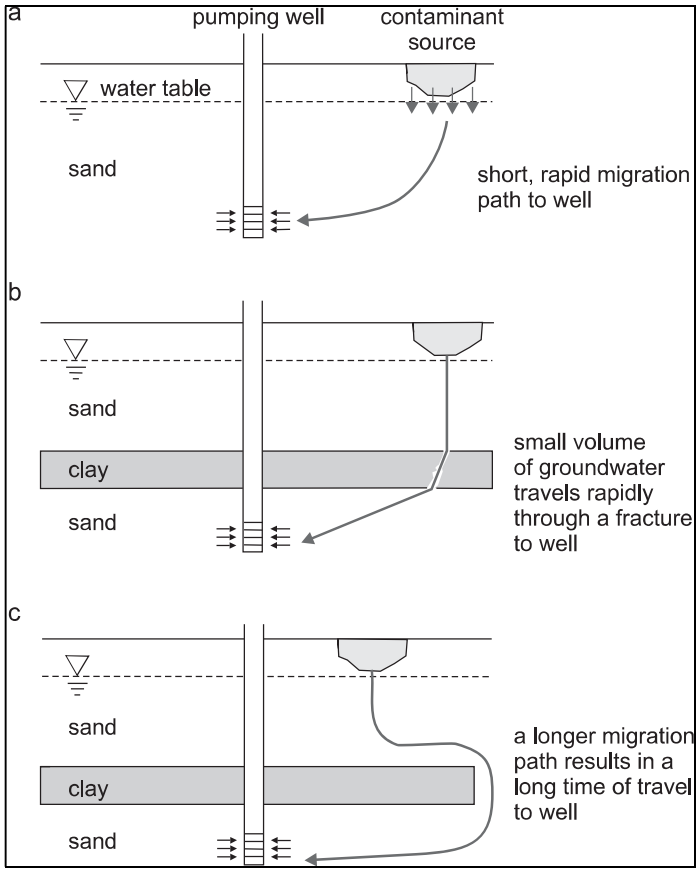

Figure 2.1. Travel times and flowpaths to a pumping well.

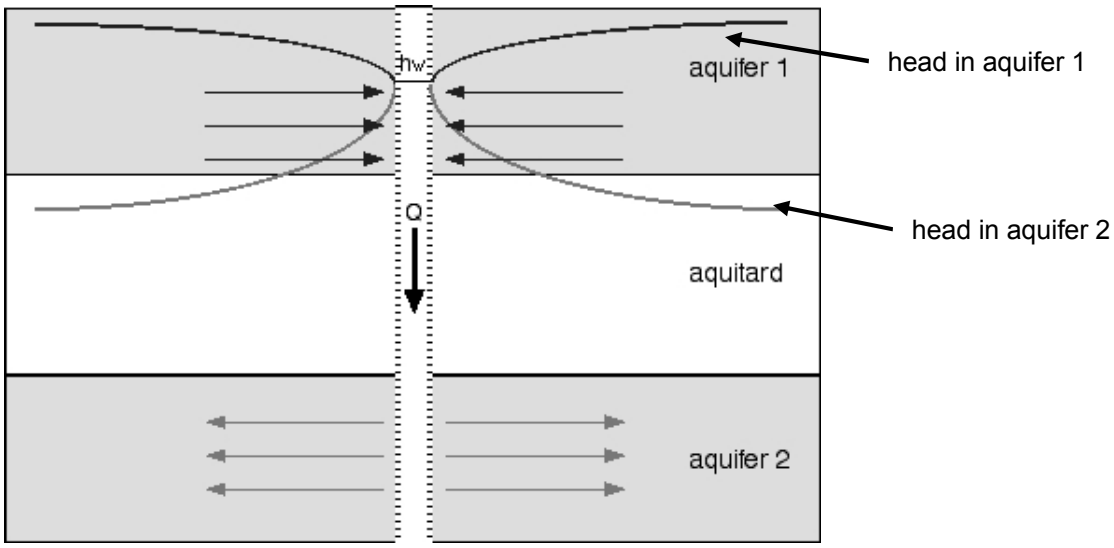

Figure 2.2 Flow across aquitard through a multi-aquifer well. Arrows show direction of groundwater flow to and from the well. h_w indicates the water level in the well, Q represents direction of flow within the borehole.

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Reference:
BBD, 1948

FORM 148

WELL LOG

BARBER-BRIDGE DRILLING CORP., Ltd.
3020 Empire Ave.
BURBANK, CALIFORNIA

2S/12W-31D015

WRD# 200118

Drilled for Tract 349 Mutual Water Co.

LOCATION Santa Ana Street, Cudahy ✓

Well No. 3 ✓

WORK STARTED August 23, 1947 WORK COMPLETED March 15, 1948 ✓

1403 ft. of 16 ✓ in 8 xx lb./ga. casing 1400 left in well
" " " " " " " "
" " " " " " " "
" " " " " " " "

Type of perforator used Hyd. Louvre- B&B Special

Perforated	ft. to	ft.	holes per	in.
949	963	8	6	
975	981	8	6	
986	1003	8	6	
B & B Special:				
1295	1305	7	12	
1340	1354	7	12	
1356	1371	7	12	

Perforations are taken from top of casing after completion.

Diameter of perforations 7/16 3/8 in., length 4 1 3/4 Louvre in.
Depth at which water was first found ft.
Standing level before perforating 73 ft.
Standing level after perforating 73 ft.
Note your observation of any change in water level while drilling

	FIRST TEST:	Second Test
Date tested	February 20,	Mar. 8, 1948
Water level when first started test	76'	dropped to 81 ft.
Draw down from standing level	116	71 ft.
G. P. M. at beginning of test	400	1190
G. P. M. at completion of test	1135	1240
Draw down at completion of test	93	63 ft.

If reducing strings of casings were cut off, state how cut

Depth from surface cut ft.
Size of casing cut in.
Lap in larger casing ft.
Was adapter or cement used?
If casing was swedged or repaired, state depth, describe repairs and condition in which casing was left and probable future effect:

Is well straight top to bottom, if not, what is the variation? slight

Will there be any detrimental effect on pump, and if so, what?

Give any additional data which may be of future value:

Total depth of well 1400 ✓ ft.

Formation: Mention size of water gravel—

0 ft. to	11 ft.	Sand
11 "	23 "	Sand and gravel
23 "	42 "	Clay sandy yellow
42 "	67 "	Clay sandy blue
67 "	82 "	Clay blue
82 "	94 "	Gravelly clay blue
94 "	122 "	Clay blue, streaks grave
122 "	147 "	Clay yellow
147 "	218 "	Clay blue, streaks grave
218 "	229 "	Clay yellow sandy
229 "	234 "	Gravelly clay yellow
234 "	251 "	Clay blue
251 "	364 "	Clay yellow, streaks sti
"	"	clay blue
364 "	381 "	Cemented gravel dirty
381 "	392 "	Gravely clay yellow
"	"	streaks cemented
392 "	394 "	Sand & gravel tight yll
394 "	402 "	Clay yellow gravel in
"	"	clay
402 "	405 "	Sand & gravel 1"
405 "	408 "	Clay yellow
408 "	411 "	Sand & gravel 1/4"
"	"	yellow tight
411 "	419 "	Clay yellow
419 "	427 "	Decomposed granite
427 "	434 "	Sand & gravel 3/8" some
"	"	to 1" (good)
434 "	441 "	Sand & gravel 3/4" same
"	"	as 427-434 only larger
441 "	449 "	Sand & gravel some to 1
449 "	453 "	Clay yellow
453 "	458 "	Clay blue
458 "	474 "	Gravely clay blue
474 "	493 "	Clay blue sticky
493 "	536 "	Gravelly clay blue
536 "	546 "	Clay yellow sandy
546 "	578 "	Gravely clay yellow
578 "	586 "	Sand & gravel dirty
586 "	597 "	Clay blue

Date of Report March 15, 1948

James W. Busby
Driller.

WELL LOG

BARBER-BRIDGE DRILLING CORP., Ltd.
3020 Empire Ave.
BURBANK, CALIFORNIA

2S/12W-31D01S

Drilled for Tract 349 Mutual Water Co.

LOCATION

Well No.

WORK STARTED WORK COMPLETED

..... ft. of ..... in ..... lb./ga. casing ..... left in well
..... " ..... " ..... " ..... " ..... " " "
..... " ..... " ..... " ..... " ..... " " "
..... " ..... " ..... " ..... " ..... " " "

Type of perforator used

Perforated ..... ft. to ..... ft. ..... holes per ..... in.
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "
" " " " " "

Diameter of perforations ..... in., length ..... in.

Depth at which water was first found ..... ft.

Standing level before perforating ..... ft.

Standing level after perforating ..... ft.

Note your observation of any change in water level while drilling

Date tested 19

Water level when first started test ..... ft.

Draw down from standing level ..... ft.

G. P. M. at beginning of test

G. P. M. at completion of test

Draw down at completion of test ..... ft.

If reducing strings of casings were cut off, state how cut

Depth from surface cut ..... ft.

Size of casing cut ..... in.

Lap in larger casing ..... ft.

Was adapter or cement used?

If casing was swedged or repaired, state depth, describe repairs and condition in which casing was left and probable future effect:

Is well straight top to bottom, if not, what is the variation?

Will there be any detrimental effect on pump, and if so, what?

Give any additional data which may be of future value:

Total depth of well ..... ft.

Formation: Mention size of water gravel—

597	ft. to	603	ft.	Gravely clay blue
603	"	619	"	Clay yellow streaks sticky
619	"	625	"	Sandy clay yellow
625	"	627	"	Sandy gravel very dirty tight
637	"	687	"	Clay blue sticky
687	"	703	"	Clay yellow streaks gravely clay
703	"	728	"	Clay yellow sticky
728	"	733	"	Mucky sand
733	"	735	"	Mucky sand and gravel
735	"	743	"	Mucky sand pea gravel
743	"	774	"	Clay blue
774	"	778	"	Mucky sand & gravel
778	"	782	"	Clay blue
782	"	803	"	Clay yellow
803	"	807	"	Mucky sand few gravel
807	"	819	"	Clay yellow
819	"	834	"	Mucky sand
834	"	839	"	Clay blue sticky
839	"	858	"	Clay yellow
858	"	871	"	Mucky sand blue wood
871	"	888	"	Clay blue
888	"	909	"	Mucky sand blue wood
909	"	917	"	Gravel sandy clay
917	"	923	"	Sea mud shells
923	"	927	"	Clay blue sticky
927	"	942	"	Mucky sand & gravel blue
942	"	952	"	Sand & gravel 1/2" very dirty & tight
952	"	959	"	Sand & gravel tight 1/2"
959	"	966	"	Sand & gravel 3/4" some to 3"
966	"	978	"	Clay yellow
978	"	984	"	Sand & gravel 1"
984	"	989	"	Clay yellow
989	"	1006	"	Sand & gravel streaks yellow clay

Date of Report 19

Driller.

25/12W-31D015

WELL LOG

BARBER-BRIDGE DRILLING CORP., Ltd.
3020 Empire Ave.
BURBANK, CALIFORNIA

Drilled for .....

LOCATION .....

..... Well No. 3

WORK STARTED ..... WORK COMPLETED .....

..... ft. of ..... in ..... lb./ga. casing ..... left in well
..... " ..... " ..... " ..... " ..... " " "
..... " ..... " ..... " ..... " ..... " " "
..... " ..... " ..... " ..... " ..... " " "

Type of perforator used .....

Perforated ..... ft. to ..... ft. ..... holes per ..... in.
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "
" ..... " ..... " ..... " ..... " ..... "

Diameter of perforations ..... in., length ..... in.

Depth at which water was first found ..... ft.

Standing level before perforating ..... ft.

Standing level after perforating ..... ft.

Note your observation of any change in water level while drilling

.....

.....

Date tested ....., 19 .....

Water level when first started test ..... ft.

Draw down from standing level ..... ft.

G. P. M. at beginning of test .....

G. P. M. at completion of test .....

Draw down at completion of test ..... ft.

If reducing strings of casings were cut off, state how cut .....

.....

Depth from surface cut ..... ft.

Size of casing cut ..... in.

Lap in larger casing ..... ft.

Was adapter or cement used? .....

If casing was swedged or repaired, state depth, describe repairs and condition in which casing was left and probable future effect:

.....

.....

Is well straight top to bottom, if not, what is the variation? .....

.....

Will there be any detrimental effect on pump, and if so, what?

.....

Give any additional data which may be of future value: .....

Total depth of well ..... ft.

Formation: Mention size of water gravel—

1006	ft. to	1029	ft.	Clay yellow
1029	"	1038	"	Clay blue
1038	"	1076	"	Clay yellow
1076	"	1123	"	Clay blue
1123	"	1162	"	Mucky sand blue
1162	"	1168	"	Clay blue
1168	"	1202	"	Sea mud shells wood
1202	"	1286	"	Sandy clay blue some
	"		"	shells
1286	"	1296	"	Mucky sand some gravel
1296	"	1300	"	Sand & gravel 3/4"
1300	"	1308	"	Sand & gravel 3/8"
1308	"	1321	"	Clay blue hard sticky
1321	"	1327	"	Clay yellow sandy
1327	"	1331	"	Sand & gravel yellow
	"		"	streaks cemented grave
1331	"	1343	"	Clay yellow sticky
1343	"	1346	"	1½" Sand & gravel tigh
1346	"	1349	"	Cemented gravel
1349	"	1357	"	1½" Sand & gravel tigh
1357	"	1359	"	Clay yellow
1359	"	1374	"	Sand & gravel 1½"
1374	"	1383	"	Caly yellow
1383	"	1400	"	Clay blue
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	
	"		"	

Date of Report ....., 19 .....

.....

Driller.

Reference:
CTE, 2011

City of Vernon

2010 Urban Water Management Plan

Volume 1 - Report

June 2011

Prepared by

CIVILTEC engineering inc.

GENERAL CIVIL, MUNICIPAL, WATER AND WASTEWATER ENGINEERING
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CHAPTER TWO – SYSTEM DESCRIPTION

2.1 General Description

The City of Vernon is located in the Los Angeles-Long Beach metro area, approximately 15 miles northeast of the Los Angeles International Airport. The location of the City is shown in Figure 1.

Figure 1 – Vicinity Map[1]

[1] Excerpt from vicinity map developed by Infrastructure Engineering Corporation as past of the 2006 Vernon Water Distribution System Hydraulic Analysis Report

2.2 Service Area Description

§10631(a) Describe the service area of the supplier.

Most of the geographical area of Vernon is supplied by the City's Water Department. The California Water Service Company (East Los Angeles District, Commerce System) serves some of the northeast portion of Vernon, and a small portion of southeast Vernon is serviced by the Maywood Mutual Water Company Number 3. The service areas of the three water suppliers serving Vernon are shown in Figure 2. All analyses with respect to service area refer to activity within the City of Vernon Service Area Boundary.

2.3 Climate

§10631(a) (Describe the service area) climate.

Information on climate was provided by the IDcide.com website[2] and based on data complied from the National Climactic Data Center, the National Oceanic and Atmospheric Administration and the National Weather Service per continuous meteorological data collected at the USC Weather Station (approximately 4.4 miles from Vernon). Table 2 provides a breakdown of normal temperatures typical to the vicinity of Vernon.

Table 2 – Normal Temperatures

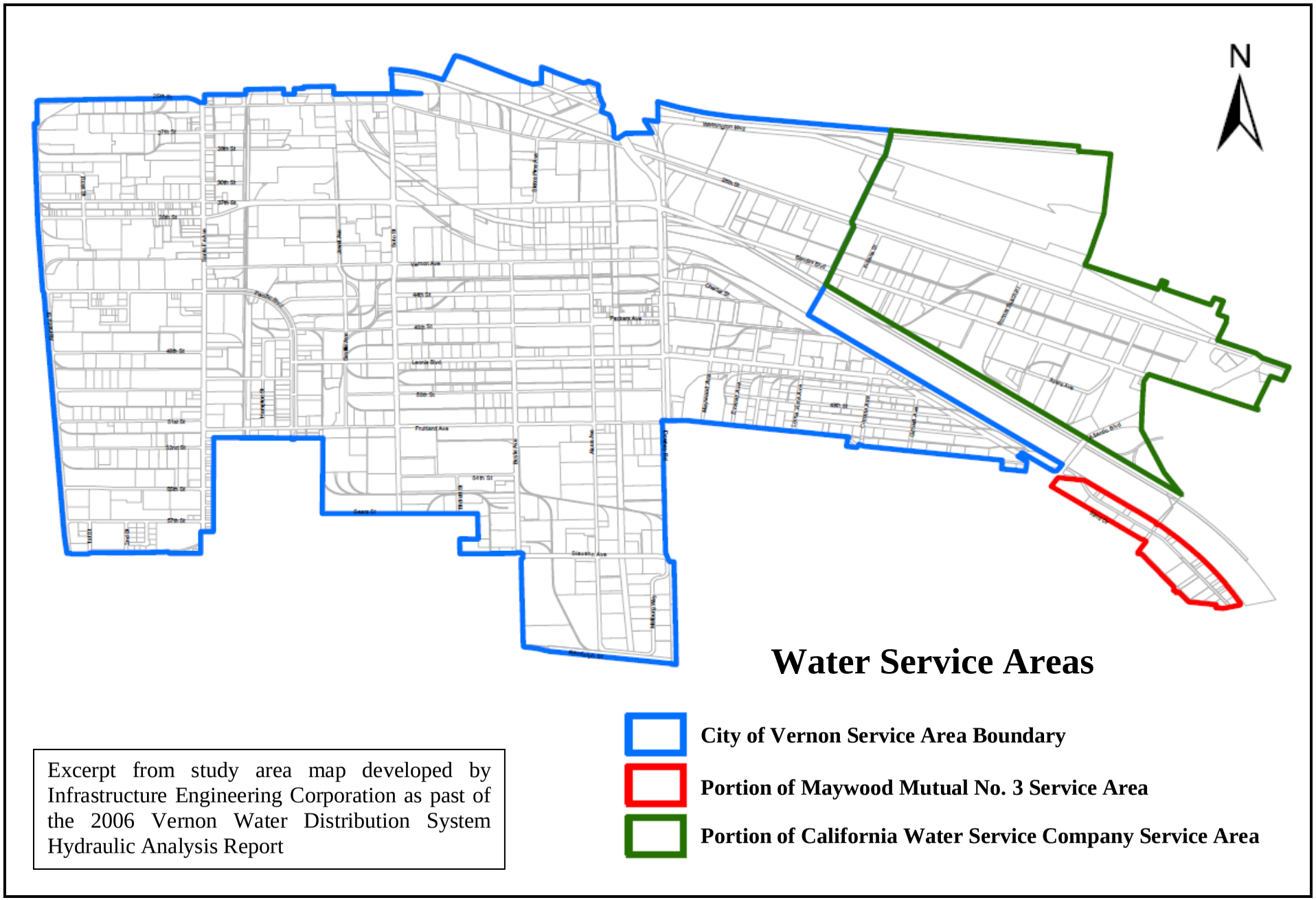
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max °F	68.1	69.6	69.8	73.1	74.5	79.5	83.8	84.8	83.3	79.0	73.2	68.7	75.6
Mean °F	58.3	60.0	60.7	63.8	66.2	70.5	74.2	75.2	74.0	69.5	62.9	58.5	66.2
Min °F	48.5	50.3	51.6	54.4	57.9	61.4	64.6	65.6	64.6	59.9	52.6	48.3	56.6

The warmest month of the year is August with an average maximum temperature of 84.8 ºF, while the coldest month of the year is December with an average minimum temperature of 48.3 ºF. Temperature variations between night and day tend to be moderate during both summer and winter with an average difference that can reach 19 ºF.

The annual average precipitation is 15.1 inches. Rainfall in is fairly evenly distributed throughout the year. The wettest month of the year is February with an average rainfall of 3.7 inches.

[2] IDcide website: http://www.idcide.com/weather/ca/vernon.htm (accessed March 29, 2011)

Figure 2 – Service Area Map



Excerpt from study area map developed by Infrastructure Engineering Corporation as past of the 2006 Vernon Water Distribution System Hydraulic Analysis Report

2.4 Population

§10631(a) (Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . . (population projections) shall be in five-year increments to 20 years or as far as data is available.

§10608.20(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

The 2009 Vernon General Plan established the current and projected population of the City as shown Table 3.

Table 3 – Current and Projected Population

Year	2010	2015	2020	2025	2030	2035
Service area population	100	101	102	103	104	105

2.5 Demographics

§10631(a) Describe . . . other demographic factors affecting the supplier's water management planning.

City founders recognized the significance of the three major railroads running through the area. The founders convinced railroad executives to run spur tracks off the main lines and later incorporated the adjacent three miles as an "exclusively industrial" city named after a dirt road, Vernon Avenue, crossing its center.

The first industry in the City dealt with livestock. Two giant stockyards with meat packing facilities became Vernon's signature industry. Twenty-seven slaughterhouses lined Vernon Avenue from Soto Street to Downey Road through the 1960s.

In the 1920s and 1930s, heavy industries proliferated including steel (U.S. and Bethlehem), aluminum (Alcoa), glass (Owens), can-making (American Can) and automobile production (Studebaker). In the 1940s and 1950s, more industries opened for business in Vernon including aerospace contractors (Norris Industries), box and paper manufacturers, drug companies (Brunswig), and food processors (General Mills, Kal Kan). A strong, unionized labor force contributed to excellent middle class incomes for thousands of families in the region.

In 1932, a Vernon bond authorized the construction of the City's own Light & Power plant, which is still operational today. Low-cost power and water, along with low taxes, attracted businesses to Vernon. Today, smaller industrial and commercial establishments are characteristic of the business community in Vernon including fashion design, garment-making, film production, electronics, and waste recycling.

Current statistical demographic data are presented in Table 4. These data were collected and disseminated by the Southern California Association of Governments (SCAG) in its 2009 Profile of the City of Vernon and verified for accuracy by Vernon Community Services and Water Department staff. The most striking discrepancy is the ratio of employees to residents at more than 400 to one. This exemplifies the nature of the City as a center for commercial and industrial activity which is consistent with the City's mission of

"maintaining Vernon as an ideal location for industry in Southern California" per the 2009 Vernon General Plan.

Table 4 – Demographic Statistics

Demographic	Quantity	Unit
Population (2008)	95	persons
Median Age	27.8	years
Number of Housing Units	31	units
Home Ownership Rate	16.1	percent
Average Household Size	3.1	persons per unit
Median Family Income (2007)	79,167	dollars
Number of Jobs (2008)	38,255	employees

CHAPTER THREE – SYSTEM DEMANDS

3.1 General Description

All of the City's service area, which is comprised predominately of commercial and industrial land uses, is built-out with almost no new accounts anticipated in the future. Currently, 90.7% the City's water supply is delivered to the commercial and industrial sectors, and 8.7% is dedicated to power generation. The remaining fraction of 1% of supply is delivered to the residential and institutional sectors. The City has no agricultural or landscaping users.

Due to the nature of Vernon as a center of commercial and industrial activity, water demand within the city is linked to the impacts of the marketplace on the region and beyond. For this reason, there is still potential for increases in water demand despite being built-out. Water demand in the commercial and industrial sectors is linked more directly to intensity and productivity than to the size or needs of the local population. Furthermore, Vernon's infrastructure is designed to meet the needs of the commercial and industrial sectors in general whatever they may be, rather than being limited to the specific needs of its current customers. As such, the infrastructure is very robust and adaptable making it capable of meeting the changing requirements necessary to fulfill its mission of being an "ideal location for industry".

Therefore, Vernon has an obligation to have a system in place capable of meeting the demands associated with high intensity and productivity in the commercial and industrial sectors whenever those demands arise as dictated by economic factors that are largely outside of the city's control.

3.2 Historical Water Demands

> *§10631(e)(1) and (2) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural.*

The availability of data related to consumption by end users for complete calendar years of the detail requested above is limited to the period of 2007 through 2010 which coincides with the implementation of new billing software. For this reason, Table 5 deviates from the typical and preferred 5-year increment.

Table 5 – Actual Water Deliveries and System Losses from 2007 to 2010

Water use sectors	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Single-family Residential	5.1	7.9	8.2	7.4
Multi-family Residential	3.4	4.3	1.0	0.9
Commercial	7,060.3	6,674.9	5,384.9	5,092.6
Industrial	2,832.2	2,695.3	2,049.1	2,154.5
Institutional and Governmental	45.6	38.6	27.5	30.6
Recycled Water (Energy)	737.8	892.1	837.6	743.3
System Losses	1,025.9	1,082.5	1,204.6	869.1
Total	11,710.2	11,395.6	9,513.1	8,898.3

3.3 Projected Water Demands

§10631(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

§10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

The business plan for the City of Vernon includes accommodating the commercial and industrial needs of the primary customers within the service area. These commercial and industrial needs are closely linked to the national and global marketplaces. A national and global economic analysis was considered to be beyond to scope and intent of the Urban Water Management Planning Act and the California Water Conservation Act. As a result, the City of Vernon has an obligation to plan for demands associated with peak economic activity which may occur at any time and for any duration. The City desires to have adequate flexibility in its water supplies to attract diverse clients and to serve 100% occupancy of existing properties. The City estimates that a potable water supply of 12,000 AFY provides sufficient flexibility to maintain the business plan.

Projected water use, as shown in Table 6, is based on the following assumptions:

- Potable water demand (i.e. residential, commercial, industrial, institutional and government and losses) is static and set at 12,000 AFY. Note that portions of this demand associated with irrigation, and industrial process water may be converted to recycled water.
- Residential and institutional and governmental water use is very low and static.
- Based on historical demand, commercial and industrial water use are approximately 63% and 26%, respectively.
- Recycled water demand (for energy) of the Malburg Generation Station is static at 800 AFY.
- For planning purposes, recycled water demand (for energy) will increase by 1,000 AFY beginning in 2015 to provide process water for a new power plant.
- System losses are set at 5% of total demand. This projection assumes the completion of Demand Management Measure 3 (Water Audits, Leak Detection and Repair).

Table 6 – Projected Water Deliveries and System Losses through 2035

Water use sectors	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Single-family Residential	10	10	10	10	10
Multi-family Residential	5	5	5	5	5
Commercial	8,000	8,000	8,000	8,000	8,000
Industrial	3,300	3,300	3,300	3,300	3,300
Institutional and Governmental	35	35	35	35	35
Recycled Water (Energy)	1,800	1,800	1,800	1,800	1,800
System Losses	650	650	650	650	650
Total	13,800	13,800	13,800	13,800	13,800

3.4 Regional Housing Needs Assessment

In July 2007, the Southern California Association of Governments adopted the final 2006-2014 Regional Housing Needs Assessment which included a future housing allocation of zero in the City of Vernon, which is consistent with previous allocations for the City. Per the Vernon General Plan, future housing growth has been deemed inappropriate due to the City's pervasive industrial environment and land use incompatibilities related to hazardous materials, background contamination, noxious odors, noise pollution, and truck and railroad traffic.

3.6 Application of the Water Conservation Act

> *§10608.20(e) An urban retail water supplier shall include in its urban water management plan . . . due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

In 2009, a number of cities in the Los Angeles Gateway Region (Gateway Region) and other interested parties formed an official Joint Powers Authority (JPA) to steer their planning efforts and provide solid governance for development and implementation of an integrated regional water management plan (IRWMP) in accordance with DWR's Regional Acceptance Process (RAP). The RAP policy is in place to provide pertinent information on the IRWMP region boundaries, make-up, and culture so that DWR can confirm that participating members can operate as a region as defined by the California Water Code.

The City of Vernon is a signatory to the Gateway Regional Alliance as noted in the Letter Agreement included in Appendix C. All references to compliance with the California Water Conservation Act of 2009 have been made in coordination with the Regional Alliance.

3.6.1 Reporting as an Individual Retail Supplier

In coordination with the Gateway Regional Alliance, initial calculations for determining baseline per capita water use and targets for interim and compliance per capita water use with respect to reporting as an individual retail water supplier are provided in Table 7 for Method 1 and Table 8 for Method 4 (all units are in terms of gallons per capita per day).

Table 7 – Reporting as an Individual Using Method 1

Method 1						
Calculation				Check		
Baseline Period	*10-Year Baseline	Target: 80% of *10-Year Baseline	2015 Interim Target	5-Year Base	95% of 5-Year Base	Is Target > 95% of 5-Year Base
1996-2005	94111	75289	84700			
1997-2006	97225	77780	87503			
1998-2007	100037	80029	90033			
1999-2008	101764	81411	91587	102369	97251	No
2000-2009	100511	80409	90460	99291	94327	No
2001-2010	97759	78208	87983	97124	92268	No
*Since RW is 8.46% of Total water; Used 10-Year Baseline 5yr Base: (Dec '07<Base End<Dec '10)						

Table 8 – Reporting as an Individual Using Method 4

Method 4					
Calculation			Check		
Hyd Region Target for South Coast	Target: 95% of Hyd Region Target	2015 Interim Target	5-Year Base	95% of 5-Year Base	Is Target > 95% of 5-Year Base
149	142	47127			
149	142	48684			
149	142	50089			
149	142	50953	102369	97251	No
149	142	50327	99291	94327	No
149	142	48951	97124	92268	No
*Since RW is 8.46% of Total water; Used 10-Year Baseline 5yr Base: (Dec '07<Base End<Dec '10)					

3.6.2 Reporting as a Member of the Gateway Regional Alliance

All justifications, calculations and conclusions regarding reporting as a member of the Gateway Regional Alliance are included in Appendix R. In coordination with the Gateway Regional Alliance, the following information represents Vernon's involvement and obligations in the Alliance:

- Vernon is member of the Gateway Regional Alliance
- The 2010 population of the Gateway Regional Alliance is 1,236,775
- The baseline per capita water use of the Gateway Regional Alliance is 113.2 GPCD
- The interim per capita water use target of the Gateway Regional Alliance is 108.2 GPCD
- The compliance per capita water use target of the Gateway Regional Alliance is 103.1 GPCD

3.7 Water Use Reduction Plan

At the time of submittal of this UWMP, a water use reduction plan for the Gateway Regional Alliance was in development but incomplete. As a member of the Gateway Regional Alliance, Vernon is actively participating in the development of the water use reduction plan and will implement those elements of the plan upon completion.

CHAPTER FOUR – SYSTEM SUPPLIES

4.1 General Description

This chapter provides quantification and descriptions of the water supplies at Vernon's disposal.

4.2 Water Sources

> *§10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

The City of Vernon currently has three sources of water: groundwater recycled water and imported water. Groundwater is pumped from the Central Basin. Recycled water and imported water are purchased from the Central Basin Municipal Water District (CBMWD). No additional sources are anticipated to be developed over the planning horizon of this document. Table 9 provides current and projected supplies from these three sources.

Table 9 – Current and Projected Water Supplies

Water Supply	2010 (AFY)	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
CBMWD[3]	673.2	1,900	1,950	2,000	2,100	2,150
Groundwater[4]	7,489.20	8,039	8,039	8,039	8,039	8,039
Recycled Water[5]	735.9	3,000	11,700	11,700	11,700	11,700
Total	8,898.30	12,939	21,689	21,739	21,839	21,889

4.2.1 Imported Water

The City currently purchases treated water from the Central Basin Municipal Water District (CBMWD). According to the *2010 Amendment to Purchase Agreement for Imported Water to Be Provided by Central Basin Municipal Water District* (Appendix O), beginning in 2010 the City has a base allocation of 1,112 AFY of which 90% (1,000 AF) is supplied at the Tier 1 rate. Additional water can be purchased from CBMWD at the Tier 2 rate. While Tier 2 imported water is available in unlimited quantities during normal years, Tier 2 water supply could be reduced in the event of a drought situation or other water shortage.

Per the CBMWD 2010 UWMP Draft, reliability of supply under drought conditions will be improved through continued development of recycled water at the local level and through implementation of the Metropolitan Water District's Water Supply Allocation Plan (WSAP) at the regional level. As a result of these efforts and through the vigilant implementation of water conservation programs at all levels,

[3] Per projections provided in CBMWD 2010 UWMP Draft, March 2011, assumed not to include "unlimited" supply at Tier 2 rates

[4] Assumes maximization of Vernon's allowed pumping allocation in the Central Basin per the Central Basin Watermaster. Does not include 20% over-pumping allocation during a single dry year.

[5] 2010 supply based on current maximum monthly rate. 2015 based 1,800 AFY for two power plants times a peaking factor of 1.65 as indicated in the CBMWD design criteria for the recycled water distribution system. Future supply for 2020 and beyond assumes completion of Phase 2 of the Southeast Water Reliability Project and is based on future demand in Vernon per the CBMWD 2008 Recycled Water Master Plan times a peaking factor of 1.65. As a rule, recycled water supply is always higher than recycled water demand.

CBMWD has projected supply surpluses under all drought conditions specified in the UWMP Act. Due to CBMWD's confidence in their ability to provide a reliable supply, Vernon believes that the precept of water being "available in unlimited qualities" applies to normal years, single dry years and multiple dry years as those designations apply to this UWMP. Additional discussion of imported water reliability is provided in §5.2.1, §5.2.2 and §5.2.3 as it pertains to water purchased at Tier 2 rates.

4.2.2 Groundwater

§10631(b) (Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . .

§10631(b)(1) (Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

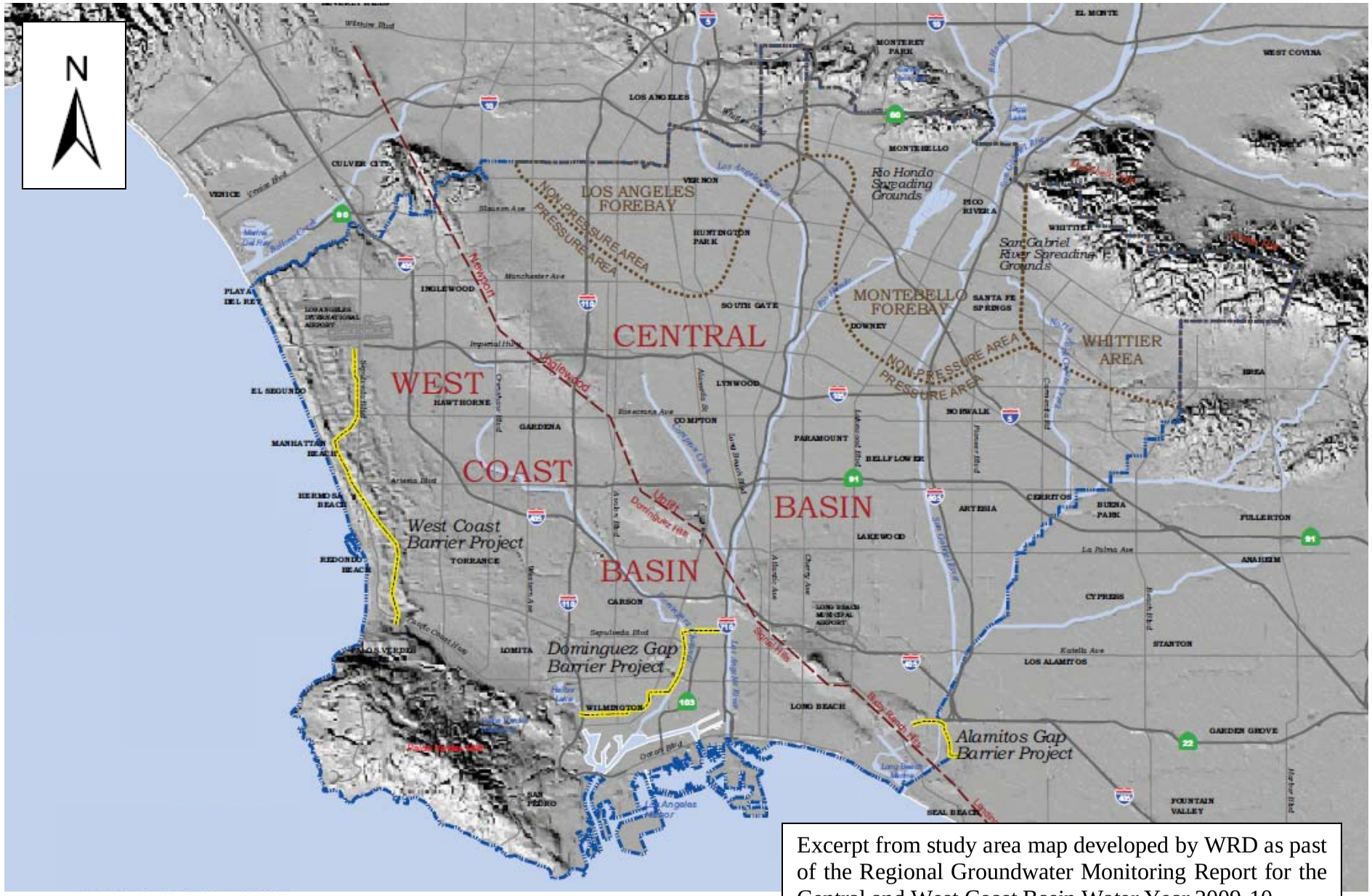
§10631(b)(2) (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board. (Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

§10631(b)(3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

§10631(b)(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Per DWR (Bulletin 118), the Central Basin occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin (Figure 3). The Central Basin is bounded on the north by a surface divide called the La Brea high, and on the northeast and east by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. The southeast boundary between Central Basin and Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean.

Figure 3 – Map of Central Basin



Excerpt from study area map developed by WRD as past of the Regional Groundwater Monitoring Report for the Central and West Coast Basin Water Year 2009-10

Throughout the Central Basin, groundwater occurs in Holocene and Pleistocene age sediments at relatively shallow depths. The Central Basin is historically divided into forebay and pressure areas. The Los Angeles forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Central Basin through the Los Angeles Narrows from the San Fernando Groundwater Basin. The Montebello forebay extends southward from the Whittier Narrows where the San Gabriel River encounters the Central Basin and is the most important area of recharge. Both forebays have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer system. The Whittier area extends from the Puente Hills south and southwest to the axis of the Santa Fe Springs-Coyote Hills uplift and contains up to 1,000 feet of freshwater-bearing sediments. The Central Basin pressure area is the largest of the four divisions, and contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay, that extend to about 2,200 feet below the surface. Throughout much of the Central Basin, the aquifers are confined, but areas with semipermeable aquicludes allow some interaction between the aquifers.

The main productive freshwater-bearing sediments are contained within Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. Throughout most of the Central Basin, the near surface Bellflower aquiclude restricts vertical percolation into the Holocene age Gaspur aquifer and other underlying aquifers, and creates local semi-perched groundwater conditions. The main additional productive aquifers in the Central Basin are the Gardena and Gage aquifers within the Lakewood Formation and the Silverado, Lynwood and Sunnyside aquifers within the San Pedro Formation. Historically, groundwater flow in the Central Basin has been from recharge areas in the northeast, toward the Pacific Ocean on the southwest. However, pumping has lowered the water level in the Central Basin and water levels in some aquifers are about equal on both sides of the Newport-Inglewood uplift, decreasing subsurface outflow to the West Coast Basin.

Many faults, folds and uplifted basement areas affect the water-bearing rocks in the Central Basin. Most of these structures form minor restrictions to groundwater flow. The strongest effect on groundwater occurs along the southwest boundary to the Central Basin. The faults and folds of the Newport – Inglewood uplift are partial barriers to movement of groundwater from the Central Basin to the West Coast Basin. The La Brea high is a system of folded, uplifted and eroded Tertiary basement rocks. Because the San Pedro Formation is eroded from this area, subsurface flow southward from the Hollywood Basin is restricted to the Lakewood formation. The Whittier Narrows is an eroded gap through the Merced and Puente Hills that provides both surface and subsurface inflow to the Central Basin. The Rio Hondo, Pico, and Cemetery faults are northeast-trending faults that project into the gap and displace aquifers. The trend of these faults parallels the local groundwater flow and does not act as a significant barrier to groundwater flow.

The City draws its groundwater supply from the Central Groundwater Basin. This source annually supplies approximately 200,000 acre-feet of potable water to the area south of the Whittier Narrows to the Pacific Ocean and from the Orange County line to the city of Compton.

In 1959, the State Legislature enacted the Water Replenishment Act, enabling the formation of the Water Replenishment District of Southern California (WRD) as it is now known to be the permanent agency in charge of replenishing both the Central and West Basins. The State Legislature has vested in WRD the statutory responsibility to manage, regulate, replenish and protect the quality of groundwater supplies within it boundaries, of which the City of Vernon is included.

The Central Groundwater Basin became an adjudicated basin in 1966 (see Appendix I). The Los Angeles County Superior Court oversees the adjudication and the California Department of Water Resources (DWR) serves as the court appointed watermaster. The Court established groundwater pumping rights at the time of adjudication, and the total allowable extractions from the basin in a given year are 217,367 acre feet. Central Basin producers may also carry over up to 20 percent of the allowable pumping rights to the next fiscal year.

Maintenance of the basin and the groundwater pumping allocation requires recharging; accomplished through facilities operated by the Los Angeles County Department of Public Works (LADPW). The groundwater basin is replenished with four sources of water: import supplies from Metropolitan Water District of Southern California (MWD), local run-off from storm flows, allocations from the Upper San Gabriel Groundwater Basin, and recycled wastewater from the Los Angeles County Sanitation Districts. The WRD purchases import supplies and recycled water for groundwater replenishment and seawater intrusion barriers. Imported water from MWD has not been available for replenishment since 2007; however, the lack of availability of this source is considered to be temporary.

The City of Vernon has adjudicated groundwater basin rights of 8,039 acre-feet per year (AFY) as indicated in the 2009-10 Central Basin Watermaster Report (Appendix P). With additional groundwater leases and carryover from previous years, the actual allowable extraction can exceed 8,039 AFY. As with all retailers in the Central Basin, the City is allowed to carry over its unused allocation of up to 20% of its adjudicated rights to the next fiscal year.

During a declared water shortage, the Central Basin Watermaster may allow the City to over-pump 20% of its water rights; however, in doing so it must decrease its allocation by 20% the following fiscal year. With this arrangement, the City can sustain itself during a declared water shortage. The City manages its supply so that when additional water is needed, due to the possibility of a shortfall in imported supply, these groundwater rights can be exercised.

Table 10 shows the volume of water pumped annually from the Central Basin for the last five years.

Table 10 – Groundwater Pumped for Last Five Years

Basin Designation	2006 (AFY)	2007 (AFY)	2008 (AFY)	2009 (AFY)	2010 (AFY)
Central Basin	8,244.7	9,004.9	8,504.4	7,327.4	7,489.2

With respect to local groundwater management options for the City, the following recommendations were published in the 2005 Hydrogeological Evaluation of the City of Vernon Groundwater Supplies:

- Due to the high potential for contamination being introduced into the groundwater from the many industries in the City, it is advisable to spread out the location of wells in order to lessen the risk of potential impacts. Wells that will be pumped simultaneously should be spaced at least 1,300 ft apart to prevent interference between wells; and wells not pumping simultaneously should be spaced at least 800 ft apart. Wells located too close to each other or a well that pumps excessively will cause a localized cone of depression to develop whereby groundwater gradients will be altered and ultimately groundwater will flow towards these wells.

- A Drinking Water Source Assessment Protection Program for City wells should be developed to inform the City's Health and Environmental Control Department as to the location of potential groundwater percolation capture zones. The City should ensure that the industries within these zones are aware that they have the potential to impact the City's groundwater supply.

- Historical data provided by the City showed evidence of pumping levels being recorded instead of true static levels. In order to obtain static levels, it is recommended that the well pump be turned off for at least six hours prior to a level being recorded. The amount of recovery time allowed before each measurement should also be recorded together with the depth to water.

- Installation of a permanent pressure transducer is recommended in each well where one doesn't already exist to collect groundwater level measurements. Access into the wells may be a problem in some instances where the pump base does not have port access for sounders. Possibilities to allow a pressure transducer to be installed into the wells include retrofitting the well with a dedicated sounding tube by strapping a PVC tube onto the pump column.

- To assist in groundwater management of the City's groundwater resources, a Groundwater Monitoring and Management Plan is an essential document that incorporates a standard methodology for the collection of data in sufficient quantities and of adequate quality to enable informed decisions regarding the management of the groundwater resources in the City's service area. The types of data to be collected include groundwater levels, groundwater production, and groundwater quality.

- For on-going groundwater management, a groundwater flow model could be developed for the City area. The model can be used to predict the actual interference effects between wells, evaluate groundwater flow direction changes due to pumping, groundwater level changes in response to various operational scenarios and potential movement of contaminants using particle tracking. The flow model could also be used to predict future groundwater conditions for up to 20 years into the future.

Jurisdiction and authority over groundwater management for the entirety of the Central Basin is currently unclear. In 2010, the Water Replenishment District of Southern California sought to expand its powers in basin management, but the Superior Court did not uphold their request (see Appendix J). Agencies with an interest in Central Basin groundwater management include the California Department of Water Resources (DWR), the Association of California Water Agencies (ACWA), the Central Basin Municipal Water District (CBMWD) and the Water Replenishment District of Southern California (WRD). CBMWD has released a groundwater management draft (Initial Study – Central Basin Groundwater Storage Plan: A Blueprint for Future Reliability) which is included in Appendix D.

4.2.3 Recycled Water

Recycled water is one of the cornerstones of CBMWD's efforts to augment local supplies and reduce dependence on imported water. Since the planning and construction of CBMWD's recycled water system in the early 1990's, CBMWD has become a leader in distributing and marketing recycled water. This new supply has assisted the City of Vernon in meeting its process water demand for power generation. It is only limited by the infrastructure needed to deliver this source to the City of Vernon. Such infrastructure, the Southeast Water Reliability Project Proposed Phase 2, is already in the planning stages and includes a 42-inch diameter, looped pipeline.

The City purchases recycled water from CBMWD in order to provide service for the on-site cooling towers of the Malburg Generation Station power plant. In order to provide this service, the City of Vernon has constructed approximately 10,000 linear feet of recycled water pipeline, capable of supplying recycled water from CBMWD. The City of Vernon has entered into an agreement with CBMWD to provide recycled water to this power plant. In the event that the recycled water supply is interrupted, this agreement stipulates that CBMWD will increase the supply of Tier 2 imported potable water to compensate for any disruption of recycled water, regardless of the drought conditions in Central Basin.

4.3 Transfer Opportunities

§10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Vernon maintains no interconnections with area agencies except its dedicated imported water supply connection with CBMWD. There are no feasible opportunities to develop water transfers or exchanges acting as an independent water supplier. There may be opportunities to act in cooperation with CBMWD or with the Gateway Regional Alliance; however, there are no such projects being planned at this time and initiation of such projects is expected to occur at the wholesale or JPA level.

4.4 Desalinated Water Opportunities

§10631(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Vernon is landlocked and has no opportunity to develop desalinated water. Furthermore, the Central Basin is Vernon's only source of groundwater and is also landlocked. CBMWD does not have access to the ocean or any source of brackish water and as such does not anticipate investing in desalination in the near future.

4.5 Recycled Water Opportunities

§10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

§10633(a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

§10633(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

§10633(c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

§10633(d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

§10633(e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

§10633(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

§10633(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

It is the City's philosophy that recycled water shall be used within the jurisdiction wherever its use is economically justified, financially and technically feasible and consistent with legal requirements, preservation of public health, safety and welfare of the environment.

To that end, the City has previously completed the task, in coordination with CBMWD, of evaluating potential recycled water use within the service area as a precursor to continued development of the Southeast Water Reliability Project. Special care was taken to exclude potential recycled water use from various industrial processes involving food processing. Vernon is satisfied that CBMWD, who is the lead agency in the Central Basin for the development and distribution of recycled water, is aware of all potential recycled water use within the service and that CBMWD makes use of this knowledge in the justification for the expansion of the recycled water system, future rate structure and phasing of implementation.

4.5.1 Disposition of Wastewater Collection and Treatment

Per the 2009 Vernon General Plan, the City owns its own sewage collection system which discharges into the system managed by the Los Angeles County Sanitation Districts (LACSD). The majority of Vernon is within District 23, but also contains territory in Districts 1 and 2. These Districts, along with more than a dozen others, are signatories to the Joint Outfall System (JOS) which provides for the operation and maintenance of an interconnected system of wastewater collection, treatment, reuse, and disposal facilities across a large portion of the urban region. The JOS includes the following water reclamation plants (WRP):

- The Joint Water Pollution Control Plant (Carson)
- Whittier Narrows WRP (South El Monte)
- Los Coyotes WRP (Cerritos)
- San Jose Creek WRP (Industry)
- Long Beach WRP (Long Beach)
- Pomona WRP (Pomona)
- La Cañada WRP (La Cañada-Flintridge)

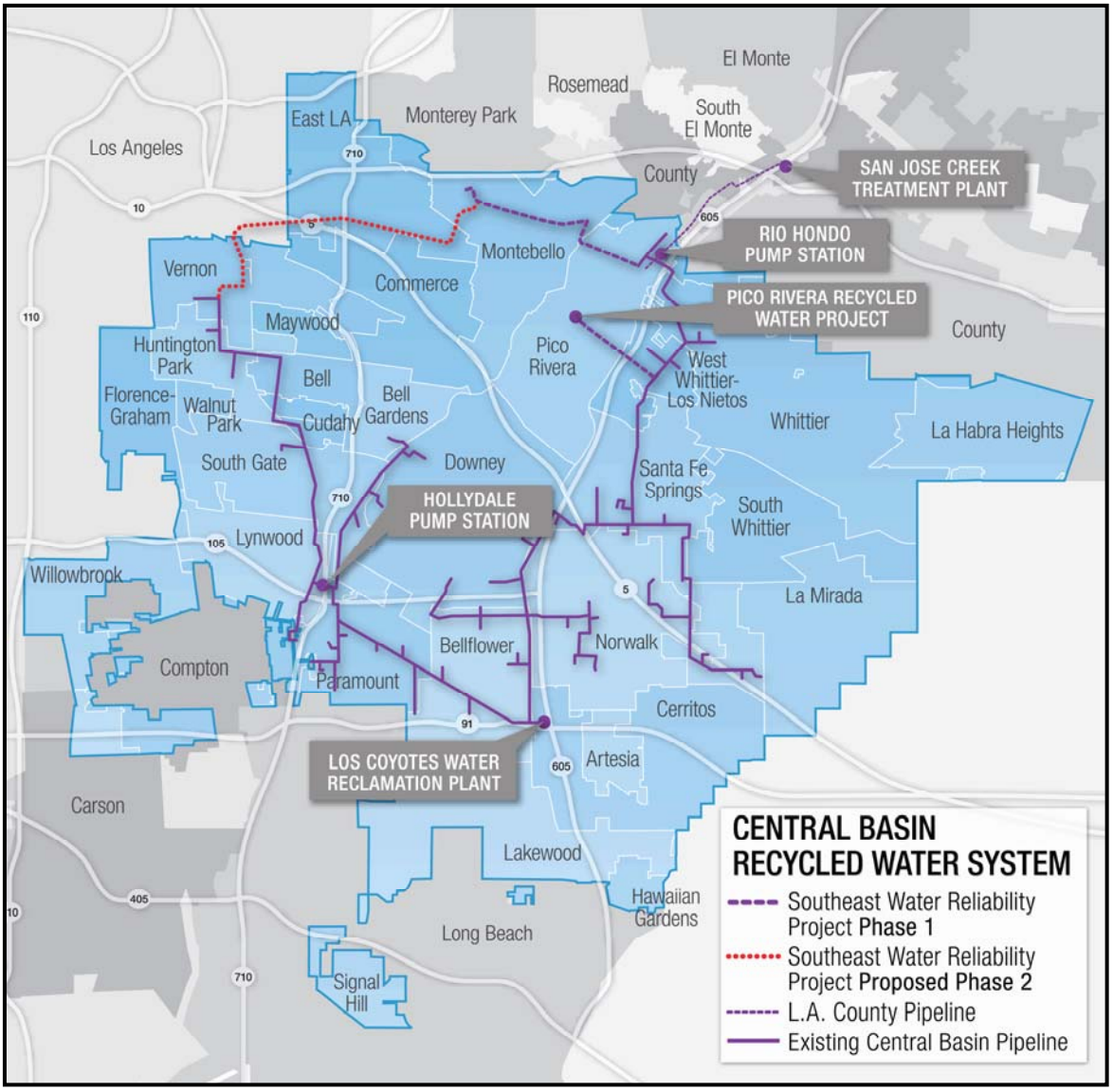
In FY 2007-08, the JOS produced a total effluent of 490,998 AFY. Of that total, 147,703 AFY met Title 22 standards for recycled water and 67,936 AFY (or 46.0%) was reused.

4.5.2 Current Recycled Water Planning

The City of Vernon has participated in the development of the Central Basin Water Recycling Master Plan. As a purveyor of both imported water and groundwater, the City has provided input on customer development, rates, facilities and impacts. The City has a current contract to purchase from CBMWD tertiary treated water, meeting all requirements of Title 22 of the California Code of Regulations.

In an effort to reduce reliance on imported water and conserve regional groundwater, CBMWD is moving forward with the Southeast Water Reliability Project (SWRP). SWRP will reduce current regional demand on imported water by 25% by delivering more than 5 billion gallons of recycled water annually to the many large industrial and irrigation sites in the Central Basin area.

Figure 4 – Central Basin Recycled Water Distribution System



4.5.3 Actual vs. Projected Recycled Water Demand for 2010

A comparison of the actual recycled water use in 2010 and the projected recycled water use as published in the 2005 Urban Water Management Plan is presented in Table 11. The discrepancy is due to the cancellation in the Southeast Regional Energy Project which had been anticipated to dramatically increase demand for recycled water as cooling tower process water.

Table 11 – Comparison of Previously Projected and Current Recycled Water Use

Use Type	2010 Actual Use (AFY)	2010 Projection from 2005 UWMP (AFY)
Geothermal/Energy	735.9	8,272

4.5.4 Potential Future Recycled Water Use

CBMWD, in coordination with its members, has taken the lead in recycled water development in the Central Basin, and the City defers to their documentation on potential uses, incentives and methods of encouragement regarding the continued development of recycled water.

Per the 2008 CBMWD Recycled Water Master Plan, Table 12 lists the potential recycled water demands by end user, address, demand, sector and type (if known). Specific demands associated with the Southeast Regional Energy Project, which was included in the 2008 CBMWD Recycled Water Master Plan, has been removed from this list. For planning purposes, one future power plant consuming 1,000 AFY of recycled water is projected to go online in Vernon in 2015. Also, potential demand associated with Tissurama Industries, Inc. has been removed from the list since this company has gone out of business subsequent to the release of the current Recycled Water Master Plan. The sum of the remaining potential recycled water demands is 5,722 AFY. Note that the Recycled Water Master Plan is currently being updated and is scheduled for release in mid-2011.

Table 12 – Potential Recycled Water Demands

End User	Address	Demand (AFY)	Sector	Type
Air Products & Chemicals, Inc	3305 E 26th St	22	Industrial	Chemical
All American Mfg Co.	2201 E 51st St	12	Industrial	Manufacturing
All West Iron, Inc.	2881 Saco St	13	Industrial	Metals
Allied Feather & Down Corp	2661 E 46th St	37	Industrial	Fabric
Aluminum Corp of America	3200 Fruitland Ave	13	Industrial	Metals
American Activewear, Inc	2807 Santa Fe Av	42	Industrial	Fabric
Ameriprid	5950 Alcoa Av	66	Industrial	Laundry
Arcadia, In	3225 Washington Blvd	31	Industrial	Manufacturing
A's Match Dyeing Co. Inc.	2522 E 37th St	556	Industrial	Fabric
Catalina Pacific Concrete	2026 E 27th St	15	Industrial	Concrete
Charleston Tex Inc.	2807 Santa Fe Av	798	Industrial	
Complete Garment, Inc	2121 E 38th St	93	Industrial	Fabric
D/K Environmental	3650 E 26th St	11	Industrial	Manufacturing
Darling International	2601 E 26th St	29	Industrial	Manufacturing
Dynix Textile Corp	4900 E 50th St	40	Industrial	Fabric
Flowserve Corporation	2300 Vernon Ave	21	Industrial	Chemical
Fortune Fashions Inc	4700 Boyle Ave	15	Industrial	Fabric
Fruitland Associates, LLC	3336 Fruitland Ave	6	Irrigation	
Hollander Home Fashions	4553 Seville Ave	47	Industrial	Fabric
JDS Finishing, Inc	5383 Alcoa Ave	510	Industrial	Fabric
Knit Heaven Inc.	2037 E 38th St	18	Industrial	Fabric
LA Washrack	4317 Downey Rd	41	Industrial	Laundry
Life Like Products, Inc.	2340 E 52nd St	14	Industrial	Manufacturing
Metro Wash & Laundry	6270 Boyle Ave	182	Industrial	Laundry
NI Industries, Inc	5215 Boyle Ave	346	Industrial	Metals
Owens Illinois, Inc.	2828 & 2910 E 50th St	26	Industrial	Manufacturing
Owens Illinois, Inc.	2923 Fruitland Ave	106	Industrial	Manufacturing
Pabco Paper Products Co.	4460 Pacific Blvd	183	Industrial	Paper
Pacific Fabric Finishing	3308 Fruitland Ave	34	Industrial	Fabric
Pacific Fabric Finishing	3314 Fruitland Ave	12	Industrial	Fabric

End User	Address	Demand (AFY)	Sector	Type
Pacific Fabric Finishing	5164 Alcoa Ave	14	Industrial	Fabric
Packaging Adv Corp	4633 Downey Rd	138	Industrial	Paper
Ramcorp Professional Services	5075 Pacific Blvd	53	Industrial	Cleaning
Robertson Ready Mix	3365 E 26th St	11	Industrial	Concrete
SC Vernon Business Park LLC	6033 Malburg Way	4	Irrigation	Office
Service Packing	3399 Vernon Ave	152	Industrial	Manufacturing
Service Packing	3425 Vernon Ave	18	Industrial	Manufacturing
Soft Touch Tissue	5353 Downey Rd	39	Industrial	Paper
Southland Box Co	4955 Maywood Ave	18	Industrial	Manufacturing
Standard Concrete Products, Inc.	2822 Soto St	11	Industrial	Concrete
Stone Blue, Inc	2501 E 28th St	529	Industrial	Laundry
TGI Fashion, Inc.	3270 E 26th St	62	Industrial	Fabric
Unipolo Fabric Corp	4900 E 50th St	482	Industrial	Fabric
US Filter Recovery Services	5375 Boyle Ave	25	Industrial	Manufacturing
Vernon Truck Wash, LLC	3308 Bandini Blvd	28	Industrial	Truck
Wimatex, Inc.	5801 E 2nd St	194	Industrial	Fabric
Zion Textiles, LLC	2300 E 52nd St	164	Industrial	Fabric
Total Potential Recycled Water Demand		**5,281**		

4.5.5 Incentives to Encourage Recycled Water Use

Per the CBMWD 2010 UWMP Draft, CBMWD's marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a business enhancement tool that lowers operating costs while increasing the reliability of the water supply per the following observations. Recycled water is:

- less expensive than potable water
- more reliable that imported water during a drought
- consistent with State-wide water supply and environmental goals

CBMWD is making funds available to assist customer with retrofitting on-site plumbing. Optimizing recycled water use in the Central Basin is one of the areas of focus of the CBMWD Recycled Water Master Plan Update.

4.5.6 Projected Recycled Water Use

Access to recycled water in Vernon is dependent on the completion of Phase 2 of the Southwest Water Reliability Project (SWRP). Implementation of this project is one of the areas of focus of the CBMWD Recycled Water Master Plan Update. Per CBMWD, "Using recycled water for commercial, industrial and landscape-irrigation uses instead of drinking water is an important component in Central Basin's conservation plan and will support the regional achievement of statewide water conservation targets for the year 2020."

Projected recycled water use is based on the following assumptions:

- completion of Phase 2 of the Southwest Water Reliability Project by 2015

- continued demand of 800 AFY at the Malburg Generation Station
- demand of 1,000 AFY at a new power plant beginning in 2015
- retrofit of on-site commercial and industrial plumbing by 2030
- 100% conversion of potential recycled water use (i.e. 1,760 AFY of additional recycled water use in 2020, 2025 and 2030)

Table 13 – Projected Recycled Water Use

Water Use	2015 (AFY)	2020 (AFY)	2025 (AFY)	2030 (AFY)	2035 (AFY)
Recycled Water	1,800	3,560	5,320	7,080	7,080

4.6 Future Water Projects

§10631(h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Per the Vernon Community Services and Water Department Five-Year Capital Improvement Plan for 2010-2015, there is only one planned project related to supply. A new well is planned to be completed by 2015 to replace a well abandoned in 2008. Construction of this new well is not expected to increase supply; rather, it is intended to improve flexibility in meeting peak demands.

All other future projects that may impact supply are being conducted at the wholesale and Regional Alliance levels.

Reference:
CWS, 2016

California Water Service

2015 Urban Water Management Plan

East Los Angeles District

June 2016

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List of Acronyms

AB	Assembly Bill
AF	Acre-Foot
AMI	Advanced Metering Infrastructure
AMR	Automatic Meter Reading
BCR	Benefit-Cost Ratio
BMP	Best Management Practice
CEHTP	California Environmental Health Tracking Program
CASGEM	California Statewide Groundwater Elevation Monitoring Program
CII	Commercial, Industrial, Institutional, water use sectors
CIMIS	California Irrigation Management Information System
CPUC	California Public Utilities Commission
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
DMMs	Demand Management Measures
DOF	Department of Finance
DWR	Department of Water Resources
eARDWP	Electronic Annual Reports to the Drinking Water Program (SWRCB)
ETo	Reference Evapotranspiration
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
IOU	Investor-Owned Utility
IRWM	Integrated Regional Water Management
LAFCO	Local Agency Formation Commission
MGD	Million Gallons Per Day
MOU	Memorandum of Understanding Regarding Urban Water Conservation
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PWS	Public Water System
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SB X7-7	Senate Bill Seven of the Senate's Seventh Extraordinary Session of 2009
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
RUWMP	Regional Urban Water Management Plan
USBR	United States Bureau of Reclamation
UWMP	Urban Water Management Plan
WARN	Water/Wastewater Agency Response Network
WDR	Waste Discharge Requirement
WRR	Water Recycling Requirement
WSCP	Water Shortage Contingency Plan

Chapter 1
Introduction and Overview

This chapter discusses the importance and uses of this Urban Water Management Plan (UWMP), the relationship of this plan to the California Water Code (CWC), the relationship of this plan to other local and regional planning efforts, and how this plan is organized.

This chapter contains the following sections:

1.1 Background and Purpose

1.2 Urban Water Management Planning and the California Water Code

1.3 Relation to Other Planning Efforts

1.4 Plan Organization

1.1 Background and Purpose

California Water Service Company (Cal Water) is an investor-owned public utility supplying water service to 1.7 million Californians through 435,000 connections. Its 24 separate water systems serve 63 communities from Chico in the North to the Palos Verdes Peninsula in Southern California. California Water Service Group, Cal Water's parent company, is also serving water to communities in Washington, New Mexico and Hawaii. Rates and operations for districts located in California are regulated by the California Public Utilities Commission (CPUC). Rates are set separately for each of the systems.

Cal Water incorporated in 1926 and has provided water service to East Los Angeles and portions of Commerce, Monterey Park, Vernon, and Montebello since 1928.

The UWMP is a foundational document and source of information about East Los Angeles District's historical and projected water demands, water supplies, supply reliability and vulnerabilities, water shortage contingency planning, and demand management programs. Among other things, it is used as:

- A long-range planning document by Cal Water for water supply and system planning
- Source data on population, housing, water demands, water supplies, and capital improvement projects used in
    - Regional water resource management plans prepared by wholesale water suppliers and other regional planning authorities,
    - General Plans prepared by cities and counties,

- Statewide and broad regional water resource plans prepared by the California Department of Water Resources (DWR), State Water Resources Control Board (State Board or Board), or other state agencies.

UWMPs are updated every five years. The last update was completed in 2010. This document is an update to the 2010 UWMP and carries forward information from that plan that remains current and is relevant to this plan. Although this plan is an update to the 2010 UWMP, it was developed to be a self-contained, stand-alone document and does not require readers to reference information contained in previous updates.

1.2 Urban Water Management Planning and the California Water Code

The UWMP Act requires urban water suppliers to prepare an UWMP every five years and to file this plan with the DWR, the California State Library, and any city or county within which the supplier provides water supplies. All urban water suppliers, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet annually are required to prepare an UWMP (CWC §10617).

The UWMP Act was enacted in 1983. Over the years it has been amended in response to water resource challenges and planning imperatives confronting California. A significant amendment was made in 2009 as a result of the governor's call for a statewide 20 percent reduction in urban water use by 2020. Colloquially known as 20x2020, the Water Conservation Act of 2009 (also referred to as SB X7-7) required urban retail water suppliers to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. Beginning in 2016, urban retail water suppliers are required to comply with the water conservation requirements in SB X7-7 in order to be eligible for state water grants or loans. Chapter 5 of this plan contains the data and calculations used to determine compliance with these requirements.

The UWMP Act contains numerous other requirements that an UWMP must satisfy. Appendix A to this plan lists each of these requirements and where in the plan they are addressed.

1.3 Relation to Other Planning Efforts

This plan provides information specific to water management and planning by the East Los Angeles District. However, water management does not happen in isolation; there are other planning processes that integrate with the UWMP to accomplish urban planning. Some of these plans include city and county General Plans, Water Master Plans, Recycled Water Master Plans, integrated resource plans, Integrated Regional Water Management Plans, Groundwater Management Plans and others.

This plan is informed by and helps to inform these other planning efforts. In particular, this plan utilizes information contained in city and county General Plans and local and regional water resource plans to the extent data from these plans is applicable and available.

1.4 Plan Organization

The organization of this Plan follows the same sequence as outlined in 2015 UWMP Guidebook.

Chapter 1 - Introduction and Overview

Chapter 2- Plan Preparation

Chapter 3 - System Description

Chapter 4 - System Water Use

Chapter 5- Baselines and Targets

Chapter 6 - System Supplies

Chapter 7— Water Supply Reliability

Chapter 8 – Water Shortage Contingency Planning

Chapter 9 — Demand Management Measures

Chapter 10 — Plan Adoption, Submittal, and Implementation

In addition to these ten chapters, this plan includes a number of appendices providing supporting documentation and supplemental information. Pursuant to CWC §10644(a)(2), this plan utilizes the standardized forms, tables, and displays developed by DWR for the reporting of water use and supply information required by the UWMP Act. This plan also includes other tables, figures, and maps, to augment the set developed by DWR. The plan notes if a table, figure, or map is part of DWR's standardized set or supplemental to it.

Chapter 2
Plan Preparation

This chapter discusses the type of UWMP East Los Angeles District is preparing and includes information that will apply throughout the plan. Coordination and outreach during the development of the plan is also discussed.

This chapter includes the following sections:

2.1 Basis for Preparing a Plan

2.2 Regional Planning and Reporting

2.3 Units of Measure

2.4 Coordination and Outreach

2.1 Basis for Preparing a Plan

Per CWC §10617, East Los Angeles District is an urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. It is therefore obligated under CWC §10621(d) to update and submit its 2015 UWMP to DWR by July 1, 2016.

East Los Angeles District is an urban retail water supplier, as defined by CWC §10608.12. East Los Angeles District does not provide water at wholesale.

East Los Angeles District operates the Public Water Systems (PWS) listed in Table 2-1. Public Water Systems are the systems that provide drinking water for human consumption and these systems are regulated by the State Water Resources Control Board (Board), Division of Drinking Water. The Board requires that water agencies report water usage and other information via the electronic Annual Reports to the Drinking Water Program (eARDWP). The information provided in this UWMP is consistent with the data reported in the eARDWP. PWS data reported to the Board is used by the state to determine whether or not a retail supplier has reached the threshold (3,000 or more connections or 3,000 acre-feet of water supplied) for submitting an UWMP.

Table 2-1: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (AF)
1910036	East Los Angeles	26,096	14,268
	Total	**26,096**	**14,268**

2.2 Regional Planning

Regional planning can deliver mutually beneficial solutions to all agencies involved by reducing costs for the individual agency, assessing water resources at the appropriate geographic scale, and allowing for solutions that cross jurisdictional boundaries. Cal Water participates in regional water resources planning initiatives throughout California in the regions in which its 25 water districts are located. In the region in which the District is located, groundwater resources are overseen by the California Department of Water Resources (DWR), which serves as Water Master for the Central Basin Adjudication. Groundwater resources are conjunctively managed with retail water suppliers, including East Los Angeles District, by the Water Replenishment District of Southern California (WRDSC) which was created in 1959, largely out of cooperation between the West Coast Basin Water Association and the Central Basin Water Association, with the directive to facilitate artificial replenishment of groundwater as a means of eliminating overdraft and halting seawater intrusion. Regional imported water supplies are conjunctively managed by Central Basin Municipal Water District and the Metropolitan Water District of Southern California. Cal Water coordinates its water resources planning with each of these entities.

2.3 Individual or Regional Planning and Compliance

Urban water suppliers may elect to prepare individual or regional UWMPs (CWC §10620(d)(1)). East Los Angeles District is preparing an individual UWMP.

Urban retail water suppliers may report on the requirements of SB X7-7 (2009 California Conservation Act) individually or as a member of a "Regional Alliance." As described in Chapter 5, East Los Angeles District is a member of a Regional Alliance and this UWMP provides information on the District's progress towards meeting its SB X7-7 water conservation targets both as an individual urban retail water supplier and as a member of a Regional Alliance.

Table 2-2: Plan Identification	
☑	Individual UWMP
☐	Regional UWMP
Notes: East Los Angeles District is a member of a Regional Alliance. Chapter 5 provides information on the District's progress towards meeting its water conservation targets under SB X7-7 both as an individual urban retail water supplier and as a member of its Regional Alliance.	

2.4 Fiscal or Calendar Year and Units of Measure

Annual volumes of water reported in this UWMP are measured in acre-feet (AF) and are reported on a calendar year basis. Water use and planning data reported in this UWMP for calendar year 2015 cover the full twelve months of the year, as required by the UWMP Guidelines. Table 2-3 summarizes the units of measure used throughout this UWMP.

Table 2-3: Agency Identification	
Name of Agency	California Water Service: East Los Angeles District
Select one or both	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
Units of Measure	
☑	Acre Feet (AF)
☐	Million Gallons (MG)
☐	Hundred Cubic Feet (CCF)

2.5 Coordination and Outreach

Coordination with other water suppliers, cities, counties, and other community organizations in the region is an important part of preparing an UWMP (CWC §10620; CWC §10642). This section identifies the agencies and organizations East Los Angeles District sought to coordinate with during preparation of this plan.

2.5.1 Wholesale and Retail Coordination

Urban retail water suppliers relying on one or more wholesalers for water supply are required to provide these wholesalers with information regarding projected water supply

and demand. East Los Angeles District provided information regarding projected water supply and demand to the wholesale water suppliers listed in Table 2-4.

Table 2-4: Retail: Water Supplier Information Exchange
East Los Angeles District has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
Central Basin Municipal Water District

2.5.2 Coordination with Other Agencies and the Community

East Los Angeles District coordinated with cities, counties, and other community organizations during preparation of this UWMP. Cal Water provided notice to these entities and the communities it serves 60 days prior to the public hearing it held on June 3, 2016, to present the draft of the UWMP, address questions, and receive comments. Cities and counties receiving the public hearing notification from East Los Angeles District as required per CWC §10621 (b) are listed in Table 10-1 in Chapter 10 of this plan.

Chapter 3
System Description

This chapter provides a description of East Los Angeles District's water system and the service area, including climate, population, and demographics, to help in understanding various elements of water supply and demand.

This chapter includes the following sections:

3.1 Service Area General Description

3.2 Service Area Map(s)

3.3 Service Area Climate

3.4 Service Area Population and Demographics

3.1 Service Area General Description

The East Los Angeles District is located east of downtown Los Angeles with a western boundary approximately three miles from LA's Civic Center. Figure 3-1 shows a general location map of the district. The service area encompasses a large section of unincorporated Los Angeles County known as East Los Angeles, and portions of the cities of Montebello, Commerce, Vernon, and Monterey Park. The system is bounded on the west and north by the City of Los Angeles, on the north by the city of Monterey Park, on the east by the city of Montebello, and on the south by the cities of Commerce, Bell, and Vernon. A portion of the District's southern boundary is the Los Angeles River.

The Los Angeles Department of Water and Power (LADWP) provides retail water service to Los Angeles. The City of Monterey Park serves Monterey Park. San Gabriel Valley Water Company, the Montebello Land and Water Company, the South Montebello Irrigation District, and the City of Montebello Water Department serve Montebello. Commerce and Vernon are served by their own City Water Departments. Cal Water operates the water system for Commerce under contract with the city.

Major transportation links in the district include the Santa Ana Freeway (Interstate 5), Long Beach Freeway (Interstate 710), San Bernardino Freeway (Interstate 10), Pomona Freeway (State Highway 60), and Whittier Boulevard (State Highway 72). The Metro Gold Line operates in the district and four new stops were added in 2009. The Union Pacific Railroad and the Atchison, Topeka, and Santa Fe Railroad both have large rail yards within the District's service area. Los Angeles International Airport (LAX) is about fifteen miles west of the heart of the District.

Figure 3-1. General Location of East Los Angeles District

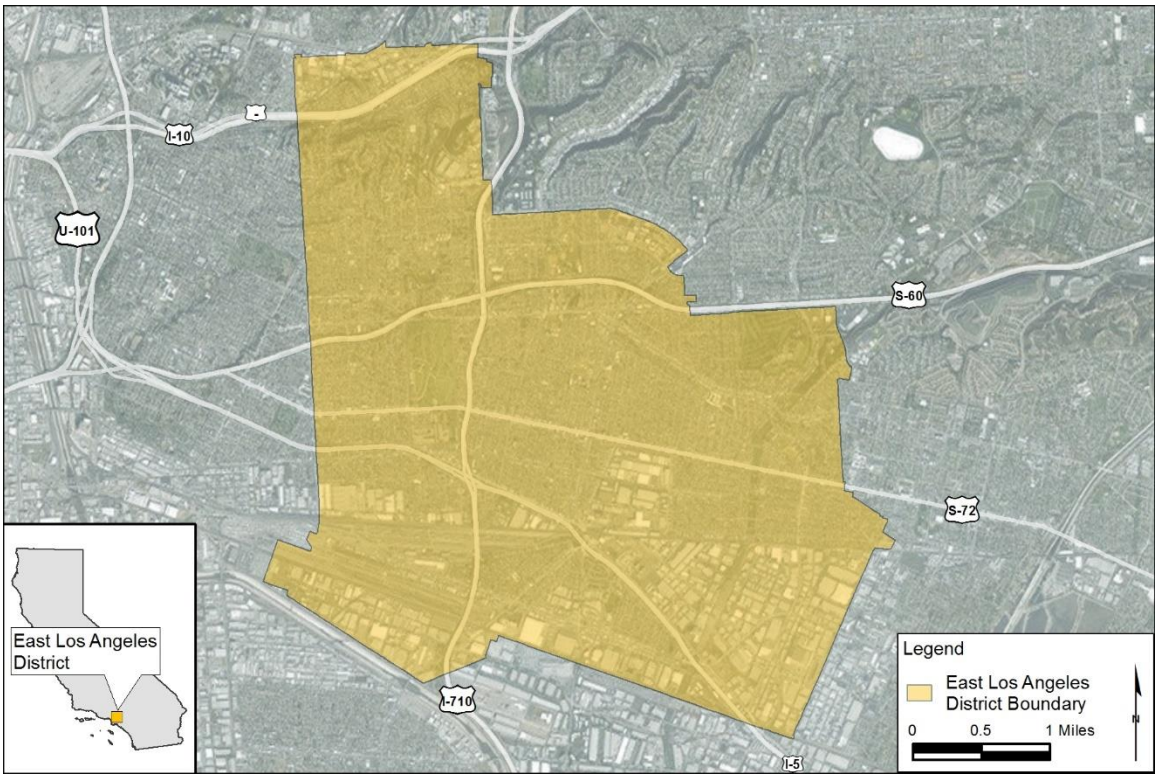
The service area is built upon the uplifted Repetto Hills and spreads down on to the alluvium of the Los Angeles coastal plain. Major geological features of the region include the Whittier Fault, which is an extension of the Elsinore Fault system, and the Workman Mill Fault. These faults are responsible for the uplift of base rock that forms the Puente Hills and Repetto Hill on which the district is built. The Newport-Inglewood Fault, which has been identified as one of the most dangerous faults in the Los Angeles area, lies ten miles southwest of the District. A major earthquake on either of these faults could disrupt water service.

Cal Water has provided water utility services in the East Los Angeles area since 1928. Water served by the District comes from a combination of local groundwater and surface water purchased from Central Basin MWD, which is imported from the Colorado River and the State Water Project. The District operates 10 groundwater wells, 17 storage tanks, 26 booster pumps, four imported water connections, and 260 of miles of pipeline. Over the last five years, the District delivered an average of 19.5 million gallons of water per day to more than 26,000 service connections.

3.2 Service Area Maps

A detailed service area map is provided in Appendix E. Figure 3-2 shows the District's service area boundaries.

Figure 3-2. East Los Angeles Service Area Boundaries



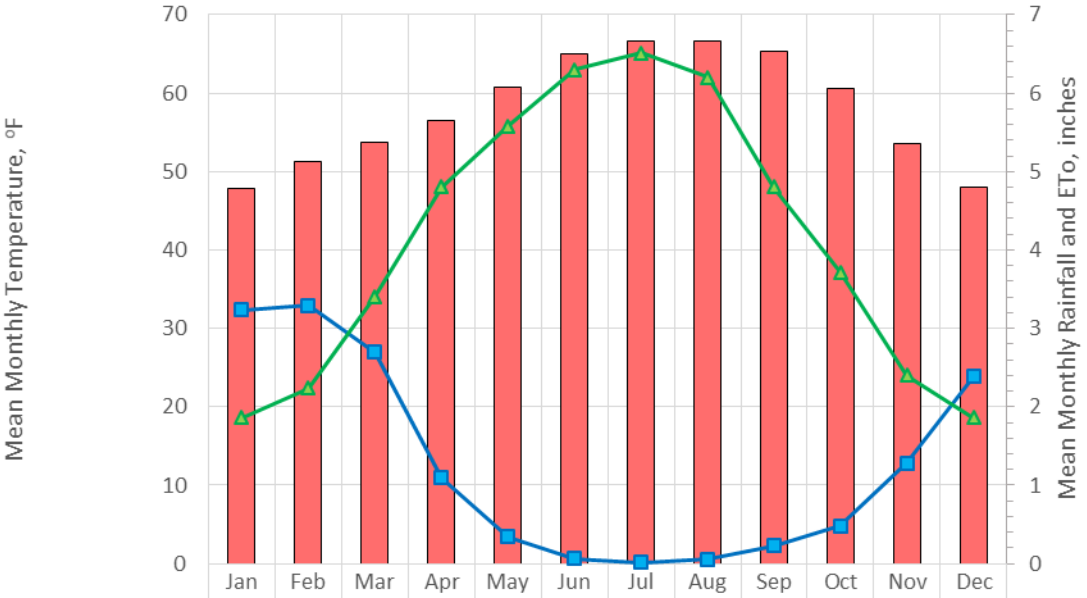
3.3 Service Area Climate

The climate for East Los Angeles District area is mild with warm dry summers and cool winters. The majority of precipitation falls during late autumn, winter, and spring. Figure 3-3 displays monthly averages for rainfall, reference evapotranspiration (ETo), and daily air temperature. Additional climate data is provided in Appendix F, worksheet 13. Rainfall and temperature data are obtained from the PRISM Climate Group.[1] ETo values are from the California Irrigation Management Information System (CIMIS).[2]

On average, the District receives 15 inches of rainfall, annually. ETo averages 50 inches, annually. Annual rainfall is 31 percent of ETo, on average. Nearly all irrigation requirements during the summer months are met with District water sources due to the lack of rainfall in the region. Annual rainfall in East Los Angeles District also is highly variable, as shown in Figure 3-4, and has been below average in nine of the last ten years. Calendar year 2013 was the driest year on record, receiving just 24 percent of average rainfall.

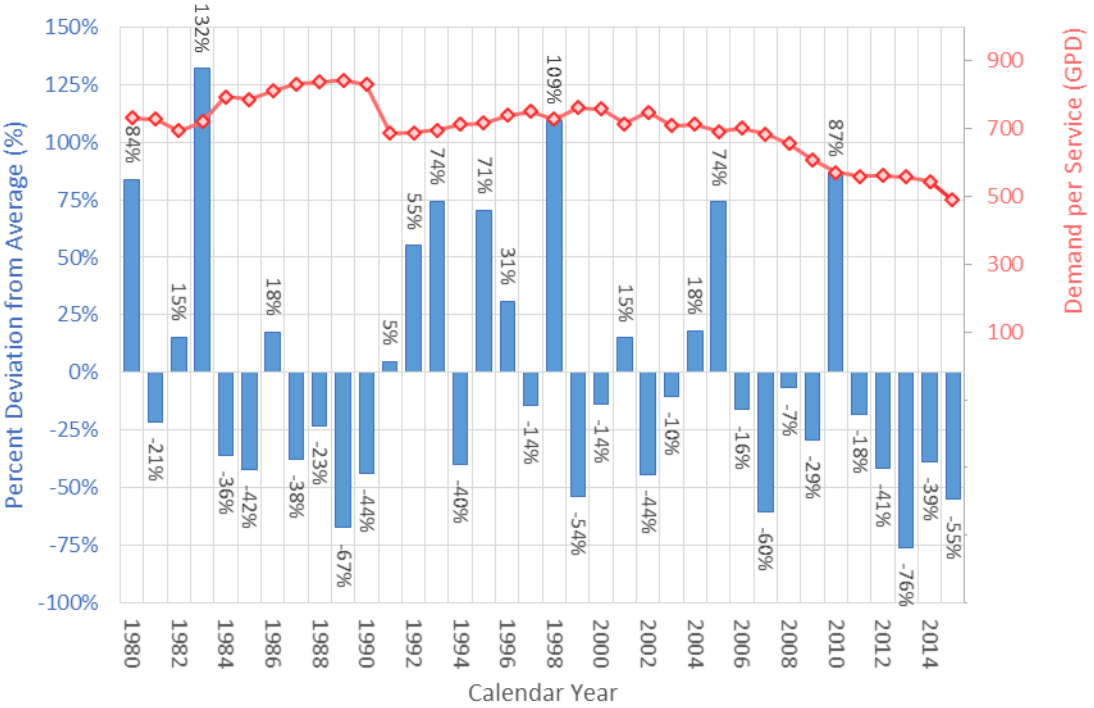
[1] www.prism.oregonstate.edu.
[2] CIMIS Zones Map, Zone 6.

Figure 3-3. Average Monthly Temperature, Rainfall, and ETo



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature	48	51	54	57	61	65	67	67	65	61	54	48
Rainfall	3.2	3.3	2.7	1.1	0.3	0.1	0.0	0.1	0.2	0.5	1.3	2.4
ETo	1.9	2.2	3.4	4.8	5.6	6.3	6.5	6.2	4.8	3.7	2.4	1.9

Figure 3-4. Annual Rainfall Deviation from Average



3.3.1 Climate Change

Potential impacts of climate change on District water demands and supplies are discussed in Chapters 4 (System Water Use), 6 (System Supplies), and 7 (Water Supply Reliability Assessment). Here it is noted that climate change is expected to bring higher average temperatures and greater variability in weather, with the potential for more frequent and deeper droughts.

The National Climatic Data Center (NCDC) has established 11 climate regions within California. Each region is defined by unique characteristics, and is shown in Figure 3-5. The East Los Angeles District is located in the South Coast Region (region H on the map). The South Coast Region has experienced a general warming trend in the last several decades, as shown in Figure 3-6. Since 1895, maximum and minimum temperatures have increased at a rate of 1.94 °F and 3.37 °F per 100 years, respectively. More recently, since 1975, maximum and minimum temperatures have increased at a rate of 1.44 °F and 3.23 °F per 100 years, respectively.

Figure 3-5. Climate Regions of California

A. North Coast Region
B. North Central Region
C. Northeast Region
D. Sierra Region
E. Sacramento-Delta Region
F. Central Coast Region
G. San Joaquin Valley Region
H. South Coast Region
I. South Interior Region
J. Mojave Desert Region
K. Sonoran Desert Region

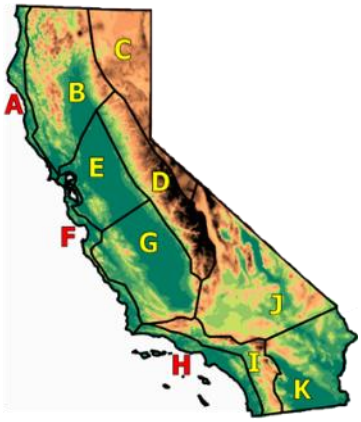
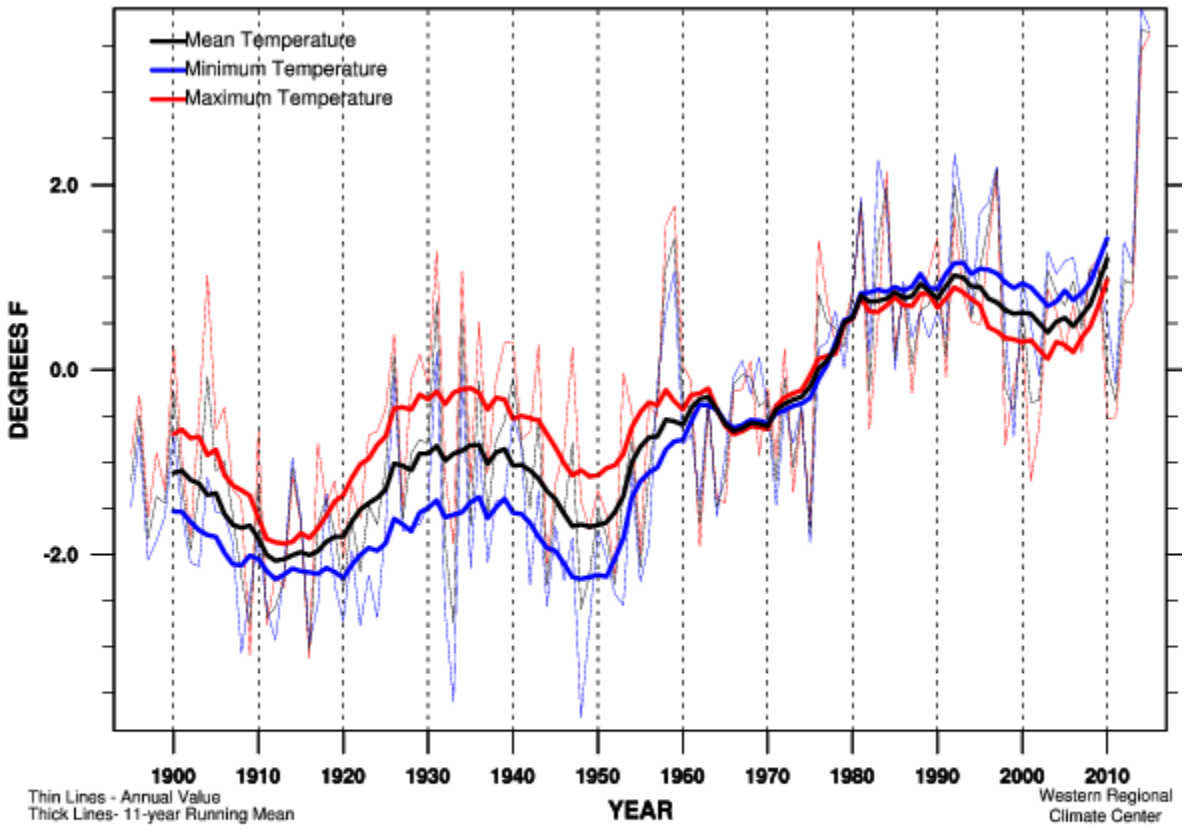


Figure 3-6. Temperature Departure, South Coast Region



	Maximum Temperature	Minimum Temperature
Linear Trend 1895-present	+ 1.94 (± 0.52) °F/100yr	+ 3.37 (± 0.52) °F/100yr
Linear Trend 1949-present	+ 3.16 (± 1.32) °F/100yr	+ 5.19 (± 1.22) °F/100yr
Linear Trend 1975-present	+ 1.44 (± 2.85) °F/100yr	+ 3.23 (± 2.62) °F/100yr

3.4 Service Area Population and Demographics

Cal Water estimates the service area population was 150,729 in 2015. Service area population has been growing slowly at an annual rate of 0.1 percent for the past 15 years. Between the 2000 and 2010 Censuses, it grew at an average annual rate of 0.05 percent. Between 2010 and 2015, population growth increased to an average annual rate of 0.19 percent per year. Some of the increase in population growth over this period was caused by a reclassification of commercial accounts to multi-family accounts which started in 2011. At the time of finalizing this plan, this account reclassification is still ongoing and will continue to impact the population estimates for the service area. Going forward, service area population is projected to increase at a rate of 0.41 percent annually averaged through the 2040 planning horizon. Because more commercial accounts are

expected to get reclassified to multi-family, the population estimates will need to be recalculated once 2020 Census data is available.

To estimate current service area population, Cal Water uses MARPLOT and LandView 5 software to intersect District service area boundaries with Census Blocks from the 2000 and 2010 Censuses. This yields estimates of the number of housing units and population within each Census Block in the District for 2000 and 2010. From these data, Cal Water estimates the total population and the average number of persons per housing unit in the District. Cal Water applies the average number of persons per housing unit to the number of housing units served to calculate service area population in non-Census years.

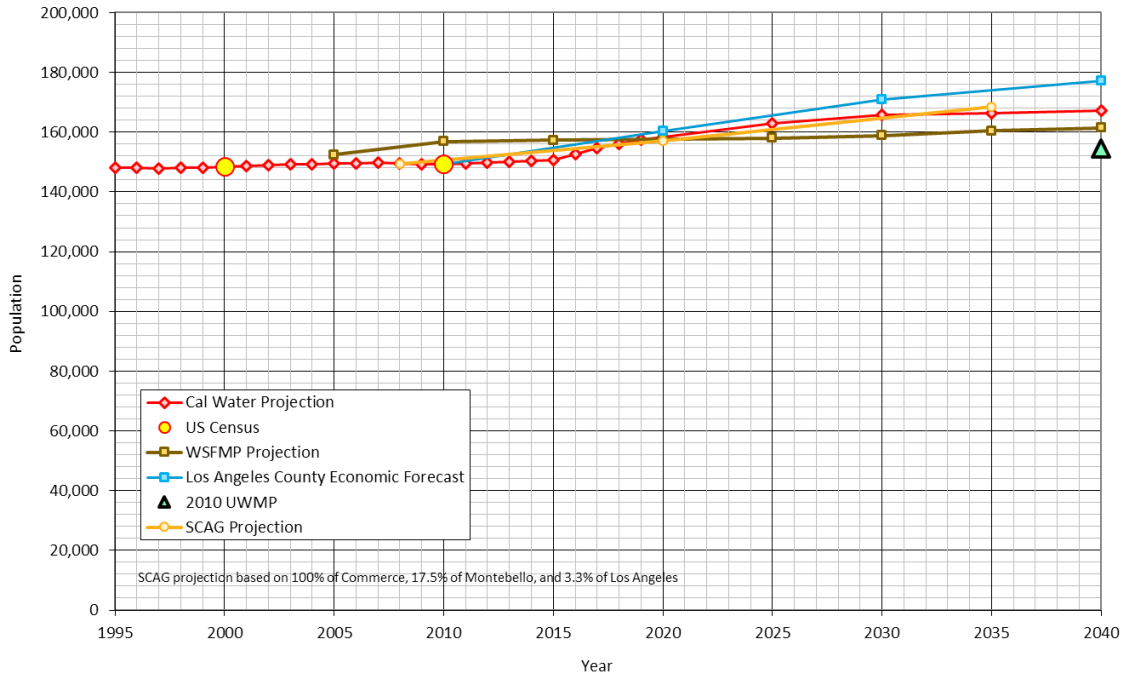
Between the 2000 and 2010 Censuses, the average number of persons per household remained decreased slightly from 3.88 to 3.83. The projection of future population is based on this lower housing unit density. Projected service area population is given in Table 3-1.

Table 3-1: Population - Current and Projected

	2015	2020	2025	2030	2035	2040
Population Served	150,729	158,497	162,982	165,790	166,437	167,087

Cal Water's current population projection for East Los Angeles District is compared in Figure 3-7 to the projections made in its 2009 Water Supply and Facility Master Plan (WSFMP) and 2010 UWMP. The figure compares the Cal Water projections to forecasts based on population growth rate projections published in California Department of Transportation's (DOT) Los Angeles County Economic Forecast and the 2012 Southern California Association of Governments (SCAG) population projections for the Cities of Commerce, Montebello, and Los Angeles.

Figure 3-7. Population Projection Comparison



Chapter 6
System Supplies

This chapter describes and quantifies the sources of water available to the East Los Angeles District. The water supply for the customers of the East Los Angeles District is a combination of imported purchased water and groundwater.

Cal Water's Allowed Pumping Allocation (APA) of 11,774 AFY is set at 80 percent of the adjudicated right, which is based on the safe yield of the groundwater basin. In the past, Cal Water did not have the ability to produce and deliver this quantity. In 2014, a new well was constructed which greatly increased the pumping capacity for the District. In 2015, nearly 9000 AF of groundwater was produced, as compared to 5000 AF in the past. The remaining groundwater is leased to other entities. Up to 60 percent of the unused APA can also be carried over into the following year. Once Cal Water's groundwater production reaches the APA, carryover will no longer be available.

The remaining supply not provided by groundwater or recycled water will come from imported water purchased from Central Basin Municipal Water District (CBMWD).

6.1 Purchased Water

In 2015, purchased imported water served approximately 37 percent of the District's water requirements. The East Los Angeles District purchases imported water from the CBMWD, one of the twenty-seven member agencies of the Metropolitan Water District of Southern California (MWD). MWD imports water through either the Colorado River Aqueduct, which is owned by MWD, or the California Aqueduct, a facility of the State Water Project, which is owned and operated by the California Department of Water Resources. CBMWD serves as the regional water wholesaler.

Cal Water signed a purchase agreement with CBMWD effective January 1, 2008 which expired on December 31, 2014 and had a base allocation of 19,533 AFY. CBMWD has elected to not require a new purchase agreement at this point, Cal Water has met our purchase requirement prior to 2012.

Delivery of imported water is made through three CBMWD service connections to the MWD distribution feeder network. The total rated capacity of these three service connections is 22,500 gallons per minute (gpm), or 32.4 mgd.

6.2 Groundwater

Groundwater extracted from the Central Basin's Lynwood and Silverado aquifers met about 63 percent of the District's water demand in 2015. This percentage is expected to

increase in the future because of the new well that has been placed on-line. Other aquifers may be used depending on the depth of perforations in specific wells.

6.2.1 Basin Description

The Central Subbasin occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin. This subbasin is commonly referred to as the Central Basin and is bounded on the north by a surface divide called the La Brea High, and on the northeast and east by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills. The southeast boundary between Central Basin and the Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean.

Additional details about the basin are given in the DWR's Groundwater Bulletin 118[8].

6.2.2 Groundwater Management

The Central Basin is an adjudicated groundwater basin with a total annual Allowed Pumping Allocation (APA) of 217,367 acre-feet. This APA is set at 80 percent of the adjudicated rights established under the judgment. This limitation was imposed on all basin pumpers due to the historically severe overdraft condition of the basin. The judgment permits an annual carry-over of up to 60 percent of the APA and permits over-extraction of up to 20 percent provided the over-extraction is off-set by next year's APA or future leases. As a result, annual allowable extractions vary as the allowable carry-over amount fluctuates. The judgment contains provisions for an exchange pool and for the leasing or transfer of adjudicated rights between parties of the judgment.

Seawater intrusion has been a concern in the Central Basin since the late 1940s. The intense uncontrolled pumping of groundwater during the 40s and 50s created an overdraft in the basin that reduced the water level to as much as 100 feet below sea level. The threat of losing the basin to salt water prompted the formation of the Water Replenishment District (WRD). WRD is responsible for the acquisition of supplemental water supplies. The installation of the Alamitos Barrier in Long Beach provides protection

[8] California's Ground Water Bulletin 118, 2003; San Francisco Hydrologic Region; Livermore Valley Groundwater Basin; Groundwater Basin Number: 2-10.
http://www.water.ca.gov/pubs/groundwater/bulletin_118/california's_groundwater__bulletin_118_-_update_2003_/bulletin118_entire.pdf

against sea water intrusion in the Central Basin. The Los Angeles County Department of Public Works operates this barrier while the Water Replenishment District purchases the water used in the facility.

The East Los Angeles District exercises an annual adjudicated right of 14,717 AF, which has been limited under the judgment to an Allowed Pumping Allocation of 11,774 AF or 80 percent of the adjudicated right. Cal Water has become more active in leasing its annual unused water rights.

As the regional groundwater management agency for two of the most utilized groundwater basins in the state of California, The Water Replenishment District of Southern California (WRD) plays an integral role in overall water resource management in southern Los Angeles County. The WRD manages groundwater for nearly four million residents in 43 cities of southern Los Angeles County. The 420 square mile service area uses about 250,000 acre-feet of groundwater per year, which equates to nearly 40 percent of the total demand for water. WRD is a public agency responsible for eliminating annual overdraft, reducing historical overdraft in both the Central and West Coast Basins, and protecting these basins from seawater intrusion or other contamination. In addition, WRD manages various groundwater quality cleanup programs.

To finance its designated responsibilities, WRD levies a Replenishment Assessment on every acre-foot of groundwater produced in the Central and West Coast Basins. A copy of the 2003 WRD Strategic Plan is included in Appendix G.

Except for the capture and recharge of stormwater runoff, which is funded by the Los Angeles County Department of Public Works as part of a long standing inter-agency agreement, all other water used for replenishing the groundwater of the Central and West Coast Basins is funded by WRD through the Replenishment Assessment. The principle mechanism for recharge in the Central Basin is through percolation of water applied to surface spreading ponds in the Montebello Forebay. Injection of water into the seawater intrusion barriers and in-lieu replenishment contributes to this effort. The sources of water used for percolation include imported water purchased through CBMWD, recycled water purchased from the Los Angeles County Sanitation District, and storm runoff flowing down the Rio Hondo and San Gabriel Rivers.

WRD is the designated Watermaster for the Central Basin Adjudication and, in that capacity, accounts for all groundwater in the basin reporting annually on groundwater production and related groundwater-use transactions.

WRD's Annual Summary of Watermaster Service reports the groundwater status in the basin. This summary includes figures depicting lines of equal water level elevation in the fall and spring of each year, lines of equal change in water level, and charts showing

historical fluctuation of water level elevation in wells throughout the basin. These references clearly indicate that, since the reduction in pumping began in 1962 followed by the final adjudication in 1965, groundwater levels in the Central Basin have risen as much as one hundred feet. However, groundwater elevations in the pressure area close to the coast remain below sea level, requiring the maintenance of seawater intrusion barriers and continued replenishment operations. Data for the last several years indicates that increased pumping has occurred in the basin as imported supplies were diminished due to drought conditions.

Sustainable Groundwater Management Act

Background – On September 16, 2014, Governor Brown signed into law Assembly Bill 1739, Senate Bill 1168, and Senate Bill 1319 (AB-1739, SB-1168, and SB-1319). This three-bill legislative package is known collectively as the Sustainable Groundwater Management Act (SGMA). SGMA was amended in the later part of 2015 by Senate Bill 13, Senate Bill 226 and Assembly Bill 1390 to provide clarity to the original law and guidance on groundwater adjudications. This new legislation defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results" [Water Code § 10721(u)]. The legislation defines "undesirable results" to be any of the following effects caused by groundwater conditions occurring throughout the basin [Water Code § 10721(w) (1-6)]:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply;
- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degraded water quality;
- Significant and unreasonable land subsidence;
- Surface water depletions that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

The legislation provides for financial and enforcement tools to carry out effective local sustainable groundwater management through formation of Groundwater Sustainability Agencies (GSA's) consisting of local public agencies, water companies regulated by the CPUC and mutual water companies. The legislation requires that GSA's within High and Medium Priority basins under the California Statewide Groundwater Elevation Monitoring (CASGEM) program subject to critical conditions of overdraft prepare and

submit a Groundwater Sustainability Plan (GSP) for the basin by January 31, 2020 [Water Code § 10720.7(a) (1)], and requires GSA's in all other groundwater basins designated as High or Medium Priority basins to prepare and submit a GSP by January 31, 2022 [Water Code § 10720.7 (a) (2)]. Following State approval, the basin would thereafter be managed under the GSP. The legislation does not require adjudicated basins, such as the one from which the East Los Angeles District draws groundwater, to develop GSPs, but they are required to report their water use.

Intended Outcomes and Benefits – The key intended outcomes and benefits of SGMA are numerous, and include:

- Advancement in understanding and knowledge of the State's groundwater basins and their issues and challenges;
- Establishment of effective local governance to protect and manage groundwater basins;
- Management of regional water resources for regional self-sufficiency and drought resilience;
- Sustainable management of groundwater basins through the actions of GSA's, utilizing State assistance and intervention only when necessary;
- All groundwater basins in California are operated to maintain adequate protection to support the beneficial uses for the resource;
- Surface water and groundwater are managed as "a Single Resource" to sustain their interconnectivity, provide dry season base flow to interconnected streams, and support and promote long-term aquatic ecosystem health and vitality;
- A statewide framework for local groundwater management planning, including development of sustainable groundwater management best management practices and plans;
- Development of comprehensive and uniform water budgets, groundwater models, and engineering tools for effective management of groundwater basins;
- Improved coordination between land use and groundwater planning;
- Enforcement actions as needed by the SWRCB to achieve region-by-region sustainable groundwater management in accordance with the 2014 legislation.

To assist in attaining the above outcomes, the California Department of Water Resources (DWR) will provide GSA's with the technical and financial assistance necessary to sustainably manage their water resources. The benefits of these outcomes include:

- A reliable, safe and sustainable water supply to protect communities, farms, and the environment, and support a stable and growing economy;

- Elimination of long-term groundwater overdraft, an increase in groundwater storage, avoidance or minimization of subsidence, enhancement of water flows in stream systems, and prevention of future groundwater quality degradation.

Cal Water Position – Cal Water's groundwater basin philosophy continues to be to work collaboratively with all stakeholders in the basins where we operate and to do what is best for the groundwater basin including the sharing of burden(s) and benefits on an equitable basis with said stakeholders. Cal Water recognizes and deeply supports the goals, objectives, and intended outcomes of the SGMA. Moreover, the company recognizes the numerous challenges of the legislation along a variety of technical, legal, political, and financial/economic dimensions, particularly when the geographical diversity of the Company's service territory is considered. None-the-less, Cal Water intends to take an active role in the local and state-wide management of groundwater resources over the next 5-25+ years by fully supporting and participating in the principal edicts of SGMA. A number of specific steps that the Company intends to take with respect to this position and role include (among others):

- Outreach to public agencies to ensure that the Company's presence, rights and interests, as well as historical and current resource management concerns are honored/incorporated within the GSA and GSP formulation process(es);

- Outreach to applicable local and regulatory agencies to ensure that the Company is at full participation, while also meeting the requirements and expectations set forth by SGMA;

- The enhanced use of digital/electronic groundwater monitoring equipment and other new technology aimed at measuring withdrawal rates, pumping water levels, and key water quality parameters within the context of day-to-day operations;

- Full participation in the development of GSP's and formulation of groundwater models being constructed in basins where the Company has an operating presence;

- Full participation in individual and/or joint projects aimed at mitigating seawater intrusion and other "undesirable results";

- Inclusion of sound groundwater management principles and data in all applicable technical reports, studies, facility master plans, and urban water management plans (including this 2015 update), particularly as these undertakings relate or pertain to water resource adequacy and reliability;

- Inclusion of sound groundwater management principles and data in all general rate case (GRC) filings and grant applications to ensure that resource management objectives remain visible and central to Cal Water's long-term planning/budgeting efforts;

SGMA related information in the 2015 UWMP – The Urban Water Management Plans prepared by Cal Water over the past decade, including the 2015 update, already contain many of the elements required by SGMA and thus already serve as a road map toward the implementation of SGMA and the basin GSP. The UWMP addresses all water supply sources including groundwater. SGMA's specific concerns with groundwater are addressed as follows:

- Chapter 4 addresses Cal Water's historic and future customer growth and water demand in the basin.

- Chapter 6 addresses Cal Water's historic and future water supplies in the basin.

- Chapter 6 addresses the potential actions Cal Water will need to take to develop additional water supplies to maintain supply reliability.

- Chapter 6 discusses water quality and necessary actions to protect and decontaminate water supplies.

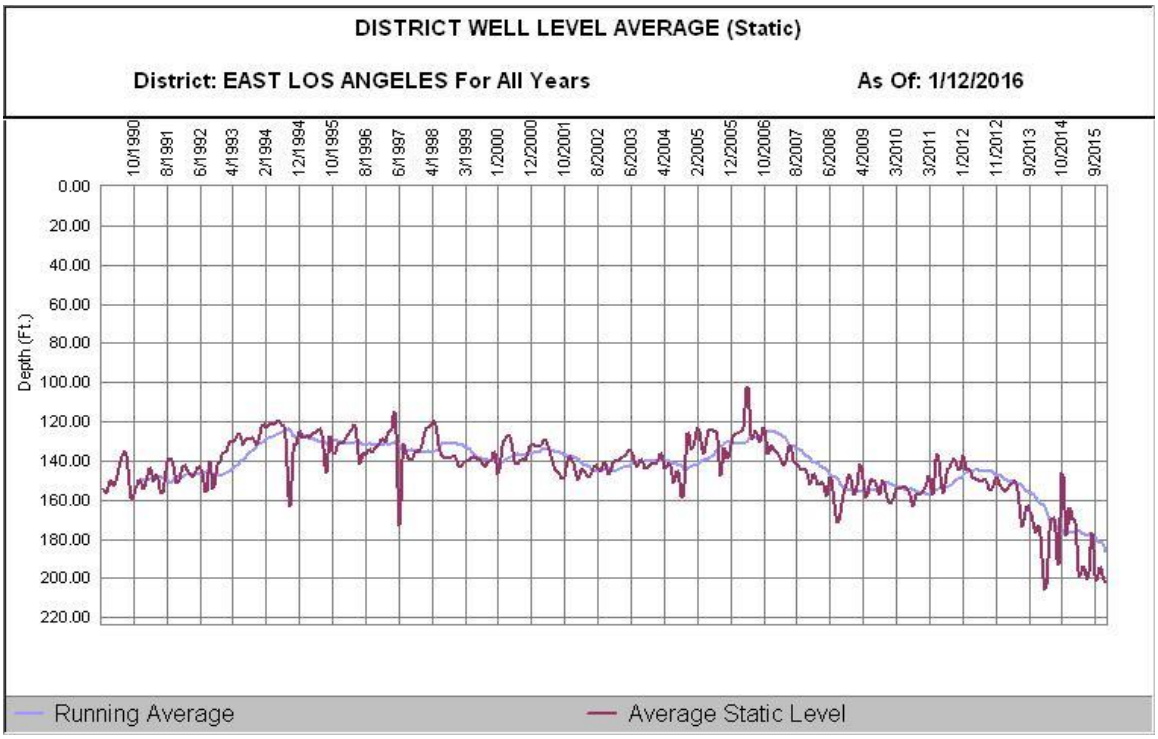
- Chapter 6 addresses supplementing water supplies with recycled water.

- Chapter 7 addresses the projected ability of the combined supply, including groundwater, to reliable serve customer demands under normal, single-dry-year and multiple-dry-year conditions.

6.2.3 Overdraft Conditions

District well levels since 1990 are shown in Figure 6-1. Water levels were fairly stable through about 2005, but have fallen significantly since then. This is due largely to dry conditions which resulted in smaller volumes of recharge and increased demands on the basin.

Figure 6-1: District Well Level Average (Static)



6.2.4 Historical Pumping

The amount of groundwater pumped over the last five years is shown in Table 6-1.

Table 6-1 Retail: Groundwater Volume Pumped (AF)						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Basin	5,433	5,617	5,533	5,518	8,972
Total		**5,433**	**5,617**	**5,533**	**5,518**	**8,972**

6.3 Surface Water

The East Los Angeles District does not impound or divert surface water as a means to meet supply requirements. Cal Water does not have any surface water rights in the area. However, surface water is the source for the purchased water imported by MWD.

6.4 Stormwater

There are no plans to divert stormwater for beneficial use in the East Los Angeles District. As described above, the Los Angeles County Department of Public Works does fund the capture and recharge of stormwater runoff.

6.5 Wastewater and Recycled Water

The recycling of wastewater offers several potential benefits to Cal Water and its customers. Perhaps the greatest of these benefits is to help maintain a sustainable groundwater supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., industrial, landscape irrigation) now being served by potable water.

Cal Water will begin serving recycled water in its service area once the recycled pipeline extension is constructed. A maximum projected demand of approximately 800 AFY is anticipated.

6.5.1 Recycled Water Coordination

The following is a listing of the wastewater agencies and type of treatment that the Cal Water District relies on for wastewater treatment and recycled water:

- Los Angeles County Sanitation District
- Central Basin Municipal Water District

6.5.2 Wastewater Collection, Treatment, and Disposal

The Los Angeles County Sanitation Districts (LACSD) owns, operates, and maintains the sewer system consisting of gravity sewers, pumping stations, and force mains to collect wastewater from East Los Angeles District service area (Sanitation District #2 and 23). The collected wastewater is discharged to trunk sewers and interceptors owned and operated by the LACSD. Although this plant does not currently produce recycled water, it is being considered as a potential source of recycled water in the future.

The Joint Water Pollution Control Plant is the largest of the LACSD's wastewater treatment plants. It provides advanced primary and partial secondary treatment for 350 million gallons of wastewater per day and serves a population of approximately 3.5 million people. The treated wastewater is disinfected with chlorine and sent to the Pacific Ocean through a network of outfalls that extend two miles off the Palos Verdes Peninsula to a depth of 200 feet.

Estimates for the District wastewater quantity (indoor usage) are shown in Table 6-2. The calculation is based on annualizing 90 percent of January water use in Cal Water's service area.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
Percentage of 2015 service area covered by wastewater collection system *(optional)*						
Percentage of 2015 service area population covered by wastewater collection system *(optional)*						
			Receiving Wastewater Treatment			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015 (AF)	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
Los Angeles County Sanitation District	*Estimated*	12,656	*Los Angeles County Sanitation District*	Joint Water Pollution Control Plant	*No*	
Total Wastewater Collected from Service Area in 2015:		**12,656**				

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
✓	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
							2015 Volumes			
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treat-ment Level	Waste water Treated	Discharged Treated Waste water	Recycled Within Service Area	Recycled Outside of Service Area
						Total				

6.5.3 Recycled Water System

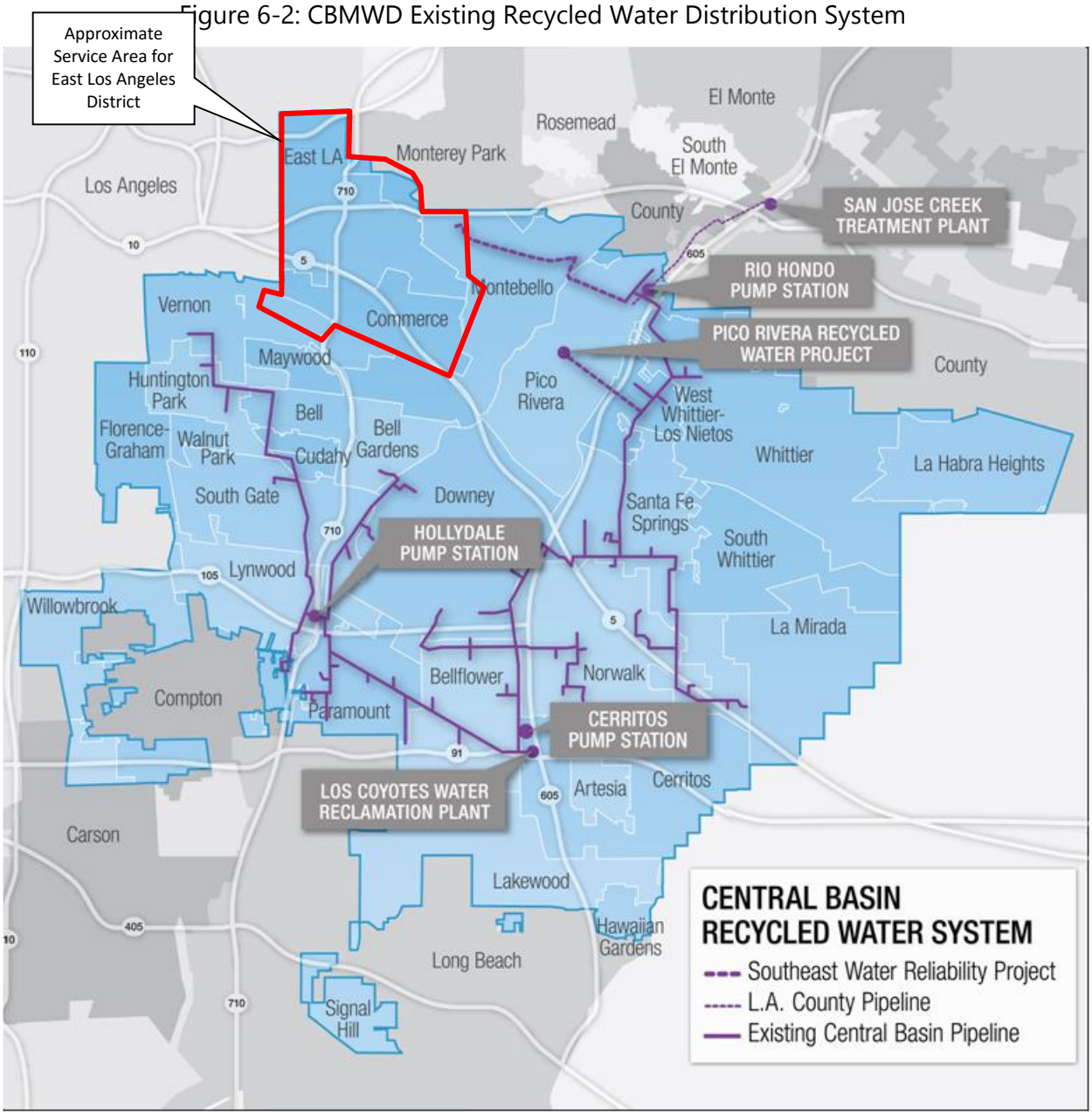
Central Basin Municipal Water District has developed a regional water recycling program. The program is comprised of two distribution systems – the E. Thornton Ibbetson Century Water Recycling Project (Century Distribution System) and the Esteban Torres Rio Hondo Water Recycling Project (Rio Hondo Distribution System) – as well as three pumping stations, including the Rio Hondo Pump Station, Hollydale Pump Station, and Cerritos Pump Station. The Century Distribution System and Rio Hondo Distribution System are interconnected by an intricate 70-mile distribution system and operate as one recycled water supply system. The combined projects are referred to as the "Central Basin Water Recycling Project." The system is shown in Figure 6-2.

In constructing the pipeline system, Central Basin is able to distribute treated recycled water obtained from the Sanitation Districts of Los Angeles County. The Central Basin Water Recycling Project delivers approximately 5,000 acre-feet of recycled water annually to over 300 industrial, commercial and landscape connections. Central Basin's use of recycled water augments the groundwater and imported water supplies of southeast Los Angeles County

Central Basin Municipal Water District has developed a feasibility study and preliminary design report for the East Los Angeles Recycled Water System Expansion in 2014 and has submitted an application with the Clean Water State Revolving Fund for grant funding in 2015.

Recycled water is not available for the District at this time; however, it is estimated that about 500 AF per year will be utilized within the District after 2020. For this plan, a projected volume of 500 AF is used for 2025 and onwards in Table 6-4.

Figure 6-2: CBMWD Existing Recycled Water Distribution System



6.5.4 Recycled Water Beneficial Uses

Central Basin is promoting recycled water as an ideal alternative for business and municipal use. Examples of recycled water use include:

- Landscape irrigation (e.g., public parks, cemeteries, golf courses);
- Industrial processes (e.g., paper manufacturing, carpet and textile dyeing, boiler feed);
- Commercial uses (e.g., cooling towers, toilet flushing, laundries, car washes);
- Construction activities (e.g., dust control, soil compaction, pipeline backfill consolidation, concrete mixing).

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

✓	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.

Name of Agency Producing (Treating) the Recycled Water:									
Name of Agency Operating the Recycled Water Distribution System:									
Supplemental Water Added in 2015									
Source of 2015 Supplemental Water									
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (exc golf courses)								
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)								
Surface water augmentation (IPR)								
Direct potable reuse								
		Total:	**0**	**0**	**0**	**0**	**0**	**0**
IPR - Indirect Potable Reuse								

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (AF)			
	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		2010 Projection for 2015	2015 actual use
Agricultural irrigation			
Landscape irrigation (exc golf courses)		500	0
Golf course irrigation			
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
	Total	**500**	**0**

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

With respect to the expansion of the recycled water use with the East Los Angeles District, Cal Water needs to rely on CBMWD since Central Basin is responsible for:

- Determining the technical and economic feasibility of supplying recycled water to the East Los Angeles service area
- Encouraging the use of and optimizing the use of recycled water in the East Los Angeles service area
- Expansion of recycled water lines within the East Los Angeles service area

As noted above, Central Basin has developed a feasibility study and preliminary design report for the East Los Angeles Recycled Water System Expansion in 2014 and has submitted an application with the Clean Water State Revolving Fund for grant funding in 2015.

Cal Water's supply portfolio in some districts already includes recycled water; elsewhere, the Company is participating in studies of the possibility of adding this supply source. Cal Water is eager to expand its portfolio to provide recycled water to its customers wherever possible, and to form partnerships with other agencies and jurisdictions to accomplish

this. Any such project must be economically feasible. Approval of such an investment by the CPUC is contingent on a demonstration that it is beneficial to ratepayers.

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Discounted Rate	Reduced cost of recycled water	2025	
		Total	**0**

6.6 Desalinated Water Opportunities

East Los Angeles is a considerable distance from the coast. Another option would be to drill a brackish groundwater well to use as a water source for a desal plant. Because of the District's distance from the ocean and the lack of a saline groundwater source, desalination is unlikely to be developed as a source of supply in the East Los Angeles District.

6.7 Exchanges or Transfers

The lease or purchase of additional Adjudicated Water Rights could be utilized to achieve increased supply reliability and availability. Obtaining additional adjudicated rights would result in cost savings due to the high cost of MWD water. However, at this time the District does not have sufficient production capacity to fully utilize all of its existing adjudicated right. Cal Water maintains several short term leases with local municipalities and private companies for the right to use this excess groundwater supply. As more wells are constructed in East Los Angeles, Cal Water will be able to produce a larger portion of its adjudicated right, and these leases will not be required.

6.7.1 Exchanges

There are no exchange opportunities for the District at this time.

6.7.2 Transfers

The lease or purchase of additional Adjudicated Water Rights could be utilized to achieve increased supply reliability and availability. Obtaining additional adjudicated rights would further increase the savings available to the District as compared to MWD water. However, at this time the District does not have sufficient production capacity to fully utilize all of its existing adjudicated right. Cal Water maintains several short term leases

with local municipalities and private companies for the right to use this excess groundwater supply. As more wells are constructed in East Los Angeles, Cal Water will be able to produce a larger portion of its adjudicated right, and these leases will not be required.

6.7.3 Emergency Interties

There are three emergency connections from the East Los Angeles District to neighboring water systems: one with Montebello Land and Water Company (6"), one with the South Montebello Irrigation District (8"), and one with City of Montebello (8"). These connections can be used to help offset the impact of the interruption in service to District customers. Being two-way connections, they can also be used to supply either imported water or pumped groundwater from the East Los Angeles District to the adjoining water systems.

6.8 Future Water Projects

The viability of future supplies is contingent upon how these supplies influence or are affected by several critical conditions. These conditions include operational feasibility and reliability, supply reliability, economic incentive, economic effect on customers, and regional supply ramifications.

The East Los Angeles District does not have sufficient well capacity to produce all of its APA. The distribution system has the capacity to deliver the current and future demands of the District's customers. Therefore, additional groundwater pumping facilities are required to meet demand and maintain required pressures. Developing additional production capacity can decrease the amount of money spent to purchase water and provide greater reliability during shortages. The cost of constructing facilities to provide additional production capacity increases as more facilities are constructed; and, at some point, the revenue requirements to finance this construction exceed the savings generated by the added capacity.

There are conditions that complicate the placement of wells in the Central Basin. For the most part aquifers below the East Los Angeles District are shallow, narrow, and highly mineralized. These same aquifers are deeper and wider and charged with better quality water east of existing district wells; however, this region is outside the district. If highly mineralized water is encountered during well development, increased costs for the installation of additional facilities may be incurred. Subsequently, additional property and equipment may be required driving up the total water cost.

Cal Water intends to provide facilities sufficient to maintain adequate production capacity in order to properly exercise the District's APA and to take full advantage of economic incentives that may be offered by MWD and WRDSC in the future.

Any program that modifies the operational strategy of the District or requires the installation of additional facilities to enhance supply reliability must be evaluated prior to being implemented, to determine what impact that project will have on regional supply conditions, including the following:

- The Central Basin is an adjudicated groundwater basin.
- Seawater intrusion barriers exist within the basin.
- The Central Basin Municipal Water District offers a reclamation program.
- Basin overdraft has caused declining groundwater levels.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
✓	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. LOCATION OF THE NARRATIVE_____					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
		If Yes, Agency Name				*This may be a range*

6.9 Summary of Existing and Planned Sources of Water

Table 6-8 shows the actual volumes of purchased water for calendar year 2015. Table 6-9 shows the projected supply volumes through 2040.

Consistent with the projections of MWD and CBMWD, Cal Water is assuming that purchased water will be sufficient to serve all demand through 2040 under all hydrologic conditions. Therefore, the supply amounts shown in Table 6-9 equal the projected demand in each year.

Table 6-8 Retail: Water Supplies — Actual (AF)				
Water Supply	Additional Detail on Water Supply	2015		
		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Purchased or Imported Water		5,296	Drinking Water	
Groundwater		8,972	Drinking Water	
Total		**14,268**		**0**

Table 6-9 Retail: Water Supplies — Projected (AF)										
Water Supply	**Projected Water Supply** *Report To the Extent Practicable*									
	2020		**2025**		**2030**		**2035**		**2040** *(opt)*	
	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Purchased	5,694		5,466		5,324		5,186		5,087	
Groundwater	11,774		11,774		11,774		11,774		11,774	
Total	**17,468**		**17,240**		**17,098**		**16,960**		**16,861**	

6.10 Climate Change Impacts to Supply

Cal Water recently completed an initial study of climate change impacts for a sample of its districts.[9] The sample districts account for 85% of Cal Water's total 2014 production and reflect the diversity of all Cal Water districts, including geographic, hydrologic, and climatic conditions and primary and secondary supply sources. East Los Angeles was not among the districts studied. The study was undertaken because it is critical for Cal Water to gain a better understanding of the potential impacts of climate change on the availability of its diverse supplies. The impacts are inherently uncertain, but Cal Water believes that the only responsible course is to carefully incorporate climate change into its ongoing water supply planning.

The initial study represents a first step in that path. In order for Cal Water to determine how its long-term water supply planning should reflect climate change impacts, it must first have an understanding of what the impacts of climate change on its supply sources might be. That was the purpose of the study.

Changes in climate can affect the availability of local groundwater and surface water supplies, as well as purchased imported supplies. This study separately addressed the impacts on each of these for each sample district. It relied on the best available projections of changes in climate (temperature and precipitation) through the end of the century, and then used the climate projections to examine how surface water flows and groundwater recharge rates may change. The study generally relied on studies done by or data provided by wholesale suppliers.

The study results provide an integrated view of how projected climate changes may affect water supply availability for Cal Water's service districts, and represent a first step in integrating potential future climate change impacts into Cal Water's ongoing supply planning.

6.10.1 Estimating Changes in Climate

Climate change is primarily driven by increased concentrations of greenhouse gases (GHGs) in the atmosphere. The trajectory of future climate change is a function of the rate at which those concentrations are projected to increase and the manner in which the atmosphere and oceans respond to increased concentrations. Both are difficult to model. Thus, while the scientific community overwhelmingly agrees that climate change will occur (and indeed may already have begun), the trajectory of those changes is very uncertain.

[9] California Water Service Company, *Potential Climate Change Impacts on the Water Supplies of California Water Service*. January 2016.

The projections of temperature and precipitation that underlie this study are based on 40 of the latest Global Circulation Models (GCMs) run as part of the Coupled Model Intercomparison Project Phase 5 (CMIP5). Generally speaking, this type of approach is termed an ensemble analysis, for which the downscaled climate projections for any particular Cal Water Service District were based on the median of the 40 downscaled GCM datasets. The GCMs used by the analysis are driven by two GHG emission pathways that bound the possible trajectories of GHG concentrations.

6.10.2 Impacts of Climate Change on Water Supplies

Since the supplies for each district consist of a mix of local surface water, local groundwater, and/or purchased imports, climate change impacts were estimated for each of these components. Based on the breakdown of district production among the supply sources, Table 6-10 shows the ranges of projected overall climate change impacts on available supply, relative to the historic average.

Table 6-10 Projected Changes in Average Available Supply Due to Climate Change

District	Percentage Change in Supply			
		2020	2050	2100
BK	Minimum	-10%	-10%	-12%
	Maximum	-12%	-16%	-20%
VIS	Minimum	-7%	-8%	-8%
	Maximum	-9%	-10%	-14%
KRV	Minimum	-13%	-16%	-19%
	Maximum	-16%	-21%	-31%
MPS/SSF/BG	Minimum	0%	-2%	-6%
	Maximum	0%	-7%	-15%
LAS	Minimum	-3%	-3%	-10%
	Maximum	-4%	-18%	-28%
CH	Minimum	2%	2%	0%
	Maximum	3%	1%	-3%
ORO	Minimum	0%	8%	5%
	Maximum	0%	-8%	-7%
DOM/HR/PV	Minimum	0%	0%	-1%
	Maximum	0%	-2%	-3%
STK	Minimum	0%	0%	-8%
	Maximum	0%	-14%	-17%
SLN	Minimum	-6%	-6%	-6%
	Maximum	-7%	-7%	-7%

6.10.3 Next Steps and Key Conclusions

Possible next steps for Cal Water's study of climate change include:

- Methodological enhancements to reduce some of the uncertainties in the results;
- Development and acquisition of better and more complete data;
- Extending the study to other Cal Water districts;
- Developing a plan to mitigate anticipated climate change impacts on supply; and
- Integrating climate change into the Company's ongoing water supply planning.

Three critical messages emerged from the study:

- Cal Water supplies in the 21st century are likely to be adversely affected by climate change.
- These impacts will vary considerably across districts, depending on geography and source mix. For some districts, the impacts can be significant; for others, little or no impacts are projected.
- The impacts will generally increase over time. Anticipated late-century impacts are forecast to be significantly higher in some districts than impacts at mid-century. Moreover, during the period that climate change is forecast to increasingly constrain supplies, demands are also generally forecast to increase, further exacerbating the adverse impacts on water supply reliability.

Reference:
DTSC, 2013

SITE SCREENING ASSESSMENT

Prepared by: California Department of Toxic Substances Control (DTSC)
Cooperative Agreement Number: V-00T62401-1
DTSC Fiscal Year: 2012-2013

Prepared for: United States Environmental Protection Agency Region 9
Superfund Division, Site Assessment Section
San Francisco, California

Date: 6/30/13

Site Name:	**Quality Distribution, Inc. aka: Univar USA**				
City:	**South Gate**			**County:**	**Los Angeles**
DTSC Regional Office:	Chatsworth				
CERCLIS ID:	*	**EPA ID:**	**CAD000031997**	**Envirostor ID:**	**60001785**

CAN000909573

EXECUTIVE SUMMARY

Narrative summary of site history and recommended action:

Quality Distribution Inc. is a transporter of hazardous chemicals. The company operates independent subsidiaries that lease portions of its property. Quality Carriers (operating as Winsome Enterprises) and Quala Wash Holding LLC are the primary operators on this property. The two companies operate in conjunction with each other and at one time were one company. Quality Carriers transports hazardous chemicals and Quala Wash Holdings LLC is a tank cleaning operation. The two companies share the parking lot that includes a trailer repair facility. The facility is a 24x7 operation and is located close to residential homes. The facility is also located less than 500 feet cross gradient to the destroyed Hofffman Well #2 (Golden State Water Company). The property is located up gradient of known impacted drinking water production wells.

DTSC Recommendation:
Refer to: ☒ EPA ☐ CADTSC ☐ CARWQCB ☐ Local Agency ☐ No Further Action
EPA Decision:
Refer to: ☒ EPA ☐ CADTSC ☐ CARWQCB ☐ Local Agency ☐ No Further Action

Final Signatures and Concurrence

DTSC Screener:	Signature	Manjul Bose *Type Name*	6/30/2013
DTSC Approval:	Signature	Javier Hinojosa *Type Name*	6/30/13 *Date: (MM/DD/YYYY)*
EPA Concurrence:	Signature	Matthew Mitguard *Type Name*	9/30/13 *Date: (MM/DD/YYYY)*

EPA Comments:

EPA ONLY				
CERCLIS CODING:	☐ Not Valid Site	☐ Not valid Site – State Lead	☒ Preliminary Assessment Needed	☐ Other:

Section 1: Site Information

1.1 CERCLIS Site Name: Quality Distribution, Inc. Aka: Univar USA
Aliases: Quality Carriers, Winsome Enterprises, Quala Wash Systems, Quala Wash Holdings LLC, Matlack Inc

1.2 Origin of Site: Driveby's with USEPA identifying facilities located in proximate distance to impacted drinking water production wells.
Note discovery project, referral, complaint, etc.

1.3 Site Location Information

Street Address: 5000-5042 Cecelia Street / 8332 Wilcox Avenue
City: South Gate **County:** Los Angeles
State: CA **Zip Code:** 90280
Latitude: + 33 . 957224
Longitude: - 118 . 179666

1.4 Regulatory Information

CERCLIS ID: No
RCRA ID: CA0000031997, CAD000031997
Envirostor ID: 60001785
Geotracker ID: T0603703785

Section 2: Operational History

Reference all factual information and attach complete and legible copies of all cited references.

2.1 Current Operation

☒ Operational facility
☐ Nonoperational
☐ Current Operators do not use CERCLA hazardous constituents

Current owner: Quala Systems Inc **Current operator:** Quality Carriers / Quala Wash Holdings LLC / Winsome Enterprises / Quality Distribution
Hazardous materials used: Halogenated Solvents, Oxygenated Solvents, Hydrocarbon Solvents, Waste Oil, Mixed Oil, Polymeric Waste, Pesticide Rinse Water, Perchloroethylene (PCE), Methyl Ethyl Keytone (MEK), Corrosives, Chromium, Barium, Cadmium, Arsenic
Hazardous materials manifested or disposed (HWTS): Halogenated Solvents, Oxygenated Solvents, Hydrocarbon Solvents, Waste Oil, Mixed Oil, Polymeric Waste, Pesticide Rinse Water, Perchloroethylene (PCE), Methyl Ethyl Keytone (MEK), Corrosives, Chromium, Barium, Cadmium, Arsenic
Dates of operation: Quality Carriers 1980-Present, Qualawash 1995-Present
Reference(s): Attachment C3 - HWTS

2.2 Historical owners/operators that may have used Contaminants of Concern onsite:

Owner: N/A **Operator:** N/A
Hazardous materials used:

Hazardous materials suspected:
Dates of operation:
Reference(s):

Owner: **Operator:**
Hazardous materials used:
Hazardous materials suspected:
Dates of operation:
Reference(s):

Section 3: Site Impact Information

Reference all factual information and attach complete and legible copies of all cited references.

3.1 Land Use/Site Setting:

Check all that apply

☒ Industrial area
☒ Residential area
☐ Schools/day care centers within 200 feet
☒ Surface water within 2 miles of the site
☐ Sensitive environments or wetlands within 2 miles of site
☐ Potential source of contamination to surface water

Details, description and references: The site borders residential homes, which are located less than 200 feet from its northern boundaries. The south side of the property is Industrial.

3.2 Surface Water

☐ Surface water used for drinking water within 15 miles of the site

☐ Public / commercial supply
☐ Private supply
Approximate number of people served by the surface water:
Details/additional information:

☐ Health advisory for consuming fish
☐ Surface water within 15 miles of the site is used for recreational or commercial fishing
☐ Surface water within 15 miles of the site provides habitat for sensitive species
☐ Site is a suspected source of surface water contamination

Details, description and references: Surface water in Los Angeles County is not used for drinking water purposes.

3.3 Groundwater

☒ Groundwater used for drinking water within 4 miles of site

☒ Public / commercial supply (approximate number of people served: 250,000)
☒ Private supply (approximate number of people served: 2,000)
☒ Groundwater within 4 miles of the site known to be contaminated with hazardous substances

List hazardous substances: PCE, TCE, Hexavalent Chromium

List substances that exceed drinking water standards: Groundwater monitoring wells (first water) within 4 miles have TCE & PCE exceeding MCL's. Production wells located within 4 miles that show PCE and TCE below MCL's. There is production well (Hoffman Well 02 – Destroyed 10/26/2007) located less than 500 feet east of this site that is listed as destroyed. The reason for its destruction is not listed on the DHS well finder tool, however this well belongs to the Golden State Water Company which serves Bell and Bell Gardens with connections to 24,500 people. Other water companies that operate in the area include Southgate Mutual Water Company serving 98,000 people, City of Cudahy Water Company serving 39,000 people DTSC is unable to determine the direction of groundwater flow at this Site based on neighboring properties. Groundwater flows to the southerly direction for NPL site Cooper Drum located ½ mile to the south of this Site. Groundwater at an active DTSC site; Los Angeles Chemical Company, located ½ mile to the west of the site, has the groundwater flowing to due west of its property (*Groundwater Monitoring Report Arcadis, 2007*).

☒ Site is a suspected source of groundwater contamination

SPGIT Quartile(s): 179
Details, description and references: Quality Distribution, Inc. is located within Quartile 179. This quartile also includes NPL sites such as Cooper Drum, Seam Masters and Jervis Webb. This quartile also includes DTSC sites Los Angeles Chemical Co and South Region HS #9 in South Gate. The area is highly contaminated with multiple sites that have released contamination to groundwater.

3.4 Community Interest

☐ High level of community interest
☐ Some community interest
☒ Low/no community interest

Details, description and references:

Section 4: Site Reconnaissance

4.1 Method of Site Reconnaissance (See Attachment B):

- ☒ Onsite Visit (Date: May 28, 2013)
- ☒ Drive-by/offsite visit (Date:May 28, 2013)
- ☐ Records/aerial photo review

4.2 Adjacent properties:

North Residential Homes
South Val-fit Inc
East Armstrong World Industries & Residential Homes
West Warehousing

4.3 Structures onsite (e.g. office building, paint booth, repair shop, etc.): Two offices, one trailer repair facility, one trailer wash section, and parking lot for trailers.

4.4 Site surface description (e.g., visual staining, cracked pavement, etc.): Site is paved, no cracks observed.

4.5 Hazardous materials observed onsite

Materials stored: Hazardous materials stored varies based on tank cleaning operations and what is being hauled in the trailers. In generally Ms. Ramirez stated that caustics, soaps, polymers, latex are generally stored short term on site. DTSC was unable to get clarification on what was being stored in the tankers parked on site during our site visit.

Materials in use: Acids, Bases, neutralizing compounds, soaps/detergents.

☐ N/A (records review only; see Section 2 for hazardous materials manifested/disposed)

4.6 Waste Storage and potential hazardous materials

Specify numbers, volume, and content

a) **Drums:** over 100 drums or storage containers noted in warehouse, contents unknown. Ms. Ramirez stated they were empty.
b) **Aboveground Storage Tanks:** 4 large above ground tanks to store wash fluid.
c) **Underground Storage Tanks:** Diesel UST (removed)
d) **Clarifiers:** Large clarifier present
e) **Transformers potentially containing PCBs** none noted
f) **Other:**

Section 5: Summary and Recommendations/Conclusions

Use multiple pages if needed. Include parenthetical references for all statements, and attach complete copies of references used.

5.1 Summary of Site History, Historical Releases, and Potential Releases

Describe site history, historical releases, and potential for release. Include summary of relevant sampling history detailed in Attachment E.

The facility identified as Quality Distribution, Inc. is actually four entities operating on one property. Quality Distribution owns the property at 8332 Wilcox and 5042 and 5000 Cecilia Streets. It leases 5042 and portions of 5000 Cecelia Street to Quality Carriers, otherwise known as Winsome Enterprises. 8332 Wilcox is a separate operation that was once part of Quality Distribution, Inc. and used as trailer washings facility prior to its spin off as Qualawash Holdings LLC.

Quality Distribution, Inc. is a holding company that conducts business around the United States. Quality Carriers is a registered transporter that hauls chemicals and other liquid materials. They park their trailers on the lot they share with Qualawash Holdings LLC on 5000 Cecelia Street. QualaWash Holdings LLC is a trailer washing facility that cleans tanks prior to its next trip. They are a 24x7 operation washing roughly 40 tanker trailers per day. There is also a trailer repair facility on site that belongs to Quality Distribution, Inc.

Chemical Leman started operating in 1986 at this facility as a tank trailer hauler and washing facility. In 1999 Quality Distribution, Inc. came about after consolidation of several trucking agencies. Qualawash Holdings LLC was spun out of Quality Distribution, Inc. in 2009 as a separate company.

5.2 Regulatory Involvement

Provide detailed description of historical and/or ongoing regulatory involvement. Identify current lead agency.

DTSC was unable to find any regulatory oversight on this property. DTSC requested files for all known addresses for this site from the Los Angeles County Fire Department, unfortunately no files were found.. A file was found at the Los Angeles Regional Water Quality Control board for a diesel UST that was present on site at one time but since removed. .

5.3 Recommendation/conclusion

Describe proposed follow-up actions and recommended lead agency. If no further action is recommended, describe reasons.

DTSC recommends further investigation. The Qualawash Holdings LLC portion of the property could be a potential source for groundwater contamination. Qualawash Holdings LLC handles a wide variety of chemicals on a daily basis. The operations were not neat and tidy; the staff was a bit jittery during DTSC's site visit. The facility is located 500 feet west of the destroyed Hoffman Well #2 and DTSC suspects there may have been a release that could have impacted the well. DTSC recommends EPA conduct further investigation on this site.

ATTACHMENT A: Site Screening Contact Report

Provide detailed description of conversations. Attach complete copies of any documents provided by the contact. Use as many pages as necessary to report all contacts.

Contact Name:	**Eva Ramirez**
Affiliation:	**Qualawash Holdings LLC**
Telephone Number:	**323-771-8226**
Date(s) of contact:	

Discussion:

Site walk & discussion of operations

Contact Name:	**Richard Wallace**
Affiliation:	**Quality Carriers**
Telephone Number:	**310-542-1222**
Date(s) of contact:	

Discussion:

Site walk and site history. Quality Carriers is also known as Winsome Enterprises.

Contact Name:	**Yvette Caldero**
Affiliation:	**LA County FD**
Telephone Number:	
Date(s) of contact:	

Discussion:

No Files found!

ATTACHMENT B: Site Reconnaissance Report

Include photos and a site layout map showing features described in Sections 4.2-4.5.

ATTACHMENT C: ATTACHMENT INDEX

Attachment #	Document Title	Date
1	Airphoto	
2	Quala Wash / Qualawash Holdings LLC - DO NOT CLEAN LIST	
3	HWTS Manifests for all companies	
4	Choicepoint	

ATTACHMENT D: SITE TYPE – PRIMARY/SECONDARY ACTIVITY FORM

Fed Fac Indicator: ☐ Federal Facility ☒ Not A Federal Facility ☐ Status Undetermined

RCRA Status: ☒ Generator ☐ TSDF ☒ Transporter ☐ Not listed in RCRIS

SITE TYPES **(Designate one dominant primary category (*PC*). Designate all secondary subcategories (*SS*) that apply.) Site type designations for both primary & secondary should pertain to the operation(s) on site of environmental consequence.**

PC	*SS*	**Manufacturing/Processing/Maintenance** (Subcategory)
☒	☐	Chemicals and allied products
☐	☐	Coal gasification
☐	☐	Coke production
☐	☐	Electric power generation and distribution
☐	☐	Electronic/electrical equipment
☐	☐	Fabrics/textiles
☐	☐	Lumber and wood products/pulp and paper
☐	☐	Lumber and wood products/wood preserving/treatment
☐	☐	Metal fabrication/finishing/coating and allied industries
☐	☐	Oil and gas
☐	☐	Ordnance production
☐	☐	Plastics and rubber products
☐	☐	Primary metals/minerals processing
☐	☐	Radioactive products
☐	☐	Tanneries
☐	☐	Trucks/ships/trains/aircraft and related components

P C	S S	**Waste Management** (Subcategory)
☐	☐	Radioactive waste treatment, storage, disposal
☐	☐	Municipal solid waste landfill
☐	☐	Mine tailings disposal
☐	☐	Industrial waste landfill
☐	☐	Industrial waste facility (non generator)
☐	☐	Illegal disposal/open dump
☐	☐	Co-disposal landfill (municipal and industrial)

PC	*SS*	**Other** (Subcategory)
☐	☐	Agricultural
☐	☐	Contaminated sediment site with no identifiable source
☐	☐	Dust control
☐	☐	Ground water plume site with no identifiable source
☐	☐	Military/other ordinance
☐	☐	Product storage/distribution
☐	☐	Research, development, and testing facility
☐	☐	Retail/commercial
☐	☐	Spill or other one time event
☐	☐	Transportation (e.g. railroad yards, airports, barge docking site
☐	☐	Treatment works/septic tanks/other sewage treatment

PC	*SS*	**Mining** (Subcategory)
☐	☐	Coal
☐	☐	Metals
☐	☐	Non-metals minerals
☐	☐	Oil and gas

P C	S S	**Recycling** (Subcategory)
☐	☐	Automobiles/tires
☐	☐	Batteries/scrap metals/secondary smelting/precious metal recovery
☒	☐	Chemicals/chemicals waste (e.g. solvent recovery)
☐	☐	Drums/tanks
☐	☐	Waste/used oil

SITE TYPES **(Designate one dominant primary category (*PC*). Designate all secondary subcategories (*SS*) that apply.)**

ATTACHMENT E: SITE SCREENING ASSESSMENT SAMPLING EVENT SUMMARY TABLE					
Date	**Event**	**Lead Agency**	**Main Contaminants Detected** (include only CERCLA-eligible hazardous substances)	**Notes/Description**	**Reference**

Acronym List

(Modify as needed)

µg/L	micrograms per liter
bgs	below ground surface
AST	Aboveground Storage Tank
CADTSC	California Environmental Protection Agency, Department of Toxic Substances Control
CARWQCB	California Environmental Protection Agency, Regional Water Quality Control Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CUPA	Certified Unified Program Agency
EPA	U. S. Environmental Protection Agency
LUST	Leaking Underground Storage Tank
NPL	National Priorities List
PA	Preliminary Assessment
RCRA	Resource Conservation and Recovery Act
RCRAInfo	Resource Conservation and Recovery Information System
SI	Site Investigation
UST	Underground Storage Tank

Attachment 1

Cecelia St
Wilcox Ave
QC - Trailer Maintenace Shop
Quala Wash
Operations
- Tank Cleaning
Quality Distribution
Quality Carriers
Winsome Enterprises
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2013 Google
Google
lat 33.957044° lon -118.178974°
Mar 8, 2011
Eye alt 984 ft

Attachment 2

QualaWash

DO-NOT-CLEAN LIST

Updated: 05/17/2013

CAS No.	Chemical Name	Synonym	OSHA action level
53-96-3	2-Acetylaminofluorene	Acetamidofluorene	> 0.1%
75-36-5	Acetyl Chloride		
107-13-1	Acrylonitrile	Propenenitrile; Vinyl Cyanide	> 1ppm vapor
106-95-6	Allyl Bromide	3-Bromopropene	> 1%
92-67-1	4-Aminodiphenyl	p-Biphenylamine; Anilinobenzene	> 0.1%
	Ammonium Nitrate/Fuel Oil Mixture	ANFO; Forane	
	Arsenic Acid Solutions		> 5μg/m3 vapor
7440-38-2	Arsenic, Inorganic Compounds		
	Asbestos		
71-43-2	Benzene		> 0.1%
92-87-5	Benzidene	p-Diaminodiphenyl	> 0.1%
98-88-4	Benzoyl Chloride	Carboxylic Acid Chloride	
100-44-7	Benzyl Chloride (unless triple-rinsed)	α-Chlorotoluene (P028)	
	Beryllium and Beryllium Compounds	(P015)	
106-99-0	1,3-Butadiene		> 0.1%
	Cadmium and Cadmium Compounds		
	Cashew Nutshell Oil		
57-74-9	Chlordane		
7782-50-5	Chorine Gas		
79-04-9	Chloroacetyl Chloride		
106-47-8	p-Chloroaniline (unless triple-rinsed)	(P024)	
13010-47-4	1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea	CCNU	
542-88-1	Chloromethyl Ether		> 0.1%
	Chlorosilanes (All)		
121-82-4	Cyclonite	RDX (explosive)	
50-29-3	Dichloro Diphenyl Trichloroethane	DDT	
96-12-8	1,2-Dibromo-3-chloropropane	DBCP	
91-94-1	3,3'-Dichlorobenzidine		> 1%
612-83-9	3,3'-Dichlorobenzidine HCl Salt		> 1%
79-36-7	Dichloroacetyl Chloride	DCAC	
2905-62-6	3,5-Dichlorobenzoyl Chloride		
154-93-8	Dichloroethyl Nitrosourea	bis(Chloroethyl) Nitrosourea	
542-88-1	Dichloromethyl Ether	bis(Chloromethyl) Ether	> 0.1%
120-83-2	2,4-Dichlorophenol	DCP	
119-90-4	3,3'-Dimethoxybenzidine		
20325-40-0	3,3'-Dimethoxybenzidine HCl Salt		
60-11-7	4-Dimethylaminobenzene	Methyl Yellow	> 1%
119-90-4	3,3'-Dimethylbenzidine	Dianisidine	
57-14-7	1,1-Dimethylhydrazine	UDMH	
77-78-1	Dimethyl Sulfate	DMS; Sulfuric Acid Dimethyl Ester	
513-37-1	Dimethyl Vinyl Chloride	1-Chloro-2-methyl-1-propene	
298-04-4	Disulfoton	Di-Syston; Solvirex (P039)	
	DOT CLASS 1 (includes 1.1 through 1.6)	All Explosives	
	DOT CLASS 2 (includes 2.1, 2.2 and 2.3)	All Gasses	
	DOT CLASS 4.2	Pyrophoric Liquids	
	DOT CLASS 6.2	Infectious Substances	
	DOT CLASS 7	Radioactive Substances	
541-41-3	Ethyl Chloroformate	Carbonochloridic Acid Ethyl Ester	
151-56-4	Ethyleneimine	Aziridine	> 1%
75-21-8	Ethylene Oxide	Oxirane; Anprolene	> 0.5ppm vapor
16961-83-4	Fluosilicic Acid	Fluorosilicic Acid	
50-00-0	Formaldehyde Gas		> 0.5ppm vapor
	Freon Compounds (All)	CFC; HCFC; Refrigerants	
	Grignard Reagent	Alkyl Magnesium Halide in Ether	
301-04-2	Lead Acetate		

QualaWash

DO-NOT-CLEAN LIST

Updated: 05/17/2013

CAS No.	Chemical Name	Synonym	OSHA action level
7446-27-7	Lead Phosphate		
101-77-9	4,4'-Methylenedianiline	MDA	> 0.1%
7439-97-6	Mercury and Mercury Compounds		
107-30-2	Methyl Chloromethyl Ether	Chloromethyl Methyl Ether	> 0.1%
75-86-5	2-Methyllactonitrile	Acetonecyanohydrin (P069)	
134-32-7	1-Naphthylamine	α-Naphthylamine	> 1%
91-59-8	2-Naphthylamine	β-Naphthylamine	> 0.1%
92-93-3	4-Nitrobiphenyl	p-Nitrobiphenyl	> 0.1%
55-86-7	Nitrogen Mustard Hydrochloride	Mechlorethamine HCl	
62-75-9	N-Nitrosodimethylamine	Dimethylnitrosamine; DMN	> 1%
	Organic Peroxides (All)		
23135-22-0	Oxamyl	Vydata; Thioxamyl; Avtel (P194)	
87-86-5	Pentachlorophenol		
3982-91-0	Phosphorus Thiochloride	Phosphorus sulfochloride	
	Polybrominated Biphenyls	PBB	
1336-36-3	Polychlorinated Biphenyls	PCB	
57-57-8	2-Propiolactone	β-Propiolactone	> 1%
7646-69-7	Sodium Hydride	NaH	
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	TCDD; Dioxin	
78-00-2	Tetraethyl Lead	Anti-knock Compounds w/Lead	
509-14-8	Tetranitromethane		
62-55-5	Thioacetamide		
7550-45-0	Titanium Tetrachloride		
8001-35-2	Toxaphene	Chlorinated Camphene	
93-72-1	2-(2,4,5-Trichlorophenoxy) Propionic Acid	2,4,5-TP; Silvex (F027)	
7727-18-6	Vanadium Oxytrichloride	Vanadyl Trichloride	
75-01-4	Vinyl Chloride	Chloroethylene	> 0.5ppm vapor
	Water-reactive chemicals		

**** EHS must grant exceptions to each facility for compounds on this list.**

Attachment 3

DTSCNet

Department of Toxic Substances Control

Database Search Site Summary

HWTS EPA ID Profile

EPA ID: CAL000343718 **Name:** WINSOME ENTERPRISES INC DBA QUALITY CARRIERS SOUTH GATE
Status: ACTIVE **Inactive Date:** **Contact:** EMILIO LOERA
County: LOS ANGELES **NAICS:** 48849 **Record Entered:** 2009-06-05 **Last updated:** 2012-10-24

MAAPS of this site Google Map and Satellite View EnviroMapper of this site

	Name	Address	City	State	ZIP	Phone
Location	WINSOME ENTERPRISES INC DBA QUALITY CARRIERS SOUTH GATE	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		5042 CECELIA ST	SOUTH GATE	CA	902803511	
Owner	WINSOME ENTERPRISES INC	50442 E CECELIA ST	SOUTH GATE	CA	902800000	8667098265
Oper/Contact	EMILIO LOERA	8332 WILCOX AVE	SOUTH GATE	CA	902803500	5627559776

Based ONLY upon EPA ID: CAL000343718:

Calif. Manifests?	Out-of-State Manifests?	Transporter Registration?	Toxic Release Inventory Data?	Envirostor Data?
YES	NO	NO	NO	NO

Calif. Manifest Counts and Total Tonnage

m = Manifest Count t=Total Tonnage

Ship Year	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
2010	5 (m) 1.20000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2011	12 (m) 5.84800 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2012	10 (m) 6.44500 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2013	5 (m) 2.64100 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

Waste Code By Year Matrix Report

Calif.	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

End of Report

DTSCNet

Department of Toxic Substances Control

HWTS - Calif. Waste Code By Year Matrix

EPA ID: CAL000343718 **Name:** WINSOME ENTERPRISES INC DBA QUALITY CARRIERS SOUTH GATE
Entity: Generator

Calif. Code	*Description*	*Weight (in Tons)*			
		2010	**2011**	**2012**	**2013**
134	AQ SOL (2 < PH< 12.5) W ORG RESIDUES < 10%	0.42000	1.72200	1.00800	0.54600
221	WASTE OIL AND MIXED OIL	0.38000	3.87600	5.18700	1.99500
352	OTHER ORGANIC SOLIDS	0.40000	0.25000	0.25000	0.10000
	TOTALS	**1.20000**	**5.84800**	**6.44500**	**2.64100**

DTSCNet

Department of Toxic Substances Control

HWTS - RCRA Waste Code By Year Matrix

EPA ID: CAL000343718 **Name:** WINSOME ENTERPRISES INC DBA QUALITY CARRIERS SOUTH GATE
Entity: Generator

RCRA Code	*Description*	*Weight (in Tons)*			
		2010	**2011**	**2012**	**2013**
	Blank/Unknown	1.20000	5.84800	6.44500	2.64100
	TOTALS	**1.20000**	**5.84800**	**6.44500**	**2.64100**

DTSCNet

Department of Toxic Substances Control

Database Search Site Summary

HWTS EPA ID Profile

EPA ID: CAL000201008 **Name:** QUALITY CARRIERS INC
Status: INACTIVE **Inactive Date:** 2006-06-30 **Contact:** LORI POTTER, ENVT'L SPECIALIST
County: LOS ANGELES **NAICS:** 48849 **Record Entered:** 1999-09-16 **Last updated:** 2007-05-25

MAAPS of this site Google Map and Satellite View EnviroMapper of this site

	Name	Address	City	State	ZIP	Phone
Location	QUALITY CARRIERS INC	8332 WILCOX AVE	SOUTH GATE	CA	902800000	
Mailing		150 E PENNSYLVANIA AVE STE 430	DOWNINGTOWN	PA	193350000	
Owner	QUALITY CARRIERS INC	3802 CORPOREX PARK DRIVE	TAMPA	FL	336190000	8002822031
Oper/Contact	LORI POTTER, ENVT'L SPECIALIST	150 E PENNSYLVANIA AVE SUITE 430	DOWNINGTOWN	PA	193350000	8002762608

Based ONLY upon EPA ID: CAL000201008:

Calif. Manifests?	Out-of-State Manifests?	Transporter Registration?	Toxic Release Inventory Data?	Envirostor Data?
YES	NO	NO	NO	NO

Calif. Manifest Counts and Total Tonnage

m = Manifest Count t=Total Tonnage

Ship Year	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
1999	1 (m) 0.22930 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2003	1 (m) 5.40000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

Waste Code By Year Matrix Report

Calif.	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

End of Report

DTSCNet

Department of Toxic Substances Control

HWTS - Calif. Waste Code By Year Matrix

EPA ID: CAL000201008 **Name:** QUALITY CARRIERS INC
Entity: Generator

Calif. Code	*Description*	*Weight (in Tons)*	
		1999	**2003**
132	AQ SOL WITH METALS(SMALLER THAN RESTRICTED LEVELS AND SEE 121)	0.22930	
214	UNSPECIFIED SOLVENT MIXTURE		5.40000
	TOTALS	**0.22930**	**5.40000**

DTSCNet

Department of Toxic Substances Control

HWTS - RCRA Waste Code By Year Matrix

EPA ID: CAL000201008 **Name:** QUALITY CARRIERS INC
Entity: Generator

RCRA Code	*Description*	*Weight (in Tons)*	
		1999	**2003**
	Blank/Unknown	0.22930	
U112	Ethyl acetate		5.40000
	TOTALS	**0.22930**	**5.40000**

DTSCNet

Department of Toxic Substances Control

Database Search Site Summary

HWTS EPA ID Profile

EPA ID: CAP000007835 **Name:** QUALITY CARRIERS
Status: INACTIVE **Inactive Date:** 2005-10-26 **Contact:** GARY PETERSON
County: LOS ANGELES **NAICS:** 99999 **Record Entered:** 2005-04-28 **Last updated:** 2005-11-01

MAAPS of this site Google Map and Satellite View EnviroMapper of this site

	Name	Address	City	State	ZIP	Phone
Location	QUALITY CARRIERS	5042 CECELIA ST	SOUTH GATE	CA	90280	
Mailing		10680 SILICON AVE	MONTCLAIR	CA	91763	
Owner	QUALITY CARRIERS	5042 CECELIA ST	SOUTH GATE	CA	90280	9096256645
Oper/Contact	GARY PETERSON	10680 SILICON AVE	MONTCLAIR	CA	91763	9096256645

Based ONLY upon EPA ID: CAP000007835:

Calif. Manifests?	Out-of-State Manifests?	Transporter Registration?	Toxic Release Inventory Data?	Envirostor Data?
YES	NO	NO	NO	NO

Calif. Manifest Counts and Total Tonnage					
					m = Manifest Count t=Total Tonnage
Ship Year	**Generator**	**Trans. 1**	**Trans. 2**	**TSDF**	**Alt. TSDF**
2004	2 (m) 1.65000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

Waste Code By Year Matrix Report					
Calif.	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

End of Report

DTSCNet

Department of Toxic Substances Control

HWTS - Calif. Waste Code By Year Matrix

EPA ID: CAP000007835 **Name:** QUALITY CARRIERS
Entity: Generator

Calif. Code	*Description*	*Weight (in Tons)*
		2004
181	OTHER INORGANIC SOLID WASTE	0.82500
352	OTHER ORGANIC SOLIDS	0.82500
	TOTALS	**1.65000**

DTSCNet

Department of Toxic Substances Control

HWTS - RCRA Waste Code By Year Matrix

EPA ID: CAP000007835 **Name:** QUALITY CARRIERS
Entity: Generator

RCRA Code	*Description*	*Weight (in Tons)*
		2004
NR	Blank/Unknown	1.65000
	TOTALS	**1.65000**

DTSCNet

Department of Toxic Substances Control

Database Search Site Summary

HWTS EPA ID Profile

EPA ID: CA0000031997 **Name:** QUALAWASH HOLDINGS LLC

Fed. Registery ID (FRS): 110000781182 (Note: on "Database Log In Failed" msg., press the "reload" button)

Status: ACTIVE **Inactive Date:** **Contact:** DANIEL LANGDON

County: LOS ANGELES **NAICS:** 81149 **Record Entered:** 1995-12-08 **Last updated:** 2013-03-20

MAAPS of this site Google Map and Satellite View EnviroMapper of this site

	Name	Address	City	State	ZIP	Phone
Location	QUALAWASH HOLDINGS LLC	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		101 S FRANKLIN ST STE 101	TAMPA	FL	336020000	
Owner	QUALAWASH HOLDINGS LLC	101 S FRANKLIN ST STE 101	TAMPA	FL	336020000	2133213079
Oper/Contact	DANIEL LANGDON	8332 WILCOX AVE	SOUTH GATE	CA	902803500	2133213079

Based ONLY upon EPA ID: CA0000031997:

Calif. Manifests?	Out-of-State Manifests?	Transporter Registration?	Toxic Release Inventory Data?	Envirostor Data?
YES	NO	NO	NO	NO

Calif. Manifest Counts and Total Tonnage

m = Manifest Count t=Total Tonnage

Ship Year	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
1994	8 (m) 30.87520 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1995	21 (m) 32.81930 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1996	9 (m) 17.29200 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1997	11 (m) 47.99420 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1998	16 (m) 63.02680 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1999	12 (m) 72.79210 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2000	18 (m) 64.70900 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2001	24 (m) 108.09930 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2002	15 (m) 63.55100 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

2003	17 (m) 41.03175 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2004	10 (m) 20.94805 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2005	9 (m) 35.55405 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2006	8 (m) 54.37045 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2007	11 (m) 76.50505 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2008	18 (m) 84.80275 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2009	27 (m) 77.40840 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2010	20 (m) 62.88000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2011	15 (m) 32.60715 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2012	2 (m) 3.68500 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

Waste Code By Year Matrix Report					
Calif.	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

End of Report

DTSCNet

Department of Toxic Substances Control

HWTS - Calif. Waste Code By Year Matrix

EPA ID: CA0000031997 **Name:** QUALAWASH HOLDINGS LLC
Entity: Generator

Calif. Code	Description	Weight (in Tons)																		
		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Blank/Unknown					7.83960	0.79230	2.89380		0.45870						0.22935			8.67665	
121	ALKALINE SOLUTION (PH>=12.5) W/ METALS											0.22935	0.33755							
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS		0.45870		0.22500	1.34270	0.62550	1.45950	1.54270	1.02165	1.33835	5.03120	2.60000	0.76295	0.29190	0.43785	0.68805			
123	UNSPECIFIED ALKALINE SOLUTION		0.22930			0.22930					0.29190					0.45870				
131	AQ SOL 2 < PH < 12.5" CONTG REACTIVE ANIONS							0.12510												
132	AQ SOL WITH METALS(SMALLER THAN RESTRICTED LEVELS AND SEE 121)							0.06250	0.43780	0.68805							0.22935	0.22935		
133	AQ SOL (2 < PH < 12.5) W ORG RESIDUES >= 10%	26.37520	13.15630				10.63350	1.56740												
134	AQ SOL (2 < PH< 12.5) W ORG RESIDUES < 10%						0.54600													
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)		2.07900		0.15000		15.96000												9.40000	
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS					2.21820	1.87650	1.81390	3.21080	0.20850		0.15000					0.22935			
181	OTHER INORGANIC SOLID WASTE					0.09000		0.10420		0.22935										
211	HALOGENATED SOLVENTS		0.45870							0.22935				0.12500	0.22935	0.02085	0.22935			
212	OXYGENATED SOLVENTS															0.18150				
213	HYDROCARBON SOLVENTS							0.12500									0.68805			
214	UNSPECIFIED SOLVENT MIXTURE		2.75400		0.62100			0.64800	5.50800	4.10400	3.44700	4.39500	2.87200	1.18250	0.79200	0.18000	0.19800			
221	WASTE OIL AND MIXED OIL		3.67080		7.98000	30.02000	28.12000	14.44000	17.10000	4.56000	11.02000		20.90000	9.50000	17.29000	3.42000		2.09000	3.42000	0.41800
222	OIL/WATER SEPARATION SLUDGE			3.75300	5.42100															
223	UNSPECIFIED OIL-CONTAINING WASTE			1.55000		0.18500		2.83560	15.76260	0.20850										
231	PESTICIDE RINSEWATER						0.08340	0.35440	0.22930											
232	PESTICIDES/PESTICIDE PRODUCTION WASTE								0.37530											
272	POLYMERIC RESIN WASTE		0.68800		2.65860			0.79230	2.89790											
281	ADHESIVES				5.50440												0.45870			
291	LATEX WASTE		1.14670		12.77170	0.47500														
321	SEWAGE SLUDGE																	0.22935		
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS		2.19450	11.98900	10.96250	15.86900	8.87990	32.36150	56.53760	45.88650	23.93450	11.14250	8.84450	42.80000	57.34080	79.50050	73.37550	57.86180	11.11050	3.26700
341	ORGANIC LIQUIDS (NONSOLVENTS) W HALOGENS							0.10420												
343	UNSPECIFIED ORGANIC LIQUID MIXTURE		2.94100		0.45000	2.09100	3.40000	0.10200		0.56100					0.56100	0.37400	0.37400	0.56100		
351	ORGANIC SOLIDS WITH HALOGENS	3.37500	2.12500						1.35000									1.70000		
352	OTHER ORGANIC SOLIDS	1.12500			1.25000	2.25000	1.87500	1.25000	1.12500	2.53500	1.00000						0.25000			
491	UNSPECIFIED SLUDGE WASTE							3.66960	1.37600	1.66800										
551	LABORATORY WASTE CHEMICALS									0.27500										

561	DETERGENT AND SOAP		0.68800															0.20850		
723	LIQUIDS WITH CHROMIUM (VI) >= 500 MG/L					0.20850														
725	LIQUIDS WITH MERCURY >= 20 MG/L									0.91740										
791	LIQUIDS W PH<=2		0.22930			0.20850			0.64630								0.68805			
	TOTALS	**30.87520**	**32.81930**	**17.29200**	**47.99420**	**63.02680**	**72.79210**	**64.70900**	**108.09930**	**63.55100**	**41.03175**	**20.94805**	**35.55405**	**54.37045**	**76.50505**	**84.80275**	**77.40840**	**62.88000**	**32.60715**	**3.68500**

DTSCNet

Department of Toxic Substances Control

HWTS - RCRA Waste Code By Year Matrix

EPA ID: CA0000031997 **Name:** QUALAWASH HOLDINGS LLC
Entity: Generator

RCRA Code	*Description*	*Weight (in Tons)*																		
		1994	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
	Blank/Unknown	30.87520	23.31980	11.94200	39.05640	50.26100	65.38540	51.28930	91.73590	47.99890	27.10950	5.54650	16.21300	43.96550	64.65930	63.40100	44.54975	46.31670	18.15900	3.50350
D001	Ignitable		7.51850	5.35000	8.71280	9.48350	5.91270	6.35240	11.15770	7.28850	7.89300	8.78450	6.57350	9.23200	10.74700	18.07850	10.25970	15.65250	13.64815	0.18150
D002	Corrosives		1.14830		0.22500	2.13500	0.83400	1.68660	2.45300	1.02165	1.83335	5.18120	2.60000	0.76295	0.29190	1.07805	16.69525	0.00330		
D003	Reactivity								0.22930			0.22935								
D004	Arsenic							0.06250	0.22930	0.22935			0.27500							
D005	Barium									3.99300										
D006	Cadmium								0.20850											
D007	Chromium					0.43780				0.22935	0.29190									
D009	Mercury									0.91740										
D023	o-Cresol							0.06600												
D024	m-Cresol								0.16500											
D035	Methyl ethyl ketone										3.44850									
D039	Tetrachloroethylene									0.22935			0.06255							
F002	Halogenated solvents		0.45870																	
F003	Non-halogenated solvents																		0.80000	
F005	Non-halogenated solvents									0.01000										
NONE	Blank/Unknown											0.54450	9.50000							
U002	Acetone (I)															0.18150				
U028	Diethylhexyl phthalate							4.29000									5.47635	0.90750		
U034	Trichloroacetaldehyde							0.10420												
U154	Methyl alcohol															0.18000				
U188	Phenol		0.37400			0.70950	0.66000	0.85800	1.72260	1.63350	0.45550	0.66200	0.33000	0.28500	0.18150	0.18150				
U210	Tetrachloroethylene													0.12500	0.22935	1.47285	0.22935			
U239	Xylene (I)								0.19800						0.39600	0.22935	0.19800			
	TOTALS	**30.87520**	**32.81930**	**17.29200**	**47.99420**	**63.02680**	**72.79210**	**64.70900**	**108.09930**	**63.55100**	**41.03175**	**20.94805**	**35.55405**	**54.37045**	**76.50505**	**84.80275**	**77.40840**	**62.88000**	**32.60715**	**3.68500**

DTSCNet

Department of Toxic Substances Control

Database Search Site Summary

HWTS EPA ID Profile

EPA ID: CAL000348372 **Name:** QUALAWASH HOLDINGS LLC
Status: INACTIVE **Inactive Date:** 2010-08-23 **Contact:** DANIEL LANGDON
County: LOS ANGELES **NAICS:** 81149 **Record Entered:** 2009-12-01 **Last updated:** 2010-10-12

MAAPS of this site Google Map and Satellite View EnviroMapper of this site

	Name	Address	City	State	ZIP	Phone
Location	QUALAWASH HOLDINGS LLC	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Owner	QUALAWASH HOLDINGS LLC	4041 PARK OAKS BLVD STE 200	TAMPA	FL	336109524	8135697365
Oper/Contact	DANIEL LANGDON	8332 WILCOX AVE	SOUTH GATE	CA	902803500	3237718226

Based ONLY upon EPA ID: CAL000348372:

Calif. Manifests?	Out-of-State Manifests?	Transporter Registration?	Toxic Release Inventory Data?	Envirostor Data?
NO	NO	NO	NO	NO

End of Report

DTSCNet

Department of Toxic Substances Control

Database Search Site Summary

HWTS EPA ID Profile

EPA ID: CAD000031997 **Name:** QUALAWASH HOLDINGS, INC.
Status: ACTIVE **Inactive Date:** **Contact:** DANIEL LANGDON
County: LOS ANGELES **NAICS:** **Record Entered:** 2013-04-15 **Last updated:** 2013-04-15

MAAPS of this site Google Map and Satellite View EnviroMapper of this site

	Name	Address	City	State	ZIP	Phone
Location	QUALAWASH HOLDINGS, INC.	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Owner	QUALAWASH HOLDINGS, INC.	8332 WILCOX AVE	SOUTH GATE	CA	902803500	3233771822
Oper/Contact	DANIEL LANGDON	8332 WILCOX AVE	SOUTH GATE	CA	902803500	3233771822

Based ONLY upon EPA ID: CAD000031997:

Calif. Manifests?	Out-of-State Manifests?	Transporter Registration?	Toxic Release Inventory Data?	Envirostor Data?
YES	NO	NO	NO	NO

Calif. Manifest Counts and Total Tonnage

m = Manifest Count t=Total Tonnage

Ship Year	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
1994	8 (m) 11.69130 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1995	2 (m) 3.54410 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1996	2 (m) 4.96330 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1997	2 (m) 6.62950 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
1999	2 (m) 7.96640 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2000	3 (m) 8.59380 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2002	6 (m) 29.83000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2003	6 (m) 31.54000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2004	10 (m) 60.51500 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

2007	1 (m) 1.25000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2008	1 (m) 1.37500 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2009	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2011	8 (m) 25.55795 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2012	24 (m) 118.66435 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)
2013	1 (m) 11.15000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)	0 (m) 0.00000 (t)

Waste Code By Year Matrix Report					
Calif.	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

End of Report

DTSCNet

Department of Toxic Substances Control

HWTS - Calif. Waste Code By Year Matrix

EPA ID: CAD000031997 **Name:** QUALAWASH HOLDINGS, INC.
Entity: Generator

Calif. Code	*Description*	*Weight (in Tons)*													
		1994	**1995**	**1996**	**1997**	**1999**	**2000**	**2002**	**2003**	**2004**	**2007**	**2008**	**2011**	**2012**	**2013**
	Blank/Unknown	1.37180	0.68800			1.14670							1.50110	0.64635	
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	1.35930	1.14670			0.20850	0.43780								
131	AQ SOL 2 < PH < 12.5" CONTG REACTIVE ANIONS					0.04170									
133	AQ SOL (2 < PH < 12.5) W ORG RESIDUES >= 10%	0.22930				4.58700									
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0.69300											16.38000	22.73400	0.50000
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS					0.30000									
181	OTHER INORGANIC SOLID WASTE												2.92935		
214	UNSPECIFIED SOLVENT MIXTURE	6.24240	0.79200												
221	WASTE OIL AND MIXED OIL							29.83000	31.54000	60.51500				4.38900	1.20000
222	OIL/WATER SEPARATION SLUDGE			2.91900	5.62950										
223	UNSPECIFIED OIL-CONTAINING WASTE						0.20850								
291	LATEX WASTE														2.25000
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS			1.81500		0.55750	6.94750						4.74750	90.89500	6.95000
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	1.11180													0.25000
351	ORGANIC SOLIDS WITH HALOGENS											1.37500			
352	OTHER ORGANIC SOLIDS				1.00000	1.12500	1.00000				1.25000				

561	DETERGENT AND SOAP			0.22930											
741	LIQ W/ HALOG ORGANIC COMP >= 1000 MG/L	0.68370	0.45870												
792	LIQUIDS W PH<=2 W METALS		0.45870												
	TOTALS	**11.69130**	**3.54410**	**4.96330**	**6.62950**	**7.96640**	**8.59380**	**29.83000**	**31.54000**	**60.51500**	**1.25000**	**1.37500**	**25.55795**	**118.66435**	**11.15000**

DTSCNet

Department of Toxic Substances Control

HWTS - RCRA Waste Code By Year Matrix

EPA ID: CAD000031997 **Name:** QUALAWASH HOLDINGS, INC.
Entity: Generator

RCRA Code	*Description*	*Weight (in Tons)*													
		1994	**1995**	**1996**	**1997**	**1999**	**2000**	**2002**	**2003**	**2004**	**2007**	**2008**	**2011**	**2012**	**2013**
	Blank/Unknown	2.71790	0.68800	3.87430	6.62950	7.26290	7.67750	29.83000	31.54000	22.80000	1.25000	1.37500	19.85385	68.48785	5.70000
D001	Ignitable	6.47170	0.79200	1.08900		0.16500	0.34650						1.45200	15.70500	2.85000
D002	Corrosives	1.81800	1.60540			0.20850	0.43780						0.11000	0.18150	
D006	Cadmium													14.14050	
D007	Chromium													2.77200	
D018	Benzene													1.08900	
D026	Cresol												0.10000		
D035	Methyl ethyl ketone													4.37250	
D038	Pyridine													0.70950	
D039	Tetrachloroethylene	0.22930	0.45870												
F002	Halogenated solvents	0.45440													
F003	Non-halogenated solvents													6.43500	
F005	Non-halogenated solvents												1.37610		
NONE	Blank/Unknown									37.71500					
U002	Acetone (I)												0.12500	1.99650	
U112	Ethyl acetate													0.30000	
U113	Ethyl acrylate														0.25000
U159	Methyl ethyl ketone (MEK) (I,T)													0.30000	
U188	Phenol					0.16500	0.13200								0.25000
U220	Toluene													0.45000	
U239	Xylene (I)					0.16500							2.54100	1.72500	2.10000
	TOTALS	**11.69130**	**3.54410**	**4.96330**	**6.62950**	**7.96640**	**8.59380**	**29.83000**	**31.54000**	**60.51500**	**1.25000**	**1.37500**	**25.55795**	**118.66435**	**11.15000**

Attachment 4

Search Type: Real Property
Reference: 4 MBOSE PASI

QUALA SYSTEMS INC
8 records aggregated.

Record 1 out of 8 (Deed)

OWNER INFORMATION

Property Address: 5000 CECELIA ST
SOUTH GATE, CA 90280

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 4041 PARK OAKS BLVD
TAMPA, FL 33610-9524

Owner: QUALA SYSTEMS INC,
Owner Relationship: COMPANY / CORPORATION

Corporate Owner: CORPORATE OWNER

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032018
		Formatted APN:	6224-032-018
County:	LOS ANGELES	**Orginal APN:**	6224032018
		Property Type:	SERVICE (GENERAL PUBLIC)
		Land Use:	AUTO REPAIR
		Building Square Feet:	6100

TRANSACTION INFORMATION

Transaction Date: 11/17/2011
Recording Date: 12/07/2011
Document Number: 1650761
Document Type: TRUST DEED/MORTGAGE
Deed Type: DEED OF TRUST
Type of Transaction: REFINANCE
Mortgage Deed Type: DEED OF TRUST
Mortgage Date: 11/17/2011

Lender Name: BANK OF AMERICA
CHICAGO, IL
60603

Title Company: CHICAGO TITLE CO.
Refinance Loan: LOAN TO VALUE IS MORE THAN 50%
Mulitple Parcel Sale: MULTI / DETAIL PARCEL SALE

Record 2 out of 8 (Tax roll)

OWNER INFORMATION

Situs Address: 5000 CECELIA ST
BELL, CA 90201
Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610

Owner: QUALA SYSTEMS INC
Additional Name: QUALA SYSTEMS INC
Owner Corporate Indicator: CORPORATE OWNER
Owner Ownership Rights Code: CORPORATION
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS Sub Code: 000
FIPS State Code: CALIFORNIA
APN Sequence Number: 1
Unformatted APN: 6224032018
Formatted APN: 6224-032-018
Original APN: 6224032018
Property Indicator: SERVICE
Land Use: AUTO REPAIR
Zoning: SGM2*
Land Square Footage: 161675
Acres: 3.7116
Location Influence: CORNER

Legal Description: TR=PARCEL MAP AS PER BK 147 P 48-49 OF P M LOT 2
Lot Number: 2

TAX ASSESSOR INFORMATION

Tax Year:	2011	**Total Value Calculated Indicator:**	ASSESSED
Tax Amount:	$19,486.58		
Tax Code Area:	668		
Calculated Land Value:	$1,103,348.00		
Calculated Improvement Value:	$204,686.00		
Calculated Total Value:	$1,308,034.00		
Assessed Land Value:	$1,103,348.00		
Assessed Improvement Value:	$204,686.00		
Assessed Total Value:	$1,308,034.00		

BUILDING/IMPROVEMENT CHARACTERISTICS

Number of Stories:	1.00	**Construction Type:**	METAL
Number of Buildings:	3	**Construction Quality:**	AVERAGE
Year Built:	1955	**Exterior Wall Type:**	METAL
Lot Area:	6000161675	**Roof Type:**	GABLE
		Foundation Type:	CONCRETE
		Heat:	PARTIAL
		A/C Type:	AC OFFICE ONLY

LAST FULL MARKET SALE INFORMATION

Deed Type:	QUIT CLAIM	**Recording Date:**	08/10/1992
Type of Sale:	RESALE	**Document Number:**	1468317

PREVIOUS TRANSFER INFORMATION

Document Number:	883353	**Recording Date:**	06/13/1991
Sale Date:	05/1991		

HISTORICAL TAX ASSESSOR INFORMATION

2011 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,103,348.00
Calculated Improvement Value:	$204,686.00
Calculated Total Value:	$1,308,034.00
Assessed Total Value:	$1,308,034.00

2010 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,081,714.00
Calculated Improvement Value:	$200,673.00
Calculated Total Value:	$1,282,387.00
Assessed Total Value:	$1,282,387.00

2009 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,073,630.00
Calculated Improvement Value:	$199,174.00
Calculated Total Value:	$1,272,804.00
Assessed Total Value:	$1,272,804.00

2008 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,076,181.00
Calculated Improvement Value:	$199,648.00
Calculated Total Value:	$1,275,829.00
Assessed Total Value:	$1,275,829.00

2007 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,055,080.00
Calculated Improvement Value:	$195,734.00
Calculated Total Value:	$1,250,814.00
Assessed Total Value:	$1,250,814.00

2006 TAX YEAR

Situs Address:	5000 CECELIA ST SOUTH GATE, CA 90280
Mailing Address:	3802 CORPOREX PARK DR TAMPA, FL 33619-1125

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,034,393.00
Calculated Improvement Value:	$191,897.00
Calculated Total Value:	$1,226,290.00
Assessed Total Value:	$1,226,290.00

2005 TAX YEAR

Situs Address:	5000 CECELIA ST SOUTH GATE, CA 90280-3511
Mailing Address:	3802 CORPOREX PARK DR TAMPA, FL 33619-1125

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,014,111.00
Calculated Improvement Value:	$188,135.00
Calculated Total Value:	$1,202,246.00
Assessed Total Value:	$1,202,246.00

2003 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1109

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$956,869.00
Calculated Improvement Value:	$177,517.00
Calculated Total Value:	$1,134,386.00
Assessed Total Value:	$1,134,386.00

2001 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$919,713.00
Calculated Improvement Value:	$170,625.00
Calculated Total Value:	$1,090,338.00
Assessed Total Value:	$1,090,338.00

2001 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Absentee Owner:	YES
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$919,713.00
Calculated Improvement Value:	$170,625.00
Calculated Total Value:	$1,090,338.00
Assessed Total Value:	$1,090,338.00

1999 TAX YEAR

Situs Address: 5000 CECELIA ST
BELL, CA 90201

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN:	6224032018
Formatted APN:	6224-032-018
Original APN:	6224032018
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$1,127,990.00
Calculated Improvement Value:	$557,216.00
Calculated Total Value:	$1,685,206.00
Assessed Total Value:	$1,685,206.00

Record 3 out of 8 (Deed)

OWNER INFORMATION

Property Address: SOUTH GATE, CA 90280

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 4041 PARK OAKS BLVD
TAMPA, FL 33610-9524

Owner: QUALA SYSTEMS INC,

Owner Relationship: COMPANY / CORPORATION

Corporate Owner: CORPORATE OWNER

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032018
		Formatted APN:	6224-032-018
County:	LOS ANGELES	**Orginal APN:**	6224032018
		Property Type:	SERVICE (GENERAL PUBLIC)
		Land Use:	AUTO REPAIR
		Building Square Feet:	6100

TRANSACTION INFORMATION

Transaction Date:	12/28/2010
Recording Date:	12/30/2010
Document Number:	1944456
Document Type:	MULTI COUNTY/STATE - OPEN END MORTGAGE
Deed Type:	DEED OF TRUST
Type of Transaction:	REFINANCE

Mortgage Amount: $225,000,000.00
Mortgage Type: CONVENTIONAL
Mortgage Deed Type: DEED OF TRUST
Mortgage Date: 12/28/2010

Lender Name: BANK OF NY MELLON TR CO NA
Lender Address: 10161 CENTURION PKWY N
JACKSONVILLE, FL
32256

Title Company: CHICAGO TITLE CO.
Refinance Loan: LOAN TO VALUE IS MORE THAN 50%
Mulitple Parcel Sale: MULTI / DETAIL PARCEL SALE

Record 4 out of 8 (Deed)

OWNER INFORMATION

Property Address:
BELL, CA

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Owner: QUALA SYSTEMS INC,

Corporate Owner: YES

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS State Code: CALIFORNIA
County: LOS ANGELES

APN: 001
Unformatted APN: 6224032018
Property Type: INDUSTRIAL LIGHT

TRANSACTION INFORMATION

Recording Date: 12/14/1992
Document Number: 2343609
Document Type: GRANT DEED

Private Party Lender: YES
Construction Type: RESALE
Refinance Loan: YES

Seller Name: BALSER BERNARR F

Type of Transaction: NOMINAL

Mortgage Amount: $1,155,023.00
Mortgage Type: PRIVATE PARTY LENDER

Record 5 out of 8 (Deed)

OWNER INFORMATION

Property Address: BELL, CA
Mailing Address: 1708 CAMINO LA VIS
FULLERTON, CA 92833-1919

Additional Owner 1: BALSER, BERNARR

Owner: BALSER, BERNARR F
Partial Interest: YES

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS State Code: CALIFORNIA
County: LOS ANGELES

APN: 001
Unformatted APN: 6224032018
Property Type: INDUSTRIAL LIGHT

TRANSACTION INFORMATION

Transaction Date: 05/1991
Recording Date: 06/13/1991
Document Number: 883354
Document Type: QUIT CLAIM

Construction Type: RESALE
InterFamily Transaction: YES
Purchase Payment: CASH

Seller Name: BALSER WILLIAM E
Type of Transaction: NOMINAL

Record 6 out of 8 (Deed)

OWNER INFORMATION

Property Address: BELL, CA
Mailing Address: 1708 CAMINO LA VIS
FULLERTON, CA 92833-1919

Additional Owner 1: BALSER, BERNARR

Owner: BALSER, BERNARR F

Partial Interest: YES

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS State Code: CALIFORNIA
County: LOS ANGELES
APN: 001
Unformatted APN: 6224032018
Property Type: INDUSTRIAL LIGHT

TRANSACTION INFORMATION

Transaction Date: 05/1991
Recording Date: 06/13/1991
Document Number: 883355
Document Type: QUIT CLAIM
Construction Type: RESALE
InterFamily Transaction: YES
Purchase Payment: CASH

Seller Name: BALSER DAVID
Type of Transaction: NOMINAL

Record 7 out of 8 (Deed)

OWNER INFORMATION

Property Address:
BELL, CA
Mailing Address: 1708 CAMINO LA VIS
FULLERTON, CA 92833-1919
Additional Owner 1: BALSER, BERNARR

Owner: BALSER, BERNARR F
Partial Interest: YES

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS State Code: CALIFORNIA
County: LOS ANGELES
APN: 001
Unformatted APN: 6224032018
Property Type: INDUSTRIAL LIGHT

TRANSACTION INFORMATION

Transaction Date: 05/1991
Recording Date: 06/13/1991
Document Number: 883353
Construction Type: RESALE
Purchase Payment: CASH

Document Type: QUIT CLAIM

Seller Name: CARTER BEVERLY
Type of Transaction: NOMINAL

Record 8 out of 8 (Deed)

OWNER INFORMATION

Property Address: BELL, CA

Additional Owner 1: BALSER, BERNARR

Mailing Address: 1708 CAMINO LA VIS
FULLERTON, CA 92833-1919

Owner: BALSER, BERNARR F
Partial Interest: YES

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS State Code: CALIFORNIA
County: LOS ANGELES

APN: 001
Unformatted APN: 6224032018
Property Type: INDUSTRIAL LIGHT

TRANSACTION INFORMATION

Transaction Date: 05/1991
Recording Date: 06/13/1991
Document Number: 883352
Document Type: QUIT CLAIM

Construction Type: RESALE
Purchase Payment: CASH

Seller Name: VILLEGAS LINDA
Type of Transaction: NOMINAL

Search Type: Real Property
Reference: 4 MBOSE PASI

QUALA SYSTEMS INC
8 records aggregated.

Record 1 out of 8 (Deed)

OWNER INFORMATION

Property Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 4041 PARK OAKS BLVD
TAMPA, FL 33610-9524

Owner: QUALA SYSTEMS INC,
Owner Relationship: COMPANY / CORPORATION

Corporate Owner: CORPORATE OWNER

Additional Owner 1: QUALA SYSTEMS INC

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Formatted APN:	6224-032-011
County:	LOS ANGELES	**Orginal APN:**	6224032011
		Property Type:	OFFICE BUILDING
		Land Use:	OFFICE BUILDING
		Building Square Feet:	7700

TRANSACTION INFORMATION

Transaction Date: 11/17/2011
Recording Date: 12/07/2011
Document Number: 1650761
Document Type: TRUST DEED/MORTGAGE
Deed Type: DEED OF TRUST
Type of Transaction: REFINANCE
Mortgage Deed Type: DEED OF TRUST
Mortgage Date: 11/17/2011

Lender Name: BANK OF AMERICA
CHICAGO, IL
60603

Title Company: CHICAGO TITLE CO.
Refinance Loan: LOAN TO VALUE IS MORE THAN 50%
Mulitple Parcel Sale: MULTI / DETAIL PARCEL SALE

Record 2 out of 8 (Tax roll)

OWNER INFORMATION

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511
Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610

Owner: QUALA SYSTEMS INC
Additional Name: QUALA SYSTEMS INC
Owner Corporate Indicator: CORPORATE OWNER
Owner Ownership Rights Code: CORPORATION
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS Sub Code: 000
FIPS State Code: CALIFORNIA
APN Sequence Number: 1
Unformatted APN: 6224032011
Formatted APN: 6224-032-011
Original APN: 6224032011
Property Indicator: OFFICE BUILDING
Land Use: OFFICE BUILDING
Zoning: SGM2*
Land Square Footage: 41895
Acres: 0.9618

Subdivision Name: 180
Subdivision Plat Book: 13
Subdivision Plat Page: 198
Legal Description: TRACT # 180 LOT 460
Subdivision Tract Number: 180
Lot Number: 460

TAX ASSESSOR INFORMATION

Tax Year: 2011
Tax Amount: $9,724.15

Total Value Calculated Indicator: ASSESSED

Tax Code Area:	668
Calculated Land Value:	$470,541.00
Calculated Improvement Value:	$228,255.00
Calculated Total Value:	$698,796.00
Assessed Land Value:	$470,541.00
Assessed Improvement Value:	$228,255.00
Assessed Total Value:	$698,796.00

BUILDING/IMPROVEMENT CHARACTERISTICS

Number of Buildings:	1
Year Built:	1966
Lot Area:	8000041895

LAST FULL MARKET SALE INFORMATION

Sale Date:	10/23/1997	**Recording Date:**	11/05/1997
Seller Name:	WESTERN MOTOR TARIFF BUREA	**Document Number:**	1762913
Deed Type:	GRANT DEED		
Type of Sale:	RESALE		

PREVIOUS TRANSFER INFORMATION

Sale Price: $50,000.00 **Recording Date:** 04/22/1966
Sale Code: FULL

HISTORICAL TAX ASSESSOR INFORMATION

2011 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$470,541.00
Calculated Improvement Value:	$228,255.00
Calculated Total Value:	$698,796.00
Assessed Total Value:	$698,796.00

2010 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$461,315.00
Calculated Improvement Value:	$223,780.00
Calculated Total Value:	$685,095.00
Assessed Total Value:	$685,095.00

2009 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$457,868.00
Calculated Improvement Value:	$222,108.00
Calculated Total Value:	$679,976.00
Assessed Total Value:	$679,976.00

2008 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$458,956.00
Calculated Improvement Value:	$222,636.00
Calculated Total Value:	$681,592.00
Assessed Total Value:	$681,592.00

2007 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$449,957.00
Calculated Improvement Value:	$218,271.00
Calculated Total Value:	$668,228.00
Assessed Total Value:	$668,228.00

2006 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$441,135.00
Calculated Improvement Value:	$213,992.00
Calculated Total Value:	$655,127.00
Assessed Total Value:	$655,127.00

2005 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$432,486.00
Calculated Improvement Value:	$209,797.00
Calculated Total Value:	$642,283.00
Assessed Total Value:	$642,283.00

2003 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1109

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$408,075.00
Calculated Improvement Value:	$197,956.00
Calculated Total Value:	$606,031.00
Assessed Total Value:	$606,031.00

2001 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$392,230.00
Calculated Improvement Value:	$328,766.00
Calculated Total Value:	$720,996.00
Assessed Total Value:	$720,996.00

2001 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Absentee Owner:	YES
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$392,230.00
Calculated Improvement Value:	$328,766.00
Calculated Total Value:	$720,996.00
Assessed Total Value:	$720,996.00

1999 TAX YEAR

Situs Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN:	6224032011
Formatted APN:	6224-032-011
Original APN:	6224032011
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$415,560.00
Calculated Improvement Value:	$337,642.00
Calculated Total Value:	$753,202.00
Assessed Total Value:	$753,202.00

Record 3 out of 8 (Deed)

OWNER INFORMATION

Property Address:	5042 CECELIA ST SOUTH GATE, CA 90280-3511
Mailing Address:	4041 PARK OAKS BLVD TAMPA, FL 33610-9524

Owner:	QUALA SYSTEMS INC,
Owner Relationship:	COMPANY / CORPORATION
Corporate Owner:	CORPORATE OWNER
Additional Owner 1:	QUALA SYSTEMS INC

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Formatted APN:	6224-032-011
County:	LOS ANGELES	**Orginal APN:**	6224032011
		Property Type:	OFFICE BUILDING
		Land Use:	OFFICE BUILDING
		Building Square Feet:	7700

TRANSACTION INFORMATION

Transaction Date:	12/28/2010
Recording Date:	12/30/2010
Document Number:	1944456

Document Type: MULTI COUNTY/STATE - OPEN END MORTGAGE
Deed Type: DEED OF TRUST
Type of Transaction: REFINANCE

Mortgage Amount: $225,000,000.00
Mortgage Type: CONVENTIONAL
Mortgage Deed Type: DEED OF TRUST
Mortgage Date: 12/28/2010

Lender Name: BANK OF NY MELLON TR CO NA
Lender Address: 10161 CENTURION PKWY N
JACKSONVILLE, FL
32256

Title Company: CHICAGO TITLE CO.
Refinance Loan: LOAN TO VALUE IS MORE THAN 50%
Mulitple Parcel Sale: MULTI / DETAIL PARCEL SALE

Record 4 out of 8 (Deed)

OWNER INFORMATION

Property Address: 5042 CECELIA ST
SOUTH GATE, CA 90280-3511
Mailing Address: 9 W 57TH ST
NEW YORK, NY 10019-2701

Owner: QUALA SYSTEMS INC,
Co-Owner Name: APOLLO MANAGEMENT
Owner Relationship: COMPANY / CORPORATION

Corporate Owner: CORPORATE OWNER

Additional Owner 1: QUALA SYSTEMS INC
Ownership 1 Rights: COMPANY / CORPORATION

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Formatted APN:	6224-032-011
County:	LOS ANGELES	**Orginal APN:**	6224032011
		Formatted APN - IRIS:	6224-032-011
		Property Type:	OFFICE BUILDING
		Land Use:	OFFICE BUILDING
		Building Square Feet:	7700

TRANSACTION INFORMATION

Transaction Date:	12/18/2007
Recording Date:	12/27/2007
Document Number:	2841673
Document Type:	TRUST DEED/MORTGAGE
Deed Type:	DEED OF TRUST
Type of Transaction:	REFINANCE
Mortgage Deed Type:	DEED OF TRUST
Mortgage Date:	12/18/2007

Interest Rate:	ADJUSTABLE INT RATE LOAN
Lender Name:	GENERAL ELEC CAP CORP NORWALK, CT 06851

Title Company:	CHICAGO TITLE CO.
Equity Loan:	SECOND

Record 5 out of 8 (Deed)

OWNER INFORMATION

Property Address:	5042 CECELIA ST SOUTH GATE, CA 90280-3511
Mailing Address:	9 W 57TH ST NEW YORK, NY 10019-2701

Owner:	QUALA SYSTEMS INC,
Co-Owner Name:	APOLLO MANAGEMENT
Owner Relationship:	COMPANY / CORPORATION

Corporate Owner: CORPORATE OWNER

Additional Owner 1: QUALA SYSTEMS INC
Ownership 1 Rights: COMPANY / CORPORATION

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Formatted APN:	6224-032-011
County:	LOS ANGELES	**Orginal APN:**	6224032011
		Formatted APN - IRIS:	6224-032-011
		Property Type:	OFFICE BUILDING
		Land Use:	OFFICE BUILDING
		Building Square Feet:	7700

TRANSACTION INFORMATION

Transaction Date: 12/18/2007
Recording Date: 12/27/2007
Document Number: 2841671
Document Type: TRUST DEED/MORTGAGE
Deed Type: DEED OF TRUST
Type of Transaction: REFINANCE
Mortgage Deed Type: DEED OF TRUST
Mortgage Date: 12/18/2007

Interest Rate: ADJUSTABLE INT RATE LOAN
Lender Name: GENERAL ELEC CAP CORP
NORWALK, CT
06851

Title Company: CHICAGO TITLE CO.
Equity Loan: SECOND
Mulitple Parcel Sale: MULTIPLE PARCEL SALE

Record 6 out of 8 (Deed)

OWNER INFORMATION

Property Address: BELL, CA

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Owner: QUALA SYSTEMS INC,

Corporate Owner: YES

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Property Type:	OFFICE BUILDING
County:	LOS ANGELES	**Building Square Feet:**	7700

TRANSACTION INFORMATION

Recording Date: 11/05/1997

Construction Type: RESALE

Document Number: 1762913

Purchase Payment: CASH

Document Type: GRANT DEED

Seller Name: WESTERN MOTOR TARIFF BUREA

Type of Transaction: NOMINAL

Record 7 out of 8 (Deed)

OWNER INFORMATION

Property Address: CA 90280

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Owner: QUALA SYSTEMS INC,

Corporate Owner: YES

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Property Type:	OFFICE BUILDING
County:	LOS ANGELES	**Building Square Feet:**	7700

TRANSACTION INFORMATION

Transaction Date:	10/23/1997	**Construction Type:**	RESALE
Recording Date:	11/05/1997	**Purchase Payment:**	CASH
Document Number:	1762913		

Seller Name: WESTERN MOTOR TARIFF BUREAU
Consideration: ESTIMATED
Type of Transaction: RESALE

Record 8 out of 8 (Deed)

OWNER INFORMATION

Property Address: BELL, CA

Additional Owner 1: MARCOS, SABRY

Mailing Address: 5580 E 2ND
LONG BEACH, CA 90803-3946

Owner: MARCOS, SABRY

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032011
		Property Type:	OFFICE BUILDING
County:	LOS ANGELES	**Building Square Feet:**	7700

TRANSACTION INFORMATION

Transaction Date:	07/1986	**Interest Rate:**	ADJUSTABLE
Recording Date:	09/19/1986	**Private Party Lender:**	YES
Document Number:	1246213	**Construction Type:**	RESALE
Document Type:	GRANT DEED	**Purchase Payment:**	MORTGAGE

Seller Name: COCA ARTHUR MARK

Sale Price: $130,000.00
Type of Transaction: RESALE

Mortgage Amount: $100,000.00
Mortgage Type: PRIVATE PARTY LENDER

Search Type: Real Property
Reference: 4 MBOSE PASI

QUALA SYSTEMS INC
6 records aggregated.

Record 1 out of 6 (Deed)

OWNER INFORMATION

Property Address:	8332 WILCOX AVE SOUTH GATE, CA 90280-3500
Mailing Address:	4041 PARK OAKS BLVD TAMPA, FL 33610-9524
Owner:	QUALA SYSTEMS INC,
Owner Relationship:	COMPANY / CORPORATION
Corporate Owner:	CORPORATE OWNER
Additional Owner 1:	QUALA SYSTEMS INC

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032017
		Formatted APN:	6224-032-017
County:	LOS ANGELES	**Orginal APN:**	6224032017
		Property Type:	VACANT
		Land Use:	INDUSTRIAL LOT

TRANSACTION INFORMATION

Transaction Date:	11/17/2011
Recording Date:	12/07/2011
Document Number:	1650761
Document Type:	TRUST DEED/MORTGAGE
Deed Type:	DEED OF TRUST
Type of Transaction:	REFINANCE
Mortgage Deed Type:	DEED OF TRUST
Mortgage Date:	11/17/2011

Lender Name: BANK OF AMERICA
CHICAGO, IL
60603

Title Company: CHICAGO TITLE CO.
Refinance Loan: LOAN TO VALUE IS MORE THAN 50%
Mulitple Parcel Sale: MULTIPLE PARCEL SALE

Record 2 out of 6 (Tax roll)

OWNER INFORMATION

Situs Address: 5032 CECELIA ST
BELL, CA 90201
Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610

Owner: QUALA SYSTEMS INC
Additional Name: QUALA SYSTEMS INC
Owner Corporate Indicator: CORPORATE OWNER
Owner Ownership Rights Code: CORPORATION
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)

PROPERTY INFORMATION

FIPS Code: LOS ANGELES
FIPS Sub Code: 000
FIPS State Code: CALIFORNIA
APN Sequence Number: 1
Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Property Indicator: VACANT
Land Use: INDUSTRIAL LOT
Zoning: SGM2*
Land Square Footage: 12624
Acres: 0.2898

Legal Description: TR=PARCEL MAP AS PER BK 147 P 48-49 OF P M LOT 1
Lot Number: 1

TAX ASSESSOR INFORMATION

Tax Year:	2011	**Total Value Calculated Indicator:**	ASSESSED
Tax Amount:	$2,551.45		
Tax Code Area:	668		
Calculated Land Value:	$192,831.00		
Calculated Total Value:	$192,831.00		
Assessed Land Value:	$192,831.00		
Assessed Total Value:	$192,831.00		

BUILDING/IMPROVEMENT CHARACTERISTICS

Lot Area: 8000012624

LAST FULL MARKET SALE INFORMATION

Sale Date:	12/18/1998	**Recording Date:**	02/04/1999
Seller Name:	MULHOLLAND TRUST	**Document Number:**	182294
Sale Price:	$154,500.00		
Sale Code:	FULL		
Deed Type:	GRANT DEED		
Type of Sale:	RESALE		

PREVIOUS TRANSFER INFORMATION

HISTORICAL TAX ASSESSOR INFORMATION

2011 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN:	6224032017
Formatted APN:	6224-032-017
Original APN:	6224032017
Absentee Owner:	ABSENTEE (MAIL AND SITUS NOT=)
Owner:	QUALA SYSTEMS INC
Calculated Land Value:	$192,831.00
Calculated Total Value:	$192,831.00
Assessed Total Value:	$192,831.00

2010 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $189,050.00
Calculated Total Value: $189,050.00
Assessed Total Value: $189,050.00

2009 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 4041 PARK OAKS BLVD 200
TAMPA, FL 33610-9524

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $187,638.00
Calculated Total Value: $187,638.00
Assessed Total Value: $187,638.00

2008 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $188,084.00
Calculated Total Value: $188,084.00
Assessed Total Value: $188,084.00

2007 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201
Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $184,397.00
Calculated Total Value: $184,397.00
Assessed Total Value: $184,397.00

2006 TAX YEAR

Situs Address: 5032 CECELIA ST
SOUTH GATE, CA 90280
Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $180,782.00
Calculated Total Value: $180,782.00
Assessed Total Value: $180,782.00

2005 TAX YEAR

Situs Address: 5032 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1125

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $177,238.00
Calculated Total Value: $177,238.00
Assessed Total Value: $177,238.00

2003 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 3802 CORPOREX PARK DR
TAMPA, FL 33619-1109

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $167,234.00
Calculated Total Value: $167,234.00
Assessed Total Value: $167,234.00

2001 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: YES
Owner: QUALA SYSTEMS INC
Calculated Land Value: $160,741.00
Calculated Total Value: $160,741.00
Assessed Total Value: $160,741.00

2001 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Absentee Owner: ABSENTEE (MAIL AND SITUS NOT=)
Owner: QUALA SYSTEMS INC
Calculated Land Value: $160,741.00
Calculated Total Value: $160,741.00
Assessed Total Value: $160,741.00

1999 TAX YEAR

Situs Address: 5032 CECELIA ST
BELL, CA 90201

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Unformatted APN: 6224032017
Formatted APN: 6224-032-017
Original APN: 6224032017
Owner: QUALA SYSTEMS INC
Calculated Land Value: $93,534.00
Calculated Improvement Value: $64,056.00
Calculated Total Value: $157,590.00
Assessed Total Value: $157,590.00

Record 3 out of 6 (Deed)

OWNER INFORMATION

Property Address: SOUTH GATE, CA 90280

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 4041 PARK OAKS BLVD TAMPA, FL 33610-9524

Owner: QUALA SYSTEMS INC,

Owner Relationship: COMPANY / CORPORATION

Corporate Owner: CORPORATE OWNER

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032017
		Formatted APN:	6224-032-017
County:	LOS ANGELES	**Orginal APN:**	6224032017
		Property Type:	VACANT
		Land Use:	INDUSTRIAL LOT

TRANSACTION INFORMATION

Transaction Date: 12/28/2010

Recording Date: 12/30/2010

Document Number: 1944456

Document Type: MULTI COUNTY/STATE - OPEN END MORTGAGE

Deed Type: DEED OF TRUST

Type of Transaction: REFINANCE

Mortgage Amount: $225,000,000.00

Mortgage Type: CONVENTIONAL

Mortgage Deed Type: DEED OF TRUST

Mortgage Date: 12/28/2010

Lender Name: BANK OF NY MELLON TR CO NA
Lender Address: 10161 CENTURION PKWY N
JACKSONVILLE, FL
32256

Title Company: CHICAGO TITLE CO.
Refinance Loan: LOAN TO VALUE IS MORE THAN 50%
Mulitple Parcel Sale: MULTIPLE PARCEL SALE

Record 4 out of 6 (Deed)

OWNER INFORMATION

Property Address:
CA 90280

Additional Owner 1: QUALA SYSTEMS INC

Mailing Address: 102 PICKERING WAY
EXTON, PA 19341-1330

Owner: QUALA SYSTEMS INC,

Corporate Owner: YES

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032017
		Formatted APN:	6224-032-017
County:	LOS ANGELES	**Property Type:**	INDUSTRIAL LIGHT
		Building Square Feet:	5000

TRANSACTION INFORMATION

Transaction Date: 12/18/1998
Recording Date: 02/04/1999
Document Number: 182294
Document Type: GRANT DEED

Seller Name: MULHOLLAND TRUST
Sale Price: $154,500.00
Consideration: SALE PRICE (FULL)
Type of Transaction: RESALE

Title Company: CONTINENTAL LAWYERS TITLE CO.
Construction Type: RESALE
Purchase Payment: CASH

Record 5 out of 6 (Deed)

OWNER INFORMATION

Property Address:
CA 90201
Mailing Address: 7505 SARABETH ST
DOWNEY, CA 90242-2233

Owner: RALPH E & L M MULHOLLAND PT,

Corporate Owner: YES

Additional Owner 1: RALPH E & L M MULHOLLAND PT

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032017
		Property Type:	INDUSTRIAL LIGHT
County:	LOS ANGELES	**Building Square Feet:**	5000

TRANSACTION INFORMATION

Recording Date:	09/17/1991	**Construction Type:**	RESALE
Document Number:	1462952	**Purchase Payment:**	CASH

Seller Name: MULHOLLAND RALPH & LORETTA
Consideration: ESTIMATED
Type of Transaction: RESALE

Record 6 out of 6 (Deed)

OWNER INFORMATION

Property Address: 5032 CECELIA ST
SOUTH GATE, CA 90280-3511

Mailing Address: 7505 SARABETH ST
DOWNEY, CA 90242-2233

Owner: MULHOLLAND, RALPH E

Additional Owner 1: MULHOLLAND, RALPH

PROPERTY INFORMATION

FIPS Code:	LOS ANGELES	**APN:**	001
FIPS State Code:	CALIFORNIA	**Unformatted APN:**	6224032017
		Property Type:	INDUSTRIAL LIGHT
County:	LOS ANGELES	**Building Square Feet:**	5000

TRANSACTION INFORMATION

Transaction Date:	08/1991	**Construction Type:**	RESALE
Recording Date:	09/17/1991	**InterFamily Transaction:**	YES
Document Number:	1462952	**Purchase Payment:**	CASH
Document Type:	GRANT DEED		

Seller Name: MULHOLLAND RALPH E
Type of Transaction: NOMINAL

Reference:
DTSC, 2017a

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
ENVIROSTOR

QUALITY DISTRIBUTION AKA UNIVAR USA (60001785)

SIGN UP FOR EMAIL ALERTS

5042 CECILA STREET
CUDAHY, CA 90201
LOS ANGELES COUNTY
SITE TYPE: EVALUATION

PROJECT MANAGER: PATRICK MOVLAY
SUPERVISOR: JAVIER HINOJOSA
OFFICE: CLEANUP CHATSWORTH

Site Information

CLEANUP STATUS
ACTIVE AS OF 9/29/2015

SITE TYPE: EVALUATION
NATIONAL PRIORITIES LIST: NO
ACRES: 1.5 ACRES
APN: 6224-032-011, 6224-032-018, 6224032011, 6224032017, 6224032018
CLEANUP OVERSIGHT AGENCIES:
DTSC - SITE CLEANUP PROGRAM - LEAD
US EPA - LEAD

ENVIROSTOR ID: 60001785
SITE CODE: 301571
SPECIAL PROGRAM: EPA - PASI
FUNDING: EPA GRANT
ASSEMBLY DISTRICT: 63
SENATE DISTRICT: 33

Regulatory Profile

PAST USE(S) THAT CAUSED CONTAMINATION
HAZARDOUS WASTE STORAGE - TANKS/CONTAINERS, HAZARDOUS MATERIAL - TRANSFER STATION, WAREHOUSING

POTENTIAL CONTAMINANTS OF CONCERN
UNDER INVESTIGATION

POTENTIAL MEDIA AFFECTED
OTHER GROUNDWATER AFFECTED (USES OTHER THAN DRINKING WATER)

Site History

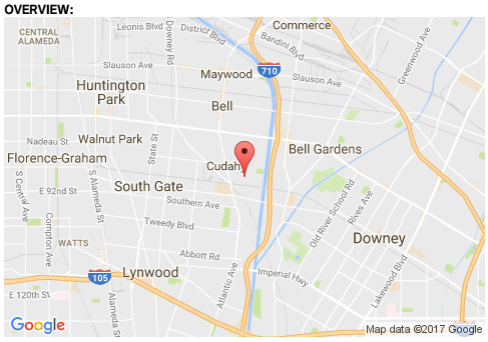
The Site will be investigated under 710 Corridor SI grant during 15/16 FY. The QualaWash site is located in a mixed industrial and residential area at the northeastern portion of the city of South Gate, California; adjacent to the border with the city of Cudahy. The site occupies approximately five acres at the southeast corner of the intersection of Wilcox Avenue and Cecelia Street. The QualaWash site is occupied by six primary structures. Operations at the QualaWash site are primarily divided into two separate activities that include bulk chemical tank truck distribution, which is conducted by Winsome, and bulk chemical tank trailer cleaning, which is conducted by QualaWash. The two entities both utilize the property for tractor and trailer parking. Winsome maintains an office at the northeastern portion of the site and a tractor trailer maintenance facility at the northwestern portion of the facility. QualaWash utilizes the central portion for tank washing activities that typically operate 24 hours a day, seven days a week, and service approximately 40 tankers per day. The site has reportedly been used for tank trailer hauling and washing activities since at least 1986. In addition, activities involving tractor trailers have been conducted at the site since at least 1972; however, the specific operations associated with these earlier activities are not known. A QualaWash representative indicated during an interview with the DTSC that caustics, soaps, polymers, and latex are generally stored for a short time on the site. Based on identified hazardous waste manifests and generator reports, hazardous substances used and/or stored on the site include, but are not limited to: halogenated solvents, including PCE; hydrocarbon solvents; oxygenated solvents; non-halogenated solvents, including MEK; and metals, including chromium, cadmium, arsenic, and mercury.

Completed Activities

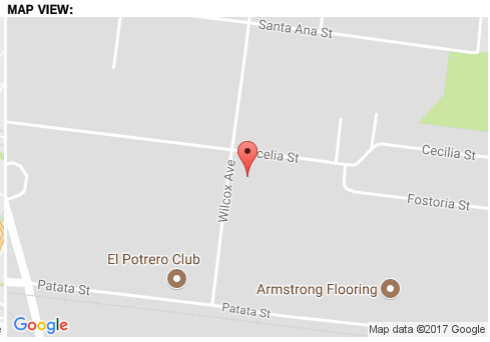
	DOCUMENT TYPE	DATE COMPLETED	COMMENTS
[VIEW DOCS]	PA/SI Site Investigation	11/1/2015	
[VIEW DOCS]	Correspondence	9/21/2015	
[VIEW DOCS]	PA/SI Site Screening	9/12/2013	

FOR AN INTERACTIVE MAP, CLICK ON AN IMAGE BELOW

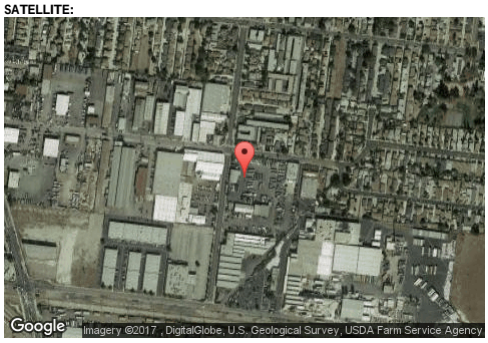
OVERVIEW:



MAP VIEW:



SATELLITE:



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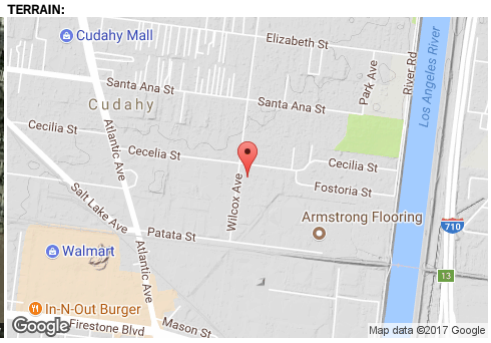

RELATED ENVIROSTOR SITES

NO RELATED ENVIROSTOR SITES FOUND

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0.5 seconds

Reference:
DTSC, 2017b

Department of Toxic Substances Control

Matthew Rodriquez
Secretary for
Environmental Protection

Barbara A. Lee , Director
1001 I Street
P.O. Box 806
Sacramento , CA 958120806

Edmund G. Brown Jr.
Governor

EPA ID PROFILE

Map

ID Number:	CA0000031997	**Status:**	ACTIVE
Name:	QUALAWASH HOLDINGS LLC	**Inactive Date:**	
County:	LOS ANGELES	**Record Entered:**	12/8/1995 12:00:00 AM
NAICS:	81149	**Last Updated:**	7/11/2017 8:06:12 AM

	Name	Address	City	State	Zip Code	Phone
Location	QUALAWASH HOLDINGS LLC	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		8332 WILCOX AVENUE	SOUTH GATE	CA	902800000	
Owner	QUALAWASH HOLDINGS LLC	1302 N. 19TH STREET	TAMPA	FL	336050000	4238421488
Operator/Contact	CHUCK BOYD	1302 N. 19TH STREET	TAMPA	FL	33605	4238421488

Based Only Upon ID Number: **CA0000031997**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	ACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1994	11 50.64020	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1995	29 44.58735	0 0.00000	0 0.00000	0 0.00000	0 0.00000

1996	10 20.09200	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1997	11 47.99420	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1998	16 63.02680	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1999	13 66.36925	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2000	18 64.70900	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2001	24 108.09930	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2002	15 60.77180	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2003	17 41.03175	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2004	10 20.94805	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2005	9 35.55405	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2006	8 54.37045	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2007	11 76.50505	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2008	20 87.30275	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2009	28 79.05840	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2010	20 62.88000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2011	15 32.60715	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2012	2 3.68500	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2013	25 73.98905	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2014	39 184.65150	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2015	74 161.40740	0 0.00000	0 0.00000	2 0.42735	0 0.00000
2016	50 91.57420	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Results for California Waste Codes, as a Generator, for EPA-ID: CA0000031997

Calif. Waste Code	Description	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Blank/Unknown	0	1.14675	0	0	7.8396	0.7923	2.8938	0	0.4587	0	0	0	0	0	0.22935	0	0	8.67665	0	5.27505	18.57735	4.7245	2.06415
121	ALKALINE SOLUTION (PH>=12.5) W/ METALS	0	0.22935	0	0	0	0	0	0	0	0	0.22935	0.33755	0	0	0	0	0	0	0	0	0	0	0
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	0	0.4587	0	0.225	1.3427	0.85485	1.4595	1.5427	1.02165	1.33835	5.0312	2.6	0.76295	0.2919	0.43785	0.68805	0	0	0	0	0	4.587	0.4587
123	UNSPECIFIED ALKALINE SOLUTION	0	0.2293	0	0	0.2293	0	0	0	0	0.2919	0	0	0	0	0.4587	0	0	0	0	0	0	0	2.2518
131	AQ SOL 2 < PH < 12.5 CONTG REACTIVE ANIONS	0	0	0	0	0	0	0.1251	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	AQ SOL WITH METALS(SMALLER THAN RESTRICTED LEVELS AND SEE 121)	0	0	0	0	0	0	0.0625	0.4378	0.68805	0	0	0	0	0	0	0.22935	0.22935	0	0	0	0	0	0
133	AQ SOL (2 < PH < 12.5) W ORG RESIDUES >= 10%	45.1402	14.30305	0	0	0	8.5485	1.5674	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	AQ SOL (2 < PH < 12.5) W ORG RESIDUES < 10%	0	0	0	0	0	0.546	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.924
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0	2.541	0	0.15	0	10.5	0	0	0	0	0	0	0	0	0	0	0	9.4	0	0.231	3.465	0.924	1.743
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS	0	0	0	0	2.2182	2.0433	1.8139	3.2108	0.2085	0	0.15	0	0	0	0	0.22935	0	0	0	0	0.3336	0	4.1283
181	OTHER INORGANIC SOLID WASTE	0	0	0	0	0.09	0	0.1042	0	0.22935	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4587
211	HALOGENATED SOLVENTS	0	0.4587	0	0	0	0	0	0	0.22935	0	0	0	0.125	0.22935	0.02085	0.22935	0	0	0	0	0	0.22935	0
212	OXYGENATED SOLVENTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1815	0	0	0	0	6.897	16.1535	48.0535	4.9005
213	HYDROCARBON SOLVENTS	0	0	0	0	0	0	0.125	0	0	0	0	0	0	0	0	0.68805	0	0	0	0	0.4587	0	0
214	UNSPECIFIED SOLVENT MIXTURE	0	5.13	0	0.621	0	0	0.648	5.508	4.104	3.447	4.395	2.872	1.1825	0.792	0.18	0.198	0	0	0	0	0	0	0
221	WASTE OIL AND MIXED OIL	0	6.5778	0	7.98	30.02	28.12	14.44	17.1	4.56	11.02	0	20.9	9.5	17.29	3.42	0	2.09	3.42	0.418	0	0	1.254	1.672
222	OIL/WATER SEPARATION SLUDGE	0	0	3.753	5.421	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223	UNSPECIFIED OIL-CONTAINING WASTE	0	0	1.95	0	0.185	0	2.8356	15.7626	0.2085	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	PESTICIDE RINSEWATER	0	0	0	0	0	0.0834	0.3544	0.2293	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
232	PESTICIDES/PESTICIDE PRODUCTION WASTE	0	0	0	0	0	0	0	0.3753	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
271	ORGANIC MONOMER WASTE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59.40165	133.1064	57.38315	31.00395
272	POLYMERIC RESIN WASTE	0	1.1467	0	2.6586	0	0	0.7923	2.8979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281	ADHESIVES	0	0	0	5.5044	0	0	0	0	0	0	0	0	0	0	0	0.4587	0	0	0	0	0	0	0
291	LATEX WASTE	0	1.37605	0	12.7717	0.475	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
321	SEWAGE SLUDGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.22935	0	0	0	0	0	0
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS	0	2.1945	14.389	10.9625	15.869	9.6059	32.3615	56.5376	43.7085	23.9345	11.1425	8.8445	42.8	57.3408	79.5005	73.3755	57.8618	11.1105	3.267	0	2.541	12.177	10.164
341	ORGANIC LIQUIDS (NONSOLVENTS) W HALOGENS	0	0	0	0	0	0	0.1042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0	3.689	0	0.45	2.091	3.4	0.102	0	0.561	0	0	0	0	0.561	0.374	0.374	0.561	0	0	1.955	1.53	3.553	2.907
351	ORGANIC SOLIDS WITH HALOGENS	4.375	2.125	0	0	0	0	0	1.35	0	0	0	0	0	0	1	1.65	1.7	0	0	0	0	0	0
352	OTHER ORGANIC SOLIDS	1.125	0	0	1.25	2.25	1.875	1.25	1.125	2.53	1	0	0	0	0	1.5	0.25	0	0	0	0	0	0	0
461	PAINT SLUDGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.81635	16.74255
491	UNSPECIFIED SLUDGE WASTE	0	0	0	0	0	0	3.6696	1.376	1.668	0	0	0	0	0	0	0	0	0	0	0	6.4218	22.5588	12.15555
551	LABORATORY WASTE CHEMICALS	0	0	0	0	0	0	0	0	0.1375	0	0	0	0	0	0	0	0	0	0	0	0	0	0
561	DETERGENT AND SOAP	0	2.29345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2085	0	0	0	0	0	0
723	LIQUIDS WITH CHROMIUM (VI) >= 500 MG/L	0	0	0	0	0.2085	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
725	LIQUIDS WITH MERCURY >= 20 MG/L	0	0	0	0	0	0	0	0	0.4587	0	0	0	0	0	0	0	0	0	0	0	0	0	0
741	LIQ W/ HALOG ORGANIC COMP >= 1000 MG/L	0	0.22935	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
791	LIQUIDS W PH<=2	0	0.2293	0	0	0.2085	0	0	0.6463	0	0	0	0	0	0	0	0.68805	0	0	0	0.22935	2.06415	1.14675	0
792	LIQUIDS W PH<=2 W METALS	0	0.22935	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grand Totals	50.6402	44.58735	20.092	47.9942	63.0268	66.36925	64.709	108.0993	60.7718	41.03175	20.94805	35.55405	54.37045	76.50505	87.30275	79.0584	62.88	32.60715	3.685	73.98905	184.6515	161.4074	91.5742

No results for California Waste Codes, as a Transporter 1, for EPA-ID: CA0000031997

No results for California Waste Codes, as a Transporter 2, for EPA-ID: CA0000031997

Results for California Waste Codes, as a TSDF, for EPA-ID: CA0000031997

Calif. Waste Code	Description	2015
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	0.22935
214	UNSPECIFIED SOLVENT MIXTURE	0.198
	Grand Total	0.42735

No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CA0000031997

Results for RCRA, as a Generator, for EPA-ID: CA0000031997

RCRA	Description	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	Blank/Unknown	50.6402	31.5618	13.942	39.0564	50.261	57.8404	51.2893	91.7359	47.8614	27.1095	5.5465	16.213	43.9655	64.6593	65.901	46.19975	46.3167	18.159	3.5035	46.2212	150.8199	90.97825	67.4919
D001	Ignitable	0	10.3565	6.15	8.7128	9.4835	6.6387	6.3524	11.1577	7.2885	7.893	8.7845	6.5735	9.232	10.747	18.0785	10.2597	15.6525	13.64815	0.1815	0	0.22935	1.14675	1.14675
D002	Corrosives	0	1.607	0	0.225	2.135	1.23015	1.6866	2.453	1.02165	1.83335	5.1812	2.6	0.76295	0.2919	1.07805	16.69525	0.0033	0	0	0.22935	2.06415	5.73375	4.587
D003	Reactivity	0	0	0	0	0	0	0	0.2293	0	0	0.22935	0	0	0	0	0	0	0	0	0	0	0	0

D004	Arsenic	0	0	0	0	0	0	0.0625	0.2293	0.22935	0	0	0.275	0	0	0	0	0	0	0	0	0	0	0
D005	Barium	0	0	0	0	0	0	0	0	1.9965	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D006	Cadmium	0	0	0	0	0	0	0	0.2085	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D007	Chromium	0	0	0	0	0.4378	0	0	0	0.22935	0.2919	0	0	0	0	0	0	0	0	0	0	0	0	0
D009	Mercury	0	0	0	0	0	0	0	0	0.4587	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D018	Benzene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.254	1.672
D023	o-Cresol	0	0	0	0	0	0	0.066	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D024	m-Cresol	0	0	0	0	0	0	0	0.165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D035	Methyl ethyl ketone	0	0	0	0	0	0	0	0	0	3.4485	0	0	0	0	0	0	0	0	0	0	0	0	0
D039	Tetrachloroethylene	0	0	0	0	0	0	0	0	0.22935	0	0	0.06255	0	0	0	0	0	0	0	0	0	0	0.924
F001	Halogenated solvents	0	0.22935	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.22935	0
F002	Halogenated solvents	0	0.4587	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F003	Non-halogenated solvents	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	0	0	0	0	0	0
F005	Non-halogenated solvents	0	0	0	0	0	0	0	0	0.005	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NONE	Blank/Unknown	0	0	0	0	0	0	0	0	0	0	0.5445	9.5	0	0	0	0	0	0	0	0	0	0	0
U002	Acetone (I)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1815	0	0	0	0	0	0	0	0
U012	Benzenamine (I,T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.897	12.1605	0	0
U019	Benzene	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.4517	48.0535	4.9005
U028	Diethylhexyl phthalate	0	0	0	0	0	0	4.29	0	0	0	0	0	0	0	0	5.47635	0.9075	0	0	0	0	0	0
U034	Trichloroacetaldehyde	0	0	0	0	0	0	0.1042	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
U154	Methyl alcohol	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18	0	0	0	0	0	0	0	0
U188	Phenol	0	0.374	0	0	0.7095	0.66	0.858	1.7226	1.452	0.4555	0.662	0.33	0.285	0.1815	0.1815	0	0	0	0	0	0	0	0
U210	Tetrachloroethylene	0	0	0	0	0	0	0	0	0	0	0	0	0.125	0.22935	1.47285	0.22935	0	0	0	12.15555	6.65115	1.8348	0.68805
U238	Ethyl carbamate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5445
U239	Xylene (I)	0	0	0	0	0	0	0	0.198	0	0	0	0	0	0.396	0.22935	0.198	0	0	0	8.48595	8.27475	12.177	9.6195
	Grand Totals	50.6402	44.58735	20.092	47.9942	63.0268	66.36925	64.709	108.0993	60.7718	41.03175	20.94805	35.55405	54.37045	76.50505	87.30275	79.0584	62.88	32.60715	3.685	73.98905	184.6515	161.4074	91.5742
No results for RCRA, as a Transporter 1, for EPA-ID: CA0000031997																								
No results for RCRA, as a Transporter 2, for EPA-ID: CA0000031997																								
Results for RCRA, as a TSDF, for EPA-ID: CA0000031997																								
RCRA	Description	2015																						
D002	Corrosives	0.42735																						
	Grand Total	0.42735																						
No results for RCRA, as a Alternate TSDF, for EPA-ID: CA0000031997																								

Matthew Rodriquez
Secretary for
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Department of Toxic Substances Control

Barbara A. Lee , Director
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Governor

EPA ID PROFILE

Map

ID Number:	CAC000293289	**Status:**	INACTIVE
Name:	1X BULK SERVICES BMI	**Inactive Date:**	10/25/2000 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	6/20/1990 12:00:00 AM
NAICS:	N/A	**Last Updated:**	12/12/2003 8:38:10 AM

	Name	Address	City	State	Zip Code	Phone
Location	1X BULK SERVICES BMI	8332 WILCOX	SOUTH GATE	CA	908200000	
Mailing		8332 WILCOX	SOUTH GATE	CA	908200000	
Owner	BULK SERVICES BMI	--	--	99	--	0000000000
Operator/Contact	MARIE CURRAN/CONTRACTOR	--	--	99	--	7148977790

Based Only Upon ID Number: **CAC000293289**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 07/18/2017

Department of Toxic Substances Control

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EPA ID PROFILE

Map

ID Number:	CAC000688344	**Status:**	INACTIVE
Name:	1X BENARR BALSAR	**Inactive Date:**	10/25/2000 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	5/7/1992 12:00:00 AM
NAICS:	N/A	**Last Updated:**	10/25/2000 12:00:00 AM

	Name	Address	City	State	Zip Code	Phone
Location	1X BENARR BALSAR	8332 WILCOX AVENUE	SOUTH GATE	CA	902800000	
Mailing		1708 CAMINO LA VISTA	FULLERTON	CA	926330000	
Owner	BERNARR BALSAR	--	--	99	--	0000000000
Operator/Contact	BERNARR BALSAR	--	--	99	--	7149921062

Based Only Upon ID Number: **CAC000688344**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1993	1 0.40000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Results for California Waste Codes, as a Generator, for EPA-ID: CAC000688344				
Calif. Waste Code	Description	1993		
181	OTHER INORGANIC SOLID WASTE	0.4		
	Grand Total	0.4		
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAC000688344				
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAC000688344				
No results for California Waste Codes, as a TSDF, for EPA-ID: CAC000688344				
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAC000688344				
Results for RCRA, as a Generator, for EPA-ID: CAC000688344				
RCRA	Description	1993		
	Blank/Unknown	0.4		
	Grand Total	0.4		
No results for RCRA, as a Transporter 1, for EPA-ID: CAC000688344				
No results for RCRA, as a Transporter 2, for EPA-ID: CAC000688344				
No results for RCRA, as a TSDF, for EPA-ID: CAC000688344				
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAC000688344				

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EPA ID PROFILE

Map

ID Number:	CAC002636448	**Status:**	INACTIVE
Name:	UNIVAR USA INC	**Inactive Date:**	5/5/2009 1:56:07 PM
County:	LOS ANGELES	**Record Entered:**	11/5/2008 1:56:07 PM
NAICS:	N/A	**Last Updated:**	5/18/2009 5:28:28 PM

	Name	Address	City	State	Zip Code	Phone
Location	UNIVAR USA INC	8332 WILCOX AVE	SOUTH GATE	CA	90280	
Mailing		PO BOX 512062	LOS ANGELES	CA	900510062	
Owner	UNIVAR USA INC.	6100 CARILLON POINT	COMMERCE	CA	900400000	2068833400
Operator/Contact	MIKE MORRIS	2600 S GARFIELD AVE	COMMERCE	CA	900400000	3238377050

Based Only Upon ID Number: **CAC002636448**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
2008	1 0.09900	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Results for California Waste Codes, as a Generator, for EPA-ID: CAC002636448				
Calif. Waste Code	Description	2008		
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS	0.099		
	Grand Total	0.099		
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAC002636448				
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAC002636448				
No results for California Waste Codes, as a TSDF, for EPA-ID: CAC002636448				
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAC002636448				
Results for RCRA, as a Generator, for EPA-ID: CAC002636448				
RCRA	Description	2008		
U210	Tetrachloroethylene	0.099		
	Grand Total	0.099		
No results for RCRA, as a Transporter 1, for EPA-ID: CAC002636448				
No results for RCRA, as a Transporter 2, for EPA-ID: CAC002636448				
No results for RCRA, as a TSDF, for EPA-ID: CAC002636448				
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAC002636448				

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EPA ID PROFILE

Map

ID Number:	CAD000031997	**Status:**	INACTIVE
Name:	QUALAWASH HOLDINGS, INC.	**Inactive Date:**	6/30/2013 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	4/15/2013 10:43:42 AM
NAICS:	N/A	**Last Updated:**	1/5/2015 10:08:16 AM

	Name	Address	City	State	Zip Code	Phone
Location	QUALAWASH HOLDINGS, INC.	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Owner	QUALAWASH HOLDINGS, INC.	8332 WILCOX AVE	SOUTH GATE	CA	902803500	3233771822
Operator/Contact	DANIEL LANGDON	8332 WILCOX AVE	SOUTH GATE	CA	902803500	3233771822

Based Only Upon ID Number: **CAD000031997**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1994	8 11.69130	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1995	2 3.54410	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1996	2 4.96330	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1997	2 6.62950	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1999	2 7.96640	0 0.00000	0 0.00000	0 0.00000	0 0.00000

2000	3 8.59380	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2002	6 29.83000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2003	6 31.54000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2004	10 60.51500	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2007	1 1.25000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2008	1 1.37500	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2009	0	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2011	8 25.55795	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2012	24 118.66435	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2013	3 16.40000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Results for California Waste Codes, as a Generator, for EPA-ID: CAD000031997															
Calif. Waste Code	Description	1994	1995	1996	1997	1999	2000	2002	2003	2004	2007	2008	2011	2012	2013
	Blank/Unknown	1.3718	0.688	0	0	1.1467	0	0	0	0	0	0	1.5011	0.64635	0.5
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	1.3593	1.1467	0	0	0.2085	0.4378	0	0	0	0	0	0	0	0
131	AQ SOL 2 < PH < 12.5 CONTG REACTIVE ANIONS	0	0	0	0	0.0417	0	0	0	0	0	0	0	0	0
133	AQ SOL (2 < PH < 12.5) W ORG RESIDUES >= 10%	0.2293	0	0	0	4.587	0	0	0	0	0	0	0	0	0
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0.693	0	0	0	0	0	0	0	0	0	0	16.38	22.734	4
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0
181	OTHER INORGANIC SOLID WASTE	0	0	0	0	0	0	0	0	0	0	0	2.92935	0	0.25
214	UNSPECIFIED SOLVENT MIXTURE	6.2424	0.792	0	0	0	0	0	0	0	0	0	0	0	0
221	WASTE OIL AND MIXED OIL	0	0	0	0	0	0	29.83	31.54	60.515	0	0	0	4.389	1.2
222	OIL/WATER SEPARATION SLUDGE	0	0	2.919	5.6295	0	0	0	0	0	0	0	0	0	0
223	UNSPECIFIED OIL-CONTAINING WASTE	0	0	0	0	0	0.2085	0	0	0	0	0	0	0	0
291	LATEX WASTE	0	0	0	0	0	0	0	0	0	0	0	0	0	2.25
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS	0	0	1.815	0	0.5575	6.9475	0	0	0	0	0	4.7475	90.895	7.95
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	1.1118	0	0	0	0	0	0	0	0	0	0	0	0	0.25
351	ORGANIC SOLIDS WITH HALOGENS	0	0	0	0	0	0	0	0	0	0	1.375	0	0	0
352	OTHER ORGANIC SOLIDS	0	0	0	1	1.125	1	0	0	0	1.25	0	0	0	0
561	DETERGENT AND SOAP	0	0	0.2293	0	0	0	0	0	0	0	0	0	0	0
741	LIQ W/ HALOG ORGANIC COMP >= 1000 MG/L	0.6837	0.4587	0	0	0	0	0	0	0	0	0	0	0	0
792	LIQUIDS W PH<=2 W METALS	0	0.4587	0	0	0	0	0	0	0	0	0	0	0	0
	Grand Totals	11.6913	3.5441	4.9633	6.6295	7.9664	8.5938	29.83	31.54	60.515	1.25	1.375	25.55795	118.66435	16.4

No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAD000031997

No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAD000031997

No results for California Waste Codes, as a TSDF, for EPA-ID: CAD000031997

No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAD000031997

Results for RCRA, as a Generator, for EPA-ID: CAD000031997															
RCRA	Description	1994	1995	1996	1997	1999	2000	2002	2003	2004	2007	2008	2011	2012	2013
	Blank/Unknown	2.7179	0.688	3.8743	6.6295	7.2629	7.6775	29.83	31.54	22.8	1.25	1.375	19.85385	68.48785	9.95
D001	Ignitable	6.4717	0.792	1.089	0	0.165	0.3465	0	0	0	0	0	1.452	15.705	3.85
D002	Corrosives	1.818	1.6054	0	0	0.2085	0.4378	0	0	0	0	0	0.11	0.1815	0
D006	Cadmium	0	0	0	0	0	0	0	0	0	0	0	0	14.1405	0
D007	Chromium	0	0	0	0	0	0	0	0	0	0	0	0	2.772	0
D018	Benzene	0	0	0	0	0	0	0	0	0	0	0	0	1.089	0
D026	Cresol	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0
D035	Methyl ethyl ketone	0	0	0	0	0	0	0	0	0	0	0	0	4.3725	0
D038	Pyridine	0	0	0	0	0	0	0	0	0	0	0	0	0.7095	0
D039	Tetrachloroethylene	0.2293	0.4587	0	0	0	0	0	0	0	0	0	0	0	0
F002	Halogenated solvents	0.4544	0	0	0	0	0	0	0	0	0	0	0	0	0
F003	Non-halogenated solvents	0	0	0	0	0	0	0	0	0	0	0	0	6.435	0
F005	Non-halogenated solvents	0	0	0	0	0	0	0	0	0	0	0	1.3761	0	0
NONE	Blank/Unknown	0	0	0	0	0	0	0	0	37.715	0	0	0	0	0
U002	Acetone (I)	0	0	0	0	0	0	0	0	0	0	0	0.125	1.9965	0
U112	Ethyl acetate	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
U113	Ethyl acrylate	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25
U159	Methyl ethyl ketone (MEK) (I,T)	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0
U188	Phenol	0	0	0	0	0.165	0.132	0	0	0	0	0	0	0	0.25
U220	Toluene	0	0	0	0	0	0	0	0	0	0	0	0	0.45	0
U239	Xylene (I)	0	0	0	0	0.165	0	0	0	0	0	0	2.541	1.725	2.1
	Grand Totals	11.6913	3.5441	4.9633	6.6295	7.9664	8.5938	29.83	31.54	60.515	1.25	1.375	25.55795	118.66435	16.4

No results for RCRA, as a Transporter 1, for EPA-ID: CAD000031997

No results for RCRA, as a Transporter 2, for EPA-ID: CAD000031997

No results for RCRA, as a TSDF, for EPA-ID: CAD000031997

No results for RCRA, as a Alternate TSDF, for EPA-ID: CAD000031997

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EPA ID PROFILE

Map

ID Number:	CAD009864679	**Status:**	INACTIVE
Name:	BALSER TRUCK CO	**Inactive Date:**	6/30/1995 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	7/23/1982 12:00:00 AM
NAICS:	N/A	**Last Updated:**	9/14/2004 2:05:48 PM

	Name	Address	City	State	Zip Code	Phone
Location	BALSER TRUCK CO	8332 WILCOX AVE	SOUTH GATE	CA	902800000	
Mailing		8332 WILCOX AVE	SOUTH GATE	CA	902800000	
Owner	LEASEWAY TRANSPORTATION	--	--	99	--	0000000000
Operator/Contact	DEACT. NON-DELIV. 6/95 FEEFORM	-P.H.	--	99	--	2137730255

Based Only Upon ID Number: **CAD009864679**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

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Report Generation Date: 07/18/2017

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EPA ID PROFILE

Map

ID Number:	CAD027896208	**Status:**	INACTIVE
Name:	BULK FREIGHTWAYS	**Inactive Date:**	6/30/1996 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	7/23/1982 12:00:00 AM
NAICS:	N/A	**Last Updated:**	8/10/2004 11:17:55 AM

	Name	Address	City	State	Zip Code	Phone
Location	BULK FREIGHTWAYS	8332 WILCOX AVENUE	SOUTH GATE	CA	902800000	
Mailing		P O BOX 1069	SOUTH GATE	CA	902800000	
Owner	LEASEWAY TRANSPORTATION	--	--	99	--	0000000000
Operator/Contact	INACTIVE PER 1996 FEES FORM	--	--	99	--	--

Based Only Upon ID Number: **CAD027896208**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

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EPA ID PROFILE

Map

ID Number:	CAD980676605	**Status:**	INACTIVE
Name:	MAX BINSWANGER TRUCKING	**Inactive Date:**	6/30/1993 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	3/4/1983 12:00:00 AM
NAICS:	N/A	**Last Updated:**	7/10/2001 12:00:00 AM

	Name	Address	City	State	Zip Code	Phone
Location	MAX BINSWANGER TRUCKING	8332 WILCOX AVE	SOUTH GATE	CA	902800000	
Mailing		PO BOX 1459	SOUTH GATE	CA	902800000	
Owner	--	--	--	99	--	0000000000
Operator/Contact	UNDELIVERABLE PER 93 FEE FORM	PO BOX 120	MANTECA	CA	953360000	2137730255

Based Only Upon ID Number: **CAD980676605**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

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EPA ID PROFILE

Map

ID Number:	CAL000178908	**Status:**	INACTIVE
Name:	CHEMICAL LEAMAN TANK LINES, INC	**Inactive Date:**	6/30/1999 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	2/3/1997 12:00:00 AM
NAICS:	N/A	**Last Updated:**	4/11/2000 12:00:00 AM

	Name	Address	City	State	Zip Code	Phone
Location	CHEMICAL LEAMAN TANK LINES, INC	8332 WILCOX AVE	SOUTH GATE	CA	902800000	
Mailing		102 PICKERING WAY	EXTON	PA	193410200	
Owner	CHEMICAL LEAMAN	102 PICKERING WAY	EXTON	PA	193410200	6103634200
Operator/Contact	DAVE RAWICZ PROJECT ENGINEER	INACT 99VQ FINAL NOTICE - BATCH	EXTON	PA	193410000	6103634499

Based Only Upon ID Number: **CAL000178908**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1998	1 0.54600	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

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Report Generation Date: 07/18/2017

Results for California Waste Codes, as a Generator, for EPA-ID: CAL000178908				
Calif. Waste Code	Description	1998		
134	AQ SOL (2 < PH < 12.5) W ORG RESIDUES < 10%	0.546		
	Grand Total	0.546		
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAL000178908				
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAL000178908				
No results for California Waste Codes, as a TSDF, for EPA-ID: CAL000178908				
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAL000178908				
Results for RCRA, as a Generator, for EPA-ID: CAL000178908				
RCRA	Description	1998		
	Blank/Unknown	0.546		
	Grand Total	0.546		
No results for RCRA, as a Transporter 1, for EPA-ID: CAL000178908				
No results for RCRA, as a Transporter 2, for EPA-ID: CAL000178908				
No results for RCRA, as a TSDF, for EPA-ID: CAL000178908				
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAL000178908				

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EPA ID PROFILE

Map

ID Number:	CAL000201008	**Status:**	INACTIVE
Name:	QUALITY CARRIERS INC	**Inactive Date:**	6/30/2006 10:14:52 AM
County:	LOS ANGELES	**Record Entered:**	9/16/1999 12:00:00 AM
NAICS:	48849	**Last Updated:**	5/25/2007 10:47:07 AM

	Name	Address	City	State	Zip Code	Phone
Location	QUALITY CARRIERS INC	8332 WILCOX AVE	SOUTH GATE	CA	902800000	
Mailing		150 E PENNSYLVANIA AVE STE 430	DOWNINGTOWN	PA	193350000	
Owner	QUALITY CARRIERS INC	3802 CORPOREX PARK DRIVE	TAMPA	FL	336190000	8002822031
Operator/Contact	LORI POTTER, ENVT'L SPECIALIST	150 E PENNSYLVANIA AVE SUITE 430	DOWNINGTOWN	PA	193350000	8002762608

Based Only Upon ID Number: **CAL000201008**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
1999	1 0.22930	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2003	1 5.40000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

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Report Generation Date: 07/18/2017

Results for California Waste Codes, as a Generator, for EPA-ID: CAL000201008				
Calif. Waste Code	Description	1999	2003	
132	AQ SOL WITH METALS(SMALLER THAN RESTRICTED LEVELS AND SEE 121)	0.2293	0	
214	UNSPECIFIED SOLVENT MIXTURE	0	5.4	
	Grand Totals	0.2293	5.4	
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAL000201008				
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAL000201008				
No results for California Waste Codes, as a TSDF, for EPA-ID: CAL000201008				
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAL000201008				
Results for RCRA, as a Generator, for EPA-ID: CAL000201008				
RCRA	Description	1999	2003	
	Blank/Unknown	0.2293	0	
U112	Ethyl acetate	0	5.4	
	Grand Totals	0.2293	5.4	
No results for RCRA, as a Transporter 1, for EPA-ID: CAL000201008				
No results for RCRA, as a Transporter 2, for EPA-ID: CAL000201008				
No results for RCRA, as a TSDF, for EPA-ID: CAL000201008				
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAL000201008				

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EPA ID PROFILE

Map

ID Number: CAL000343718
Name:
WINSOME ENTERPRISES INC DBA QUALITY CARRIERS SOUTH GATE
County: LOS ANGELES
NAICS: 48849

Status: ACTIVE
Inactive Date:
Record Entered: 6/5/2009 1:32:31 PM
Last Updated: 10/25/2016 10:14:14 AM

	Name	Address	City	State	Zip Code	Phone
Location	WINSOME ENTERPRISES INC DBA QUALITY CARRIERS SOUTH GATE	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		5042 E CECELIA ST	SOUTH GATE	CA	902803511	
Owner	WINSOME ENTERPRISES INC	5042 E CECELIA ST	SOUTH GATE	CA	902800000	8667098265
Operator/Contact	EMILIO LOERA	8332 WILCOX AVE	SOUTH GATE	CA	90280	5627559776

Based Only Upon ID Number: **CAL000343718**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	ACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
2010	5 1.20000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2011	12 5.84800	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2012	10 6.44500	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2013	9 5.23900	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2014	13 7.72535	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2015	11 6.80200	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2016	12 5.98700	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2017	3 1.65000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

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Report Generation Date: 07/18/2017

Results for California Waste Codes, as a Generator, for EPA-ID: CAL000343718									
Calif. Waste Code	Description	2010	2011	2012	2013	2014	2015	2016	2017
134	AQ SOL (2 < PH < 12.5) W ORG RESIDUES < 10%	0.42	1.722	1.008	0.714	0.609	0.987	0.609	0.21
221	WASTE OIL AND MIXED OIL	0.38	3.876	5.187	4.275	6.612	5.415	4.978	1.14
223	UNSPECIFIED OIL-CONTAINING WASTE	0	0	0	0	0.22935	0	0	0
352	OTHER ORGANIC SOLIDS	0.4	0.25	0.25	0.25	0.275	0.4	0.4	0.3
	Grand Totals	1.2	5.848	6.445	5.239	7.72535	6.802	5.987	1.65
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAL000343718									
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAL000343718									
No results for California Waste Codes, as a TSDF, for EPA-ID: CAL000343718									
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAL000343718									
Results for RCRA, as a Generator, for EPA-ID: CAL000343718									
RCRA	Description	2010	2011	2012	2013	2014	2015	2016	2017
	Blank/Unknown	1.2	5.848	6.445	5.239	7.72535	6.802	5.987	1.65
	Grand Totals	1.2	5.848	6.445	5.239	7.72535	6.802	5.987	1.65
No results for RCRA, as a Transporter 1, for EPA-ID: CAL000343718									
No results for RCRA, as a Transporter 2, for EPA-ID: CAL000343718									
No results for RCRA, as a TSDF, for EPA-ID: CAL000343718									
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAL000343718									

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EPA ID PROFILE

Map

ID Number:	CAL000348372	**Status:**	INACTIVE
Name:	QUALAWASH HOLDINGS LLC	**Inactive Date:**	8/23/2010 12:00:00 AM
County:	LOS ANGELES	**Record Entered:**	12/1/2009 4:12:58 PM
NAICS:	81149	**Last Updated:**	10/12/2010 7:51:57 AM

	Name	Address	City	State	Zip Code	Phone
Location	QUALAWASH HOLDINGS LLC	8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Mailing		8332 WILCOX AVE	SOUTH GATE	CA	902803500	
Owner	QUALAWASH HOLDINGS LLC	4041 PARK OAKS BLVD STE 200	TAMPA	FL	336109524	8135697365
Operator/Contact	DANIEL LANGDON	8332 WILCOX AVE	SOUTH GATE	CA	902803500	3237718226

Based Only Upon ID Number: **CAL000348372**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
N/A	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

No Records Found

Non California Manifest Total Tonnage

No Records Found

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EPA ID PROFILE

Map

ID Number:	CAP000007835	**Status:**	INACTIVE
Name:	QUALITY CARRIERS	**Inactive Date:**	10/26/2005 11:21:00 AM
County:	LOS ANGELES	**Record Entered:**	4/28/2005 11:21:36 AM
NAICS:	99999	**Last Updated:**	11/1/2005 3:01:00 PM

	Name	Address	City	State	Zip Code	Phone
Location	QUALITY CARRIERS	5042 CECELIA ST	SOUTH GATE	CA	90280	
Mailing		10680 SILICON AVE	MONTCLAIR	CA	91763	
Owner	QUALITY CARRIERS	5042 CECELIA ST	SOUTH GATE	CA	90280	9096256645
Operator/Contact	GARY PETERSON	10680 SILICON AVE	MONTCLAIR	CA	91763	9096256645

Based Only Upon ID Number: **CAP000007835**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
2004	2 1.65000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

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Results for California Waste Codes, as a Generator, for EPA-ID: CAP000007835				
Calif. Waste Code	Description	2004		
181	OTHER INORGANIC SOLID WASTE	0.825		
352	OTHER ORGANIC SOLIDS	0.825		
	Grand Total	1.65		
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAP000007835				
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAP000007835				
No results for California Waste Codes, as a TSDF, for EPA-ID: CAP000007835				
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAP000007835				
Results for RCRA, as a Generator, for EPA-ID: CAP000007835				
RCRA	Description	2004		
NR	Blank/Unknown	1.65		
	Grand Total	1.65		
No results for RCRA, as a Transporter 1, for EPA-ID: CAP000007835				
No results for RCRA, as a Transporter 2, for EPA-ID: CAP000007835				
No results for RCRA, as a TSDF, for EPA-ID: CAP000007835				
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAP000007835				

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EPA ID PROFILE

Map

ID Number:	CAR000174078	**Status:**	INACTIVE
Name:	ASHLAND DISTRIBUTION	**Inactive Date:**	6/30/2007 9:15:34 AM
County:	LOS ANGELES	**Record Entered:**	8/15/2006 9:55:00 AM
NAICS:	N/A	**Last Updated:**	10/15/2007 1:17:27 PM

	Name	Address	City	State	Zip Code	Phone
Location	ASHLAND DISTRIBUTION	8332 WILCOX AVE SOUTHEAST CORNER	SOUTH GATE	CA	902800000	
Mailing		PO BOX 2219 EH AND S	COLUMBUS	OH	432160000	
Owner	ASHLAND DISTRIBUTION	PO BOX 2219 EH AND S	COLUMBUS	OH	432160000	
Operator/Contact	KARA B LONG	PO BOX 2219 EH AND S	COLUMBUS	OH	432160000	6147904641

Based Only Upon ID Number: **CAR000174078**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	INACTIVE

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF
2006	1 20.85000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	**Generator**	**Trans. 1**	**Trans. 2**	**TSDF**	**Alt. TSDF**
RCRA	**Generator**	**Trans. 1**	**Trans. 2**	**TSDF**	**Alt. TSDF**

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Results for California Waste Codes, as a Generator, for EPA-ID: CAR000174078				
Calif. Waste Code	Description	2006		
271	ORGANIC MONOMER WASTE	20.85		
	Grand Total	20.85		
No results for California Waste Codes, as a Transporter 1, for EPA-ID: CAR000174078				
No results for California Waste Codes, as a Transporter 2, for EPA-ID: CAR000174078				
No results for California Waste Codes, as a TSDF, for EPA-ID: CAR000174078				
No results for California Waste Codes, as a Alternate TSDF, for EPA-ID: CAR000174078				
Results for RCRA, as a Generator, for EPA-ID: CAR000174078				
RCRA	Description	2006		
D001	Ignitable	20.85		
	Grand Total	20.85		
No results for RCRA, as a Transporter 1, for EPA-ID: CAR000174078				
No results for RCRA, as a Transporter 2, for EPA-ID: CAR000174078				
No results for RCRA, as a TSDF, for EPA-ID: CAR000174078				
No results for RCRA, as a Alternate TSDF, for EPA-ID: CAR000174078				

Reference:
DWR, 1948

WRD # 200120

REGION

COUNTY

NEAR

DIVISION OF WATER RESOURCES

DEPARTMENT OF PUBLIC WORKS

STATE OF CALIFORNIA

WELL LOG

BASIN

DWR No. 2S/12W-31M2 B & M

OTHER Nos. B-77c

Loc. # 7

#1514A

LOCATION About 20' from old #7 Well (1514)

Probably N.E.

OWNER Southgate Water Dept. ADDRESS

DRILLED BY Lyon Bros. ADDRESS 1363 Carmona Ave., L. A.

DRILLING METHOD GRAVEL PACKED DATE COMPLETED March 4, 1936

SIZE OF CASING DEPTH 16" STRUCK WATER AT

PERFORATIONS 500' - 600' - about 780 holes SIZE No.

WATER LEVEL BEFORE PERFORATING AFTER

TEST DATA: DISCHARGE G. P. M. DRAWDOWN FT. HOURS RUN

OTHER DATA AVAILABLE: WATER LEVEL RECORD ANALYSIS

SURFACE ELEV. 111' DATUM SOURCE OF INFORMATION L.A.CoFCD

DEPTH	ELEV. OF BOTTOM OF STRATUM	MATERIAL	THICKNESS	SP. YIELD %
0-12	[illegible]	Fine sand		
12-35	[illegible]	Packed silt		
35-69	[illegible]	Mucky sand, water		
69-85				
85-89	[illegible]	Blue sand & gravel		
89-114	[illegible]	Sticky clay		
114-123	[illegible]	Packed sand		
123-127	[illegible]	Sand & gravel, water		
127-169	[illegible]	Sandy clay		
169-182	[illegible]	Sand & gravel, water		
182-248	[illegible]	packed sand		
248-252	[illegible]	Mucky sand		
252-306	[illegible]	Sandy clay		
306-398	[illegible]	Packed sand		
398-411	[illegible]	Sand & small gravel		
411-492	[illegible]	Hard sandy clay		
492-495	[illegible]	Cemented sand & gravel		
495-497	[illegible]	Packed sand		
497-517	[illegible]	Good loose gravel, water		
517-539	[illegible]	Clay		
539-545	[illegible]	Cemented gravel		
545-555	[illegible]	Good sand & gravel		
555-562	[illegible]	Gravelly clay		
562-574	[illegible]	Sand & gravel		

MICROFILMED

FOR FIELD COPIES USE ALTERNATE LINES

LOG OBTAINED BY CER DATE 10/19/48 SHEET 1 OF

FORM 263. 8642 12-54 5M ② SPO

DWR 263A
INVESTIGATION

WRD # 200120 25/12 - 24 A 2

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

SHEET 2

NUMBER B-77c

WELL LOG

Loc ~~XXXXXXXXXXXX~~ #1514A

DEPTH	ELEVATION OF BOTTOM OF STRATUM	MATERIAL	THICKNESS FEET	% VOIDS	ABSOLUTE VOIDS FEET	TOTAL VOIDS FEET
574-582	21	Sand & small gravel				
582-609	02	Clay				
609-646	05	Cemented sand				
646-751	05	Very hard sandy clay				
751-754		Hard cemented sand				
754-756		Sticky clay				
756-807		Cemented sand				
807-855		Very hard, sandy clay				
855-883		Very hard clay				

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FOR FIELD COPIES USE ALTERNATE LINES

93524 3-59 5M ① SPO

F. C. Dist. Form 106—1M 6-36 — Sheet 1

300±' N.E. inter. of Mason St. & Neville Ave.; At N.E. end of Neville Ave. 47' S.W. ℄ of U.P.R.R.; 13±' N.E. of well 1514.

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDRAULIC DEPARTMENT
WELL DATA

Location and description: About 20' from old #7 well (1514) Probably N.E. N. end of Neville Ave. 47' S. of ℄ of Salt Lake U.P. & Atlantic Ave. Railroad tracks

Description of reference point: (a) Airgage of Base of Pump, 1' above grd. surface (b) & (c) See below

R. P. elev. above sea level: (a) ~~114.6~~ 113.9 (b) 113.9 ~~114.6~~ (c) Equiv. Elev. 114.6 Datum: U.S.G.S.

How determined: R.P. (a); (b); (c) Rel. to Owner's Levels

R. P. elev. above, below, ground:

Owner: Southgate Water Dept

Use: Municipal Supply

Capacity of well: Tested from 2-2-36 to 4-3-36. See sht #1A. 200 g.p.m. at start; 1300 g.p.m. at end with drawdown of 25'

Depth of well: 883'

Size of well: 16" Type:

Power used:

Type of motor, engine: Make: HP: 100 150

Type of pump: Make: Ser. No. 639360

Capacity of pump: 900 G.P.M. See sht. No. 1A

Year drilled or dug: 3-4-36 Driller:

Depth to water when drilled:
R.P.(b) 11-17-54 1" hole in pumpbase, 0.1' above pumpfoundation
~~Salinity of water~~ 1±' above grd.
R.P.(c) 2-1-69 1½" hole in discharge line, 0.9' ↓ & 0.8' out
~~Temperature of water~~ from pump column at grd level

Artesian when drilled: Yes: No:

Artesian on date: Yes: No:

Airline length 138

Owner's Levels:- Pump foundation elev. 113.72 prior to [illegible] & from 2-27-57 elev. 113.78'.

Well Numbers: Owner's New #7

DWR B-77C 2S/12W-31M2

F. C. Well No. 1514 A

2S/12W-31M1 and M2

LOG OF WELL NO. 151 + A

Drilled by Lyon Bros., 1343 Cermona Ave., L.A.

Date drilled Dec. 20, 1935 To March 4 1936

Depth from ground surface 883'

Static water at 47' ft. from ground. after test

Water rose to ..... ft. from ground.

FROM	TO	CLASSIFICATION OF MATERIALS			
0	12	Fine sand	497	517	Good coarse grvl. - Water
	35	Packed silt		539	Clay
	69	Mucky Sand - Water		545	Cemented grvl.
	85			555	Good sand + grvl
	89	Blue sand + gravel		562	Gravely clay
	114	Sticky Clay		574	Sand + gravel
	123	Packed sand		582	Sand + Sml. grvl
	127	Sand + gravel - Water		609	Clay ◇
	169	Sandy Clay		646	Cemented sand
	182	Sand + gravel - Water		757	Very hard sndy. clay
	248	Packed sand		764	Hard cem'd sand
	252	Mucky sand		786	Sticky clay
	306	Sandy clay		807	Cemented sand
	398	Packed sand		855	Very hard sndy. cl.
	411	Sand + Sml. grvl.	855	883	Very hard Clay
	492	Hard Sndy. Clay			
	495	Cem. Snd + grvl.			
495	497	Packed sand			

Perf. 500' To 600'
about 78 holes
(Office - S.P.)

LOS ANGELES COUNTY
FLOOD CONTROL DISTRICT
HYDROGRAPHIC DEPARTMENT

Sheet No. [illegible]

Water Measuring Point _____ Well No. 1514A

RPM Motor or Pump	1456
Static Water Level	56.8
(DRAWDOWN)	12.7
Discharge head in feet	172.3
Total pumping head in feet	239.8
Gallons pumped	919.
Miners inches	102.1

Pumping Test
8:00A to 10:00A pumped GPM 1028.
10:00A to 11:00A " " 1095.

(OVER)

Reference:
DWR, 1961

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
SOUTHERN DISTRICT

BULLETIN NO. 104

PLANNED UTILIZATION OF THE GROUND WATER BASINS OF THE COASTAL PLAIN OF LOS ANGELES COUNTY

APPENDIX A
GROUND WATER GEOLOGY

EDMUND G. BROWN
Governor

WILLIAM E. WARNE
Director

JUNE 1961

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ATTACHMENTS
(Bound at end of report)

Attachment No.

1 Bibliography

2 Specific Yield Values and Transmissibility Tests

3 Well Numbering System and Definitions

CHAPTER IV STRATIGRAPHY

This chapter describes the stratigraphy, or the physical characteristics of the natural groupings of the rocks and sediments, in the Coastal Plain of Los Angeles County, including the age of rocks and sediments, their order in relationship to each other, and their position in the area. In order to simplify the discussion of stratigraphy, the rocks and sediments in the coastal plain are divided into water-bearing deposits and nonwater-bearing rocks.

The water-bearing deposits include the unconsolidated and semi-consolidated marine and nonmarine alluvial sediments of Recent, Pleistocene, and Pliocene age which form ground water basins. These materials absorb, transmit, and yield water readily to wells. Sizes of individual particles may grade from coarse gravel and boulders to clay. Coarse sands and gravels form the conduits for transmission of ground water and are called aquifers, while the finer sands, silts and clays, which also transmit ground water, but very slowly, are known as aquicludes.

The types of materials encountered by surface and subsurface geologic exploration and water well drilling, as reported by various individuals and agencies, are summarized on Table 1, which is bound at the end in this report. Based upon this information, the areal extent, thickness, and depths of the various aquifers and aquicludes underlying the coastal plain were estimated. The aquifers were named and their stratigraphic positions are illustrated schematically on Plate 5, entitled "Generalized Stratigraphic Column, Coastal Plain of Los Angeles County". Since the aquicludes which separate aquifers are generally of secondary interest, and because of additional complications of nomenclature, only the surface aquiclude is named. An attempt has been made to bring together and clarify the nomenclature

used by many individuals and agencies. Therefore Plate 5 also relates the nomenclature system utilized in this report with that employed by others in the past.

The term "nonwater-bearing rocks" used in this report should not be construed to mean rocks which contain no water, but rather materials from which wells produce relatively limited quantities of water. Nonwater-bearing rocks are the parent rocks from which alluvium is derived. These rocks flank, underlie, and sometimes form the limits of the ground water basins and provide watersheds for runoff or drainage to valley-fill areas. Nonwater-bearing rocks include granitic, metamorphic, volcanic, and consolidated sedimentary types. Locally, the sedimentary rocks may yield a small amount of brackish, saline, or other poor quality waters. Water which drains from these rocks may also affect the quality of water in the sediments of valley-fill areas. Even within the crystalline basement rocks, some extractable water is contained within the joints, fractures, and solution cavities. In the highland areas, wells in volcanic flows and breccias yield limited quantities of water. The yield of wells in the volcanics, however, is usually restricted either because there is a lack of connected interstices or because they are so situated topographically or structurally that cementation, folding and faulting interferes with the vertical and lateral flow of ground water.

The following sections describe the water-bearing deposits and nonwater-bearing rocks in detail beginning with the geologically most recent, and working backward in time to the oldest strata. The surface outcroppings of the various formations are delineated on Plate 3. The conclusions of this study relating to the depth and thickness of the various aquifers and aquicludes in the coastal plain are illustrated by a series of idealized

geologic sections cutting the area in east-west and north-south directions. These sections are shown on Plates 6A through 6G, entitled "Idealized Geologic Sections"; and the geographic locations of the sections are indicated on Plate 3, together with the locations of wells and test holes from which the geologic sections were derived. In addition to the wells and test holes shown on these plates, there were two to three times as many wells and test holes that were studied. These data were used to assist in delineating the boundaries of the aquifers and aquicludes.

In constructing the geologic sections, it was much easier to correlate aquifers from well log to well log in the marine sediments found southwest of the Newport-Inglewood uplift than it was in the area to the northeast. Consequently, the correlations in the continental sediments, especially those adjacent to the high lands are more definitive than are those in the marine sediments closer to the ocean. Also, the geologic sections in the West Coast Basin (this basin is described in Chapter 6) were mainly based on data taken from the Report of Referee (Calif. D.W.R. 1952a), modified slightly by unpublished data obtained from the Los Angeles County Flood Control District.

Subsurface structure and positions of aquifers in the area downstream from Whittier Narrows are illustrated by a series of cut-away diagrams shown on Plate 7, entitled "Cut-Away Diagrams of Aquifers in Vicinity of Whittier Narrows". These diagrams are of assistance in following the discussion of stratigraphic relationships but are discussed in detail in Chapter V. Detailed discussions of structural features referred to in the following sections are also contained in Chapter V.

Quaternary System

Sediments of Quaternary and late Pliocene age comprise the water-bearing formations in the coastal plain. The Quaternary deposits are divided into the Recent and Pleistocene series.

Alluvial materials and rocks of Recent and Pleistocene age usually are unconsolidated and have suffered deformation to a lesser degree than the older underlying rocks. These younger alluvial materials are generally more heterogeneous than the older sediments although this may be more apparent than real, since more detailed information is usually available for younger sediments than for those older in age. In the detailed studies of oil fields, by contrast, the heterogeneity of older sediments is apparent.

Ground water extracted from wells is obtained primarily from aquifers of Recent and Pleistocene age, with the exception of a few wells in the Lakewood and North Long Beach areas which are perforated in sediments of late Pliocene age.

Deposition of Quaternary sediments has been controlled by tectonic activity, geomorphic processes, changes in climate, and world-wide changes in sea level, as previously discussed. The physical characteristics of those water-bearing series that favor high production of ground water are: their unconsolidated and permeable nature, their relatively undeformed state, their low topographic position, which permits infiltration of drainage from higher surrounding areas, their freedom from obstructions to flow in most areas, the ease with which their materials may be dewatered, or drained, and the ease with which in certain areas they may be naturally or artificially recharged.

Recent Series

Reade (1872) first defined the Recent epoch as that time which has elapsed since the beginning of the last major rise in sea level, and this definition has been adopted for use in this report. An approximate age of 15,000 years has been assigned to the Recent epoch by Shepard (1956) and Hopkins (1959).

Recent materials were laid down upon the erosional surface that existed toward the end of the last glacial stage. In most of the Coastal Plain of Los Angeles County these sediments are stream deposits but near the ocean they include tidal, marine, and wind-deposited materials.

Recent deposits are recognizable by:their generally coarse, unconsolidated or uncemented nature (however, on Recent flood plains, alluvial fans, and certain marine deposits, fine-grained silts and clays are common), their unconformable relationship with the underlying late Pleistocene and older deposits, their relationship to the present drainage system including numerous gaps along the coast and other physiographic features, and the youthful or poorly developed soil normally found on the surface. Little deformation of the Recent sediments has occurred except where they cross tectonically active areas, as in Dominguez and Ballona Gaps. Two major members of the Recent series are shown in the areal geology presented on Plate 3 namely, alluvium, represented by the symbol Qal and active dune sand represented by Qsr.

Alluvium. Recent Alluvium is primarily stream deposited gravel, sand, silt and clay with some interbedded littoral and estuary or bay deposits near the ocean. Geologic members found within the alluvial deposits include the Semiperched aquifer, Bellflower aquiclude, Gaspur aquifer, and

Ballona aquifer. Portions of the Semiperched aquifer and Bellflower aquiclude are of late Pleistocene age, placing them in the Lakewood formation. They are described here, however, together with the deposits of Recent age.

Semiperched Aquifer. Coarse sands and gravels, called the Semiperched aquifer, are found on or near the surface of much of the Coastal Plain of Los Angeles County. These materials vary in thickness from 0 to 60 feet and may contain significant amounts of unconfined water where they are more than 20 feet thick. The most important areas where this aquifer appears are in the Los Angeles and Montebello Forebay Areas, and irregular patches occur throughout the rest of the coastal plain.

Where the underlying aquifers are confined, the Semiperched aquifer is generally separated from them by silts and clays or other material of relatively low permeability, called the Bellflower aquiclude. These materials inhibit the free percolation of water from the Semiperched aquifer to the underlying aquifers.

Permeable sediments of both Recent and late Pleistocene age are included within the Semiperched aquifer. Most of the sediments are probably remnants of abandoned stream channels, although marine deposits previously known as the Palos Verdes Sand are a part of the aquifer underlying portions of the Torrance Plain.

Little beneficial use is made of water in the Semiperched aquifer since wells perforated in it yield very small quantities of water. Furthermore, the poor quality of the water in some areas makes it undesirable for widespread use.

Bellflower Aquiclude. Lying directly beneath the Semiperched aquifer are sediments of lesser permeability which restrict vertical movement of ground water. These relatively impermeable materials, referred to in numerous reports in generalized terms, have been designated the Bellflower aquiclude. Physical features and dimensions of this aquiclude are delineated on Plate 8, entitled "Lines of Equal Elevation on the Base of the Bellflower Aquiclude", and on Plate 9, entitled "Lines of Equal Thickness of the Bellflower Aquiclude". The Bellflower aquiclude comprises all of the fine grained sediments that extend from the ground surface, or from the base of the Semiperched aquifer, down to the first aquifer below. Other names that have been used to refer to these materials are: "Upper Division of the Alluvial Deposits of Recent Age" (Poland, et al 1956); "Upper Fine Grained Phase" in California D.W.R. 1952b; and "clay cap" in California D.W.R., 1952c, 1957a, and 1958b. The flood plain deposits referred to by Poland, (1959b) which are found in many portions of the Downey Plain may be equivalent, at least in part, to the Bellflower aquiclude as here defined. Although other reports refer to these sediments as Recent in geologic age, the Bellflower aquiclude, as defined in this report, is composed of both Recent sediments in some areas, and late Pleistocene deposits in others.

The Bellflower aquiclude extends throughout most of the Coastal Plain of Los Angeles County, except for the Los Angeles and Montebello Forebay Areas. According to drillers logs and from visual observation of exposed formations in excavations, this aquiclude is a heterogeneous mixture of fine grained continental, marine, and wind-blown sediments. In about a third of the coastal plain, the aquiclude consists only of clays and silty clays, but extensive lenses and pockets of sandy or gravelly clays occur in the remainder of the area, as shown on Plate 9. These predominantly

sandy and gravelly clays may permit waters to percolate slowly to the underlying aquifer or aquifers, or ground water in these latter areas may move upward if pressure levels in the underlying aquifer are sufficiently high. Classification of materials from the descriptions usually found in well logs is difficult; however, in logs where descriptions of materials are more precise and presumably of greater reliability, the sand content is greater than has been generally assumed. Consequently, the aquiclude is believed to have a somewhat greater, though still restricted, permeability than has been supposed in the past.

That portion of the aquiclude of Recent age has not been appreciably faulted or folded; however, the portion of late Pleistocene age has been affected to some extent by tectonic movements.

The thickness of the Bellflower aquiclude, as shown on Plate 9, varies from zero to 200 feet. The areas of greatest thickness occur along the center and east flank of the Gardena Syncline in the West Coast Basin. Other areas of considerable thickness, ranging up to 140 feet, are generally aligned with the South Gate-Santa Ana Depression.

Gaspur Aquifer. The basal coarse phase of the Recent series has been referred to in previous reports as the Gaspur water-bearing zone. These sediments were described by Poland, et al (1956) and in California D.W.R. 1952a and 1952b. The term "aquifer" is used in this report rather than "water-bearing zone", the expression previously employed, as being more descriptive of the function of the deposits. According to Poland, et al (1956) the name of the aquifer is derived from the identification of a typical section in the log of a well near Gaspur Station at the coastal end of Dominguez Gap.

The extent of the Gaspur aquifer is shown on Plate 10, entitled "Lines of Equal Elevation on the Base of the Gaspur, Ballona, Artesia, and Exposition Aquifers". Its westerly arm, extending southerly from the Los Angeles Narrows, joins the easterly arm extending southwesterly from the Whittier Narrows near Downey and continues southwesterly through Dominguez Gap to the ocean. Throughout the 23 mile length of the aquifer the width varies from one to five and a half miles.

The type cobbles and pebbles in the Gaspur aquifer indicate that they are derived from the San Gabriel Mountains and other highland areas surrounding the San Gabriel and San Fernando Valleys.

The continental stream deposits found in the Gaspur aquifer range in size from boulder gravel to silt and clay. In vertical section, the upper part is medium to coarse-textured sand while the lower part consists of sand, gravel, and cobbles as large as four or five inches in diameter. There is also a lateral variation in lithology. Well logs north of Rosecrans Boulevard generally show 80 to 90 percent coarse sands and gravels with 10 to 20 percent finer-grained materials. South of Rosecrans Boulevard, about 40 to 50 percent of the sediments comprising the Gaspur aquifer are fine-grained. The fine-grained patches are discontinuous within the Whittier Narrows, and occur as stringers, or elongated lenses. Variations in the thickness and width of the Gaspur aquifer seem to indicate that the stream or streams responsible for original deposition were meandering, braiding, eroding and aggrading. The absence of fine deposits in the lower portion suggests that they were removed by erosion during flood stages. Thickness of the Gaspur aquifer ranging up to about 120 feet, is delineated on Plate 11 entitled, "Lines of Equal Thickness of the Gaspur, Ballona, Artesia, and Exposition Aquifers".

The Gaspur aquifer is merged with surface deposits in the Montebello Forebay between the Rio Hondo and San Gabriel River, extending as far south as Slauson Avenue. It also crops out in the Los Angeles Narrows in an area bounded by the Los Angeles River and the Harbor Freeway, and extends from the Narrows as far south as Firestone Boulevard. These two outcrops areas are shown on Plate 10A.

The gradient of the base of the westerly arm of the Gaspur aquifer is 44.5 feet per mile (a 300-foot drop in elevation in 6.75 miles). The gradient of the base of the Gaspur aquifer along the easterly arm is about 19 feet per mile (a drop of 200 feet in 10.5 miles). Between San Pedro Bay and the point where the two arms of the Gaspur aquifer join, the gradient is 10 feet per mile (a 60-foot drop in elevation in 6.0 miles). The steepness of the westerly arm may indicate uplift to the north and west, although greater rock hardness in Los Angeles Narrows and/or a difference in stream flow regimen caused by changing debris loads also may have caused this steep gradient. Minor warping of both the aquifer and overlying Recent deposits has probably occurred within the Whittier Narrows and Dominguez Gap. The Gaspur aquifer has apparently not been affected by faulting.

Water levels and well histories indicate that the Gaspur aquifer has been partially dewatered. The majority of new wells drilled in the area under which this aquifer lies do not depend solely on this aquifer but are usually drilled into and perforated in deeper aquifers as well. Many existing wells, however, depend only on this aquifer for their supply, and in these wells the yields are usually high. Permeabilities in this aquifer range up to 6000 gallons per day per square foot. (See Table D in Attachment 2 for general values of permeabilities used in the coastal plain).

The Gaspur aquifer is merged with the deeper aquifers in the area immediately south of Los Angeles Narrows, which at one time served as a recharge area. However, this area is now completely covered by buildings and paved streets. Little, if any, direct percolation of water is possible; even the channel of the Los Angeles River is now lined where it passes through this area.

In the vicinity of Whittier Narrows, the deeper aquifers are also merged with the Gaspur aquifer and receive their natural recharge waters through it. Because percolation in the Los Angeles Narrows has been rendered infeasible, the Whittier Narrows is the most suitable remaining location for artificial recharge of the underlying aquifers. Consequently, the principal recharge basins and projects for recharging local surface flood waters and imported waters are located in this area, from whence natural percolation processes carry this water into the deeper aquifers.

Ballona Aquifer. The other principal aquifer of Recent age is the Ballona aquifer, which has previously been termed the "50-foot gravel". Poland, et al (1959a) originally assigned the name "50-foot gravel" to the lower divisions of the Recent series in Ballona Gap, because these occurred at an average depth of 50 feet below the surface. Although this aquifer is included within the Recent series it is believed that at least part of it may be of late Pleistocene age.

The Ballona aquifer lies north of the Ballona escarpment and extends inland to a point east of the Overland Avenue fault. The extent of this aquifer is shown on Plate 10. It is composed of coarse sand, rounded to subrounded gravel, and cobbles up to five inches in diameter that are of both granitic and metamorphic origin. Slate pebbles in this aquifer suggest

that the Santa Monica Mountains were a possible source of material; on the other hand, granitic rocks and pebbles appear to come from the San Gabriel Mountains. The Los Angeles River has flowed north of the Baldwin Hills and along Ballona Creek channel in historic time, but no attempt has been made to determine the relative contribution to the Ballona aquifer from the two drainage systems.

The Ballona aquifer varies in thickness from less than 10 feet at the coast to 40 feet near Beverly Hills. Thickness of the Ballona aquifer is delineated on Plate 11.

The base of the Ballona aquifer drops from more than 100 feet above sea level beneath the Sawtelle Plain to 60 feet below sea level near the Ballona Escarpment, a gradient of about 40 feet per mile. There is a southward tilt to the base, which corresponds to the southerly dip into West Coast Basin of the San Pedro formation, and may be due to either erosion and depositional processes or to tilting, or possibly both.

Well yields from the Ballona aquifer are highly variable, ranging from 100 to 800 gpm (Poland, et al 1959a). This may be due to the irregularity and discontinuity of its composition and thickness.

Miscellaneous Alluvial Deposits. Other Recent alluvial deposits include beach deposits, playa lake deposits and lagoonal marshland deposits. These have been described more elaborately (Poland, et al 1959a), and are treated only briefly in this report.

Narrow strips of beach deposits, with materials ranging in size from fine sand to cobbles, are found adjacent to wave-cut cliffs along the coastline. They also exist as barrier beaches across the various gaps along the coast. The beach deposits act as a source for wind-blown material

for the coastal-dune belt and may also serve as a permeable conduit for sea-water intrusion into aquifers near the surface along the coast.

Playa lake deposits found near the intersection of the Coast Highway and Vermont Avenue, about one mile west of Wilmington, have been deposited in shallow closed depressions. Standing water accumulates in these closed drainage areas after heavy rains. These deposits are usually fine-grained sands, silts, and clays.

Lagoonal marshlands extend along the coastal reaches of the Los Angeles and San Gabriel Rivers and Ballona Creek for a distance of one-half to three miles inland. Deposits in these areas appear to be heterogeneous in nature, lenticular, and mostly fine-grained. These sediments may also include medium sand, silty sand, clay and peat deposits.

Active Dune Sand. Wind-blown sands occur in a narrow strip 0.2 to 0.5 miles inland and parallel to the coast and continue from Ballona Escarpment southward to Redondo Beach for a distance of about nine miles. These deposits are known as the Active Dune Sands. Plate 3B shows the extent of these deposits which are identified by the symbol Qsr. These eolian deposits are lenticular, and composed of fine to medium, white or grayish sand, usually well sorted. These sediments may also include medium sand, silty sand, clay and peat deposits. The Active Dune Sands range up to 70 feet in thickness. Being above the zone of saturation, the sands do not yield water to wells. However, they are relatively permeable and water held in closed depressions after heavy rains does percolate vertically downward and laterally. The dune sands may therefore serve as recharge media to any water bodies that underlie this area.

Pleistocene Series

The Pleistocene series is divided into upper Pleistocene and lower Pleistocene in most of coastal California, primarily because they are separated by an angular unconformity in many uplift areas. Fossils are used as an additional index to separation of the Pleistocene series. The boundary between deposits of Pliocene and Pleistocene age is difficult to determine and consequently is somewhat arbitrary in many areas.

In the coastal plain the upper Pleistocene is represented by the Older Dune Sands and the Lakewood formation, while the lower Pleistocene consists of the San Pedro formation (Poland, et al, 1956). Where they appear on the surface the Older Dune Sands, Lakewood formation, and the San Pedro formation are identified by the symbols Qso, Qlw, and Qsp, respectively. on Plate 3. A small zone of transitional material, cropping out between the San Pedro formation and the underlying Pico formation of Pliocene age is also shown on Plate 3 and identified by the symbol Qsp-Pp.

Older Dune Sand. Dune deposits occur in West Coast Basin which are older than those described under the Recent Series. These wind-blown materials are sufficiently significant in manner of deposition, lithology and topography, to be considered in this report as a separate unit. The term "Older Sand Dunes" has been previously used to designate these wind-blown deposits; however, in this report, the more descriptive term "Older Dune Sand" is used to identify these deposits.

The Older Dune Sand has been described by Poland, (1956, 1959b) and in Calif. D.W.R. 1952a and 1957c. Although these sediments have been previously classed as Recent materials, they are now considered to be of late Pleistocene age.

The Older Dune Sand covers an area three to four miles wide and about 13 miles long extending along the Santa Monica Bay Coast line south of Ballona Escarpment. Surface exposures and well logs indicate that the dune sediments cover the Ocean Park Plain as well as a portion of the West Coast Basin. In the Ballona Creek area the older dunes have been removed. In the West Coast Basin the Older Dune Sand together with the Active Dune Sand form the El Segundo Sand Hills.

The Older Dune Sand consists of fine to medium sand with minor sandy silt, clay, and gravel lenses. Within the weathered zone the materials are yellow to brown in color although the unweathered formation in place is white, gray and black in color. The Older Dune Sand generally consists of three divisions: a deeply weathered surface, an intermediate horizon of clean sands and basal beach sands and gravels, and a lowermost horizon which apparently includes a zone of transition to the underlying Bellflower aquiclude.

Cross-bedding, and fossils in exposures near the Hyperion Sewage Treatment Plant at El Segundo and elsewhere, indicate that the sands were originally beach deposits with associated coarse gravels. These beach deposits were exposed to the wind by lowering of the sea level, resulting in formation of the present Older Dune Sand. Deep weathering has oxidized the iron minerals which, through cementation and leaching processes, have partially filled the interstices between individual grains, thus reducing the permeability of the weathered Older Dune Sand to some extent. Uplifting may have gently tilted these dunes toward the southwest.

Deep percolation of surface water occurs in most of the Older Dune Sand area, especially where closed depressions occur. Directly beneath these older dunes in part of the El Segundo Sand Hills, the fine sediments

of the Bellflower aquiclude restrict downward movement of ground water. However, the aquiclude is missing along the ocean and ground water can move laterally into an area where downward percolation can again occur.

Lakewood formation. The Lakewood formation includes all upper Pleistocene deposits other than the Older Dune Sand. It includes what has previously been termed "terrace deposits", "Palos Verdes sand", and "unnamed upper Pleistocene deposits". Other names which have been used for upper Pleistocene deposits or parts of these deposits include the Sunny Hill formation (Hoskins, 1954,), and San Dimas formation (Eckis, 1928). These names, however, are awkward for use in the entire coastal plain since the named formations have been described as existing only in the limited associated area. The present designation was selected from a typical section indicated in the log of a well at Lakewood where this formation reaches a maximum thickness of approximately 340 feet.

In the upper part of the Lakewood formation lithologic changes are rapid, with discontinuous permeable zones and considerable variation in particle size. No shell zones have been found in the upper part of this formation. These features represent typical stream type alluviation with flood plain fine-grained sediments comprising from 40 to 80 percent of the total deposits. In the lower horizons the gravels and coarse sands are confined to a narrow belt extending over the Newport-Inglewood uplift. Gravels range from pea-size to cobbles, three to four inches in diameter. Over the balance of the coastal plain, coarse basal deposits of sand and gravel are fairly continuous with discontinuous lenses of sandy silt and clay. The basal part of the Lakewood formation in the Cheviot Hills area of Beverly Hills has been called the Medill sand by Rodda (1957)..

The Lakewood formation extends beneath most of the coastal plain. In portions of the Baldwin Hills, Signal Hill, Palos Verdes Hills, and Coyote Hills, it has been eroded, exposing the underlying San Pedro and older formations. In the La Brea, Santa Monica, and Montebello Plains, and on the flanks of the Palos Verdes Hills and Puente Hills, the Lakewood formation unconformably overlies the lower Pleistocene San Pedro formation, the Pliocene Pico and Repetto formations, and the Miocene Puente formation.

The Lakewood formation is divided into the Artesia-Exposition aquifers, the Gage-Gardena aquifers, and the unnamed aquicludes between the aquifers. In some areas, portions of the Semiperched aquifer and the Bellflower aquiclude, described under Recent alluvium, are included. The base of the Lakewood formation generally coincides with the base of the Gage and Gardena aquifers. The aquifers of the Lakewood formation are discussed in the following paragraphs.

Artesia-Exposition Aquifers. The Artesia and Exposition aquifers, although located in separate geographical areas, are similar in composition and mode of deposition; this leads to the conclusion that they are contemporaneous. They are, therefore, jointly discussed in this section. The Artesia aquifer appears to be related to the San Gabriel River, Coyote Creek, and Santa Ana River systems, and the Exposition aquifer is related to the Los Angeles River drainage system. As shown on geologic section C-C'-C", Plate 6B, these aquifers extend beneath the Gaspur aquifer at which point they merge with each other and with the overlying Gaspur aquifer. On Plates 10 and 11, the contours on the base of the Artesia-Exposition aquifers and lines of equal thickness are not extended beneath the Gaspur aquifer since it is difficult to distinguish the separate aquifers.

The Artesia aquifer extends from the middle of the Santa Fe Springs Plain southward, where it underlies the northern portions of the Bouton Plain, Signal Hill, and Bixby Ranch Hill. It follows the general trend of the present San Gabriel-Coyote Creek drainage as shown on Plate 10. The Artesia aquifer extends southeasterly from the Gaspur aquifer to and beyond the Los Angeles-Orange County line. However, since no study has been made of the extension of this or any other aquifer outside the area of investigation, it is terminated at the county line.

The Artesia aquifer is composed of coarse gravel, coarse to fine sand and interbedded silts and clays. In some areas, individual gravel members within the aquifer can be identified in drillers logs for considerable distances. The Artesia aquifer has a general southwesterly dip, and varies in thickness (Plate 11) and bottom configuration (Plate 10).

The ancestral San Gabriel and Santa Ana Rivers, and Coyote Creek, appear to have been the main source of the sediments comprising this aquifer. The Santa Ana River may have contributed sediments to the southern portion of the area since this river once flowed directly west and joined the San Gabriel River near its present confluence with Coyote Creek.

The geographical extent of the Exposition aquifer is shown on Plate 10. This aquifer consists of one to four discontinuous coarse members. Materials range in size from coarse gravels to clay, with the fine deposits separating the lenticular sandy and gravelly beds. Changes in lithology are frequent as evidenced by the many lenses of silt and clay encountered in the drillers logs.

Deposition of this material appears to have been controlled by the ancestral Los Angeles River, which may have flowed through the Silver Lake

area (Riveroll, 1957) in the geologic past, as well as by tributary streams from the Santa Monica Mountains, Elysian Hills, and Repetto Hills. The configuration of the base of the Exposition aquifer, as well as the Artesia aquifer, is highly irregular and it appears that both were deposited on an erosional surface. A study of well logs indicates that the upper coarse members of the Exposition aquifer were either eroded and backfilled by Gaspur deposits or that some of the upper members were deposited contemporaneously with the formation of the Gaspur aquifer. Highway excavations in the vicinity of Boyle Heights and other areas along the south slope of the Repetto Hills and along the east bank of the Los Angeles River have exposed clean sands and gravels which are apparently an upper member of the Exposition aquifer.

The maximum thickness of the Exposition aquifer is 100 feet. Lines of equal thickness of the aquifer, including interbedded fine materials as well as the permeable zones, are shown on Plate 11.

Stratigraphically, the Artesia and Exposition aquifers lie above the Gage aquifer, described subsequently, and are generally deeper than the Gaspur aquifer, although some of the upper coarse members abut directly into the Gaspur aquifer and may be of the same age. At Boyle Heights and other places, the Artesia and Exposition aquifer have been uplifted and are now higher in elevation than the adjacent Gaspur aquifer. Lower members of the Exposition continue beneath the Gaspur aquifer and merge laterally with the Artesia aquifer. The Exposition aquifer merges with the underlying Gage aquifer approximately three miles northwest of downtown Los Angeles and also in the triangular area between the easterly and westerly arms of the Gaspur aquifer on the Montebello Plain, as shown on Plate 12, "Lines of Equal Elevation on the Base of the Gage and Gardena Aquifers".

The Potrero fault is the only known structure that displaces the Exposition aquifer. However, both the Artesia and Exposition aquifers have been affected by folding and show slight warping near the Newport-Inglewood uplift and in the downwarped area of the Central Basin.

Gage Aquifer. The basal or lowest member of the Lakewood formation is termed the Gage aquifer. The name "200-foot sand" was applied to this aquifer by Poland, et al (1948 and 1959a), later by Richter (1950) and in the "Report of Referee", (Calif. D.W.R. 1952a). Originally the designation of the "200-foot sand" was used because the aquifer occurred about 200 feet below land surface in the syncline extending from Inglewood southeasterly through Gardena. In the Central Basin the base of the aquifer varies from 100 to over 350 feet below the surface; consequently the term "200-foot sand" is inapplicable. The lowest elevation this aquifer attains is in the vicinity of Lynwood, where an elevation of 350 feet below sea level occurs. The Gage aquifer extends over most of the Coastal Plain of Los Angeles County, although insufficient data is available to verify its extension beneath the Santa Monica Plain. Contours on the base of the aquifer are shown on Plate 12.

The composition of the Gage aquifer varies from a fine to medium sand with variable amounts of gravel, sandy silt, and clay in the West Coast Basin, to a coarse yellow sand and minor gravel (two to four inches in diameter) in the center of the Central Basin, and to a fine yellow sand and gravel toward the Whittier Narrows region. The thickness varies from 10 feet to a maximum of 160 feet in the Torrance area. The thickness of the aquifer is shown on Plate 13, "Lines of Equal Thickness of the Gage and Gardena Aquifers".

Deposits that comprise this aquifer are of both marine and continental origin. Along the northerly boundary of the Central Basin, that is, along the base of the Santa Monica Mountains and the Elysian and Repetto Hills, the deposits appear to be continental in origin. In the southeastern half of the coastal plain the aquifer consists mainly of mixed continental and marine, or in some areas, solely marine sediments.

Subsurface structures which either cut the aquifer or against which the aquifer terminates are shown on Plate 12. Areas where the aquifer is merged with overlying aquifers are also shown on this plate.

While this aquifer generally consists of sand, wells have been perforated in it only in areas where coarser materials exist. Approximately 200 wells have been drilled into the Gage aquifer in the West Coast Basin in the vicinity of Gardena but it is unimportant as a producing aquifer in other areas.

Gardena Aquifer. In 1950 Richter described the coarse deposits comprising this aquifer within the West Coast Basin under the term "Gardena Water-bearing Zone". In "Report of Referee" (Calif. D.W.R. 1952a) the description of the Gardena Water-bearing Zone was further elaborated. In the present investigation the extent of the Gardena water-bearing zone in the Central Basin was determined and these deposits have been designated the "Gardena aquifer". This term now applies to all of the coarse deposits that are contemporaneous with the Gage aquifer (fine grained deposits) in both the Central and West Coast Basins.

The Gardena aquifer extends inland from Redondo Beach beneath the City of Gardena, across the Newport-Inglewood uplift and into the Central Basin, where it loses its identity near Lynwood. Further inland, identical

coarse deposits are again discernible underlying the Montebello Plain and within the Whittier Narrows. These two areas, however, are separated by the Gage aquifer which underlies that part of the Central Basin where the water-bearing deposits are deepest. In the western part of the coastal plain, the deposits form a strip one to four and one-half miles wide extending from Lynwood to the coast. Other coarse deposits, believed to be at the same stratigraphic horizon, extend southwesterly from the Whittier Narrows and then form two southeasterly trending lobes. One lobe reaches the area south of downtown Los Angeles and the Elysian Hills, and the other extends along the south side of the Santa Fe Springs Plain to the vicinity of Norwalk. The extent of these deposits is shown on Plate 12.

The lithology of the Gardena aquifer in the West Coast Basin is given by Richter (1950) as coarse sand and gravel with discontinuous lenses of sandy silt and yellow to blue clay, with the gravel sizes ranging from pea-size to cobbles three to four inches in diameter and the sand ranging from fine to coarse. Deposits in the Central Basin also contain coarse sands and gravels, with minor lenses of sand, silty clay, and clay. The deposits are similar in thickness and elevation to those of the Gage aquifer and are in direct continuity with the Gage materials. According to Richter (1950), the thickness within the West Coast Basin varies from 50 to 75 feet between the Avalon-Compton fault and the City of Gardena; from 75 to 100 feet west of Gardena, and is over 100 feet where it overlaps the merged Lynwood and Silverado aquifers near the coast. The present study indicates that the Gardena aquifer varies in thickness from 40 feet near Lynwood to 100 feet near Gardena and increases to 160 feet northwest of Torrance. Lines of equal thickness are shown on Plate 13.

As shown on Plate 12, the lowest elevation of the base of this aquifer is 350 feet below sea level in the Central Basin and 200 feet below sea level in the West Coast Basin. On the Newport-Inglewood uplift, as well as in the merged area near the coast, the elevation of the base is 100 feet below sea level.

Richter (1950) indicated that this aquifer was one of fluvial origin since the alignment over the Newport-Inglewood uplift was narrow and perpendicular to probable ancient shore lines; furthermore, these deposits are similar to other Recent alluvial deposits in Dominguez and other Gaps. However, Poland (1959a) suggested that this coarse deposit may have been laid down beyond a shore line fringing the Newport-Inglewood uplift. Work in conjunction with this investigation, however, leads to the same conclusion outlined by Richter.

Some ancestral river flowing southwesterly incised a channel across the Newport-Inglewood uplift and eroded away most of the sediments comprising the Gage aquifer ("200-foot sand"). In this channel coarse fluvial deposits were laid down during a subsequent rise of sea level. Coastward from the uplift some shells have been found in wells drilled in this aquifer suggesting that fluvial action may have been affected by shallow lagoons or estuaries. From further study conducted during this investigation, it appears that the Rio Hondo-San Gabriel River systems have been the principal transporting agencies for sediments comprising the Gardena aquifer. However, because the two inland lobes of the Gardena aquifer extend parallel to the inland foothills there is a possibility that the Los Angeles River may have deposited portions of it.

In the Whittier Narrows, the Gardena aquifer is cut by the Rio Hondo fault shown on Plate 7, and it has been folded up to 11 degrees along

the edge of the area near Boyle Heights. Recent uplift along the crest of the Rosecrans anticline has arched the Gardena aquifer, and this is shown on Plate 12 by contours plotted of the base of the aquifer.

The Gardena aquifer has yielded large quantities of water to wells. Because of its coarse texture and continuity, it is an important aquifer in the coastal plain. It is in hydraulic continuity with the Gage aquifer throughout most of its extent and for this reason the isopachs (lines of equal thickness) and elevation contours are plotted on the same maps as the Gage aquifer.

San Pedro Formation. The San Pedro formation has previously been defined to Poland, et al (1945, 1948, 1956, 1959a), as "that stratigraphic unit underlying the unnamed upper Pleistocene deposits and overlying the Pico formation of the late Pliocene age..... Essentially, the San Pedro formation embraces all strata of lower Pleistocene age." Richter (1950) defined the San Pedro formation as "all of the deposits of lower Pleistocene age which underlie West Basin." The original type section of the San Pedro formation contained San Pedro sand, Timms Point silt, and Lomita marl; however, Poland has stated that the San Pedro formation "includes some strata that are younger and may include some that are older than any exposed in the type section cited."

Eckis, (Calif. D.W.R., 1934) used the term "Fernando Group" for the lower Pleistocene and upper Pliocene strata that occurs along the inland foothills of the coastal plain. Since this term included the upper Pliocene deposits, not considered important fresh-water-bearing sediments, the designation "San Pedro formation" is used in this report for the heterogeneous materials comprising the lower Pleistocene horizons.

The San Pedro formation underlies most, if not all, of the Coastal Plain of Los Angeles County as well as portions of the Santa Monica and San Pedro shelves offshore. In the type section along the north flank of the Palos Verdes Hills the San Pedro formation is composed of stratified sand with some beds of fine gravel, silty sand, and silt. Crossbedding occurs frequently in the outcrop. Some pebbles of limestone, siliceous Miocene shales and schist are also found. Away from the Palos Verdes Hills the percentage of granitic fragments increase. In 1950, Richter described the lithology of the San Pedro formation as it occurs in West Coast Basin as "gray sand, which weathers brown or reddish brown on exposure, and interbeds of small gravel are characteristic. Sand and gravel fragments are mainly granitic, indicating a common source area, probably the San Gabriel Mountains". Fine-grained members are generally marine type, blue to black clays, sea muds, or quicksand with abundant shells. The Anchor silt found in the Cheviot Hills (Rodda, 1957) is one of these members. It is correlative with the Timms Point silt, of lower Pleistocene age, and to the lower part of the San Pedro formation. The Coyote silt found in the Coyote Hills (Hoskins, 1954) is also of lower Pleistocene age and resembles the Anchor silt.

The thickness of the San Pedro formation is about 1050 feet beneath the Downey Plain along the South Gate-Santa Ana Depression, and increases to a maximum of 1350 feet in the area about two miles east and southeast of Norwalk along the Norwalk synclinal axis. Where section C-C'-C" (Plate 6b) crosses the Rosecrans anticline, the thickness is 570 feet. Within the West Coast Basin the thickness is greatest along the Gardena syncline, varying from 400 feet about 1 1/2 miles west of Inglewood to 500 feet 1 mile north of Hawthorne, 700 feet at Gardena, and to as much as 1050 feet near the intersection of Carson and Alameda Streets.

The San Pedro formation crops out along the south side of the Repetto, Merced, and Puente Hills; on the Coyote Hills, Baldwin Hills, and Beverly Hills; along the north side of the Palos Verdes Hills; and on Signal Hill. Around the margins of the coastal plain, the San Pedro formation is upturned, and in some local areas is beveled and capped by younger strata.

Most of the structures encountered within the area of study affect at least part of the San Pedro formation. Elevation contour maps on the bases of the aquifers that comprise this formation indicate which fault or faults displace the aquifers. Much folding and warping, along with erosion, also has affected many of the aquifers. The structures affecting the San Pedro formation will be discussed in the descriptions of individual aquifers to follow.

On Plate 3 the San Pedro formation, where it appears at the ground surface, is represented by the symbol "Qsp". Although the formation is shown as one unit for convenience, it has been divided into various stratigraphic units or members. Only those members capable of storing or conveying ground water in suitable quantities have been named as aquifers, while the intervening finer-grained zones were not named. In downward succession, excluding the fine-grained interbedded layers, the aquifers are: The Hollydale aquifer, the Jefferson aquifer, the Lynwood aquifer ("400-foot gravel"), the Silverado aquifer, and the Sunnyside aquifer. Since most of the important aquifers used for production within the coastal plain are contained within the San Pedro formation, their complex water-bearing characteristics are discussed in Chapter VI rather than in the following description.

Hollydale Aquifer. The uppermost aquifer within the San Pedro formation is named the Hollydale aquifer. Although discontinuous in extent, it reaches from the Newport-Inglewood uplift north and northeastward to the south line of the Elysian, Repetto, Merced, and Puente Hills, and eastward and southeastward to and beyond the Los Angeles-Orange County line. Plate 14, entitled "Lines of Equal Elevation on the Base of the Hollydale Aquifer", shows the sinuous irregular courses of this aquifer.

The lithology of this aquifer is variable and consists of yellow sands and gravels (pea-size to two inches) in the northeastern portion of the area, while grey, blue, and black sands, with muds, clays, and marine shells become more predominant toward the Newport-Inglewood uplift. Well log reports are the only means of determining the lithology for this aquifer because it does not crop out on the surface. The well logs indicate that some of the marine sands are mushy, while others are cemented and hard.

The irregular, sinuous, and meander-like courses of the aquifer suggests a stream deposition, but the lithology of the aquifer over three-fourths of the area indicates shallow marine deposition. Because the two main lobes of the aquifer open toward the Los Angeles and Whittier Narrows, it is assumed that streams flowing through these two narrows have controlled the deposition of those parts, while a part of the sediments were laid down beneath shallow water in lagoons or estuaries.

Lines of equal thickness of this aquifer are shown on Plate 15, "Lines of Equal Thickness of the Hollydale Aquifer". The thickness varies from less than 10 feet to a maximum of 100 feet near Lakewood.

In stratigraphic position the Hollydale aquifer is the first important aquifer beneath the Gage-Gardena aquifers. The Hollydale aquifer is overlain and underlain, in most areas, by fine-grained members or aquicludes

of the San Pedro formation. Elevation contours on the base of the Hollydale aquifer and areas of mergence with overlying aquifers are shown on Plate 14. The aquifer attains its greatest depth at an elevation of 500 feet below sea level about two miles east of Compton. In the area between the towns of Norwalk and Bellflower, the depth is about 450 feet below sea level. The slope of the base of the Hollydale aquifer is generally toward these two areas of greatest depth.

Upfolding along the Newport-Inglewood uplift has apparently limited the depositional area of the Hollydale aquifer to the Central Basin. Within the Central Basin the aquifer does not exist in upfolded areas. Downfolding along the axis of the Paramount and Norwalk synclines has, however, placed the base of the aquifer at an elevation of 500 feet below sea level.

This aquifer apparently does not yield large quantities of water to wells, therefore few wells are perforated in this interval and even then only when producing horizons above and below are also perforated. Low productivity of the Hollydale aquifer may be due to the fineness of the materials of which it is composed and the lack of continuity in its extent.

Recharge of the Hollydale aquifer can be accomplished only where it merges with the overlying Gage or younger aquifers (Plate 14) because of the absence of outcrop areas.

Jefferson aquifer. Within the Central Basin, the second aquifer in downward succession within the San Pedro formation is designated the Jefferson aquifer. This aquifer extends over most of the Central Basin, although it is not known to reach the surface. Lobes of this aquifer extend into the Whittier Narrows, into the La Brea Plain, and south of the Coyote Hills through Buena Park into Orange County. Within the boundaries of

the aquifer, some irregular areas exist where the aquifer has not been identified, as indicated on Plate 16, "Lines of Equal Elevation on the Base of the Jefferson Aquifer". This aquifer has not been located in the West Coast Basin. The Jefferson aquifer occurs in sinous courses extending from both the Los Angeles and Whittier Narrows into Orange County.

The lithology of the Jefferson aquifer is known only from drillers logs of water wells. The sediments comprising this aquifer are, for the greater part, fine-grained. Gravels are most extensive in the Whittier Narrows but also occur in scattered patches through the rest of the Central Basin. The remainder of the aquifer consists primarily of sand with some gravelly and clayey lenses.

From the pattern of distribution of sediments comprising this aquifer, source areas are assumed to have been the San Fernando and San Gabriel Valleys and their surrounding highlands. The Los Angeles and San Gabriel Rivers appear to have transported the material through the Los Angeles and Whittier Narrows into or through three possible areas: the La Habra Piedmont slope, the Buena Park area, and southward toward Seal Beach. Extensions of these areas into Orange County have not been determined.

The thickness of the Jefferson aquifer is shown on Plate 17, "Lines of Equal Thickness of the Jefferson Aquifer", and varies from a few feet to a maximum of 140 feet along the Los Alamitos fault. At Norwalk the Jefferson aquifer is 120 feet thick. The Jefferson aquifer has been considerably folded and its base varies in elevation from 700 feet below sea level to 50 feet above sea level.

Structures that affect the Jefferson aquifer are the Los Alamitos, Rio Hondo, Pico, and Cherry Hill faults, and possibly the Seal Beach fault.

It is believed that the general upwarped area along the Newport-Inglewood uplift has controlled or confined to the Central Basin the deposition of sediments comprising this aquifer.

Although it does not crop out on the surface, the Jefferson aquifer does merge with the overlying Hollydale aquifer and also with the Gage aquifer along the Elysian Hills, Repetto Hills, and within the Whittier Narrows. These areas of mergence are shown on Plate 16.

Artificial recharge within the Whittier Narrows would have some effect on this aquifer. Since less than 10 percent of the wells in the Central Basin are perforated in this horizon, and then only in areas where coarse sandy and gravelly zones are found, it is not considered an important water producing aquifer.

Lynwood Aquifer. The Lynwood aquifer is the term used for the third aquifer in stratigraphic sequence within the San Pedro formation. The term "400-foot gravel" has been applied to this aquifer in the West Coast Basin. This latter term was first used by Poland (1948) and defined as "a distinct water-bearing zone in the upper part of the San Pedro formation .... its base is about 400 feet below land surface along the axis of the syncline" (southwest of the Newport-Inglewood uplift). Plate 18, "Lines of Equal Elevation on the Base of the Lynwood Aquifer", and Plate 19, "Lines of Equal Thickness of the Lynwood Aquifer" show the extent, elevation of the base, and thickness of this aquifer.

The Lynwood aquifer extends throughout the Central and West Coast Basins and its existence has been verified in the Hollywood Basin. There is no evidence to show that it exists in the Santa Monica Basin, nor has it been identified in the Baldwin Hills.

Materials of which the Lynwood aquifer is composed appear to be both continental and marine in origin. Continental deposits, of yellow, brown, and red coarse gravels, sands, silts, and clays, are found in the vicinity of the Montebello Forebay Area. A line bounding this area extends from the Whittier Narrows to Bellflower, thence to Compton, South Gate, Huntington Park, and back to the Whittier Narrows. One arm of continental sediments extends from the area just described toward Hawthorne. Sediments of the Lynwood aquifer surrounding the Montebello Forebay Area are mostly marine deposits and are characterized by sand and gravel and blue, grey, and black silts and clays. Some of the sands and gravels have been cemented. The several areas where the marine deposits consist predominantly of fine-grained materials vary from less than 100 acres to about six or seven square miles in extent, and are shown on Plate 19.

From the study of well logs and the materials from wells drilled into this aquifer, it appears that the Rio Hondo and San Gabriel River systems have been the major contributing source for the continental sediments. Marine-type deposits appear to have been laid down when the area was covered by shallow seas.

The Lynwood aquifer ranges from less than 50 feet to about 200 feet in thickness near Wilmington, as shown on Plate 19. Near Lakewood, Torrance, Inglewood, and Montebello it is about 150 feet in thickness. The base contours and lines of equal thickness are not shown west of the Gardena syncline because of mergence with the Silverado aquifer.

In stratigraphic sequence the Lynwood aquifer is overlain and underlain in most of the area by fine-grained materials such as clays, silts, and sandy and silty clays. It is beneath the Jefferson aquifer and above the Silverado aquifer. Known areas of mergence with the overlying aquifers

are shown on Plate 18, while the areas of mergence with the Silverado aquifer are shown on Plate 20, "Lines of Equal Elevation on the Base of the Silverado Aquifer".

Folding has been the primary structural factor affecting the Lynwood aquifer. Upfolding or upwarping has occurred along the coast in the West Coast Basin, over the Newport-Inglewood uplift, in the Artesia area over the Santa Fe Springs uplift, along the edge of the Elysian, Repetto, and Puente Hills, and within the Whittier Narrows. Downwarping has affected the aquifer in the Hawthorne-Long Beach depression extending to San Pedro, within the South Gate-Santa Ana depression (includes Paramount and Norwalk synclines), and within the La Habra syncline. Within the West Coast Basin the Charnock fault has offset the Lynwood aquifer. Along the Newport-Inglewood uplift, the Inglewood, Potrero, Avalon-Compton, Cherry Hill, Northeast Flank, and other associated transverse faults cut the aquifer. Within the Central Basin the Los Alamitos fault offsets the Lynwood aquifer as does the Rio Hondo and Pico faults within and south of Whittier Narrows.

The Lynwood aquifer is an important producer of ground water and is discussed in more detail in the descriptions of the ground water basins in Chapter VI. Most wells in the coastal plain drilled to or below this aquifer are perforated in it. Yields of wells perforated only in the Lynwood aquifer vary from 200 to 2100 gallons per minute.

Surface and subsurface flow of water through the Whittier Narrows moves downward through the shallow aquifers into the Lynwood aquifer. Water is also artificially spread in shallow pits below the Whittier Narrows where the Lynwood aquifer is in contact with the permeable materials extending upward into the pits, thus permitting this water to reach the Lynwood aquifer. This artificial method of recharging is not generally

applicable in other areas where the Lynwood aquifer is merged with the overlying aquifers because of the greater depth of those aquifers as well as the Lynwood aquifer below the surface, the lack of continuous permeable materials to conduct water vertically downward, and the lack of available space for large surface pits. In these areas, therefore, other methods of recharge would be necessary, such as injection wells drilled into and perforated in this aquifer.

Silverado Aquifer. The Silverado aquifer is the name applied in this report to those water-bearing materials which are stratigraphic equivalents of the "Silverado Water-Bearing Zone" in the West Coast Basin. Originally named by Poland, et al (1956), from its typical occurrence in a well in Silverado Park, Long Beach, the Silverado Water-Bearing Zone has been found throughout the rest of the Coastal Plain of Los Angeles County and extends across the Los Angeles County line into Orange County. For the purpose of this report the term, "Silverado aquifer", will apply to these materials throughout the Coastal Plain of Los Angeles County. Areas of Pleistocene deposits occurring in the Santa Monica and San Pedro shelves offshore may be continuations of the Silverado and underlying Sunnywide aquifers. Plate 20 shows the known extent and elevation contours of the base of the Silverado aquifer.

Sediments comprising the Silverado aquifer are both continental and marine. Where continental deposits predominate, yellow to brown, coarse to fine sands and gravels are interbedded with yellow to brown silts and clays. Marine deposits which comprise the Silverado aquifer over the remainder of the basin are primarily blue to grey sand, gravel, silt, and clay. Some black sands, quicksand, marine shells, peat, and wood fragments

are also shown on drillers logs of wells located in the area of marine sediments. In the West Coast Basin, Richter (1950) describes the lithology as fine to coarse, blue-black arkosic sand with the larger grains composed of granite, granodiorite, and diorite. Along the flanks of the Palos Verdes Hills, limestone and schist pebbles are abundant, while in the Ballona Gap area slate, schist, and volcanic pebbles are commonly found.

The ancestral Rio Hondo and San Gabriel River systems have been the major transporting agent for materials comprising the continental portion of the Silverado aquifer in Central Basin, although some contributions may have been added by the Santa Ana River flowing in one of its earlier courses. The regional evidence indicates that the Los Angeles River did not flow into the coastal plain during much of the lower Pleistocene time and probably did not contribute sediment to the Silverado aquifer. However, streams flowing from the Santa Monica Mountains, Elysian Hills, and Palos Verdes Hills have added debris from these areas. Much of this material was deposited beneath the shallow ocean that covered the coastal plain at this time. The continental deposits appear to have been laid down when the sea was retreating from the coastal plain.

The varying thickness of the Silverado aquifer is depicted on Plate 21, "Lines of Equal Thickness of the Silverado Aquifer". This aquifer reaches a maximum thickness of 500 feet between the Wilmington anticline and the Cherry Hill fault. One mile west of Lakewood, along Carson Street, the Silverado aquifer is 450 feet thick. Along the south side of the Santa Fe Springs Plain and also two miles southeast of Huntington Park it is 300 feet thick.

The maximum depth reached by the base of the Silverado aquifer, 1200 feet below sea level, is found southwest of the Cherry Hill fault

within Dominguez Gap, along the north side of the Los Alamitos fault, and about three miles southeast of Norwalk. A depth of 1100 feet below sea level occurs near Long Beach Harbor.

The Silverado aquifer crops out along the northeast flank of the Palos Verdes Hills, possibly on the continental shelf beneath Santa Monica Bay, along the southern margin of the Baldwin Hills, in the Repetto and Merced Hills, along the south slope of the Puente Hills, and possibly in the Coyote Hills. Outcrops in the areas named are shown as the San Pedro formation, Qsp on Plate 3, because insufficient data are available to definitely identify the aquifer involved.

Areas where the Silverado aquifer merges with overlying aquifers are shown on Plate 20. In the Montebello Forebay Area and Whittier Narrows the Silverado aquifer is directly overlain by and merges with aquifers younger than the Lynwood aquifer. Merged areas are irregular in extent but are generally found along the Newport-Inglewood uplift, in the area from Huntington Park to Santa Fe Springs, and also within the Whittier Narrows. In the West Coast Basin the Silverado is merged with the overlying Lynwood aquifer everywhere except beneath the Gardena syncline and the Wilmington anticline. Near Santa Monica Bay the Silverado aquifer is in hydraulic continuity with the Gardena and Gage, as well as the Lynwood aquifers. In the Montebello Forebay Area the Silverado aquifer merges with the overlying Lynwood, Jefferson, Hollydale and Gardena aquifers, as delineated on Plate 20A.

The Silverado aquifer has suffered a greater degree of folding than the overlying Lynwood aquifer. It has been deformed by all of the major anticlinal and synclinal folds. All the major faults shown on Plate 3 seem to have affected this aquifer. After faulting occurred, the aquifer

may be found at either different or the same elevation but separated by a region of altered permeability. Sufficient data is lacking to determine whether the geologic structure just south of Santa Fe Springs is a fault or downfold. On the basis of the data available it is believed that the postulation of a sharp downfold would explain the existing structure in a more adequate manner than the assumption of a fault.

This aquifer is one of the most important ground water producers in the coastal plain. Specific capacities of wells perforated in it range up to a maximum of 159 gallons per minute per foot of drawdown and yields range up to 4700 gallons per minute.

In the Whittier Narrows the Silverado aquifer is merged with many overlying aquifers and recharging the shallow aquifers in that area would cause additional water to reach the Silverado aquifer. Recharge from the surface in the Los Angeles Forebay Area may also reach the Silverado aquifer where it is truncated by the Gaspur. Other possible recharge areas for the Silverado aquifer are in the outcrop along the Coyote and Baldwin Hills, or in the Ballona Gap, where the Silverado aquifer is directly beneath the Ballona aquifer and close to the surface. Natural recharge takes place in those areas shown on Plate 3 where the San Pedro formation crops out on the surface.

Sunnyside Aquifer. The water-bearing materials occurring within the Central Basin beneath the Silverado aquifer but above the Pico formation have been termed the "Sunnyside aquifer" after a typical occurrence illustrated by the log of a well located in Sunnyside Cemetery in North Long Beach.

The Sunnywide aquifer extends throughout the Central Basin. Its extent and elevation of its base are shown on Plate 22, "Lines of Equal

Elevation on the Base of the Sunnyside Aquifer". Recent drilling along the coastal region from Palos Verdes Hills to Ballona Escarpment has revealed a zone of coarse deposits approximately 500 feet thick occurring beneath the Silverado aquifer, but separated from it by silts and clays. These coarse materials are similar to the Sunnyside aquifer in the Central Basin and may be the extension of the Sunnyside aquifer in the West Coast Basin.

The materials comprising this aquifer are coarse-grained sands and gravels separated by fine-grained interbeds of sandy clay and clay. The lithology shown on a typical well log near the intersection of Del Amo and Cherry Streets is compacted blue sand, coarse blue gravel (up to four inches in diameter), hard blue sandy clay, and clay. Toward the Los Angeles-Orange County line, mushy blue sands and coarse gravels with greater amounts of blue clay are found. At Spring Street and Bloomfield Avenue, well logs indicated that instead of clay, fine blue sand with minor clay streaks was present. Along the center of the coastal plain, about one mile north of Manchester and near Alameda Avenue, fine to medium gravel (one quarter to one inch in diameter), and partly cemented blue clay, and grey to brown shale are typical materials. In Whittier Narrows hard grey sands and gravels, boulders, and blue sandy shale are present.

From drillers descriptions of materials, it is believed that the aquifer is of marine origin and has been affected very little by weathering. Many well logs show marine shells included with the sediments in addition to the interbedded marine-type clays and shales.

The Sunnyside aquifer attains its maximum known thickness of about 300 feet about one to one and a half miles southeast of Maywood in the vicinity of Slauson Avenue and the Long Beach Freeway. Plate 23, "Lines of Equal Thickness of the Sunnyside Aquifer", gives the thickness of the

Sunnyside aquifer. No data is available to determine thickness in the central downfolded area because none of the water wells have reached the aquifer in this area.

It is not definitely known whether the Sunnyside aquifer crops out in any particular location within the Central Basin; however, it is assumed that some of the outcrop areas shown as the San Pedro formation on Plate 3 include the Sunnyside aquifer also. The most likely areas for this to occur are along the south slope of the Repetto, Merced, and Puente Hills, and especially on the top of the Coyote Hills.

In stratigraphic position the Sunnyside aquifer is overlain by the fine-grained Timms Point silt and Lomita marl and underlain by the Pico formation. It may be correlated in age with the unit mapped by Hoskins (1954) as the Coyote silt, the Anchor silt of Rodda (1957), and the La Habra conglomerate of Eckis (Calif. D.W.R., 1934).

Structurally, the Sunnyside aquifer is offset by most, if not all, of the faults within the Central Basin. Some of the faults appear to act as boundaries for the aquifer. Northeast of the Los Alamitos fault the base of the Sunnyside aquifer occurs at a maximum depth of about 1500 feet below sea level.

The Sunnyside merges with the Silverado and other overlying aquifers in many areas delineated on Plate 22, "Lines of Equal Elevation on the Base of the Sunnyside Aquifer". In these merged areas hydraulic continuity is possible through a series of aquifers to the surface. The only known areas where this aquifer may be recharged are limited to outcrops of the San Pedro formation and merged areas where folds have lifted the Sunnyside aquifer near the surface of the ground.

Yields of wells perforated in this aquifer range up to 1500 gallons per minute. Specific capacities of known wells using only this aquifer for production are only fair, ranging from 6 to 25 gallons per minute per foot of drawdown.

Undifferentiated Plio-Pleistocene Sediments

An area of sediments of either Pliocene or Pleistocene age, or possibly both, is shown on Plate 3 in the Repetto Hills southeasterly of Monterey Park. In the geologic literature these sediments have been classified variously as both Pliocene and Pleistocene. Although various fossils are present, age designation based upon them is uncertain. While these sediments are somewhat permeable they have relatively little significance as far as ground water in the coastal plain is concerned; therefore, no attempt was made to determine their age.

These undifferentiated sediments consist of thin bedded to massive silts, sands, and gravels that are locally well indurated and contain limited marine fossil remains. The sediments have been folded and many minor faults and fractures are seen in outcrops.

Although these sediments are considered to be relatively unimportant as far as ground water is concerned, a drainage well constructed in 1959 reportedly yields fair quantities of good quality water. Firm conclusions, however, cannot be drawn from this limited experience.

Tertiary System

Aquifers have not been differentiated in sediments and rocks older than Pleistocene age because of limited well log data. Few wells extend into these materials and little ground water of suitable quality is extracted from them. Some fresh water is now being extracted from the upper member

of the Pico formation, discussed first in this section. For pre-Pleistocene materials in general, the sediments and rocks are described by formations or broad age classification.

Pliocene Series

The Pliocene series is divided into two formations, the Pico formation and the Repetto formation. In addition, the Pico formation is divided into upper, middle, and lower divisions.

Pico Formation. The Pico formation is shown, where it outcrops at the surface, on Plate 3 by the symbol "P_p". The upper division or upper member of the Pico formation is a potential source of ground water. It has not been exploited to date, though wells along Carson Street near Lakewood do obtain water from upper Pico aquifers. This member is thickest in the synclinal areas, and it outcrops on the hills surrounding the coastal plain.

The upper Pico formation is generally composed of sand, silt, and clay of marine origin interbedded with marine gravels. Beds of gravels and sands range in thickness from 20 to 100 feet and are separated by beds of micaceous siltstone and clays.

Unconformably beneath this upper member are the middle and lower members of the Pico formation, or in some areas, the Repetto formation. The middle and lower divisions of the Pico formation are differentiated from upper Pico sediments by the contained foraminiferal faunas. Lithologically, the middle and lower divisions are composed of greenish-grey micaceous siltstone and fine to coarse light grey feldspathic sandstone interbedded with claystone and shale. The thickness of these lower division materials ranges from 400 to more than 2,000 feet. Throughout most of the coastal plain these rocks are far below the depths reached by the deepest

water wells. Oil well data indicate that, although portions of these sediments may be sufficiently permeable to transmit water in usable quantities, the water is of poor quality and unsuitable for general use.

Repetto Formation. The Repetto formation, of early Pliocene age, is exposed in several areas adjacent to the coastal plain. The outcrops of this formation are identified by the symbol "Pr" on Plate 3. These deposits are composed mostly of siltstone with layers of sandstone and conglomerate, containing fragmental marine shells locally. The Repetto formation is about 5,000 feet in thickness. Wissler (1943) states that the maximum thickness occurs in the Montebello-Santa Fe Springs area. Conrey (1958) and Slosson (1958) confirm this and discuss the distribution and thickness of the Repetto rocks in some detail.

Miocene Series

Rocks of Miocene age are shown on Plate 3 by the symbols "Ms" for sedimentary rocks and "Mv" for volcanic rocks. Nomenclature of the sediments of Miocene age is somewhat complicated; however, the relationship between the various names and brief descriptions of the various formations are presented in Table 1.

Sedimentary Rocks. Sedimentary rocks of middle and late Miocene age have been called the Monterey formation in the Palos Verdes Hills, the Modelo formation in the Santa Monica Mountains, and the Puente formation beneath the coastal plain and in the Repetto and Puente Hills. These formations, up to 11,000 feet thick, consist predominantly of clay shales but siliceous shales, sandstones, and conglomerates are common.

The Topanga formation is of middle and possibly early Miocene age. It is interbedded with and lies below the Miocene volcanic rocks. The formation attains a thickness of 7,500 feet and consists of shale, sandstone, and conglomerate.

No wells are known to produce fresh water from these formations in the immediate area of the coastal plain. However, water wells in other parts of Southern California do obtain limited supplies from hard fractured shales and poorly consolidated sandstones and conglomerates of these formations.

Volcanic Rocks. Calcic andesite flows, tuffs, and breccias underlie at least parts of the coastal plain, and usually contain interbedded marine sand, conglomerate, and shale. Where these materials outcrop on the surface they are identified by the symbol "Mv" on Plate 3. Available data indicate that the fractured sills, dikes, and flows, along with interbedded sand and gravels, yield water to wells, while the conglomerates and agglomerates are relatively nonwater-bearing.

Older Tertiary Sedimentary Rocks

Rocks of Eocene and Oligocene age are missing beneath West Coast Basin, though they may underlie the Central Basin. Hoots (1931) gives some evidence for the presence of the Sespe and Vaqueros formations of Oligocene(?) or early Miocene age in the Santa Monica Mountains. Paleocene rocks crop out in the Santa Monica Mountains and may underlie a part of the coastal plain. Hoots (1931) termed these rocks the Martinez formation. Other exposures of Martinez sandstone and conglomerate were found in the Santa Monica Mountains by Durrell (1954) and others. Outcrops of Eocene and Oligocene rocks are shown on Plate 3 by the symbols "E" and "Ø", respectively, while outcrops of Paleocene rocks are marked by the symbol "E-K".

Cretaceous System

A sequence of Upper Cretaceous sediments within the Santa Monica Mountains are differentiated and have been called the Chico formation by Hoots (1931). Durrell (1954) however, appears to have divided the same sequence into the Chico and Trabuco formations. The symbol "K_s" represents the areas of outcrops of these rocks on Plate 3.

Quartz dioritic intrusive rocks, shown by the symbol "K_g" on Plate 3 have previously been assumed to be Jurassic by comparison with similar rocks in the Sierra Nevada (Durrell, 1954). On the basis of dating by lead-alpha activity ratios of intrusive rocks in Southern California, Larsen, et al (1958) suggests that these rocks are of an early Late Cretaceous age rather than Jurassic.

Jurassic System

Rocks, called the Catalina schist, crop out on the Palos Verdes Hills and are identified on Plate 3 by the symbol "J". These have been also referred to as the Western bedrock complex because they underlie Miocene rocks of the West Coast Basin. The age of these schistose rocks is questionable and, according to Woodford, et al (1954), may be either Mesozoic (when compared to the Jurassic Franciscan formation of the coast ranges) or Precambrian (when compared with the Pelona schist of the San Gabriel Mountains). In this report they are mapped as Jurassic.

Triassic System

Metamorphosed black shale and sandstone crops out in the Santa Monica Mountains and have been called the Santa Monica slate (Hoots, 1931) and the Santa Monica formation (Durrell, 1954). Intrusion of these rocks

by the quartz dioritic magma was responsible for changing these rocks into grey to black slates, mica schists, and spotted slates. These rocks are dated as Triassic by comparison with similar rocks of Triassic age in the Santa Ana Mountains. In the coastal plain, these are presumably the oldest rocks known, although the Cataline schist mentioned under the Jurassic System may possibly be older. These Triassic rocks are identified on Plate 3 by the symbol "T_R".

CHAPTER VI. DESCRIPTION OF GROUND WATER BASINS

This chapter describes the ground water basins in the Coastal Plain of Los Angeles County and discusses the occurrence and movement of ground water within each basin. Information regarding geologic features presented in earlier chapters is summarized here for each ground water basin to show what effect these features have on ground water flow into, through, and out of each basin. The relationships between the geologic features and the occurrence and movement of ground water as discussed in this chapter are intended to clarify the geologic setting of the area for future studies of hydrology, water quality, and problems involving the use of ground water.

Basin Boundaries

The ground water basin as herein used is defined as the area underlain by one or more permeable formations capable of furnishing a substantial water supply. It does not necessarily coincide with the surface drainage basins and is usually smaller in size because the essentially nonwater-bearing hills and mountains of the surface drainage basin (watershed) are excluded. Ground water basins are separated from adjacent basins by geologic features such as nonwater-bearing rock, faults, or other geologic structures which impede ground water movement, and by natural or artificial mounds or divides in the water table or piezometric surface. Geologic features generally establish well defined, fixed boundaries while ground water mounds are subject to change in time, particularly with changes in the development and use of ground water. However, both of these types of boundaries do define limits of ground water movement.

Central Basin

The Central Basin extends over most of the Coastal Plain of Los Angeles County east and northeast of the Newport-Inglewood uplift (Plate 2). It is bounded on the north by the Hollywood Basin and a series of low hills extending from the Elysian Hills on the northwest to the Puente Hills on the southeast. Where the Los Angeles and Whittier Narrows break the otherwise continuous line of hills, the Central Basin is separated from the ground water basins to its north by arbitrary lines. The Central Basin is bounded on the west and south by the Newport-Inglewood uplift and on the southeast by the Los Angeles-Orange County line. All of these boundaries do not coincide with the ones defined in earlier reports. In Bulletin No. 8 (Calif. D.W.R. 1952c) the Central Basin included the area referred to in this report as the Hollywood Basin. The present Central Basin includes part of the area formerly known as the Los Angeles Narrows Basin, and the Whittier Area which was formerly the western part of the La Habra Basin.

The Central Basin was historically divided internally into three areas (Calif. D.W.R. 1934): the Los Angeles and Montebello Forebay Areas and the Central Basin Pressure Area. This division is shown on Plate 2. The forebay areas have been described as intake areas (areas of free or unconfined ground water) where substantial infiltration of surface water could occur. In the pressure area, the aquifers were pictured as being confined between relatively impervious layers of considerable lateral extent that restricted percolation of water from the ground surface downward to the underlying aquifers. This investigation has shown that such a simplified division is not possible because aquicludes were found to extend into the so-called forebay areas and the pressure area aquicludes were found locally

to contain large amounts of sandy and gravelly clay and silts where considerable deep percolation could occur. The area of essentially unrestricted percolation of surface waters to the underlying ground water is limited to small areas in the vicinity of the Los Angeles and Whittier Narrows (Plate 9A). These areas are considerably smaller in extent than the historically defined Los Angeles and Montebello Forebay Areas. However, in large portions of the remainder of the basin, including the pressure area, the upper aquiclude is only partly effective in restricting downward percolation. Because of the heterogeneous pattern of these relatively permeable areas in and around the more impermeable aquicludes and the general gradation from one to the other, an attempt to divide the basin into pressure and forebay areas along a definite line for purposes of hydrologic analysis would not only be difficult but would have to be completely arbitrary. Nevertheless, the old delineation of forebay and pressure areas are used in the discussion of the geology of the Central Basin to follow because of their historical significance and descriptive usefulness.

The Central Basin is divided into four parts for descriptive purposes: the Los Angeles Forebay Area, the Montebello Forebay Area, the Whittier Area, and the Central Basin Pressure Area. The Los Angeles and Montebello Forebay Areas are located in the northern part of the Central Basin immediately south of the two breaks in the line of low hills bordering the basin. Through these breaks the Los Angeles River and the Rio Hondo-San Gabriel River systems flow from the valleys to the north into the coastal plain (Plate 2). These forebay areas spread southward from the two narrows in irregular semicircles. The southern boundary of the two forebay areas roughly coincides with the northernmost limit of the line of flowing

artesian wells delineated by Mendenhall in 1903. As explained above, these forebay areas are not true forebays in the academic sense of the word but are used herein for descriptive purposes.

The Whittier Area is located in the northeastern part of the Central Basin east of the Montebello Forebay Area, south of the Puente Hills and west of the Orange County line. The Whittier Area was described as part of the La Habra Basin in Bulletin 45 (Calif. D. W. R. 1934). However, since the aquifers present in this area, especially the deeper ones, are interconnected to varying degrees with the aquifers in the Central Basin, the area was renamed and treated as part of the Central Basin.

The Central Basin Pressure Area is the largest of the four divisions of the Central Basin. It encompasses all of the area east and northeast of the Newport-Inglewood uplift and northwest of the Orange County line that is not included in the other three areas. It is called a "pressure area" because the aquifers within it are confined by aquicludes or relatively impermeable layers of clay and silt over most of the area. One of the most important aquicludes is at or near the surface. As noted previously, this near surface aquiclude is missing in local areas and contains zones of relatively more permeable material in many places where water could move into or out of the underlying aquifer. Accordingly, completely confined conditions do not exist in the pressure area.

It should also be noted in this discussion of basin divisions that the pressure area could be further divided on the basis of a ground water mound which has existed in the northwestern portion of the basin since the early 1930's. This mound effectively divides the ground water movement in that portion of the basin into two parts; that which moves northward

toward the Hollywood Basin and that which moves southeasterly toward the center of the old pressure area and the Los Angeles Forebay Area. This ground water mound was used in the formulation of a portion of the northern boundary of the Central and West Basin Water Replenishment District organized in 1959 (Calif. D.W.R. 1959).

In the sections which follow, the geologic features of the Los Angeles Forebay Area, the Montebello Forebay Area, the Whittier Area and finally the Central Basin Pressure Area are summarized. For each area these summaries include information about the aquifers present, the areas where these aquifers merge, and barriers to ground water movement. The flow of water into and out of the Central Basin as a whole, replenishment of the aquifers, and areas of free ground water and storage change are described in a separate section under the heading of "Occurrence of Ground Water in the Central Basin".

Geologic Features of the Los Angeles Forebay Area

The Los Angeles Forebay Area, located in the northern part of the Central Basin, is shown on Plate 2. In general it is a free ground water area; however, in the course of this investigation it became evident that the Bellflower aquiclude extends into the southerly portion of the forebay area. The aquiclude in this area contains a high percentage of sand, and vertical percolation of water is apparently more rapid here than in other portions of the basin covered by it. Where the Bellflower aquiclude is missing within the forebay area (see Plate 8A), the aquifers are in direct hydraulic continuity with the surface.

The Los Angeles Forebay Area is overlain by parts of the La Brea, Downey, and Montebello Plains. The known water-bearing sediments extend to

The Sunnyside aquifer also has been identified throughout the Whittier Area. It consists of 200 to 300 feet of sand and gravel with some interbedded clay (Plate 23). It is the lowest of the aquifers identified, reaching a maximum depth of about 1,000 feet (700 feet below sea level, Plate 22). The gravels exposed in the Coyote Hills and along the north side of the area are believed to be surface outcrops of the Sunnyside aquifer.

The Pliocene and Miocene sediments below the San Pedro formation generally contain saline water in this area, but may locally contain fresh water. Plate 24A shows the approximate elevation of the base of fresh water-bearing sediments.

The available data suggest that some of the water-bearing sediments in the Whittier Area may have been faulted. However, the location of such faulting and its effect on ground water has not been determined.

The water-bearing sediments of the Whittier Area comprise part of the generally east-west trending La Habra syncline. The Recent deposits are essentially undisturbed. The Lakewood formation underlying the Recent alluvium is also generally flat-lying, though in some areas it is slightly tilted. The San Pedro formation, however, which unconformably underlies the Lakewood formation, has been folded sharply and its flanks are exposed in the Coyote Hills and on the south side of the Puente Hills. The effects of this unconformity and the outcrops of the moderately dipping San Pedro formation upon the occurrence and movement of ground water will be discussed later.

Geologic Features of the Central Basin Pressure Area

The Central Basin Pressure Area, previously known as the Central Coastal Plain Pressure Area, is overlain by the Downey Plain and parts of

the Santa Fe Springs, Montebello, La Brea, and Bouton Plains. The area is generally flat and slopes gently to the south. Water-bearing sediments in the Central Basin Pressure Area range in age from Recent to Pliocene and extend to a probable maximum depth of 2,200 feet northeast of the City of Lakewood. Aquifers have been defined in the Recent alluvium and the Lakewood and San Pedro formations.

In this pressure area the aquifers are confined by many aquicludes, only one of which has been named. This is the near surface Bellflower aquiclude which restricts vertical percolation into the Gaspur and other underlying aquifers. Water levels in the confined area form a piezometric or pressure surface rather than a free ground water surface. As pressures change from aquifer to aquifer, the corresponding piezometric water levels in wells tend to vary according to which aquifer or aquifers are used for production. Also, as the aquicludes vary in extent, configuration, permeability, and thickness, their effectiveness as confining members also changes from place to place and with this change an exchange of water between aquifers may take place, depending on the direction of the pressure gradient.

The Recent alluvium covers most of the Central Basin Pressure Area, and attains a probable maximum depth of 200 feet near the City of Bellflower. It contains the Semiperched aquifer, the Bellflower aquiclude, and the Gaspur aquifer. The Semiperched aquifer consists of sands and gravels 20 to 60 feet thick overlying the Bellflower aquiclude.

The Bellflower aquiclude is found throughout the pressure area and is composed mainly of clay and silt; however, there are numerous areas where it consists mainly of clayey sands and gravels and where its effectiveness as an aquiclude is limited. It ranges from a few feet to 160 feet in

thickness (Plate 9A). It extends downward to about 200 feet (140 feet below sea level) southwest of the City of Bellflower (Plate 8A). The Bellflower aquiclude is also present in the Lakewood formation but no effort has been made to define separately the areas where the aquiclude is identified with each age. The Gaspur aquifer extends south from the forebay areas in two separate arms which merge in the vicinity of the City of Lynwood and then extend south along the course of the Los Angeles River to the ocean. The Gaspur aquifer consists of coarse sand and gravel and ranges in thickness from 40 to 100 feet (Plate 11A). The maximum depth of about 190 feet (170 feet below sea level) occurs in the vicinity of Terminal Island in San Pedro Bay (Plate 10B).

The Lakewood formation, of late Pleistocene age, extends over all of the Central Basin Pressure Area. It contains part of the Bellflower aquiclude and the Artesia, Exposition, Gage, and Gardena aquifers. The water-bearing materials immediately underlying the Bellflower aquiclude west of the easterly arm of the Gaspur aquifer are called the Exposition aquifer. The water-bearing materials immediately underlying the Bellflower aquiclude east of this arm of the Gaspur aquifer are called the Artesia aquifer and are believed to be contemporary both in age and mode of deposition with the materials in the Exposition aquifer. The boundary between the Artesia and Exposition aquifers is somewhere in the center of the basin under the Gaspur aquifer. All three aquifers are in hydraulic continuity. Both the Artesia and Exposition aquifers consist of sand and gravel with local areas of interbedded clay. The Exposition aquifer ranges from 20 to over 100 feet in thickness (Plate 11A) and reaches a maximum depth of about 230 feet (120 feet below sea level) southeast of Huntington Park (Plate 10A).

The Artesia aquifer consists of 10 to 140 feet of sand and gravel with some interbedded clays (Plate 11A). It extends down to a maximum depth of 230 feet (220 feet below sea level) southeast of the City of Lakewood (Plate 10A).

The Gage and Gardena aquifers of the Lakewood formation are also considered to be the same age. Their relationship was discussed in this chapter in the section on the West Coast Basin. The Gage aquifer consists of fine-grained sand and silty sand ranging from 5 to 120 feet in thickness (Plate 13A). The maximum depth attained is 380 feet (350 feet below sea level) west of the City of Lakewood (Plate 12A). The Gardena aquifer consists of coarse-grained sand and gravel from 10 to 60 feet in thickness. It extends down to a depth of about 390 feet (350 feet below sea level) near the City of Lynwood. The Gage and Gardena aquifers mark the base of the Lakewood formation and along this base they abut the underlying San Pedro formation unconformably.

The San Pedro formation, present throughout the Central Basin Pressure Area, contains some of the most important aquifers in the area. In all, five aquifers, the Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside, have been delineated.

Two relatively minor aquifers, the Hollydale and Jefferson aquifers, are present in the upper part of the San Pedro formation in the Central Basin Pressure Area. The Hollydale aquifer, uppermost of the two, (Plates 14 and 15) extends over approximately 60 percent of the area. It is mostly sand and silty sand with interbedded clays, though some gravel is found locally. It ranges from approximately 10 to 100 feet in thickness, and the maximum depth of about 570 feet (500 feet below sea level) is reached a few miles east of the City of Compton. The Jefferson aquifer (Plates 16 and 17)

is present over only 40 to 50 percent of the pressure area. It is mostly fine-grained sand with scattered lenses of gravel, and ranges in thickness from about 10 feet to over 140 feet. The maximum depth of approximately 720 feet (650 feet below sea level) is found near the Orange County line southeast of the City of Norwalk. Although these two aquifers are not continuous over the entire Central Basin Pressure Area, they are important sources of water in some localities.

Both the Lynwood and Silverado aquifers yield considerable water to wells in the Central Basin Pressure Area. The Lynwood aquifer (Plates 18A and 19A) is composed mainly of coarse-grained sands and gravels, ranging in thickness from less than 50 feet to over 150 feet. The maximum depth of about 1,030 feet (950 feet below sea level) occurs southeast of the City of Norwalk. The Silverado aquifer (Plates 20A and 21A) is composed largely of sands and gravels, ranging in thickness from about fifty feet to over 450 feet. The greatest depth is found north of the City of Lakewood, where its base is about 1,240 feet below the ground surface (1,200 feet below sea level). The base of the Silverado aquifer was thought to correspond to the base of the Pleistocene deposits and of fresh water in the West Coast Basin, where it was first named. In the Central Basin, however, the Sunnyside aquifer has been differentiated below the Silverado aquifer.

The Sunnyside aquifer (Plates 22 and 23) marks the base of the San Pedro formation in most parts of the Central Basin Pressure Area. It varies from about 70 feet to over 500 feet in thickness and consists of sand, and sand and gravel. The maximum depth of about 1,700 feet (1,660 feet below sea level) occurs east of the City of Lakewood.

Below the Sunnyside aquifer is a thick section of Pliocene deposits, the coarse zones of which contain fresh water, as indicated by electric logs of oil wells. Around the margins of the Central Basin Pressure Area, where many oil fields exist and more data are available, it is apparent that the fresh water was introduced into the Pliocene sediments by flushing the saline water toward the ocean. Much of the pressure area is in the South Gate-Santa Ana depression where only widely scattered exploratory type oil well data are available. No contours depicting the base of fresh water could be drawn through this area; however, the replacement of saline waters with fresh water appears to have occurred here as well.

The structural features which control or influence the occurrence and movement of ground water in the Central Basin Pressure Area are the South Gate-Santa Ana depression and the Newport-Inglewood uplift. The South Gate-Santa Ana depression extends from south of Beverly Hills into Orange County. It is bounded by transitional structures adjacent to the Puente and Repetto Hills on the northeast and the Newport-Inglewood uplift on the southwest. The Recent sediments in this depression are generally flat-lying as are the underlying deposits of the Lakewood formation. The San Pedro formation, however, is moderately folded and unconformably underlies the younger formations in most of the Central Basin.

The major structural features in the South Gate-Santa Ana depression are the Paramount syncline and Los Alamitos fault, and the Norwalk syncline. These structures appear to be developed only in the San Pedro formation, and they do not affect the overlying younger sediments. The Paramount syncline underlies the City of Paramount and extends northwesterly to the Inglewood fault north of the Baldwin Hills. The Los Alamitos fault

appears as an extension of the axis of the Paramount syncline southeast of the City of Paramount. The Norwalk syncline extends from the City of Norwalk southeasterly to the Orange County line. It is separated from the Los Alamitos fault by an unnamed anticlinal fold which extends into Orange County. None of these structural features appear to materially affect ground water movement in the Central Basin Pressure Area.

The faults and anticlinal folds of the Newport-Inglewood uplift mark the west and southwest boundary of the Central Basin Pressure Area and are partial barriers to movement of ground water from the Central Basin to the West Coast Basin, as has been previously discussed.

Occurrence of Ground Water in the Central Basin

In all four areas of the Central Basin ground water is found in the Recent alluvium, the Lakewood and San Pedro formations, and sometimes in the older sediments. The aquifers in these formations have been discussed above under separate headings for each area of the Central Basin. The paragraphs that follow will take up the movement of ground water into and through the Central Basin as a whole, rather than by separate areas.

Ground water enters the Central Basin through surface and subsurface flow and by direct percolation of precipitation, stream flow, and applied water. The main surface and subsurface flow into the basin is through the Los Angeles and Whittier Narrows from the ground water basins in the interior valleys. However, minor subsurface flow probably enters the area from the bordering relatively impermeable formations, and some subsurface flow can take place from the other surrounding ground water basins.

Replenishment of the aquifers by percolation of precipitation, stream flow, and applied water occurs in the forebay areas where permeable sediments are exposed at ground surface. In addition, some water also moves into the aquifers where they crop out on the surface against the surrounding highlands and in those portions of the pressure area where the Bellflower aquiclude is missing or contains considerable sand and gravel.

In the Los Angeles and Montebello Forebay Areas the aquifers are in hydraulic continuity in varying degrees, with each other and with the ground surface. In some instances this hydraulic continuity results from the aquifers being superposed one on another with no intervening clay members. Areas where each aquifer is merged with the overlying one are shown on the plates depicting lines of equal elevation on the base of each aquifer

(Plates 10A, 12A, 14, 16, 18A, 20A, and 22). In other portions of the forebay areas aquicludes present between the aquifers restrict direct movement of ground water between aquifers. However, these aquicludes are not continuous over the entire area; consequently, the hydraulic gradient controls the lateral movement of ground water to points where the aquifers are merged.

The areas of contact between aquifers and areas of contact with the ground surface are important because it is only through these areas that surface water can be introduced by spreading into the aquifers in major quantity. The most important area in this regard in the Coastal Plain of Los Angeles County is in the vicinity of the Whittier Narrows in the Montebello Forebay Area because of the interconnection of the deeper aquifers through the shallower ones to the ground surface. This condition also exists in the vicinity of the Los Angeles Narrows in the Los Angeles Forebay Area, but the paving of this area has essentially eliminated surface recharge to the aquifers below.

Plate 25, entitled "Areas Where Aquifers are Merged with Permeable Surface Deposits or Overlying Aquifers in Vicinity of Whittier Narrows" shows the generalized interconnections in and near the Whittier Narrows in the Montebello Forebay Area and the areas of essentially direct connection between the aquifers and the ground surface. This plate was derived from the detailed delineation of the areas of mergence shown on the plates depicting lines of equal elevation on the base of each aquifer.

Water applied on the surface can move directly into the Gaspur aquifer within the area shown on Plate 25. The Gage and Gardena aquifers immediately underlie the Gaspur aquifer and they are in hydraulic continuity. Below the Gage and Gardena aquifers are the Hollydale and Jefferson

aquifers which are generally merged with the Gage and Gardena aquifers. This relationship is shown on Plates 12A, 14, 16, and Plate 25. These interconnections provide essentially complete continuity with the surface through the Gaspur aquifer. The areas of mergence of the deeper aquifers with the overlying ones are much more restricted and these limited areas are shown on Plate 25 as well as on Plates 18A, 20A, and 22. It will be noted from Plate 25 that the area of direct vertical recharge from the ground surface to the Lynwood aquifer is about one-third of the area of the Gaspur in contact with the ground surface. The area of direct vertical recharge to the Silverado and Sunnyside aquifers is even more restricted and is limited to a very small area in the immediate vicinity of Whittier Narrows Dam. These limited areas of interconnection severely restrict the amount of recharge that can directly reach the deeper aquifers from the ground surface. Fortunately, the areas of mergence through which water can reach the lower aquifers by devious paths is considerably larger than shown on Plate 25 (see Plates 12A, 14, 16, 18A, 20A, and 22). Therefore, even though the direct downward infiltration may be restricted or entirely impeded by an intervening aquiclude, water can move laterally in one aquifer to a point where the aquifer is merged with a lower one, permitting water applied at the surface to reach and replenish the deeper aquifers.

The areas of mergence between aquifers in the Los Angeles Forebay also are shown on the plates depicting lines of equal elevation on the base of each aquifer. It is evident that considerable opportunity existed for infiltration of water from the ground surface into the Gaspur aquifer and on into the deeper aquifers of the basin. However, as noted before, this area now is essentially covered with impervious material and the opportunity for surface recharge of the aquifers is practically nonexistent.

This is unfortunate from the standpoint of ground water basin utilization since the available storage capacity in the Los Angeles Forebay is large.

Under present conditions, ground water in the Montebello Forebay Area moves into the Los Angeles Forebay Area, the Whittier Area, and the Central Basin Pressure Area. Ground water from the Los Angeles Forebay Area also moves into the Central Basin Pressure Area. In the northern portion of the pressure area a ground water mound exists which separates ground water movement into two parts. North of this mound ground water moves northward into the Hollywood Basin while south of this mound ground water moves southwesterly toward the West Coast Basin.

Ground water movement in the Whittier Area in July 1958 was to the west and southwest in both the deep and shallow aquifers. The Santa Fe Springs-Coyote Hills uplift, the axis of which serves as the southern boundary of the Whittier Area, appears to restrict ground water movement to the south into the Central Basin Pressure Area in the aquifers of the Lakewood formation. The aquifers of the San Pedro formation are continuous across the uplift and it is reasonable to assume that ground water movement to the south could take place if the hydraulic gradient sloped in that direction.

Historically, subsurface flow took place from the Central Basin across the Newport-Inglewood uplift into the West Coast Basin. However, pumping has lowered the water level in the Central Basin and at present water levels in some aquifers are about equal on both sides of the Newport-Inglewood uplift. Further lowering of water levels on either side of the uplift could result in a hydraulic gradient being established which would slope toward the point of the lower water level with a consequent flow of water in that direction. A relatively small amount of subsurface flow occurs out of the Central Basin Pressure Area because most of the ground

water moves to a series of pumping holes developed along the Newport-Inglewood uplift north of Dominguez Hill, along the Cherry Hill fault, north of Signal Hill and in the Lakewood area. From these areas the water is removed by pumping for industrial, irrigation, and domestic uses.

The movement of ground water across the Los Angeles-Orange County line, which forms the eastern boundary of the Central Basin, is entirely dependent on the hydraulic gradient in that area, as no physical barrier to ground water movement exists except for the Coyote Hills.

Transmissibility rates of aquifers in Central Basin as shown on Plates 26A through 26I are extremely variable, ranging up to 400,000 gallons per day per foot of width, although most of the aquifers have transmissibility rates of less than 100,000.

The Gaspur aquifer (Plate 26A) generally has a transmissibility rate of less than 200,000 gallons per day per foot, but has a maximum of 400,000 in a small area in Whittier Narrows. Transmissibility rates in the Artesia-Exposition aquifer average about 30,000 with a maximum transmissibility rate of about 70,000 in several small areas (see Plate 26B, "Lines of Equal Transmissibility of the Artesia-Exposition Aquifers"). The Gage and Gardena aquifers (Plate 26C) also have average rates of about 30,000 but reach a maximum value of about 100,000 near Long Beach and in the Whittier Narrows. The transmissibility rates of the Hollydale and Jefferson aquifers, shown on Plates 26D and 26E entitled, "Lines of Equal Transmissibility of the Hollydale Aquifer" and "Lines of Equal Transmissibility of the Jefferson Aquifer", respectively, have average values of about 20,000 gallons per day per foot of width. The Lynwood aquifer rates (Plate 26F) average about 40,000 but attain a maximum transmissibility rate of about 100,000 gallons per day per foot of width in several areas.

The Silverado aquifer (Plate 26G) averages about 60,000 but reaches a maximum of 400,000 near the intersection of Carson and Atlantic Boulevards. Data on the Sunnyside aquifer in the middle, deeper portion of Central Basin is not very complete, but it appears to have an average transmissibility rate of about 100,000 with a maximum of 300,000 in several areas as shown on Plate 26H, "Lines of Equal Transmissibility of the Sunnyside Aquifer".

The overall transmissibility of all aquifers in the Central Basin is of considerable importance. It may be noted on Plate 26I that high transmissibility rates exist from Whittier Narrows toward Long Beach and Compton, but that an area of low transmissibility separates the Montebello and Los Angeles Forebays. This low transmissibility partly explains the existence of the large pumping depression around Huntington Park and Vernon, where pumping rates are generally not much higher than in the Downey area but there no pumping depression exists.

While the Central Basin Pressure Area is, as its name signifies, essentially an area of confined aquifers, free ground water conditions exist in the Semiperched aquifer overlying the Bellflower aquiclude, and probably in the vicinity of Baldwin Hills where the San Pedro formation is exposed at the surface. In addition, changes in ground water storage have occurred immediately south of the two forebay areas in the upper aquifers directly underlying the Bellflower aquiclude.

In past ground water studies of the Central Basin, it was believed that the clay layer or cap covered all of the basin south of the forebay areas and effectively prevented any percolation of surface water into the aquifers below. Plate 9 shows places where this clay cap, the Bellflower aquiclude, contains considerable amounts of sand and gravel. In

these areas, water applied on the surface could percolate down into the underlying aquifers and it is possible that free ground water conditions may exist from the surface down through one or more of the upper aquifers. These areas increase the total area of the Central Basin where changes in ground water storage can occur with changing water levels and where replenishment by deep percolation can occur. In addition, changes in storage in the Bellflower aquiclude itself is believed to occur as water levels are lowered. These changes in storage are relatively small however, because of the relatively low specific yield assigned to much of these sediments.

Total capacity to store ground water in the Central Basin above the base of the Sunnyside aquifer, or the Silverado aquifer where the Sunnyside is missing, is about 13,800,000 acre-feet. Historically utilized storage since 1904 amounts to about 780,000 acre-feet. As noted before, this change in storage has occurred primarily in the Montebello and Los Angeles Forebay Areas; however, some of the change in storage occurred in the pressure area immediately south of these areas where water levels were lowered below the base of the Bellflower aquiclude and near the Repetto and Whittier Hills where the San Pedro formation crops out at the surface. The storage capacity between high water levels, which occurred in 1904, and sea level amounts to about 1,340,000 acre-feet.

The storage and storage change for the Central Basin listed above may be broken down between the generalized areas delineated on Plate 2 as follows:

	Total storage to base of deepest aquifer	Storage between high water and sea level	Historically utilized storage
Los Angeles Forebay Area	1,800,000	430,000	190,000
Montebello Forebay Area	1,800,000	410,000	230,000
Whittier Area	600,000	60,000	20,000
Central Basin Pressure Area	9,600,000	440,000	340,000
Total	13,800,000	1,340,000	780,000

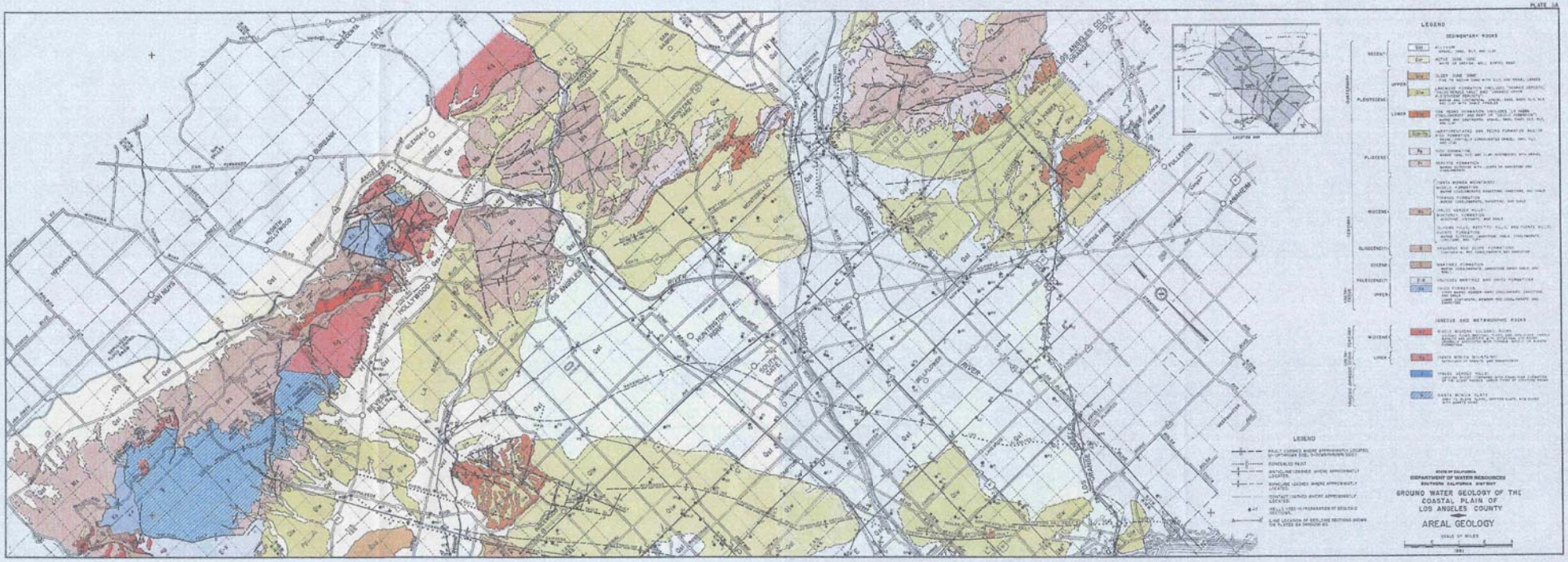
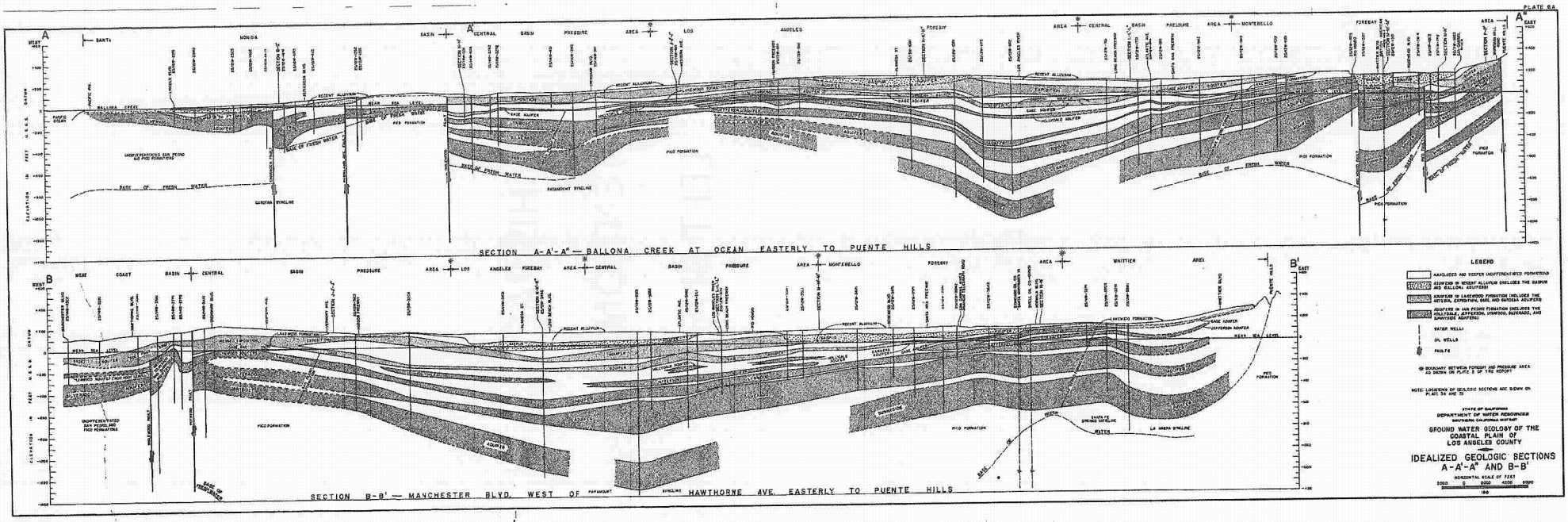


PLATE 1A
LEGEND
SEDIMENTARY ROCKS
LEGEND
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
SOUTHERN CALIFORNIA DISTRICT
GROUND WATER GEOLOGY OF THE
COASTAL PLAIN OF
LOS ANGELES COUNTY
AREAL GEOLOGY
SCALE OF MILES

PLATE 6A


SECTION A-A'-A" — BALLONA CREEK AT OCEAN EASTERLY TO PUENTE HILLS
SECTION B-B' — MANCHESTER BLVD. WEST OF HAWTHORNE AVE. EASTERLY TO PUENTE HILLS
LEGEND
WATER WELLS
OIL WELLS
FAULTS
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
SOUTHERN CALIFORNIA DISTRICT
GROUND WATER GEOLOGY OF THE COASTAL PLAIN OF LOS ANGELES COUNTY
IDEALIZED GEOLOGIC SECTIONS A-A'-A" AND B-B'
HORIZONTAL SCALE OF FEET

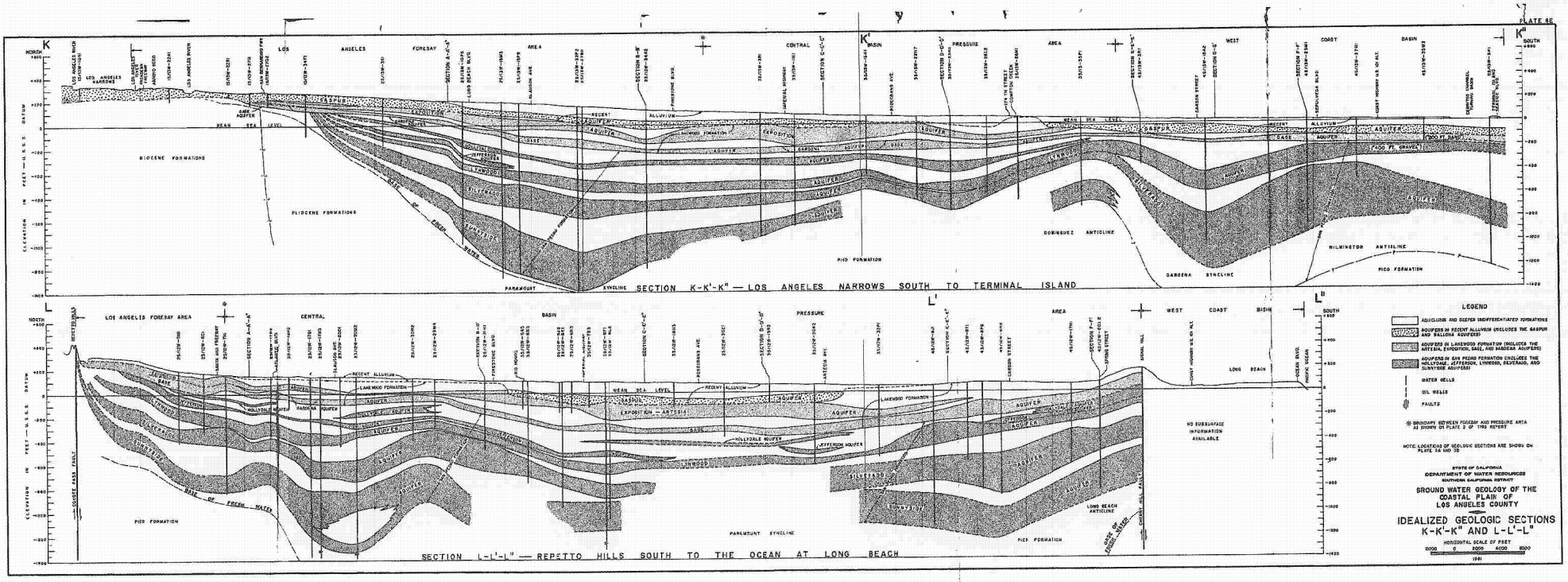


PLATE 8B
SECTION K-K'-K" — LOS ANGELES NARROWS SOUTH TO TERMINAL ISLAND
SECTION L-L'-L" — REPETTO HILLS SOUTH TO THE OCEAN AT LONG BEACH
LEGEND
AQUICLUDE AND DEEPER UNDIFFERENTIATED FORMATIONS
AQUIFERS IN RECENT ALLUVIUM (INCLUDES THE GAGPUR AND GALLINE AQUIFERS)
AQUIFERS IN LAKEWOOD FORMATION (INCLUDES THE ARTESIA, EXPOSITION, GAGE, AND MADERA AQUIFERS)
AQUIFERS IN SAN PEDRO FORMATION (INCLUDES THE HOLLYDALE, JEFFERSON, LYNWOOD, SILVERADO, AND SUNNYSIDE AQUIFERS)
WATER WELLS
OIL WELLS
FAULTS
BOUNDARY BETWEEN FOREBAY AND PRESSURE AREA AS SHOWN ON PLATE 2 OF 1961 REPORT
NOTE: LOCATIONS OF GEOLOGIC SECTIONS ARE SHOWN ON PLATE 5A AND 5B
STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
SOUTHERN CALIFORNIA DISTRICT
GROUND WATER GEOLOGY OF THE COASTAL PLAIN OF LOS ANGELES COUNTY
IDEALIZED GEOLOGIC SECTIONS K-K'-K" AND L-L'-L"
HORIZONTAL SCALE OF FEET
2000 0 2000 4000 6000
1961

Reference:
DWR, 2004

Coastal Plain of Los Angeles Groundwater Basin, Central Subbasin

- Groundwater Basin Number: 4-11.04
- County: Los Angeles
- Surface Area: 177,000 acres (277 square miles)

Basin Boundaries and Hydrology

The Central Subbasin occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles Groundwater Basin. This subbasin is commonly referred to as the "Central Basin" and is bounded on the north by a surface divide called the La Brea high, and on the northeast and east by emergent less permeable Tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. The southeast boundary between Central Basin and Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage province boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean. Average precipitation throughout the subbasin ranges from 11 to 13 inches with an average of around 12 inches.

Hydrogeologic Information

Water Bearing Formations

Throughout the Central Basin, groundwater occurs in Holocene and Pleistocene age sediments at relatively shallow depths. The Central Basin is historically divided into forebay and pressure areas. The Los Angeles forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Central Basin through the Los Angeles Narrows from the San Fernando Groundwater Basin. The Montebello forebay extends southward from the Whittier Narrows where the San Gabriel River encounters the Central Basin and is the most important area of recharge in the subbasin. Both forebays have unconfined groundwater conditions and relatively interconnected aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer system of this subbasin (DWR 1961). The Whittier area extends from the Puente Hills south and southwest to the axis of the Santa Fe Springs-Coyote Hills uplift and contains up to 1,000 feet of freshwater-bearing sediments. The Central Basin pressure area is the largest of the four divisions, and contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay, that extend to about 2,200 feet below the surface (DWR 1961). The estimated average specific yield of these sediments is around 18 percent. Throughout much of the subbasin, the aquifers are confined, but areas with semi-permeable aquicludes allow some interaction between the aquifers (DWR 1961).

The main productive freshwater-bearing sediments are contained within Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations (DWR 1961). Throughout most of the subbasin, the near surface Bellflower aquiclude restricts vertical percolation into the Holocene age Gaspur aquifer and other underlying aquifers, and creates local semi-perched groundwater

conditions. The main additional productive aquifers in the subbasin are the Gardena and Gage aquifers within the Lakewood Formation and the Silverado, Lynwood and Sunnyside aquifers within the San Pedro Formation (DWR 1961). Specific yield of deposits in this subbasin range up to 23 percent in the Montebello forebay, 29 percent in the Los Angeles forebay, and 37 percent in the Central Basin pressure area (DWR 1961). Historically, groundwater flow in the Central Basin has been from recharge areas in the northeast part of the subbasin, toward the Pacific Ocean on the southwest. However, pumping has lowered the water level in the Central Basin and water levels in some aquifers are about equal on both sides of the Newport-Inglewood uplift, decreasing subsurface outflow to the West Coast Subbasin (DWR 1961).

There are several principal aquifers/aquicludes present in this subbasin.

Aquifers/ Aquiclude	Age	Formation	Lithology	Maximum Thickness (feet)
Gaspur	Holocene		Coarse sand, gravel	120
Semiperched	Holocene		Sand, gravel	60
Bellflower	Pleistocene	Lakewood Formation	Clay, sandy clay	140
Gardena	Pleistocene	Lakewood Formation	Sand, gravel	160
Gage			Sand	120
Silverado	Lower Pleistocene	San Pedro Formation	Sandy gravel	300
Lynwood			Coarse sand and gravel	150
Sunnyside				350

Restrictive Structures

Many faults, folds and uplifted basement areas affect the water-bearing rocks in the Central Basin. Most of these structures form minor restrictions to groundwater flow in the subbasin. The strongest effect on groundwater occurs along the southwest boundary to the Central Subbasin. The faults and folds of the Newport – Inglewood uplift are partial barriers to movement of groundwater from the Central Basin to the West Coast Basin (DWR 1961). The La Brea high is a system of folded, uplifted and eroded Tertiary basement rocks. Because the San Pedro Formation is eroded from this area, subsurface flow southward from the Hollywood Basin is restricted to the Lakewood formation (DWR 1961). The Whittier Narrows is an eroded gap through the Merced and Puente Hills that provides both surface and subsurface inflow to the Central Basin (DWR 1961). The Rio Hondo, Pico, and Cemetery faults are northeast-trending faults that project into the gap and displace aquifers. The trend of these faults parallels the local groundwater flow and do not act as significant barriers to groundwater flow (DWR 1961).

Recharge Areas

Groundwater enters the Central Basin through surface and subsurface flow and by direct percolation of precipitation, stream flow, and applied water; and replenishes the aquifers dominantly in the forebay areas where permeable sediments are exposed at ground surface (DWR 1961). Natural replenishment of the subbasin's groundwater supply is largely from surface inflow through Whittier Narrows (and some underflow) from the San Gabriel Valley. Percolation into the Los Angeles Forebay Area is restricted due to paving and development of the surface of the forebay. Imported water purchased from Metropolitan Water District and recycled water from Whittier and San Jose Treatment Plants are used for artificial recharge in the Montebello Forebay at the Rio Hondo and San Gabriel River spreading grounds (DWR 1999). Saltwater intrusion is a problem in areas where recent or active river systems have eroded through the Newport Inglewood uplift. A mound of water to form a barrier is formed by injection of water in wells along the Alamitos Gap (DWR 1999).

Groundwater Level Trends

Water levels varied over a range of about 25 feet between 1961 and 1977 and have varied through a range of about 5 to 10 feet since 1996. Most water wells show levels in 1999 that are in the upper portion of their recent historical range.

Groundwater Storage

Groundwater Storage Capacity. Total storage capacity of the Central Basin is 13,800,000 (DWR 1961).

Groundwater in Storage.

Groundwater Budget (Type A)

A complete water budget could not be constructed due to the lack of data available. Recharge to the subbasin is accomplished through both natural and artificial recharge. The Watermaster reported natural recharge for the subbasin to be 31,950 af and artificial recharge to be 63,688 af for 1998 (DWR 1999). Additionally, the subbasin receives 27,000 af/yr of water through the Whittier Narrows from the San Gabriel Valley Basin in the form of subsurface flow (SWRB 1952). Urban extractions for the subbasin were 204,335 af in 1998 (DWR 1999).

Groundwater Quality

Characterization. TDS content in the subbasin ranges from 200 to 2,500 mg/l according to data from 293 public supply wells. The average for these 293 wells is 453 mg/l.

I

Impairments.

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	316	15
Radiological	315	1
Nitrates	315	2
Pesticides	322	0
VOCs and SVOCs	344	43
Inorganics – Secondary	316	113

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Production characteristics

	Well yields (gal/min)
Municipal/Irrigation	
	Total depths (ft)
Domestic	
Municipal/Irrigation	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
USGS	Groundwater levels	90
DWR	Groundwater levels	87
Los Angeles County Public Works	Groundwater levels	212 / Bi-monthly
USGS	Miscellaneous water quality	64
Department of Health Services and cooperators	Title 22 water quality	294

Basin Management

Groundwater management:	Central Basin was adjudicated in 1965, and the Department of Water Resources was appointed Watermaster. Every month extractions are reported to the Watermaster by each individual pumper. This allows the Watermaster to regulate the water rights of the subbasin. (DWR 1999)
Water agencies	
Public	City of Bellflower, Bellflower-Somerset MWC, City of Compton, City of Huntington Park, City of Long Beach, City of Los Angeles DWP, City of Montebello, City of Paramount, City of Pico Rivera, City of Santa Fe Springs, Sativa LA County WD, City of Signal Hill, South Montebello ID, City of South Gate, City of Vernon, City of Whittier. (DWR 1999)
Private	California-American Water Company, Montebello Land and Water Company, Bellflower Home Garden Water Co., California Water Service, Lynwood Park MWC, Maywood MWC, Park Water Company, Pearless Water Company, San Gabriel Valley Water Company, Southern California Water Company, Tract No. 180 Water Company, Tract 349 MWC, Western Water Company.(DWR 1999)

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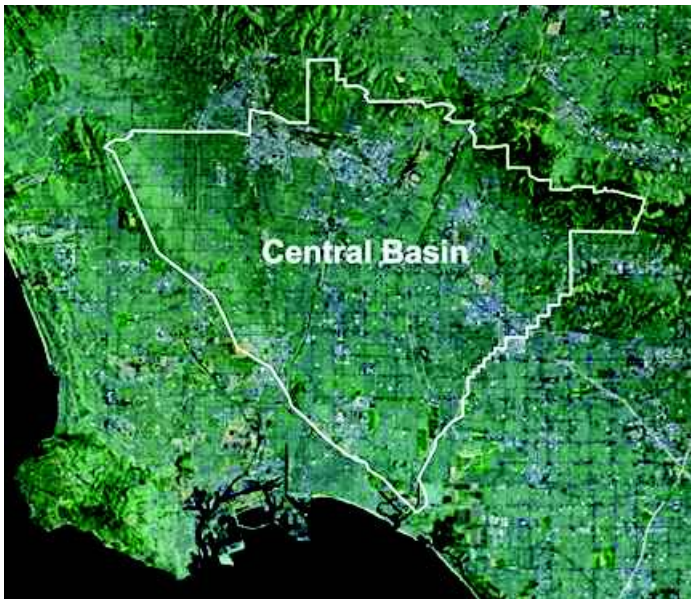
Errata

Changes made to the basin description will be noted here.

Reference:
DWR, 2013

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
SOUTHERN REGION OFFICE



WATERMASTER SERVICE
in the
CENTRAL BASIN
Los Angeles County

July 1, 2012 - June 30, 2013

October 2013

Edmund G. Brown Jr.	**John Laird**	**Mark W. Cowin**
Governor	Secretary for Natural Resources	Director
State of California	California Natural Resources Agency	Department of Water Resources

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Summary of Pertinent Data

Item	Fiscal year 2011-2012	Fiscal year 2012-2013
Parties to Judgment	132	132
Active pumpers	67	67
Active nonparties	4	3
Allowed Pumping Allocation (acre-feet)	217,367	217,367
Rainfall (inches)	7.51	5.55
Injection at the Alamitos Barrier Project (acre-feet)	4,335	5,490[1]
Spreading operations (acre-feet)[1]	105,165	66,389
Watermaster expenses, total	$503,367	$403,293
Watermaster expenses, per APA	$2.32	$1.86
Extractions (acre-feet)[2]	185,914	196,262
Recycled water use by parties (acre-feet)	13,112	13,622
Imported water use by parties (acre-feet)[3]	128,465	117,983
Exported water by parties (acre-feet)	-2,527	-2,506
Total water use by parties (acre-feet)	324,964	325,361

Introduction

The Central Basin Watermaster Service Area overlies about 227 square miles of the Central Basin (Basin) in southeastern Los Angeles County. Figure 1 shows the location and boundaries of the Central Basin Watermaster Service Area. The Watermaster Service Area is bounded by the Newport-Inglewood Uplift on the southwest, the Los Angeles-Orange County line on the southeast, and an irregular line that approximately follows Stocker Street, Martin Luther King Boulevard, Alameda Street, Olympic Boulevard, the boundary between the City of Los Angeles and unincorporated East Los Angeles, and the foot of the Merced Hills and Puente Hills on the north. Twenty-three incorporated cities and several unincorporated communities are found within the Watermaster Service Area. Groundwater from the Basin provides a substantial portion of the water supply needed by the residents, businesses, and industries in the area overlying the Basin.

More than 60 years ago, groundwater overdraft and declining water levels in the Basin threatened the area's groundwater supply and caused the intrusion of sea water into the southern part of the Basin. However, timely legal action and adjudication of the water rights halted the overdraft and helped to prevent further damage to the Basin. Since that

[1] Provisional information from Los Angeles County Department of Public Works.
[2] Excludes extractions by parties with non-consumptive water use permits and by nonparties.
[3] Excludes groundwater imported from the San Gabriel Basin.

time, groundwater extraction from the Basin is limited to the amounts set by a Superior Court Judgment[4] and is monitored by a Court-appointed Watermaster.[5]

The Watermaster assists the Court in the administration and enforcement of the provisions of the Judgment.[6] Among other duties, the Watermaster monitors extractions and reports significant water-related events in the Basin to the Court and to the parties to the Judgment. The activities of the Watermaster are key components for the effective management of the groundwater resources of the Basin.

This report, which is required by the Judgment,[7] summarizes the activities of the Watermaster, the conditions of the groundwater supply, and the quantities of water used in the area overlying the Basin and for the replenishment of the Basin; it also includes a financial report for the 2012-2013 fiscal year.[8]

Water Use

Water used in the area overlying the Basin includes groundwater extracted from the Basin, imported water, and recycled water. Figure 2 shows the water use since 1953.

Extractions by Parties. The Judgment limits the amount of groundwater each party may extract annually from the Basin.[9] This limit, referred to as the Allowed Pumping Allocation (APA), is shown in Table 1 for each party. A recipient of Exchange Pool water may pump the amount released to it in addition to its APA. The volume of water extracted from most wells is reported monthly.[10] Table 2 lists, by party, the volume of groundwater extracted each month from each active well in the Basin. Figure 3 shows the pattern of groundwater extractions during 2012-2013.

To provide flexibility in the control of groundwater extractions, the Judgment contains provisions allowing each party to carry over into the succeeding administrative year[11] a portion of its unused APA and in some cases to over extract.[12] This flexibility was necessary to meet unforeseen water demand.

One provision allows each party to carry over from one administrative year to another any unused APA not to exceed 20 percent of its APA or 20 acre-feet, whichever is

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[4] *Central and West Basin Water Replenishment District, etc., vs. Charles E. Adams, et al.,* Los Angeles County Superior Court Case No. 786,656, Second Amended Judgment, May 6, 1991.
[5] Judgment Part II.
[6] Judgment Part II. 1.
[7] Judgment Part II. 1. (d)
[8] July 1 through June 30
[9] Judgment Part I. 2.
[10] Parties extracting small volumes of water report extractions quarterly.
[11] July 1 through June 30
[12] Judgment Part III. Subpart B.

greater.[13] In addition, any unused Exchange Pool water can be carried over into the following fiscal year.

Overextractions. The Judgment provides for overextractions under certain conditions.[14] A party may over extract by 20 percent of its APA or 20 acre-feet, whichever is greater.[15] When a party overextracts in violation of the Judgment, Watermaster notifies the party to resolve the overextraction issue. Under certain circumstances, a party may overextract in a greater amount; however, prior approval must be obtained from the Watermaster.[16] The overextraction must be made up in the following administrative year unless Watermaster concludes that to require the party to make up the overextraction would create an unreasonable hardship for the party. In such cases, Watermaster may grant relief from the requirement that the party must make up the overextraction in the following year, such as prorating the reduction in the party's APA over a period of up to five years.[17]

Table 3 lists the names of parties that have over extracted groundwater during the year and shows the amount of overextraction by each party. During 2012-2013, six parties had a combined overextraction of 23,657.02 acre-feet. The table also identifies one party, State of California (CalTrans), that has over extracted in violation of the Judgment. Since 1997-1998, CalTrans has been pumping groundwater for dewatering beneath the 105 freeway in Downey.[18] CalTrans extracted 22,844.75 acre-feet of water during 1997-1998 through 2011-2012 and 671.41 acre-feet in 2012-2013. Watermaster has suspended its effort to address the overextraction of groundwater by CalTrans.[19]

Extractions by Nonparties. Table 4 shows extractions by nonparties totaled 1.04 acre-feet. Extractions by nonparties are shown by well and by month in Table 2.

Extractions of Contaminated Groundwater. Any party may petition the Water Replenishment District of Southern California (WRD) for a Non-consumptive Water Use Permit (NCWUP) as part of a project to remedy or ameliorate groundwater contamination. If the petition is granted, the party may extract the groundwater without the production counting against its production rights.[20] Table 5 lists current Non-

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[13] Judgment Part III. Subpart A. 1. The Judgment was amended to permit each party to carry over a maximum of 100 percent of its APA from 1976-1977 and 1977-1978 because of drought.
[14] Judgment Part III. Subpart B.
[15] Judgment Part III. Subpart B. 1. (a)
[16] Judgment Part III. Subpart B. 1. (b)
[17] Judgment Part III. Subpart B. 2.
[18] CalTrans has been discharging this water to the Los Angeles and the San Gabriel Rivers after treatment through granulated activated carbon units.
[19] In a letter to the Director of the Department of Water Resources, dated September 25, 2008, the Central Basin Water Association, which represents the majority of the water right holders, said that taking legal action against Caltrans to address overextraction from the Central Basin "may at best confuse the issues before the court [regarding groundwater storage], and at worst create unnecessary delay and difficulty for a judge to resolve both questions."
[20] Judgment Part III. Subpart B. 7.

consumptive Water Use Permits issued by WRD and the amounts of groundwater extracted under those permits during 2012-2013.

Transfers of Allowed Pumping Allocations. Each year, APAs are transferred between parties through sales and leases. Table 6 shows the succession of APAs in the Basin as of June 30, 2013. Sales have reduced the number of parties from 508 in 1966-1967 to 133 in 2012-2013. Figure 4 shows samples of suggested water rights transfer agreements.

Table 7 shows transfers of APAs through sales and leases. During 2012-2013 there were four sales of APAs that totaled 635.5 acre-feet and 52 leases that totaled 28,381.47 acre-feet. Each party's APA, as of June 30, 2013, is also shown in Table 1.

When land is sold on which a water right has been developed, the Watermaster must be furnished a copy of the sale document if the water right is also sold. The water right does not pass to the new land owner unless the sale document specifies that the water right was sold with the land. For the proper accounting of the water right, the sale document must specify the exact amount of water right.

In transferring water rights, parties must specify (1) the type of right (i.e., APA, normal carryover, or drought carryover), (2) the amount of right to the nearest 0.01 acre-foot, and (3) the period of the lease, if applicable. Moreover, all leases must be made on a fiscal year basis and must be executed by the parties and received by Watermaster by June 30 of the year in which the lease is effective.

For parties wanting to buy, sell, or lease water rights, Watermaster maintains a web page.[21] Any party wishing to be listed should call the Watermaster. This is a courtesy to assist parties unable to resolve problems regarding a surplus or deficiency of water supply. Watermaster will make no recommendation regarding transactions conducted relative to the use of this service.

Exchange Pool. The Judgment authorizes an Exchange Pool to provide additional water rights to parties without sufficient water.[22] If a party's estimated water requirement for the following fiscal year exceeds its total available water supply, that party may request additional water from the Exchange Pool. Any party wishing to purchase water from the Exchange Pool must file the request with the Watermaster before April 1. If no requests are received by April 1, the Exchange Pool will not operate in the following fiscal year, and Watermaster will not process Exchange Pool forms. Table 8 shows that there were no requests for Exchange Pool water during 2013-2013.

Status of Extraction Wells. In the Basin there are 306 reported active extraction wells and 231 reported inactive extraction wells (Table 2). The locations of the active extraction wells are shown on Figure 3. Table 9 shows four new extraction wells were completed and 11 extraction wells were destroyed.

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[21] www.water.ca.gov/watermaster
[22] Judgment Part III, Subpart C.

Meter Testing Program. Accurate measurement of groundwater extractions is essential for the successful management of groundwater in the Basin. Therefore, Watermaster requires an operative water meter to be installed at each extraction well.[23] It is the responsibility of each party to ensure that its meter and test facilities are installed properly and are maintained in good working condition. It is the goal of Watermaster to test the water meter at each active extraction well at least once every two years or when a party requests a meter calibration.[24] Watermaster tests meters by volumetric or pitot comparisons. Watermaster notifies a party that it must repair or replace its meter when the meter registers beyond 5 percent accuracy. Watermaster calculates the monthly water production for each well using the meter readings and Unit of Measure Code reported for the well that month. If the registration accuracy of the meter deviates by as much as 10 percent, the calculated well production could be subject to revision.[25]

During 2012-2013, Watermaster visited 57 parties, tested 239 meters, and performed 20 well investigations. Tests showed that four meters were more than 5 percent fast, with registration accuracies of plus 6.5 percent to plus 18 percent, and two meters were more than 5 percent slow with registration accuracies of minus 12 percent to mimus 34 percent. Meters at three sites were inoperative, and meters at nine sites could not be tested because the well sites lacked test points or the pumps were inoperative. Watermaster notified and required the responsible parties to make the needed repairs.

Water Supply

Water supplies available to the communities overlying the Basin include groundwater extracted from the Basin, imported surface water and groundwater, and recycled water.

Precipitation. Because layers of materials of low permeability overlie the primary water-producing aquifers throughout much of the Basin and largely impermeable surfaces (i.e., pavement and buildings) cover most of the forebay areas, precipitation over the Basin has relatively little direct influence on the replenishment of the groundwater in the Basin. However, during years of high rainfall, increased runoff from the areas upstream of the Basin would result in increased replenishment to the Basin and would probably result in decreased water demand by the water users overlying the Basin which, in turn, could result in lower rates of groundwater extraction from the Basin.

During 2012-2013, the following amounts of precipitation were measured at six precipitation stations: 5.02 inches at 96th and Central, 7.58 inches at Montana Ranch, 4.72 inches at La Mirada, 5.01 inches at Whittier City Yard, 4.80 inches at USC, and 6.16 inches at Imperial Yard.[26] Figure 1 shows the locations of these precipitation

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[23] Judgment Part II. 1. (b)
[24] Judgment Part II. 1. (c)
[25] The Board of Directors of the Central Basin Water Association concurs with this Watermaster policy regarding adjustments to reported well production amounts.
[26] Provisional data provided by Los Angeles County Department of Public Works.

stations, and Figure 5 shows the monthly average of the rainfall measured at these stations. Based on the rainfall measured at these stations, the mean precipitation over the Central Basin was 5.55 inches, which is 40 percent of the long-term mean precipitation at these stations.[27]

Groundwater Recharge. Natural replenishment of the groundwater in the Basin is largely from surface flow and underflow through Whittier Narrows from the San Gabriel Valley. As mentioned above, little of the rainfall over the Basin would be likely to infiltrate into deeper aquifers of the Basin.

Intentional replenishment of groundwater in the Basin is accomplished by spreading water at the Rio Hondo and the San Gabriel River spreading grounds in the Montebello forebay (Figure 1). [28] The sources of this replenishment water include local storm runoff, purchased imported water, and recycled water from three reclamation plants located upstream of the Basin.[29] Table 10 shows the sources and quantities of water spread to replenish the groundwater. In 2012-2013, replenishment water included 8,274 acre-feet of local storm runoff (which is 32,140 acre-feet less than in 2011-2012), 58,113 acre-feet of recycled water, and 2 acre-feet of untreated imported water. Local runoff accounted for 13 percent of the water, recycled water accounted for 86 percent, and the untreated imported water accounted for 1 percent.

In-Lieu Replenishment. During the 1965-1966 water year,[30] the WRD, in cooperation with the Metropolitan Water District of Southern California (MWD), began an in-lieu replenishment program. WRD may contract with any producer having access to supplemental water that could be used in lieu of extracting groundwater from the Basin.[31]

The use of supplemental water in lieu of pumping groundwater does not change a party's water right,[32] but it counts as water pumped under the Judgment. The program may be used to (1) alter pumping patterns within the Basin, (2) replenish the groundwater in areas of low transmissivity where conventional recharge techniques are ineffective, (3) heighten the effect of injecting water to form a sea water barrier by reducing extractions, (4) reduce the amount of replenishment water purchased by WRD, and (5) reduce the annual extractions from the Basin. Table 11 shows that the City of Long Beach participated in the in-lieu replenishment program.

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[27] Calculation of the long-term precipitation included the Downey Fire Department precipitation station rather than the Imperial Yard station.
[28] Water injected at the Alamitos Barrier Project also contributes to the replenishment of the Central Basin.
[29] The three water reclamation plants are the Whittier Narrows, San Jose Creek, and Pomona plants. The locations of the first two plants are shown on Figure 1, but the Pomona plant is farther upstream and is not shown on the figure.
[30] October 1, 1965 through September 30, 1966
[31] California Water Code Section 60230(p).
[32] Water Code Section 1005.1

Imported Water. Water is imported from northern California via the State Water Project and from the Colorado River and is made available to water users by MWD through its member agencies: Central Basin Municipal Water District (CBMWD) and the Cities of Compton, Long Beach, and Los Angeles. The City of Los Angeles also imports water from the Owens River-Mono Basin, and the California Domestic Water Company, the San Gabriel Valley Water Company, the Suburban Water Systems, and the City of Whittier import groundwater from the San Gabriel Valley groundwater basin, which lies to the northeast and upstream of the Basin. Table 12 shows that in fiscal year 2012-2013, a total of 117,983 acre-feet of water was imported to the area overlying the Central Basin. The Water Replenishment District of Southern California (WRD) did not purchase seasonally discounted spreading water because the Metropolitan Water District of Southern California (MWD) discontinued the delivery of discounted water for groundwater replenishment in August 2011.

Quality of Imported Water

Constituent	Colorado River Water[33] (mg/L)	State Water Project Water[34] (mg/L)
Chloride	84	67
Sulfate	222	42
Hardness (as $CaCO_3$)	274	109
Total Dissolved Solids	574	259

Exported Water. California-American Water Company exported 2,505.68 acre-feet of groundwater from the Basin to its service area that overlies a portion of the West Coast Basin.

Recycled Water. Table 13 shows that 14,318 acre-feet of recycled water were used in the area overlying the Basin during 2012-2013. This amount is 560 acre-feet more than that used in 2011-2012. These amounts do not include the recycled water used to replenish groundwater in the Basin.

Alamitos Sea Water Intrusion Barrier Project. Sea water intrusion in the Alamitos Gap near the mouth of the San Gabriel River poses a threat to the groundwater in the Central Basin. The Alamitos Barrier Project is designed to prevent sea water intrusion into the fresh water aquifers of the Basin. The location of the barrier is shown on Figure 1. The Los Angeles County Department of Public Works operates the barrier project, which is comprised of four extraction wells that can be used to create a groundwater trough and 43 injection wells that create a groundwater ridge to halt sea water intrusion. In addition, the project includes 220 observation wells that are used to monitor groundwater levels and quality in the area. Table 14 shows the quantities of imported water and of recycled water injected into the barrier wells and the quantity of

[33] at Lake Mathews
[34] at Castaic Lake

water extracted. Figure 6 shows the quantities of water used in the barrier project since operation of the project began in 1965. The sea water intrusion problem has been contained by the barrier project.

Groundwater Levels. Figure 7 shows the locations of selected wells that are used to monitor groundwater level elevations. Figure 8 shows the water level elevations in key wells located in the Montebello forebay, and Figure 9 shows the water level elevations in wells perforated in the principal water producing aquifers in the Basin.

Watermaster Administration Costs and Budget

The Judgment requires Watermaster to report its administration costs.[35] Table 15 shows that Watermaster income was $462,765 and that expenditures were $403,293.

The Judgment requires Watermaster to prepare an annual budget and to apportion it among the parties.[36] The total amount billed was $356,000, and the total amount paid was $357,484.86. The budget was submitted to the Parties on May 1, 2012, and it was adopted as the final budget on June 1, 2012. Table 16 shows the approved budget of $560,000.

Table 17 shows the apportionment of the budget among the parties. A penalty of 5 percent is assessed if payments become delinquent. Seventeen parties were penalized because their payments were not made within the allowable 30 days after service of the invoice. Late fees totaling $1,484.86 were collected for deliquent payments.

Significant Water-Related Events

Motion to Amend the Judgment. On May 9, 2012, the State Supreme Court dismissed the petitions for review of the Court of Appeal decision that reversed the ruling of the Superior Court that denied jurisdiction over the motion to amend the Central Basin Judgment.[37] The case was remanded to the trial court.

On November 30, 2012, the case was assigned to Superior Court Judge Joanne O'Donnell, and she ruled that the Central Basin and the West Coast Basin Groundwater Storage Amendment cases are related. On April 3, 2013, both cases were assigned to Superior Court Judge Abraham Khan.

Replenishment Assessment Exemptions. On December 7, 2012, WRD adopted a new policy regarding Replenishment Assessment Exemptions (RAE) in the West Coast

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[35] Judgment Part II. 1. (d)
[36] Judgment Part II. 1. (e)
[37] In 2009, some of the parties to the Judgment filed a motion to amend the Judgment to allow for groundwater storage in the Basin. Litigation of the case is ongoing. See earlier Annual Reports for more information.

Basin and in the Central Basin. A party with a Non-Consumptive Water Use Permit will not be granted a RAE if the party extracts water and does not return the water to the Basin.

Water Emergency Declaration. On February 6, 2013, Judge O'Donnell lifted the stay order on the implementation of the Drought Carryover Provisions of the Central Basin Judgment.[38] On May 16, 2013, Watermaster issued a draft rule on Application of Drought Carryover Provisions, and on June 17, 2013, the Rule[39] was adopted. On July 3, 2013, Watermaster mailed letters to the Parties informing them of their Drought Carryover 1991 (DCO-91) allocations[40]. However, the motion challenging the November 19, 2010, WRD declaration of a water emergency in the Basin has not been withdrawn.

Extraction of Imported Water. On April 26, 2013, CBMWD re-filed the motion for an order declaring that extraction of non-native imported water does not diminish a Party's Allowed Pumping Allocation under the Judgment.[41]

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[38] Implementation of the WRD drought emergency declaration was stayed by Judge Kendig on July 13, 2011.

[39] See Appendix A for the Rule on Application of the Drought Carryover Provision in the Judgment.

[40] See Appendix B for Revised Table of Water Rights Accounting for 2010-2011 and Appendix C for Revised Table of Water Rights Accounting for 2011-2012.

[41] CBMWD initially filed the motion with the court on September 19, 2011.

Reference:
EPA, 2014

CERCLIS SITE DECISION: Univar USA

Univar USA ("the Site") is located at 5000-5042 Cecelia Avenue and 8332 Wilcox Avenue in South Gate, Los Angeles County, California. The Site currently operates as Quala Systems, Incorporated and Quality Carriers. The Site is situated on three county parcels and occupies approximately five acres in a mixed industrial and residential area at the northeastern portion of the city of South Gate; adjacent to the border with the city of Cudahy.

As of April 2013, the Site was occupied by six primary structures that include: the Quality Carriers Office and Warehousing Building, the Quality Carriers Maintenance Building, the QualaWash Office Building, the QualaWash Operations Building, and two large truck bays. An additional building, which was removed in the early 2000s, was formerly located adjacent west of the Quality Carriers Office and Warehousing Building. The Site was first developed prior to 1954 as single-family residential buildings and vacant land. By 1974, all but two of the single-family homes, which were located at the northwest and north-central portions of the Site, had been removed and the present-day buildings had been constructed. By 1994, the remaining single-family residences had been removed.

The Site is currently owned by Quala Systems, Incorporated, which has owned the Site parcels since the 1990s. The Site is operated primarily by two entities: Winsome Enterprises, Inc. (Winsome), which is a subsidiary of Quality Distribution, Inc.; and QualaWash Holdings LLC (QualaWash), which prior to 2009 was Quala Systems, Inc., a subsidiary of Quality Distribution, Inc.

Current operations at the Site are primarily divided into two separate activities that include bulk chemical tank truck distribution, which is conducted by Winsome, and bulk chemical tank trailer cleaning, which is conducted by QualaWash. QualaWash utilizes the central portion of the Site for tank washing activities that typically operate 24 hours a day.

The volume and type of hazardous substances stored at the Site is variable due to the nature of the on-Site operations. Caustics, soaps, polymers, and latex are generally stored for a short time on the Site. Based on identified hazardous waste manifests and generator reports, hazardous substances used and/or stored on the Site include, but are not limited to: halogenated solvents, including tetrachloroethylene (PCE); hydrocarbon solvents; oxygenated solvents; non-halogenated solvents, including methyl ethyl ketone (MEK); and metals, including chromium, cadmium, arsenic, and mercury. Specific hazardous substance storage and disposal practices are not known.

The Site boundary is located approximately 200 feet west of the former Hoffman Well 2, which was historically operated by the Golden State Water Company and was destroyed in approximately 2007 due to concentrations of trichloroethylene (TCE) that exceeded 10 micrograms per liter (µg/L).

Due to the Site's historical use and disposal of halogenated solvents, including PCE, along with metals, including chromium and arsenic, the Site warrants further Federal action to assess whether it is a likely source of the halogenated solvent and metals contamination known to exist in area groundwater and drinking water wells.

Site Assessment Manager: _____ Date: 9/18/14

Reference:
EPA, 2017a

EPA ID SITE ID	SITE NAME STREET 1 STREET 2 CITY, STATE COUNTY NAME (FIPS CODE)	ZIP CONG DIST.	LATITUDE LONGITUDE SOURCE	OU	ACTION CODE, NAME		SEQ	START (ACTUAL)	FINISH (ACTUAL)	QUAL	CURRENT ACTION LEAD
CAN000909569 0909569	M STEPHENS Postal Address is unavailable for the Site CUDAHY, CA LOS ANGELES (06037)	00000		NPL STATUS: N FEDERAL FACILITY: N NON-NPL STATUS: SI Ongoing							
				00	DS	DISCVRY	1	09/30/2013	09/30/2013		EPA Perf
				00	PA	PA	1	08/20/2014	04/30/2015	H	EPA Perf
				00	SI	SI	1	04/30/2015			EPA Perf
CAN000909573 0909573	QUALAWASH Postal Address is unavailable for the Site SOUTH GATE, CA LOS ANGELES (06037)	00000		NPL STATUS: N FEDERAL FACILITY: N NON-NPL STATUS: SI Ongoing							
				00	PA	PA	1	10/01/2013	09/04/2014	H	EPA Perf
				00	DS	DISCVRY	1	10/01/2013	10/01/2013		EPA Perf
				00	SI	SI	1	07/16/2015			EPA Perf
CAN000909576 0909576	DC POWER MERCURY 9337 DOUGLAS DRIVE RIVERSIDE, CA RIVERSIDE (06065)	92503		NPL STATUS: N FEDERAL FACILITY: N NON-NPL STATUS: Removal Only Site (No Site Assessment Work Needed)							
CAN000909577 0909577	TUOLUMNE MIWOK HAZARDOUS WASTES HANI LOOP TUOLUMNE RANCHERIA TUOLUMNE, CA			NPL STATUS: N FEDERAL FACILITY: N NON-NPL STATUS: Removal Only Site (No Site Assessment Work Needed)							
CAN009564188 0906124	ANCHOR HOCKING CORP PLANT 8 8653 ATLANTIC AVE SOUTH GATE, CA LOS ANGELES (06037)	90280		NPL STATUS: N FEDERAL FACILITY: N NON-NPL STATUS: PA Start Needed							

Reference:
EPA, 2017b

https://oaspub.epa.gov/enviro/rcrainfoquery_3.facility_information?pgm_sys_id=CAD027896208

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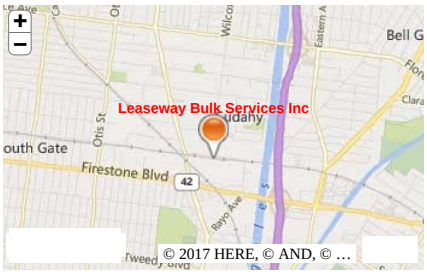
BULK FREIGHTWAYS
Handler ID: CAD027896208
8332 WILCOX AVE
SOUTH GATE, CA 90280

County Name: LOS ANGELES

Latitude: 33.957233
Longitude: -118.179705

Hazardous Waste Generator:

Owner Name: LEASEWAY TRANSPORTATION



*You can navigate within the map with your mouse.

No BIENNIAL REPORT data is available for the facility listed above.

LIST OF FACILITY CONTACTS

NAME	STREET	CITY	STATE	ZIP CODE	PHONE	TYPE OF CONTACT
ENVIRONMENTAL MANAGER	8332 WILCOX AVE	SOUTH GATE	CA	90280	213-773-0255	Public
ENVIRONMENTAL MANAGER	8332 WILCOX AVE	SOUTH GATE	CA	90280	213-773-0255	Permit

HANDLER / FACILITY CLASSIFICATION

Unspecified Universe for the facility listed above.

HANDLER TYPE
Transporter

No PROCESS INFORMATION is available for the facility listed above.

No NAICS Codes are available for the facility listed above.

No Waste Codes are available for the facility listed above.

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Last updated on 7/19/2017

https://oaspub.epa.gov/enviro/rcrainfoquery_3.facility_information?pgm_sys_id=CAD009864679

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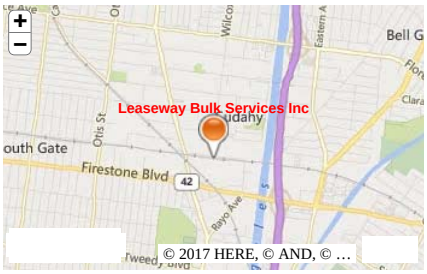
LEASEWAY BULK SERVICES INC
Handler ID: CAD009864679
8332 WILCOX AVE
SOUTH GATE, CA 90280

County Name: LOS ANGELES

Latitude: 33.957233
Longitude: -118.179705

Hazardous Waste Generator: Small Quantity Generator

Owner Name:



You can navigate within the map with your mouse.

No BIENNIAL REPORT data is available for the facility listed above.

LIST OF FACILITY CONTACTS

NAME	STREET	CITY	STATE	ZIP CODE	PHONE	TYPE OF CONTACT
						Public
ENVIRONMENTAL MANAGER	8332 WILCOX AVE	SOUTH GATE	CA	90280	213-773-0255	Permit

HANDLER / FACILITY CLASSIFICATION

Unspecified Universe for the facility listed above.

HANDLER TYPE
Small Quantity Generator

No PROCESS INFORMATION is available for the facility listed above.

No NAICS Codes are available for the facility listed above.

No Waste Codes are available for the facility listed above.

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https://oaspub.epa.gov/enviro/rcrainfoquery_3.facility_information?pgm_sys_id=CA0000031997

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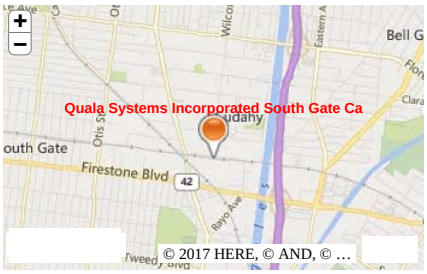
QUALAWASH HOLDINGS, LLC
Handler ID: CA0000031997
8332 WILCOX AVE
SOUTH GATE, CA 90280

County Name: LOS ANGELES

Latitude: 33.957233
Longitude: -118.179705

Hazardous Waste Generator: Large Quantity Generator

Owner Name: QUALAWASH HOLDINGS, LLC.



You can navigate within the map with your mouse.

BIENNIAL REPORT SUMMARY

REPORT YEAR	GENERATION (Tons)	MANAGEMENT (Tons)	WASTE RECEIVED (Tons)	WASTE SHIPPED (Tons)	INCINERATION (Tons)	DISPOSAL (Tons)	ACUTE GENERATION (Tons)
2015	100.7			100.7			
2013							
2011							
2009	35.3			35.3			
2007	15			15			
2005							
2003	11.5			11.5			
2001	19.5			19.5			

LIST OF FACILITY CONTACTS

NAME	STREET	CITY	STATE	ZIP CODE	PHONE	TYPE OF CONTACT
BILL WILKERSON	WILCOX AVE	SOUTH GATE	CA	90280	323-774-2320	Public
FRANCIS MCGEE					213-771-8226	Permit
ENRIQUE FLORES					323-771-8226	Permit
MCGEE FRANCIS					323-771-8226	Permit
DANIEL LANGDON					323-771-8226	Permit
FRANCIS MCGEE	8332 WILCOX AVE	SOUTH GATE	CA	90280	323-771-8226	Permit
DANIEL LANGDON	8332 WILCOX AVE	SOUTH GATE	CA	90280	323-771-8226	Permit
FRANCIS V. MCGEE					213-771-8226	Permit
SHANE SOLDINGER					323-771-8226	Permit
DANIEL LANGDON	WILCOX AVENUE	SOUTHGATE	CA	90280	323-771-8226	Permit
BILL WILKERSON	WILCOX AVE	SOUTH GATE	CA	90280	323-774-2320	Permit
ENVIRONMENTAL MANAGER	8332 WILCOX AVE	SOUTH GATE	CA	90280		Permit

HANDLER / FACILITY CLASSIFICATION

Unspecified Universe for the facility listed above.

HANDLER TYPE
Large Quantity Generator

No PROCESS INFORMATION is available for the facility listed above.

LIST OF NAICS CODES AND DESCRIPTIONS

NAICS CODE	NAICS DESCRIPTION
81149	OTHER PERSONAL AND HOUSEHOLD GOODS REPAIR AND MAINTENANCE
48849	OTHER SUPPORT ACTIVITIES FOR ROAD TRANSPORTATION
562998	ALL OTHER MISCELLANEOUS WASTE MANAGEMENT SERVICES

LIST OF WASTE CODES AND DESCRIPTIONS

WASTE CODE	WASTE DESCRIPTION
D001	IGNITABLE WASTE
D002	CORROSIVE WASTE
D018	BENZENE
D039	TETRACHLOROETHYLENE
F001	THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLORETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
U002	2-PROPANONE (I) (OR) ACETONE (I)
U019	BENZENE (I,T)
U056	BENZENE, HEXAHYDRO- (I) (OR) CYCLOHEXANE (I)
U080	METHANE, DICHLORO- (OR) METHYLENE CHLORIDE
U140	1-PROPANOL, 2-METHYL- (I,T) (OR) ISOBUTYL ALCOHOL (I,T)
U154	METHANOL (I) (OR) METHYL ALCOHOL (I)
U210	ETHENE, TETRACHLORO- (OR) TETRACHLOROETHYLENE
U220	BENZENE, METHYL- (OR) TOLUENE
U239	BENZENE, DIMETHYL- (I,T) (OR) XYLENE (I)

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Reference:
EPA, 2017c

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4. Legend and Info

FACILITY REPORT

QUALA SYSTEMS INCORPORATED SOUTH GATE CA

- 8332 WILCOX AVE., SOUTH GATE, CA 90280

CONTEXT

-
- This facility does not report to the Toxics Release Inventory.
- Facility has the potential to generate and/or manage at least 2,200 pounds of hazardous waste in a month.

COMPLIANCE

Facility has permits/records for:

Air	Water	Land
		✓

3 Year Compliance Status (quarterly): (Jan 14 -> Dec 16)

- Compliance
- Significant Non-Compliance
- Non-Compliance
- Status Unknown/Unavailable

Last Full Inspection: 290 days ago

Formal Enforcement Actions-5yr: 0

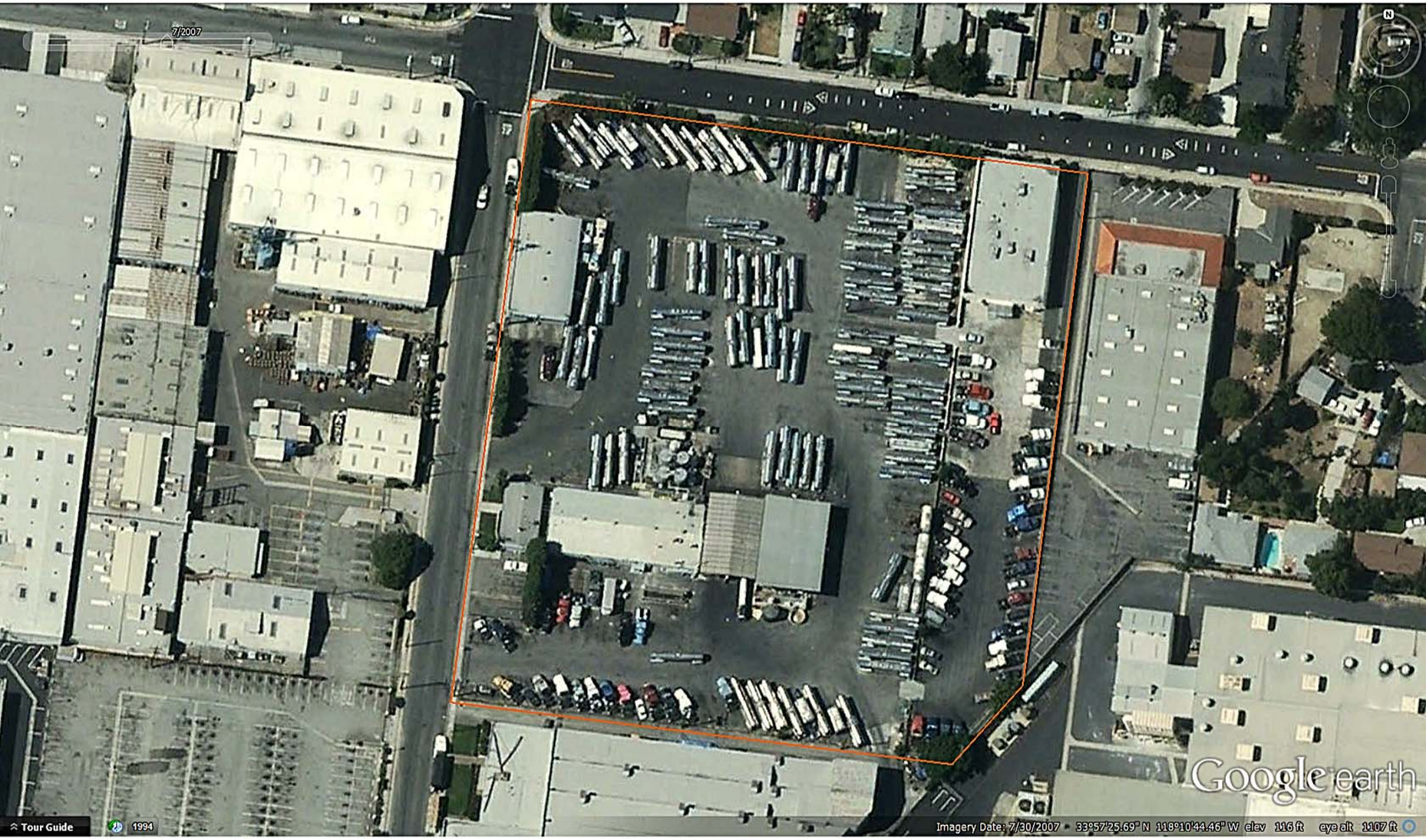
More Compliance Data

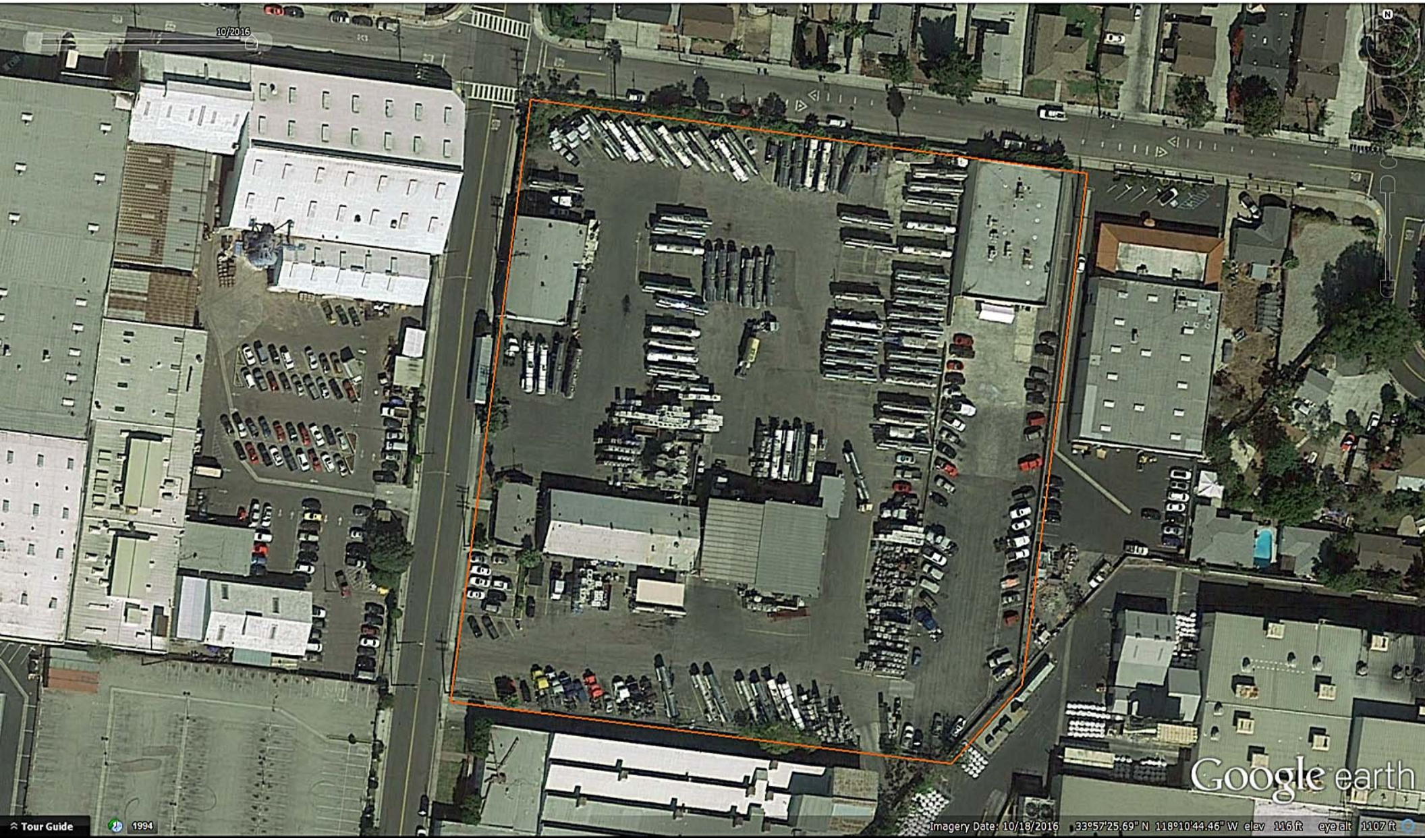
LINKS

- When were myRTK data updated?
- What can I do?
- How can I find more TRI information?
- What other environmental information is there about my neighborhood?

Reference:
Google, 2017

5/1994
N
Image U.S. Geological Survey
Google earth
Tour Guide
1994
Imagery Date: 5/30/1994 33°57'25.69" N 118°10'44.46" W elev 116 ft eye alt 1107 ft


7/2007
Google earth
Tour Guide
1994
Imagery Date: 7/30/2007 • 33°57'25.69" N 118°10'44.46" W elev 116 ft eye alt 1107 ft


10/2016
Google earth
Tour Guide
1994
Imagery Date: 10/18/2016 33°57'25.69" N 118°10'44.46" W elev 116 ft eye alt 1107 ft

Reference:
HA, 2014

HistoricAerials.com
Univar USA site
1954

HistoricAerials.com
Univar USA site
1972

Reference:
Johnson et al., 2011

JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION
Vol. 47, No. 3 AMERICAN WATER RESOURCES ASSOCIATION June 2011

MODELING THE POTENTIAL IMPACT OF SEASONAL AND INACTIVE MULTI-AQUIFER WELLS ON CONTAMINANT MOVEMENT TO PUBLIC WATER-SUPPLY WELLS[1]

R.L. Johnson, B.R. Clark, M.K. Landon, L.J. Kauffman, and S.M. Eberts[2]

ABSTRACT: Wells screened across multiple aquifers can provide pathways for the movement of surprisingly large volumes of groundwater to confined aquifers used for public water supply (PWS). Using a simple numerical model, we examine the impact of several pumping scenarios on leakage from an unconfined aquifer to a confined aquifer and conclude that a single inactive multi-aquifer well can contribute nearly 10% of total PWS well flow over a wide range of pumping rates. This leakage can occur even when the multi-aquifer well is more than a kilometer from the PWS well. The contribution from multi-aquifer wells may be greater under conditions where seasonal pumping (e.g., irrigation) creates large, widespread downward hydraulic gradients between aquifers. Under those conditions, water can continue to leak down a multi-aquifer well from an unconfined aquifer to a confined aquifer even when those multi-aquifer wells are actively pumped. An important implication is that, if an unconfined aquifer is contaminated, multi-aquifer wells can increase the vulnerability of a confined-aquifer PWS well.

(KEY TERMS: groundwater hydrology; simulation; drinking water; nonpoint source pollution; point source pollution; source water protection; water supply.)

Johnson, R.L., B.R. Clark, M.K. Landon, L.J. Kauffman, and S.M. Eberts, 2011. Modeling the Potential Impact of Seasonal and Inactive Multi-Aquifer Wells on Contaminant Movement to Public Water-Supply Wells. *Journal of the American Water Resources Association* (JAWRA) 47(3):588-596. DOI: 10.1111/j.1752-1688.2011.00526.x

INTRODUCTION

Public water-supply (PWS) wells are often sited in confined aquifers because confined systems generally offer more protection from near-surface sources of groundwater contamination than do unconfined aquifers. However, even aquifers beneath laterally extensive confining units can be vulnerable to contamination if natural or man-made preferential flow pathways through the confining unit exist (Santi *et al.*, 2006). This is particularly the case for multi-aquifer wells; that is, wells screened across confining units. Seasonal irrigation wells are important in this context because, in many areas, these wells have been and continue to be installed with long screened intervals that connect multiple aquifers. As a result, they may provide a direct connection between unconfined aquifers and deeper confined aquifers.

At the same time, high-volume pumping (e.g., irrigation) in confined aquifers frequently creates significant downward hydraulic gradients between the

[1]Paper No. JAWRA-09-0184-P of the *Journal of the American Water Resources Association* (JAWRA). Received November 24, 2009; accepted January 12, 2011. © 2011 American Water Resources Association. This article is a U.S. Government work and is in the public domain in the USA. **Discussions are open until six months from print publication**.

[2]Respectively, Professor, Oregon Health & Science University, Portland, Oregon; Hydrologist, U.S. Geological Survey, Little Rock, Arkansas; Hydrologist, U.S. Geological Survey, San Diego, California; Hydrologist, U.S. Geological Survey, West Trenton, New Jersey; and Hydrologist, U.S. Geological Survey, 6480 Doubletree Avenue, Columbus, Ohio 43229 (E-Mail/Eberts: smeberts@usgs.gov).

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confined and overlying unconfined aquifers (Chen *et al.*, 2005). These downward hydraulic gradients can encompass multiple square-kilometer areas. During periods of heavy pumping, it is not uncommon for vertical hydraulic head differences between aquifers to be several meters of water or more (e.g., Chen *et al.*, 2005; Clark *et al.*, 2008). Thus, if wells are screened in both confined and unconfined aquifers, substantial downward flow to the confined aquifer can occur. If shallow groundwater in the vicinity of these wells is contaminated with natural or anthropogenic contaminants, including pathogens, then relatively young contaminated water can quickly reach the confined aquifer without the benefit of attenuation processes otherwise provided by the overlying confining unit.

The goal of the work presented here is to show that a simple numerical model can provide site-specific insight into the potential impact of multi-aquifer wells that are seasonally pumped (e.g., irrigation) and/or inactive (e.g., unused, abandoned and improperly decommissioned wells, test holes) on a confined-aquifer PWS well. As seasonally pumped wells frequently play a controlling role in overall aquifer stress (e.g., Clark *et al.*, 2008), understanding their effect on the movement of potentially contaminated water to PWS wells in confined aquifers also is an important objective of the work presented here.

Previous Studies

The impact of inactive multi-aquifer wells on confined aquifers has been examined previously using both mathematical modeling and field studies. Silliman and Higgins (1990) developed analytical solutions for steady-state flow between aquifers through an open well. More recently, Zinn and Konikow (2007) conducted a numerical modeling study on the effects of wellbores with long screened or open intervals on the transport of water and solutes. Their results demonstrate that inactive wells completed in multiple aquifer layers can transport water and solutes rapidly over large vertical distances. Results were highly dependent on assumed flow conditions, but in all simulations the inactive wells substantially altered the groundwater age distribution in the aquifer. When pumping in proximity to an inactive well was simulated, the inactive well served as a conduit for downward flow of recently recharged (i.e., "young") water to deeper parts of the aquifer, even where the inactive well had served as a conduit for upward flow of older water prior to pumping. Likewise, an earlier modeling study by Lacombe *et al.* (1995) indicated that contaminants from an upper aquifer can rapidly migrate downward along an open or sediment-filled borehole and result in an extensive contaminant plume in a lower aquifer. At the regional scale, wells screened across multiple aquifers have been shown to influence the overall water balance of confined aquifers (Williamson *et al.*, 1989; Hanson *et al.*, 2004; Hart *et al.*, 2006). For example, Hanson *et al.* (2004) used simulations to estimate that wellbore flow represented 19% of total groundwater flow between layered aquifers in the Santa Clara Valley, California.

Delineation of Wellhead Protection Areas in Relation to Multi-aquifer Wells

Since passage of the Amendments to the Safe Drinking Water Act (SDWA) in 1986, an extensive literature on delineation of wellhead protection areas (WHPAs) has developed, including "Guidelines for delineation of wellhead protection areas" (USEPA, 1987) and "Wellhead protection strategies for confined-aquifer settings" (USEPA, 1991). These and other publications use a range of terminologies to describe wellhead protection areas, including one that will be used here. USEPA (1987) defined the "zone of transport" (ZOT) as the 2D projection to land surface defined by "an isochrone indicating the time necessary for water or a conservative contaminant to reach the well."

In the context of contaminant transport to PWS wells, a 40-year time of travel is recommended for differentiating semiconfined and highly confined conditions (USEPA, 1991; Savoca *et al.*, 2002). As an approximation of the area over which multi-aquifer wells would be anticipated to impact a confined-aquifer PWS well, an estimate of the 40-year ZOT can be calculated from the volume of water pumped over 40 years divided by the thickness of the transmissive zone and divided by the porosity of the aquifer [i.e., the so called "cylinder" or "volumetric flow" calculation (USEPA, 1987)].

Numerical models can simulate more realistic conceptual models of groundwater flow than what is simulated with the cylinder model. However, standard approaches for using numerical models to estimate ZOTs (e.g., USEPA, 1987) do not take multi-aquifer wells into account. This is partly because commonly used numerical modeling programs (e.g., MODFLOW, Harbaugh *et al.*, 2000) have not had the capability of simulating wells with screens extending across multiple layers while allowing water to simultaneously flow into and out of different portions of the well screen. This changed for MODFLOW with development of the Multi-Node Well (MNW) package (Halford and Hanson, 2002).

In cases where anthropogenic contaminants have impacted a PWS well, it is typically difficult to document whether or not multi-aquifer wells within the

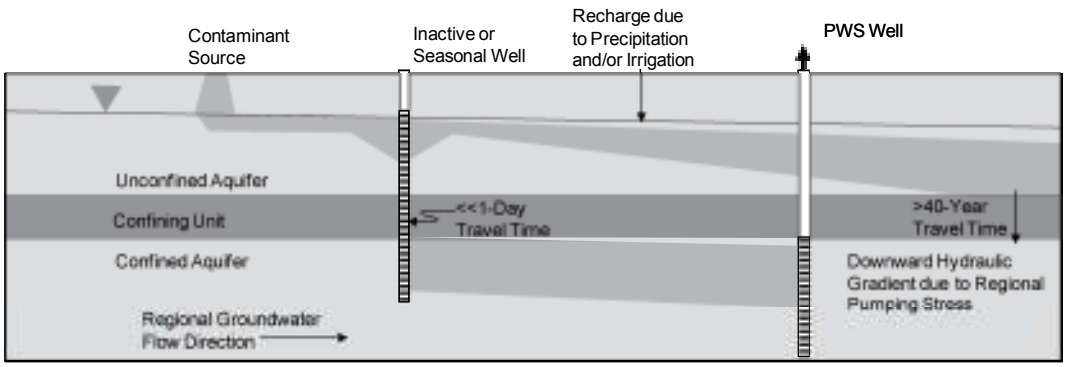

FIGURE 1. Conceptual Drawing Showing the Impact of an Inactive Multi-aquifer Well on Contaminant Movement to a Public Water-Supply Well.

ZOT for the well have played a substantial role. At the same time, it is difficult to determine *a priori* the likelihood that such contamination will occur, even if multi-aquifer wells are known to be present in a given study area. Johnson *et al.* (2000) used a probabilistic approach to estimate the potential impact of releases to shallow groundwater on PWS wells. The focus of that work was on releases from underground storage tanks near the water table. Their numerical modeling analysis indicated that, for most scenarios, there was a pumping rate threshold below which contamination would not be drawn down to the PWS well screen. Not surprisingly, that analysis showed that a confining unit between the water table and the PWS well screen substantially increased that threshold. In the work discussed here, it is shown that the threshold may be reduced or eliminated by rapid transport (leaking) from an overlying unconfined aquifer into a confined aquifer because of the presence of one or more multi-aquifer wells (Figure 1) and downward hydraulic gradients across the confining unit due to regional pumping (e.g., for irrigation and or PWS).

To demonstrate that simple models can be used to assess the potential impact of multi-aquifer wells on confined-aquifer PWS wells, we use a well-studied example from York, Nebraska (Clark *et al.*, 2008; Landon *et al.*, 2008). At that location, U.S. Geological Survey researchers identified 62 multi-aquifer production wells (primarily irrigation wells) and test holes in an ≈62-km^2 area – a density of approximately 1 multi-aquifer well per km^2. Interspersed among the multi-aquifer wells were 58 confined-aquifer wells. Heavy pumping from the confined aquifer put a significant hydraulic stress on the aquifer and resulted in downward hydraulic gradients of more than 10 m throughout the area during irrigation seasons (Landon *et al.*, 2008).

Using aquifer and pumping conditions similar to those in York, a volumetric calculation of the 40-year ZOT for a confined-aquifer PWS well gives an area of ≈12 km^2 and suggests that ≈12 multi-aquifer wells could lie within the ZOT (Table 1, top). Assuming an annual average regional downward hydraulic gradient of 3 m, the volume of water that would be estimated to leak down an inactive multi-aquifer well for

TABLE 1. Calculation of a 40-Year Zone of Transport, Number of Multi-aquifer Wells Potentially Impacting a Public Water-Supply Well, and Volumetric Flow Down an Inactive Multi-aquifer Well: Example for Confined-Aquifer Setting Similar to York, Nebraska.

Daily pumping rate	1,200 m^3/day
Total volume pumped over 40 years	17,520,000 m^3
Aquifer thickness	10 m
Effective aquifer porosity	0.15
40-year zone of transport	17,520,000 m^3/10 m/0.15 ≈12 km^2
Estimated density of multi-aquifer wells	1.0 well/km^2
Number of multi-aquifer wells potentially impacting the PWS well	12 km^2 × 1.0 well/km^2 12 wells
$Q = 2\ K_C b_C (H_U \quad H_C)/\ln(r_C/r_W)$ where, K_C is the hydraulic conductivity of the confined aquifer (≈9 m/day), b_C is the thickness of the confined aquifer (≈10.5 m), ($H_U \quad H_C$) is the hydraulic head difference across the confining unit (3 m), r_C is the radius at which the hydraulic head is measured in the confined aquifer (assumed here to be 100 m, at which point the confined head will likely not be significantly influenced by flow down the leaking well), and r_W is the radius of the well (0.1 m, assumed) (Silliman and Higgins, 1990)[1]	
Volumetric flow down inactive multi-aquifer well	
≈2 × 9 × 10.5 × 3/ln(100/0.1)	
≈260 m^3/day	
≈0.06 million gallons per day	

Note: PWS, public water supply.

[1]Assumptions inherent in this calculation include that the hydraulic head in the well equals that in the unconfined aquifer and the well is fully screened across the confined aquifer. The flow calculated by this equation may be significantly reduced if there is resistance to flow through the well (see, for example, the discussion in Halford and Hanson, 2002).

the York example is ≈260 m^3/day (Table 1, bottom). Taken together, the total volume leaked down the 12 wells potentially within the 40-year ZOT (≈3,120 m^3/day) is significantly greater than the typical pumping rates for PWS wells near York (400-2,000 m^3/day). Thus, if one or more inactive, multi-aquifer wells were contaminated, there could be a potentially significant impact on a PWS well. Of course, both the presence of multi-aquifer wells and seasonal pumping would affect the ZOT for a PWS well, but their combined effect cannot be estimated using the simple calculations in Table 1. However, as shown below, a simple numerical model can be used to take these interactions into account.

METHODS

Schematic plan and cross-section views for a simple numerical model of a confined-aquifer setting similar to York, Nebraska are shown in Figure 2. The model domain is 16 km long by 8 km wide by ≈63 m thick and is composed of 11 layers with grid blocks that are 40 m on a side. To simulate the regional groundwater flow, "constant-head" boundaries were used on the "short" sides – 74.9 and 59.4 m for the left and right sides respectively. "No-flow" boundaries were used on the "long" sides of the model domain because (1) the effects of pumping the PWS well extended only ≈2 km beyond the well, (2) these boundaries are approximately parallel to the regional groundwater flow direction, and (3) it is reasonable to assume that regionally extensive irrigation pumping is similar inside and outside the model domain and that the model boundaries are, therefore, lines of symmetry. Water-table conditions were assumed in the unconfined aquifer, and no-flow conditions were assumed along the bottom boundary. Recharge was applied at 0.0001 m/day, except in the vicinity of irrigation wells for the four months each year when water was applied. For recharge during irrigation, the application rate was 0.00025 m/day to a 1-km^2 rectangle centered on each irrigation well.

In the vicinity of the PWS well, the confined aquifer is represented by three layers at the bottom of the model with an overall thickness of 10.5 m and with horizontal hydraulic conductivity values of 6.1-15 m/day (Table 2, adapted from Clark *et al.*, 2008). The confined aquifer is overlain by a 22.4-m-thick confining unit with a horizontal hydraulic conductivity of

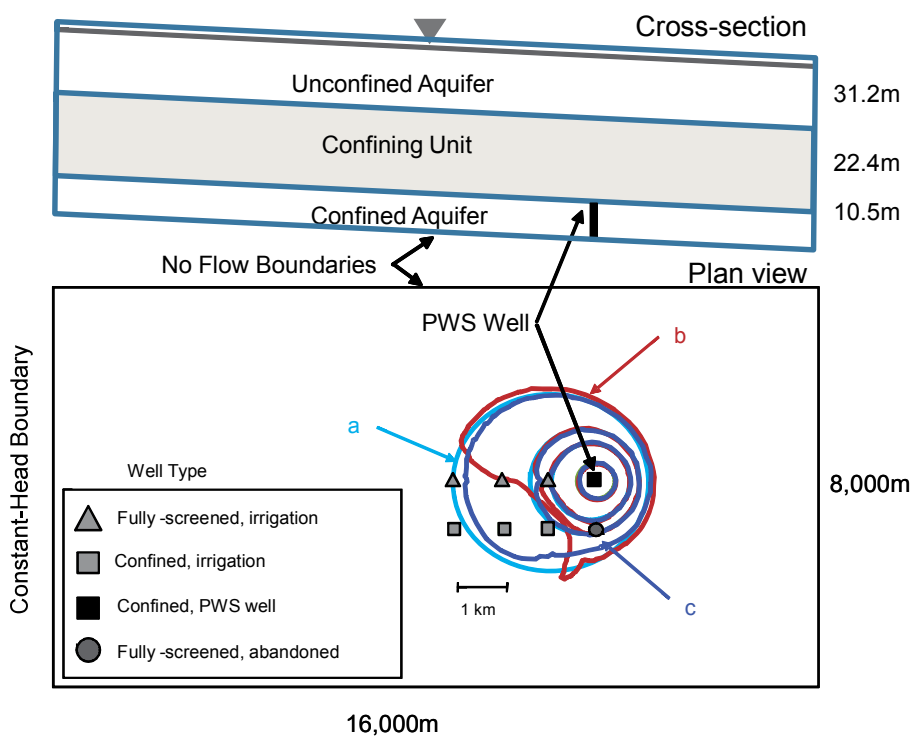

FIGURE 2. Map Showing Simplified Numerical Model Domain and Simulated Effects of Multi-aquifer Wells on Flow to a Confined-Aquifer Public Water-Supply (PWS) Well. The extent of the simulated 1-, 5-, 10-, and 40-year zones of transport (ZOT) in the confined aquifer for the PWS well are shown for the (a) PWS-well-only scenario, (b) seasonal scenario, and (c) inactive scenario. The pumping rate at the PWS well for these model results was 1,200 m^3/day.

TABLE 2. Model Parameters Used in the Simplified Numerical Model (adapted from Clark *et al.*, 2008).

Layer	Thickness (m)	Horizontal (m/day)	Vertical (m/day)	Porosity	Specific Storage	Specific Yield	Representative Aquifer or Unit
1	4.2	55	1.5	0.15	0.00001	0.15	Unconfined aquifer
2	18.6	55	1.5	0.15	0.00001	0.15	Unconfined aquifer
3	4.2	34	1.1	0.15	0.00001	0.15	Unconfined aquifer
4	4.2	12	0.4	0.15	0.00001	0.15	Unconfined aquifer
5	5.6	0.03	0.001	0.35	0.00001		Confining unit
6	5.6	0.03	0.001	0.35	0.00001		Confining unit
7	5.6	0.03	0.001	0.35	0.00001		Confining unit
8	5.6	0.03	0.001	0.35	0.00001		Confining unit
9	3.5	6.1	0.2	0.15	0.00001		Confined aquifer
10	3.5	15	0.5	0.15	0.00001		Confined aquifer
11	3.5	6.1	0.2	0.15	0.00001		Confined aquifer

0.03 m/day. A 31.2-m-thick unconfined aquifer with horizontal hydraulic conductivity values from 12 to 55 m/day overlies the confining unit. A vertical anisotropy value of 30 was used for all layers in these simulations.

The model domain described above was used to examine three different scenarios. First, a single PWS well and steady recharge were simulated. No additional wells were included in this simulation ("PWS-well-only" scenario). Second, the PWS-well-only scenario was simulated with the addition of six seasonal irrigation wells and one abandoned well ("seasonal" scenario) (see Figure 2, plan view, for well configuration). Third, the seasonal scenario was simulated without any pumping for irrigation ("inactive" scenario). To assess sensitivity of the results to PWS well pumping, three different PWS well pumping rates were examined in each scenario (400, 1,200, and 2,000 m^3/day or approximately 0.1, 0.3, and 0.5 million gallons per day). For the seasonal scenario, the irrigation wells were pumped at a rate of 1,200 m^3/day per well for a four-month period and then were inactive for the remaining eight months of each year. Three of the six irrigation wells were fully screened across the model domain, and three were screened only in the confined aquifer (Figure 2). All of the wells were simulated using MODFLOW 2000 (Harbaugh *et al.*, 2000) and the MNW package (Halford and Hanson, 2002).

For each model scenario and pumping rate, ZOTs were estimated using backward particle tracking in MODPATH (Pollock, 1994). This was accomplished by starting particles in an array on each face of the cells representing the PWS well. Particles were tracked backwards within the confined aquifer until they reached a source of water (in this case, MNW cells that leaked water) or until the desired travel time (1, 5, 10, or 40 years) was reached. The ZOTs were then calculated using the maximum horizontal extent of the tracked particles within the confined aquifer for each travel time.

To determine the fractions of leaked water reaching the PWS well within 40 years or less travel time, forward particle tracking in MODPATH was used. Particles were started on the faces of model cells where there was a source of flow from an MNW. The particles were released during the first year of the simulation and tracked until they reached a pumping well or the end of the 40-year simulation period. The cells representing the PWS wells were strong sinks, so a volume of water could be assigned to each tracked particle by dividing the flow across the model-cell face where a particle was started by the number of particles started on that face. The percentage of water pumped by the PWS well that originated as leakage down a given up-gradient multi-aquifer well was computed by summing the volumes associated with the particles released in the leaking MNW cells that reached the PWS well, dividing the computed volume by the volume of water pumped at the PWS well, and multiplying by 100.

RESULTS AND DISCUSSION

A steady-state simulation for the PWS-well-only scenario at the middle pumping rate (1,200 m^3/day) produced a 40-year ZOT in the confined aquifer of 11.6 km^2 (Figures 2 and 3). This value is similar to the simple cylinder model calculation presented in Table 1 ($\approx$12 km^2). The 40-year ZOT for the seasonal scenario was notably smaller (8.8 km^2) because much of the water pumped at the PWS well was supplied by leakage down the abandoned well and the nearest multi-aquifer irrigation well (Table 3). The shape of the 40-year ZOT in this scenario was affected by pumping at the confined-aquifer irrigation wells. The size of the 40-year ZOT for the inactive scenario was between those computed for the PWS-well-only and the seasonal scenarios because some of the water

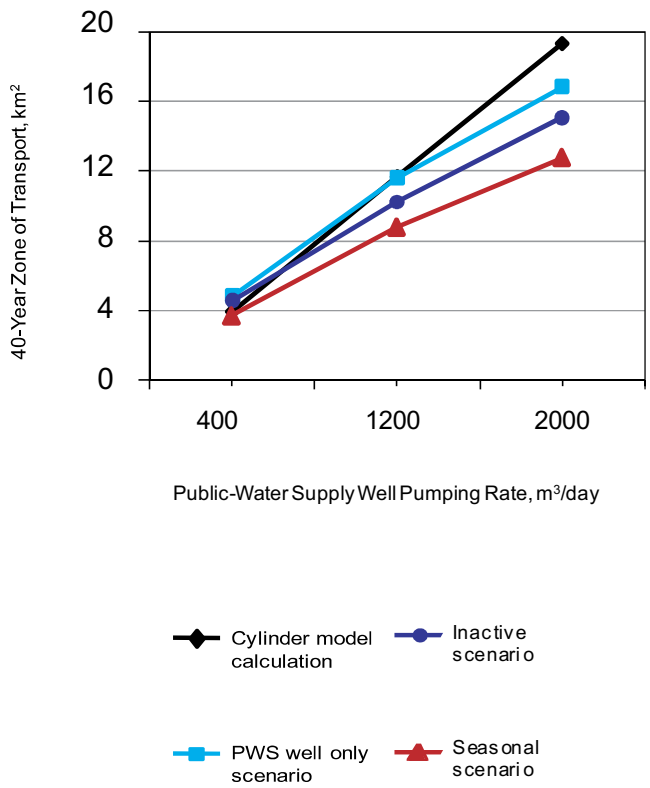

FIGURE 3. Graph Showing 40-Year Zones of Transport for Various Public Water-Supply (PWS) Well Pumping Rates in the Simplified Numerical Model.

pumped at the PWS well was supplied by leakage down multi-aquifer wellbores, but, as discussed below, flow down the multi-aquifer wells for the inactive case was less than for the seasonal case because the downward hydraulic gradients were smaller. The one- and five-year ZOTs for the three different scenarios were essentially the same because the ZOTs did not extend beyond the closest multi-aquifer wells (Figure 2).

As in many confined aquifer settings developed for water supply, hydraulic head differences were observed across the confining unit in the simulated scenarios. For the PWS-well-only scenario with a pumping rate of 1,200 m^3/day, differences of a meter or more were observed in the vicinity of the PWS well (Figure 4a). In contrast, when the seasonal wells were active, hydraulic head differences of more than a meter were observed throughout most of the model domain (Figure 4b). When the irrigation wells were present but not pumped (the inactive scenario; Figure 4c), the hydraulic head differences were similar to those in the PWS-well-only scenario.

Differences in the vertical hydraulic gradients among the scenarios resulted in differences in the multi-aquifer wells that contributed flow to the PWS well and the amount of water leaked down the multi-aquifer wells (Table 3). Not all of the leaked water reached the PWS well during the simulations. For the seasonal scenario, however, multi-aquifer wells contributed a total of about 20% of the flow to the PWS well regardless of the pumping rate at the PWS well. This is because the three confined-aquifer irrigation wells collectively had a greater influence on vertical hydraulic gradients – and thus the downward flow of water to the confined aquifer – than did the PWS well. The smaller vertical hydraulic gradients in

TABLE 3. Wellbore Leakage Rates and Percents of PWS Well Flow Rates from Multi-aquifer Wells.

		PWS Well Pumping Rate (m^3/day)					
		Inactive Scenario (no irrigation pumping)			Seasonal Scenario (seasonal irrigation pumping)		
Well	**Distance From PWS Well (km)**	**2,000**	**1,200**	**400**	**2,000**	**1,200**	**400**
Net wellbore flow rate from unconfined to confined aquifer (m^3/day)[1]							
Abandoned well	1	153	95	37	195	137	80
Multi-aquifer irrigation well	1	149	92	36	176	120	64
Multi-aquifer irrigation well	2	49	32	16	86	70	54
Multi-aquifer irrigation well	3	23	17	11	52	46	40
All wells (abandoned + three irrigation wells)		374	237	100	510	373	237
Percent of water pumped at the PWS well from multi-aquifer wellbore leakage 40 years after leakage began							
Abandoned well	1	8	8	0	10	11	6
Multi-aquifer irrigation well	1	7	8	9	9	10	13
Multi-aquifer irrigation well	2	2	2	2	2	0	0
Multi-aquifer irrigation well	3	1	0	0	0	0	0
All wells (abandoned + three irrigation wells)		17	17	11	20	21	20

Notes: PWS, public water supply; MNW, Multi-Node Well.
[1]Inactive scenario values from the MODFLOW MNW QSUM file. Seasonal scenario values derived from the MODFLOW MNW QSUM file; reported rates are averages from the time steps representing the last year of the simulation weighted by the time-step lengths.

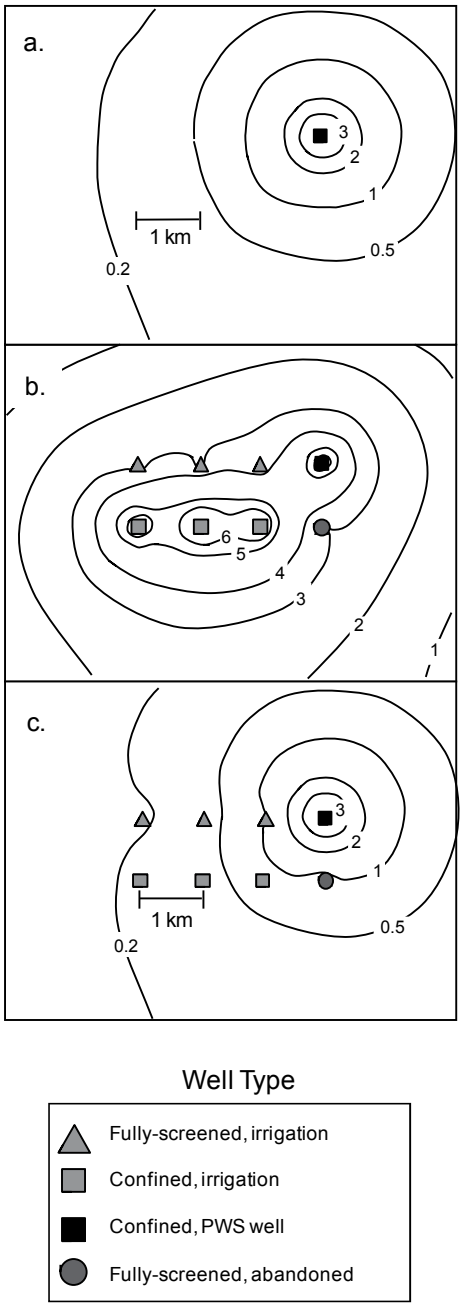

FIGURE 4. Contours of Hydraulic Head Difference Between the Confined and Unconfined Aquifers (in meters) During Irrigation and Nonirrigation Conditions. Scenarios are (a) PWS-well-only, (b) seasonal, and (c) inactive.

the inactive scenario resulted in less water leaked down individual multi-aquifer wells. Consequently, the volume of water needed to satisfy the pumping demand at the PWS well had to come from a larger area, and more multi-aquifer wells contributed flow to the PWS well. Unlike in the seasonal scenario, however, the pumping rate at the PWS well in the inactive scenario affected the percentage of leaked water that reached the PWS well. The smallest percentage of leaked water produced by the PWS well (11%) was for the inactive scenario simulation with the lowest pumping rate (400 m^3/day). Both the inactive and seasonal scenarios demonstrated that nearly 10% of the water produced by a confined-aquifer PWS well can come through a single multi-aquifer well (Table 3), even when the well is a kilometer away from the PWS well.

Interestingly, for the multi-aquifer irrigation wells, water continued to flow from the unconfined aquifer to the confined aquifer even when the wells were actively pumped. For example, the model indicated that if the total flow out of each multi-aquifer irrigation well was 1,200 m^3/day, then flow from the unconfined aquifer into the irrigation wells ranged from 1,246 to 1,320 m^3/day (determined near the end of the four-month irrigation period). At the same time, a portion of the water that entered the wells from the unconfined aquifer (46-120 m^3/day) flowed down the wells and *out* of the lower portions of the same irrigation wells into the confined aquifer. This occurred because the pumping rate at the multi-aquifer irrigation wells was too low to overcome the downward flow of water between aquifers that resulted from the large downward hydraulic gradients established in response to pumping at the confined-aquifer wells.

In the absence of multi-aquifer wells (i.e., the PWS-well-only scenario), travel times associated with water flowing from the unconfined aquifer through the confining unit to the confined aquifer were >40 years. In contrast, the model indicated that if a multi-aquifer well was 1 km from the PWS well and the PWS pumping rate was 1,200 m^3/day, water moving down the multi-aquifer well could reach the PWS well after ≈5 years of travel. Although the model presented here is conceptually simple and contains far fewer multi-aquifer wells than are reported for York, Nebraska, conclusions drawn from the model results are similar to those reached by Clark *et al.* (2008) based on the more-detailed numerical model constructed for the York area.

In other settings, the impact of multi-aquifer wells could be different. For example, a higher hydraulic conductivity in the confined aquifer for a given hydraulic head difference between aquifers would result in a higher flow rate out of the well and into the confined aquifer. However, given similar boundary conditions, a higher hydraulic conductivity would lead to a smaller hydraulic head difference and therefore a smaller flow rate out of the well. Thus, if the impact of multi-aquifer wells on a PWS well is to be explored using a simple numerical model, the model should be constructed to represent the setting of interest.

IMPLICATIONS FOR PROTECTION OF PUBLIC WATER-SUPPLY WELLS

Predicting the impact of contaminants on a PWS well due to leaking multi-aquifer wells is, in general, not possible. However, the modeling steps described here can provide site-specific insight into the potential for multi-aquifer wells to affect a confined-aquifer PWS well. First, the ZOT for the PWS well can be estimated to assess whether a multi-aquifer well might present a problem. The ZOT should be defined within the confined aquifer (rather than, for example, only considering water reaching the well from the water table within a specific time period). This is because multi-aquifer wells can reduce or eliminate any protection offered by transport through either the unconfined aquifer or the confining unit. Second, site-specific vertical hydraulic gradient data should be obtained so that the volumetric flow down inactive wells from the unconfined aquifer to the confined aquifer can be estimated using the approach developed by Silliman and Higgins (1990). Third, if the setting of interest has complexities such as numerous inactive or seasonally active multi-aquifer wells, the kind of simple numerical model discussed here can be constructed to better understand the potential contributions of those wells to the PWS well.

Although the focus here has been on volumetric water flow rather than water quality, estimates of volumetric flow through multi-aquifer wells do provide insight into the issue of contamination of PWS wells. The numerical modeling data from this study suggest that, if a leaking multi-aquifer well lies within the ZOT of a PWS well, on the order of 10% of the total PWS flow could come from that well. Stated another way, water produced from the PWS well could be expected to have concentrations that are within a factor of 10 of the concentration leaked into the confined aquifer via the multi-aquifer well. As a result, if a leaky well were contaminated, it is likely that the contaminant concentration would be high enough to impact water quality at the PWS well.

For the simulations presented here, seasonal pumping had a controlling impact on the hydraulic gradient across the confining unit during the irrigation season (i.e., when in operation, irrigation wells – especially those screened in the confined aquifer alone – placed substantial stress on the confined aquifer). An important and unexpected result for the case examined here was that, during irrigation, water levels in the multi-aquifer wells remained above the potentiometric surface for the stressed confined aquifer. As a result, water entering those wells flowed from the unconfined aquifer to the confined aquifer under both inactive and actively pumped conditions. In addition, active pumping of the irrigation wells had the potential to draw contaminants to the irrigation wells through the unconfined aquifer at the same time they continued to leak water from the unconfined aquifer to the confined aquifer.

A national survey of PWS wells concluded that anthropogenic volatile organic contaminants (VOCs) were nearly as likely to be found in water from confined aquifers as from unconfined aquifers (62 *vs.* 67% probability of detection) (Squillace and Moran, 2007). For VOC contamination of a confined aquifer to occur, both downward hydraulic gradients and preferential flow pathways through the confining layer are likely to be necessary. Thus, the Squillace and Moran data suggest that preferential flow pathways may occur frequently. Although multi-aquifer wells represent only one type of preferential flow pathway, the modeling results presented here indicate that, where they exist, multi-aquifer wells could be a major factor contributing contaminants to impacted confined-aquifer PWS wells. As a result, multi-aquifer wells, including those that are seasonally active, can lead to situations that may affect public health.

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FINAL REPORT

2015 Urban Water Management Plan
Bell/Bell Gardens

Corporate Office
630 E. Foothill Blvd.
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Kennedy/Jenks Consultants

July 2016

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Appendix I	Documentation of Submittal to Library, Cities and Counties

Chapter 3: System Description

3.1 General Description

> ***CWC Section 10631***
>
> *Describe the service area of the supplier.*

The Bell-Bell Gardens System is located in Los Angeles County and serves the Cities of Bell, Bell Gardens and Cudahy. Figure 3-1 illustrates the service area of the Bell-Bell Gardens System. The service area is primarily characterized by a mixture residential and commercial land use.

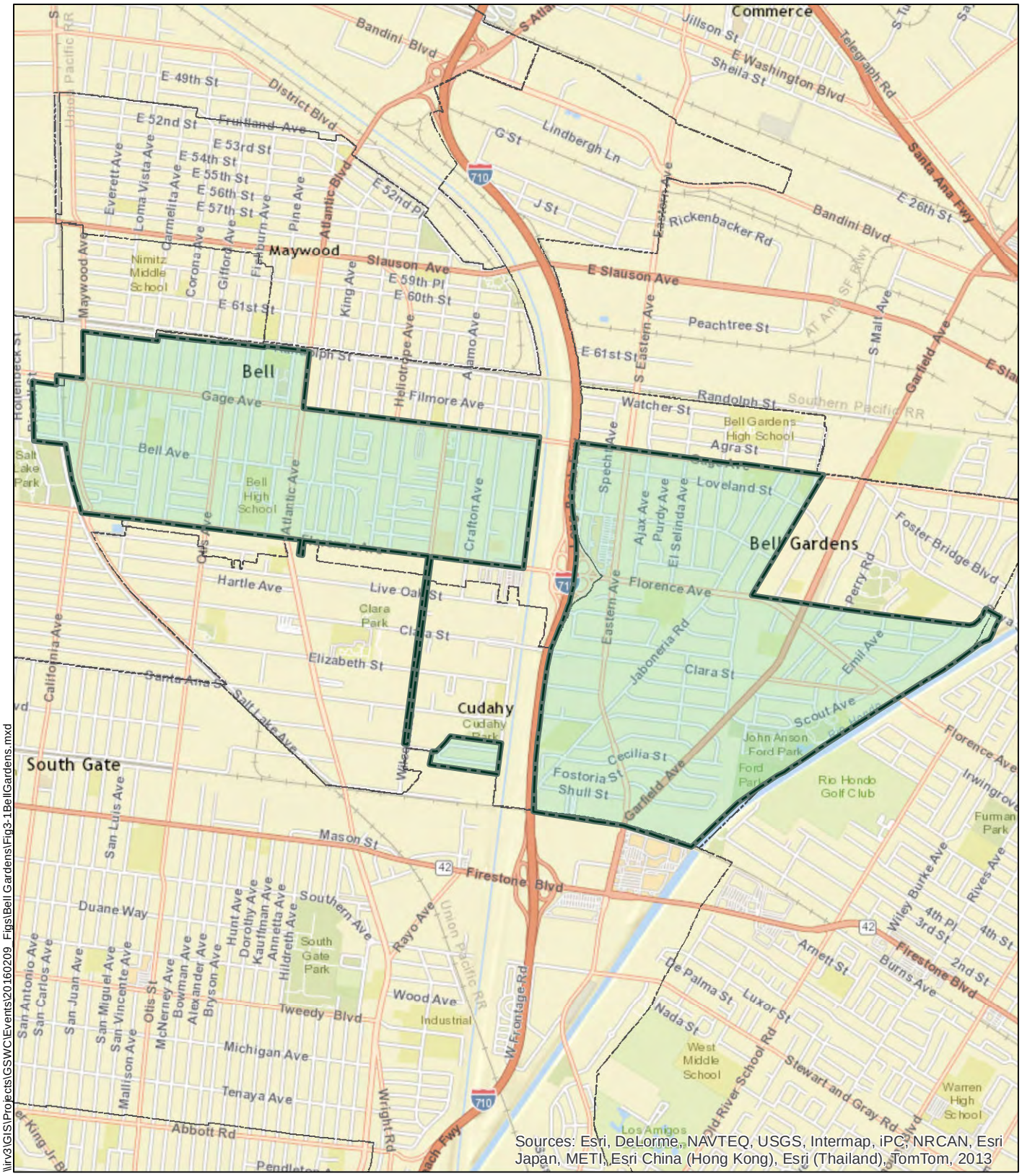
3.2 Service Area Climate

> ***CWC Section 10631***
>
> *Describe the service area of the supplier, including... climate...*

Bell-Bell Gardens System has cool, humid winters and warm, dry summers. Western Regional Climate Center (WRCC) maintains historic climate data for selected cities throughout the West (WRCC 2016). WRCC does not have a station at the cities of Bell or Bell Gardens, but does maintain 32 years of climate records for the City of Montebello station, 7 miles from Bell. Data obtained from the WRCC website (www.wrcc.dri.edu) for the Montebello station was utilized for the climate data analysis below.

In the winter, the lowest average monthly temperature is approximately 47 degrees Fahrenheit. The highest average monthly temperature reaches approximately 90 degrees Fahrenheit in the summer. The rainy season is typically from November to March. Monthly precipitation during the winter months ranges from 1 to 4 inches. Low humidity occurs in the summer months from May to October. The warm and dry weather during the summer months typically results in moderately high water demand.

Similar to the WRCC in the Bell-Bell Gardens area, the California Irrigation Management Information System (CIMIS) website (http://www.cimis.water.ca.gov) tracks and maintains records of evapotranspiration (ETo) for selected cities (DWR 2016b). ETo statistics used for this system come from Glendale station, which are based on 19 years of climate records. ETo is a standard measurement of environmental parameters that affect the water use of plants. ETo is given in inches per day, month, or year and is an estimate of the evapotranspiration from a large field of well-watered, cool-season grass that is 4- to 7-inches tall. Figure 3-2 presents the monthly average precipitation, ETo, maximum temperature, and minimum temperature. As the figure indicates, a greater quantity of water is evaporated during July and August in correlation to high temperatures and low humidity, which may result in high water demand.



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Legend

- Bell-Bell Gardens System Boundary
- City Boundary

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Feet

Kennedy/Jenks Consultants

Golden State Water Company
2015 Urban Water Management Plan

Bell - Bell Gardens System Service Area

K/J 1570027.00
July 2016

Figure 3-1

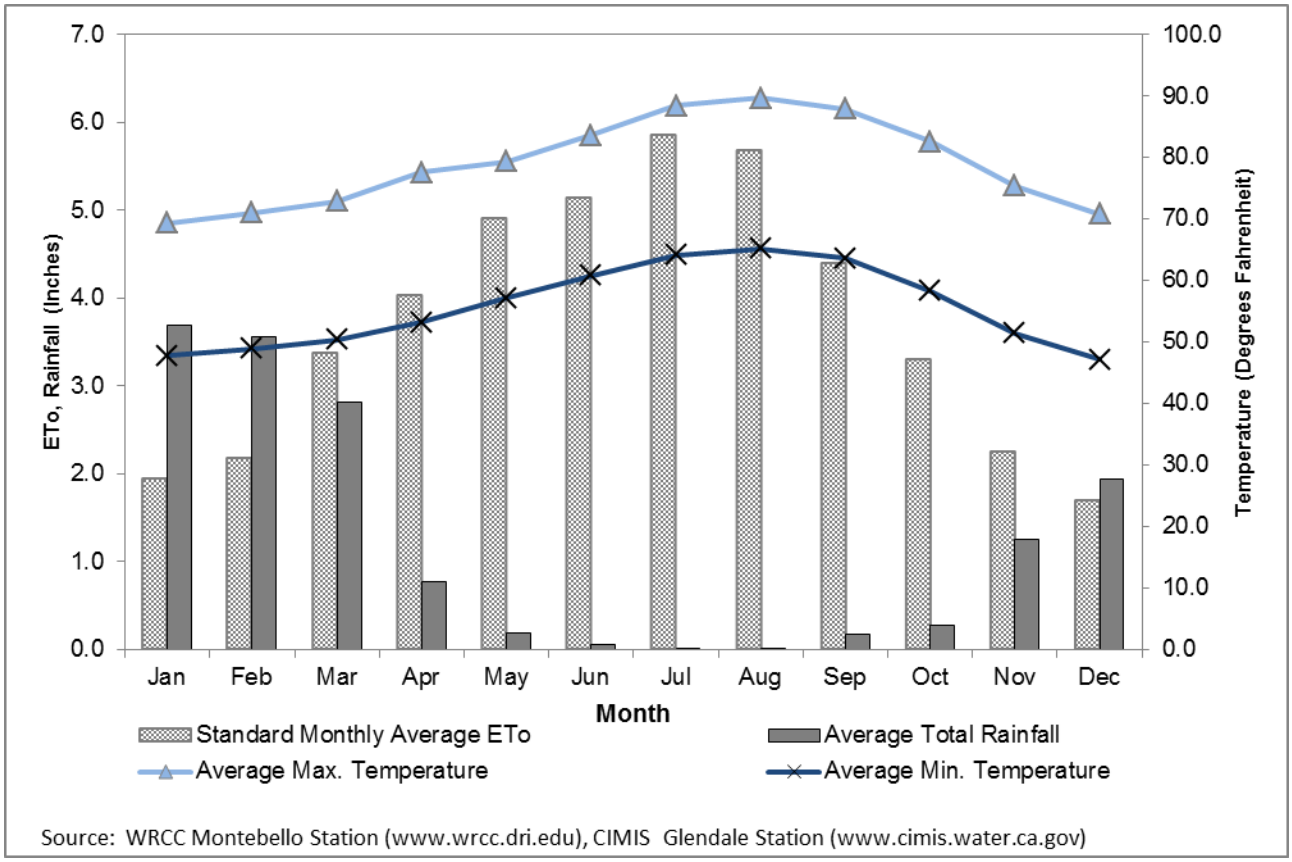

Figure 3-2: Monthly Average Climate Data in Bell-Bell Gardens System

3.3 Service Area Population and Demographics

> ***CWC Section 10631***
>
> *Describe the service area of the supplier, including current and projected population ...The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

In 2015 the estimated population of the Bell-Bell Gardens service area was 58,457, according to the DWR Population Tool and methodology described in Chapter 5. The following sections discuss population and other demographics that will influence water use.

3.3.1 SCAG Population Projection Development Methodology

Population, housing, and employment projections were developed for the Bell-Bell Gardens System using the Southern California Association of Governments (SCAG) population, housing, and employment data. SCAG updated its projections in 2012 for population, household, and employment growth through the year 2035 using 2010 U.S. Census data (SCAG 2012). SCAG's methodology is described below, followed by the derivation of population projections for the Bell-Bell Gardens System. Similar to the 2010 UWMP projections, the population projections use 2010 U.S. Census data.

The SCAG is a regional planning agency that provides demographic and economic data analysis for Imperial County, Los Angeles County, Orange County, Riverside County, San Bernardino County, and Ventura County. SCAG's Integrated Growth Forecasting process uses a variety of estimates and projections from the federal and state governments. Sources include the U.S. Department of Labor, Internal Revenue Service (IRS), U.S. Citizenship and Immigration Services, U.S. Department of Health and Human Services, California Department of Finance (DOF), California Employment Development Department, and information received through the Intergovernmental Review process. On a regional level, the SCAG forecast uses a cohort component model to project birth and death rates based on demographic factors and estimates migration based on economic fluctuations. Projected growth of an individual jurisdiction is assumed to be proportionate to the jurisdiction's historic contribution to county growth.

A detailed explanation of the population, household and employment projection process employed by SCAG can be found in the report: "Growth Forecast", a supplemental report to the SCAG "Regional Transportation Plan, 2012-2035".

3.3.2 Historical and Projected Population

SCAG city level projections were used to determine projected population from 2020 to 2040. The Bell-Bell Gardens System serves the Cities of Bell, Bell Gardens, and Cudahy. The SCAG historic growth rate for the City of Bell more closely matches that of the Bell-Bell Gardens System's historic population growth rate than that for the surrounding cities. Therefore, the SCAG growth rate for 2015 through 2035 for the City of Bell was used to project the population, household, and employment of the Bell-Bell Gardens System. Table 3-1 presents the current and projected population for the Bell-Bell Gardens System. This methodology applies the SCAG growth rate to a consistent system boundary through 2040; therefore it is assumed that the projected population accounts for system in-fill only and does not include geographic growth such as tariff area expansion.

Table 3-1: Population – Current and Projected

	2015	2020	2025	2030	2035	2040*(opt)*
Population Served	58,457	58,731	59,002	59,275	59,549	59,824

NOTES:
1. 2015 population estimated using the DWR Online Population Tool.
2. Projected population based on SCAG population growth rate for the City of Bell.

3.3.3 Other Demographic Factors

CWC 10631

Describe the service area of the supplier, including...other demographic factors affecting the supplier's water management planning.

The City of Bell Gardens was chosen as demographically representative of the Bell-Bell Gardens System. According to 2010 U.S. Census Data, the median age of Bell-Bell Gardens'

residents is 28.9 years. Bell-Bell Gardens has an average household size of 3.93 and a median household income of approximately $36,496 in 2014 dollars (2010-2014 American Community Survey 5-Year Estimates).

According to SCAG data for Bell Gardens, by 2040, population is expected to increase by a total of three (3) percent from 2008 to 2035, which translates to a 0.1 percent growth rate per year. The number of households is expected to grow one (1) percent during the same period, which equates to an annual household growth rate of 0.04 percent. Employment is expected to grow eight (8) percent during the same period, which equates to an annual employment growth rate of 0.3 percent.

Chapter 6: System Supplies

This chapter addresses the water supply sources of the Bell-Bell Gardens System of GSWC. GSWC's current sources of water supply for the Bell-Bell Gardens System are imported water, groundwater, and recycled water. Imported water and recycled water are purchased from the Central Basin Municipal Water District (CBMWD).

6.1 Purchased or Imported Water

CBMWD is a large purveyor of water in southern California that provides water to several agencies, including GSWC. GSWC obtains water from CBMWD for the Bell-Bell Gardens System, as well as several other systems. CBMWD obtains its imported water supply from the Metropolitan Water District of Southern California (Metropolitan). Water purchased from the CBMWD is delivered to the Bell-Bell Gardens System through Metropolitan's CB-3 connection, which has a design capacity of 3,366 gallons per minute ([gpm], 5,432 acre-feet per year [AFY]). Between 2011 and 2015, purchased water quantities ranged from 8 AF to 155 AF. It should be noted that the connection capacity to deliver purchased water to GSWC is significantly higher than the projected purchased water supply that is expected to meet normal year demands.

GSWC entered into a 5-year purchase agreement between GSWC and CBMWD effective January 1, 2008 through December 31, 2012. The agreement was extended an additional two years to December 31, 2014. The purchase agreement established Tier 1 water purchase limits, shared by all of GSWC's systems served by CBMWD. The Tier 1 annual maximum was 90 percent of the Base Allocation of 12,691 AFY, equal to 11,422 AFY, with a total 5-year commitment of 38,073 AF. The agreement stipulated that the purchase commitment for the 5-year period was 60 percent of the Base Allocation over the 5-year period (60% X 5 years X 12,691 = 38,073 AF). Effective January 1, 2015, CBMWD entered into a new 10-year purchase agreement with Metropolitan through December 31, 2024. CBMWD did not enter into purchased water agreements with its customer agencies but instead staff proposed Tier 1 budgets for each agency establishing annual Tier 1 water purchase limits.

6.2 Groundwater

The Bell-Bell Gardens System is supplied by five active GSWC-owned wells in the Central Subbasin of the Coastal Plain of Los Angeles County Groundwater Basin. A sixth well is currently offline.

6.2.1 Basin Description

CWC 10631

(b) *If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(2) *A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

The Central Subbasin of the Coastal Plain of Los Angeles Groundwater Basin in Los Angeles County, commonly referred to as the “Central Basin”, is shown on Figure 6-1. The Bell-Bell Gardens System’s wells are located within the adjudicated Central Basin Watermaster Service Area, which overlies approximately 227 square miles in the southeastern part of the 277 square mile Central Basin. The Central Basin Watermaster Service Area is bounded by the Newport-Inglewood Uplift on the southwest, the Los Angeles-Orange County line on the southeast, and an irregular line that approximately follows Stocker Street, Martin Luther King Boulevard, Alameda Street, Olympic Boulevard, the boundary between the City of Los Angeles and unincorporated East Los Angeles, and the foot of the Merced and Puente Hills on the north. Within the Central Basin, groundwater provides a significant portion of the water supply (DWR, 2013).

The Central Basin is subdivided into four areas: The Los Angeles forebay, the Montebello forebay, the Whittier area, and the Central Basin pressure area. The Los Angeles forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Basin through the Los Angeles Narrows. The Montebello forebay extends southward from where the San Gabriel River enters the Central Basin through the Whittier Narrows. The Montebello forebay is considered the most important area of recharge in the Central Basin (DWR, 2004). Both forebay areas have unconfined groundwater conditions and aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer systems of the Central Basin (DWR, 1961). The Whittier area extends south and southwest from the Puente Hills to the axis of the Santa Fe Springs-Coyote Hills uplift. The Whittier area contains up to 1,000 feet of freshwater-bearing sediments (DWR, 2004). The Central Basin pressure area contains many aquifers of permeable sands and gravels separated by semi-permeable to low permeability sandy-clay to clay. Aquifers in the Central Basin pressure area extend approximately 2,200 feet below the surface (DWR, 1961). The aquifers in the Whittier area and Central Basin pressure area are generally confined, but areas with semi-permeable aquitards allow some interaction between aquifers (DWR, 2004).

The main freshwater-bearing aquifers are contained within the Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. The main productive aquifers within the Basin are the Gardena and Gage aquifers in the Lakewood Formation and the Silverado, Lynwood, and Sunnyside aquifers in the San Pedro Formation (DWR, 1961). The Gardena and Gage aquifers are primarily comprised of sand and gravel and have a total maximum thickness of 280 feet (DWR, 2004). Aquifers within the San Pedro Formation are comprised of coarse sand, gravel, and sandy gravel and have a combined maximum thickness of 800 feet (DWR, 2004).

Recharge occurs from percolation of precipitation, stream flow, and return flow of applied waters (e.g. irrigation), from artificial recharge activities at spreading grounds, and from injection of imported water into the Alamitos Barrier Project (a seawater intrusion barrier located in the southeastern part of the Basin). Recharge of the Basin occurs in the forebay areas due to the presence of permeable sediments. Recharge in the pressure area is precluded by overlying, less permeable silt and clay units. Purchased water from Metropolitan and recycled water from the Whittier and San Jose Treatment Plants are used for recharge in the spreading grounds in the Montebello forebay area. The total groundwater storage capacity of the Central Basin is approximately 13,800,000 acre-feet (DWR, 1961). Groundwater flow is predominantly from the foothills northeast of the Central Basin towards the ocean to the southwest.

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Legend

- Bell-Bell Gardens System
- County Boundary

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Kennedy/Jenks Consultants

Golden State Water Company
2015 Urban Water Management Plan

Groundwater Basin Map

K/J 1570027.00
July 2016

Figure 6-1

The groundwater wells in the system meet all current California Title 22 drinking water standards. However, the Bell-Bell Gardens System is impacted by VOC and manganese (Mn) contamination. The VOCs include trichloroethylene (TCE), tetrachloroethylene (PCE), and 1,2-dichloroethane (1, 2-DCA). Maximum Contaminant Levels (MCLs) for PCE and TCE are exceeded at Gage No. 2 and Watson No. 1 wells. As a result, Granular Activated Carbon (GAC) treatment plants are in use at the Watson and Gage plant sites. At Otis Well No. 3 and Watson No. 1, 1,4-dioxane has exceeded the notification level of 1 ppb. According to DDW regulations, there are no actions needed at this time for 1,4-dioxane removal.

Concentrations of Mn exceeding the Secondary MCL of 50 µg/L have been observed at Bissell No. 2. Pyrolusite filtration is applied for manganese removal, however, Bissel No. 2 is currently offline. Bissell No. 3 also has manganese levels very close to the Secondary MCL and is currently running through the treatment plant for Bissell No. 2 while it is offline. Otis Well No. 3 has manganese levels just below the Secondary MCL and may need treatment in the future.

6.2.2 Groundwater Management

CWC 10631

(b) *...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(1) *A copy of any groundwater management plan adopted by the urban water supplier... or any other specific authorization for groundwater management.*

(2) *...For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.*

In 1965, the Central Basin was adjudicated in the case *Central and West Basin Water Replenishment District vs. Charles E. Adams, et al* (Superior Court, County of Los Angeles, Case No. 786656). The Central Basin Judgment (Appendix H) limits the amount of groundwater each party can extract annually from the Basin. This limit is referred to as the "Allowed Pumping Allocation" (APA), which is a fraction of each party's water rights and is monitored by a court-appointed Watermaster. The Watermaster administers and enforces the terms of the Judgment and reports annually to the Court on significant groundwater-related events that occur in the Basin. In 2013, the Third Amended Judgment was accepted by the Court. The Third Amended Judgment modified the structure of the Watermaster from being administered by DWR to a three panel structure: an administrative body administering Watermaster accounting and reporting, a water rights panel made up of seven water right holders, and a storage panel. The amendment now allows storage in the basin by the water right holders. The Court retained jurisdiction to monitor ongoing management of the Basin, including the conjunctive use of Basin storage space, to assure the Basin will be capable of supplying sufficient water to meet local needs, including future growth and development.

The Central Basin adjudication limit for groundwater extraction across the entire basin is 217,367 AFY. GSWC maintains an APA of 16,439 AFY. GSWC's APA is shared between all of their systems that extract groundwater from the Central Basin: Norwalk, Florence-Graham, Hollydale, Willowbrook, Artesia, Bell-Bell Gardens, and portions of the Southwest System. GSWC reports total groundwater extractions (on a per-well basis) to the Watermaster.

Three agencies, LACDPW, WRDSC, and CBMWD, work with the water producers to ensure that the APA is available to the pumpers in the Central Basin. LACDPW operates and maintains

the Rio Hondo and San Gabriel spreading grounds in the Montebello forebay. LACDPW diverts and recharges storm flows from the Rio Hondo and San Gabriel Rivers, highly treated wastewater from the LACSD (Whittier and San Jose Wastewater Reclamation Plants), and purchased water from Metropolitan (including both State Water Project water and Colorado River water). LACDPW, in conjunction with Orange County Water District, operates and maintains the Alamitos Barrier Project to recharge imported water into this injection barrier, which is designed to prevent seawater intrusion into the Central Basin. WRDSC collects a replenishment assessment from all groundwater producers in the Basin to pay for water supplies to replenish the Basin. Annually, by statute, WRDSC is required to determine replenishment requirements. WRDSC pays CBMWD for imported and recycled water for recharge into the Central Basin.

Under the Sustainable Groundwater Management Act of 2014, the Central Basin is exempted from the requirements to form a Groundwater Sustainability Agency (SGMA) since it is an adjudicated basin.

6.2.3 Overdraft Conditions

CWC 10631

(b)(2) *For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.*

Prior to adjudication, groundwater supply in the Central Basin was threatened by overdraft and seawater intrusion. The overdraft has since been stopped as groundwater extraction is now limited by the Judgment.

6.2.4 Historical Groundwater Pumping

CWC 10631

(b)*...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(3) *A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

Table 6-0 lists the wells, along with the well capacity, status, and water quality assessment for the Bell-Bell Gardens System. GSWC's Bell-Bell Gardens System currently has a total active normal year well capacity of 6,950 gpm (11,220 AFY).

Table 6-0: Well Name and Capacity, and Water Quality Assessment						
Well	**Design Well Capacity (gpm)[1]**	**Design Well Capacity (AFY)**	**Status**	**Water Quality Issue/Concern**	**Existing Treatment**	**Recommendation**
Bissell No. 2[2]	0	0	Offline	Mn, sand	Pyrolusite	Solve sand issue
Bissell No. 3	2,000	3,226	Active	Mn		Mn Treatment
Clara No. 2	1,000	1,613	Active	None	None	
Gage No. 1[3]	0	0	Inactive			
Gage No. 2	1,000	1,613	Active	PCE, TCE	GAC	Continue Treatment
Otis No. 3	1,000	1,613	Active	Mn	None	Mn Treatment
Priory No. 2[3]	0	0	Inactive			
Watson No. 1	950	1,532	Active	TCE, PCE	GAC	Continue Treatment
Total Capacity	**6,950**	**11,220**				

Note:
1. Design well production capacity is provided; actual and annual average pumping capacity may vary for each well.
2. Bissell Well No. 2 – currently offline, but future plans to repair and bring back to service at a lower capacity
3. Gage Well No. 1 and Priory Well No. 2 are abandoned and scheduled to be destroyed

GSWC has historically obtained leases to augment its APA in the Central Basin, averaging 4,190 AFY from 1999 to 2015. Leases for additional groundwater in the Central Basin are renewed annually, on an as-needed basis, and after an evaluation of the economic benefits to their rate payers. The Central Basin Watermaster tracks the total unused APA from all users in the Central Basin. Since 2004, between 27,392 and 61,067 AFY of available APA has not been pumped each year. A portion of this unpumped water could be available for GSWC to lease, on an annual basis, to augment their Central Basin APA and support overall water supply reliability. Water transfers and exchanges may also be undertaken as part of conjunctive use storage programs to be developed.

Table 6-1 shows the groundwater pumping history for the Bell-Bell Gardens System from calendar years 2011 through 2015. The total groundwater pumping for the Bell-Bell Gardens System has ranged from 4,619 AFY to 5,280 AFY. Pumping amounts have generally been consistent over the last 5 years, with a decrease in 2015 likely attributable to statewide mandatory demand reduction regulations. With this exception, there were no limitations or challenges for obtaining groundwater during the last 5 years, and the available groundwater quantity was sufficient.

Table 6-1: Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Basin of Coastal Plan of Los Angeles County	4,832	5,280	5,150	4,973	4,618
	TOTAL	4,832	5,280	5,150	4,973	4,618
NOTES: Volume is in AF						

6.3 Surface Water

The Bell-Bell Gardens System purchases surface water through CBMWD, but does not self-supply surface water. Therefore this section is left blank.

6.4 Stormwater

In the Bell-Bell Gardens System service area, stormwater is managed by the City of Bell and GSWC does not have infrastructure for beneficial reuse of stormwater. Therefore, this section is left blank.

6.5 Wastewater and Recycled Water

6.5.1 Recycled Water Coordination

> ***CWC 10633***
>
> *The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.*

CBMWD, acting as the recycled water wholesaler, is the lead agency in implementing the recycled water plan and distribution network. GSWC provides data to CBMWD and Los Angeles County for use in planning a potential recycled water distribution system expansion, and identifying additional recycled water customers.

The Sanitation District of Los Angeles County (LACSD) provides a reliable supply of recycled water that meets California recycled water quality standards set forth in Title 22 of the California Code of Regulations.

6.5.2 Wastewater Collection, Treatment, and Disposal

> ***CWC 10633***
>
> ***(a)*** *(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*
>
> ***CWC 10633***
>
> ***(b)*** *(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*

Wastewater in the Bell-Bell Gardens System is collected by gravity sewers and lift stations owned by the City of Bell Gardens, and LACSD. The wastewater is transported through trunk sewers to LACSD's Los Coyotes Water Reclamation Plant (WRP) in Cerritos for treatment.

The Los Coyotes WRP provides primary, secondary, and tertiary treatment for an average dry weather flow (DWF) design capacity of 37.5 million gallons of wastewater per day (mgd). The plant serves a population of approximately 370,000 people. Of the total water treated, over 21.2 mgd of purified water is reused at more than 270 reuse sites. The uses for recycled water include irrigation of schools, golf courses, parks, nurseries and greenbelts, as well as industrial

use at local companies for carpet dying and concrete mixing. The remaining effluent (approximately 19 mgd in 2015) is discharged into the San Gabriel River (LACSD 2016).

Because the Los Coyotes WRP treats wastewater for a larger population than exists in the Bell-Bell Gardens service area, an estimated per capita wastewater generation factor was used to calculate the volume of wastewater generated by the customers in the Bell-Bell Gardens System for Table 6-2. The wastewater generation factor is based on the populations served and the average DWF for the treatment plant. The Los Coyotes WRP serves approximately 370,000 residents and treated 24.41 mgd in 2015, making the average per capita wastewater generation factor for the Los Coyotes WRP 66 gpd.

Table 6-2: Wastewater Collected Within Service Area in 2015

Wastewater Collection			Recipient of Collected Wastewater		
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?
Sanitation Districts of Los Angeles County	Estimated	4,320	Sanitation Districts of Los Angeles County	Los Coyotes Water Reclamation Plant	No
Total Wastewater Collected from Service Area in 2015:		4,320			
NOTES: Volume is in AFY					

Currently, the wastewater that is collected and treated by the Los Coyotes WRP is either recycled or discharged into the unlined portions of the San Gabriel River. The discharge point is not located within the Bell-Bell Gardens System service area, therefore Table 6-3 is left blank.

All of the effluent from Los Coyotes WRP is treated to meet Title 22 recycled water standards, however, out of the total 24.41 mgd wastewater effluent in 2015, only approximately 5.69 mgd (23 percent) was actively reused throughout the region. Approximately 126 AFY (0.10 mgd) was actively reused within the Bell-Bell Gardens System service area. While it is not considered an active recycled water use, the majority of the water that is discharged into the San Gabriel River will contribute to groundwater recharge through the river bed.

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2015

☑	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.								
						2015 volumes			
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
					Total	0	0	0	0
NOTES:									

6.5.3 Recycled Water System

> ***CWC 10633***
>
> ***(c)*** *(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*

CBMWD acquires, controls, distributes, and sells recycled water to several cities, agencies, and customers in the greater Los Angeles area. CBMWD owns and operates the recycled water distribution infrastructure in its service area. The Bell-Bell Gardens System currently receives recycled water from CBMWD as part of the district's Central Basin Recycled Water Project (CBRWP). CBRWP consists of two interconnected distribution systems (the E. Thornton Ibbetson Century Recycled Water Project and the Esteban Torres Rio Hondo Recycled Water Project). CBRWP receives reclaimed water from LACSD's Los Coyotes WRP as well as the San Jose Creek WRP, which does not supply recycled water to the Bell-Bell Gardens System. In addition to GSWC, CBRWP provides recycled water to more than 150 industrial, commercial, and landscape irrigation sites throughout southeast Los Angeles County.

CBMWD owns two existing recycled water pipelines that fall within the boundaries of the Bell-Bell Gardens System, but does not currently have plans to expand its recycled water distribution network to reach any more of GSWC's Bell-Bell Gardens customers. One of the existing recycled water lines is located in the City of Bell and runs the length of Otis Avenue (from Florence Avenue to Randolph Street) and continues on Randolph Street (from Otis Avenue to Bear Avenue). The pipeline is a main distribution line that carries recycled water to the north of the City of Bell. However, within the boundaries of GSWC's Bell-Bell Gardens System, the pipeline alignment mostly runs through residential areas, and there are currently no potential recycled water customers located immediately along this alignment. However, there are potential customers located within a one-mile radius which could be connected to the recycled water pipeline if, and when, funding to construct recycled water laterals becomes available. If CBMWD does make plans to construct recycled water laterals in this area, the additional recycled water demand will need to be updated in future UWMPs for the Bell-Bell Gardens System.

The second existing recycled water line is located in the City of Bell Gardens. The recycled water line is the terminus of a main distribution line that travels north along the border between the cities of South Gate and Downey. Within the boundaries of GSWC's Bell-Bell Gardens System, the pipeline bisects John Ford Park and runs the length of Park Lane (from Scout Avenue to Garfield Avenue). The average recycled water use from 2005 through 2015 was 138 AFY. During this time period, the maximum recycled water used was 156 AFY in 2005. The maximum (156 AFY) is categorized as the existing potential recycled water use for the Bell-Bell Gardens System, given that this demand was met 2005.

6.5.4 Potential Recycled Water Beneficial Uses

CWC 10633

(d) *(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

CWC 10633

(e) *(Describe) the projected use of recycled water within the supplier's service area at the end of 5,10,15, and 20 years and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*

6.5.4.1 Current and Planned Uses of Recycled Water

In 2015, about 126 AF of recycled water was used within the Bell-Bell Gardens System. Development of additional recycled water usage in the Bell-Bell Gardens System is the responsibility of CBMWD, the Cities of Bell and Bell Gardens, and GSWC.

CBMWD and the City of Bell Gardens are investigating options to expand the recycled water supply into the City. Central Basin plans to extend an existing 16-inch pipeline that runs through the Bell-Bell Gardens System service area to connect Suva Elementary School. CBMWD also plans to add an 8-inch pipeline along Emil Avenue from Florence Avenue to connect Bell Gardens Veterans Park. The intended recycled water customers, Suva Elementary School and Bell Gardens Veterans Park, are both outside of the GSWC Bell-Bell Gardens System service area.

Within the GSWC Bell-Bell Gardens System service area, CBMWD does not plan to expand its recycled water distribution networks at this time. However, of the six existing recycled water connections, four connections are for the City of Bell Gardens Department of Public Works. In addition to the recycled water connections, the Department of Public Works has other potable water connections that are classified as irrigation lines and are located along the recycled water pipeline alignment. There is a potential, therefore, to convert this potable water use into an additional recycled water use for the Bell-Bell Gardens System; thereby reducing the demand on potable water supplies.

Based on historical usage records, the average water use for the Public Works' potable water irrigation connections was 20 AFY; this volume is categorized as the additional potential recycled water use for the Bell-Bell Gardens System. The total potential recycled water use in the future for the Bell-Bell Gardens System would likely not occur before 2020; therefor in 2020 it is the existing potential recycled water use (212 AFY) and beginning in 2025 it is the sum of the existing potential recycled water use plus the additional potential recycled water use (20 AFY) for a total of 232 AFY, as summarized in Table 6-4.

Table 6-4: Current and Projected Retailers Provided Recycled Water Within Service Area*								
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		Sanitation Districts of Los Angeles County						
Name of Agency Operating the Recycled Water Distribution		Central Basin Municipal Water District						
Supplemental Water Added in 2015								
Source of 2015 Supplemental Water								
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
Landscape irrigation (excludes golf courses)	Existing Customers	Tertiary	126	156	176	176	176	176
		Total:	126	156	176	176	176	176
IPR - Indirect Potable Reuse								
NOTES: 1. Volume is in AFY. 2. Projected (2020-2040) recycled water use based on the existing potential recycled water demand and additional potential demand.								

Metropolitan has partnered with LACSD since 2010 to investigate the technical and regulatory constraints of indirect potable reuse (IPR) and estimate approximate costs associated with a system. In September 2015, representatives gave a presentation to Metropolitan's Board of Directors, detailing the potential to develop an IPR water supply to recharge groundwater basins similar to the Orange County Water District's Groundwater Replenishment System. For additional information on the presentation, the program and potential recycled water use see the CBMWD 2015 UWMP

6.5.4.2 Planned Versus Actual Use of Recycled Water

> ***CWC 10633***
>
> ***(e)*** *(Provide) a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*

Due partly to the economic downturn and a plateau in demand, the actual volume of recycled water delivered in the Bell-Bell Gardens System was 126 AF in 2015, which was lower than the demand projected in the 2010 UWMP (see Table 6-5).

Table 6-5: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual		
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.	
Use Type	2010 Projection for 2015	2015 actual use
Landscape irrigation (excludes golf courses)	130	126
Total	130	126
NOTES: Volume is in AF		

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

CWC 10633

(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

CWC 10633

(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

GSWC provides data to CBMWD for planning system expansion and identifying potential recycled water customers. Once identified, GSWC works with the wholesaler in explaining the benefits of using recycled water. CBMWD would then lead the way in securing a contract and implementing retro-fit installations for conversion to recycled water.

GSWC participates in the local workshops held by the wholesalers, and distributes conservation materials and literature including a discussion of recycled water and its benefits at local community events. GSWC has developed a special recycled water tariff approved by the CPUC which allows recycled water to be sold at a discount from the potable water rates.

Table 6-6 provides a summary of the actions performed by GSWC to encourage recycled water use and the resulting projected use. For the Bell-Bell Gardens System, the assumption is that the financial incentives of using recycled water account for 100 percent of the recycled water sales in the system. The CPUC encourages recycled water use and is currently conducting a proceeding to evaluate targets for recycled water use and potential penalties for not participating in the program. Additional program actions, such as this, may support increased recycled water use within the service area in the future.

Table 6-6: Methods to Expand Future Recycled Water Use

☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
6-12	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
		Total	0
NOTES:			

6.6 Desalinated Water Opportunities

CWC 10631

(h) *Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

Wholesalers providing water to the Bell-Bell Gardens System are actively pursuing seawater desalination projects. Water produced by these desalination projects would increase the total available water supply for the wholesalers and would, in-turn, improve the reliability of water supply for the Bell-Bell Gardens System. However, it is not possible at this point to quantify the amount of desalinated water that would be available for the GSWC's Bell-Bell Gardens System. The following discussion summarizes the desalination plans of water wholesalers.

Metropolitan and its member agencies view seawater desalination as a component of a diversified water supply portfolio. Recent and continuous breakthroughs in membrane technology have helped to reduce desalination costs, leading to the consideration of desalination among the alternative resource options outlined in Metropolitan's 2010 Integrated Resources Plan (IRP) Update. This updated plan describes a diversified regional strategy to include recycled water, groundwater recharge, and seawater desalination in its portfolio of methods to ensure robust water supply reliability. In 2001, Metropolitan established the Seawater Desalination Program to encourage its member agencies to develop desalination projects, and in the 2004 IRP Update established a target goal of up to 150,000 AFY of desalination capacity from its retailers by 2025. In 2014, Metropolitan included desalination projects in its Local Resources Program. This is an important component of the total estimated water supply production for the region. (Metropolitan, 2016)

Metropolitan is also involved in efforts to assess current desalination projects and to compare project features and applicability to Southern California. Furthermore, Metropolitan, in association with member agencies, is involved in assessing established and emerging desalination treatment technologies, pretreatment alternatives, and brine disposal issues, as well as the permitting and regulatory approvals associated with the delivery of desalinated seawater to regional and local distribution systems. (Metropolitan, 2016)

CBMWD is land locked without direct access to the ocean and therefore does not view desalination as a practical nor economically feasible water supply option at this time. Additionally, seawater barriers are not employed within CBMWD's service area, so recovery and desalination of brackish groundwater is not a viable potential water resource. However, CBMWD could provide financial assistance to other SWP contractors or wholesalers such as WBMWD in the construction of their seawater desalination facilities in exchange for SWP supplies.

6.7 Exchanges or Transfers

CWC 10631

(d) *Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

No specific transfer or exchange opportunities have been identified in the Bell-Bell Gardens System at this time, and there are no anticipated sales to other agencies for the Bell-Bell Gardens System.

6.7.1 Emergency Interties

The Bell-Bell Gardens System has the following emergency connections:

- The City of Huntington Park with a capacity of 750-1,000 gpm.
- Maywood Mutual Water Company No. 3 with a capacity of 750-1,000 gpm.
- The City of Bell-Bell Gardens with a capacity of 1,500 gpm.

There is also an emergency connection with Tract 180 Water Company, however, the connection only supplies Tract 180 Water Company; GSWC does not receive water from Tract 180 Water Company.

6.8 Future Water Projects

CWC 10631

(g) ...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Table 6-7: Expected Future Water Supply Projects or Programs

☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☑	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
6-14	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
NOTES:						

GSWC plans to purchase and store water in the Central Basin in accordance with the Third Amended Judgment. Implementation of storage programs may involve constructing new wells and other infrastructure improvements. In addition, GSWC will construct new wells, pipelines, and treatment systems as part of its normal operations and maintenance. Such efforts are part of GSWC's ongoing Capital Investment Program to maintain its supply and meet distribution system requirements.

A potential long-term water supply transfer opportunity that GSWC is evaluating is the Cadiz Valley Water Conservation, Recovery and Storage Project (Cadiz Project). The project is designed to capture and conserve thousands of acre-feet of native groundwater currently being lost to evaporation through an aquifer system beneath Cadiz's property in eastern San Bernardino County, California. By implementing established groundwater management practices, the project will create a new, sustainable annual water supply for project participants. In addition, the project offers storage capacity that can be used by participants to carry-over – or "bank" – annual supplies, without the high rates of evaporative loss suffered by local surface reservoirs.

The Cadiz Project will produce up to 50,000 AFY for fifty years. GSWC is one of five entities that have expressed an interest in receiving water from the project. In 2009, GSWC signed a letter of intent to purchase up to 5,000 AFY and committed to paying a share of the cost of the project's environmental evaluation. GSWC continues to evaluate the economics and technical feasibility of this project.

6.9 Summary of Existing and Planned Sources of Water

CWC 10631

(b) *Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision 10631 (a).*

(4) *(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

As described in the preceding sections, GSWC currently obtains its water supply for the Bell-Bell Gardens System from three sources: GSWC-operated groundwater wells, imported water, and recycled water. Imported water is purchased from CBMWD, which obtains its imported water supply from Metropolitan. Recycled water is also supplied by CBMWD. GSWC operates several groundwater wells within the Bell-Bell Gardens System, and has adjudicated allowed groundwater pumping allocation in the Central Basin. In addition to adjudicated groundwater pumping rights, GSWC also has the ability to lease groundwater rights when they are available. Table 6-8 summarizes the actual water supplied to GSWC for the Bell-Bell Gardens System in 2015.

Table 6-9 summarizes the planned water supplies available to GSWC for the Bell-Bell Gardens System that will meet their projected water demands during normal water year conditions. The availability of water from each source is estimated through the year 2040, in accordance with GSWC's long-term water supply planning projections and those of its wholesale suppliers. GSWC's groundwater rights and future leases within the Central Basin are shared among all GSWC's systems in the basin. Therefore, the actual pumping amounts for wells in each of their systems could vary based on GSWC's overall system management. Access to local groundwater and purchased water affords GSWC flexibility to meet demands in all systems. In addition to GSWC's APA in the Central Basin, GSWC also has the ability to annually lease groundwater rights, if needed and available. Leased groundwater quantities are determined annually for all GSWC systems that obtain groundwater from the basin. While quantifiable estimates of groundwater leases are not available for future years, projections are based on historical pumping amounts, including leased groundwater, and assume that available unpumped groundwater will continue to be available as in the past.

GSWC's water supply is projected to increase by approximately 23 percent from 2015 to 2040 to meet projected water demands which will be met by groundwater, the expected implementation of conjunctive use groundwater storage programs, and by imported water.

Table 6-8: Water Supplies — Actual

Water Supply	Additional Detail on Water Supply	2015	
May use each category multiple times.		Actual Volume	Water Quality
Purchased or Imported Water	CBMWD	13	Drinking Water
Groundwater	Central Basin of Coastal Plan of Los Angeles County	4,618	Drinking Water
Recycled Water	CBMWD	126	Recycled Water
	Total	4,757	
NOTES: Volume is in AF			

Table 6-9: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	**Projected Water Supply** *Report To the Extent Practicable*				
May use each category multiple times.		**2020**	**2025**	**2030**	**2035**	**2040** *(opt)*
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Add additional rows as needed						
Purchased or Imported Water	CBMWD	518	565	610	656	702
Groundwater	Central Basin	5,000	5,000	5,000	5,000	5,000
Recycled Water	CBMWD	156	176	176	176	176
	Total	5,674	5,741	5,786	5,832	5,878
NOTES: Volume is in AF						

For 2015, imported water made up less than 1 percent of the available supply, whereas approximately 97 percent of the supply was from GSWC groundwater pumping and 2 percent was provided by recycled water sources. In future years, the imported water supply may be as great as 20 percent or higher depending on groundwater allocations, the availability to lease additional groundwater rights, and groundwater quality considerations. Therefore, GSWC is actively pursuing the availability of a reliable, cost effective supply of imported water through the implementation of conjunctive use storage programs in the Central Basin. Storage programs could utilize water purchased from CBMWD or water purchased from other suppliers.

Reference:
KJC, 2016b

Golden State
Water Company
A Subsidiary of American States Water Company

FINAL REPORT

2015 Urban Water Management Plan
Florence-Graham

Corporate Office
630 E. Foothill Blvd.
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Kennedy/Jenks Consultants

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Chapter 3: System Description

3.1 General Description

> ***CWC Section 10631***
>
> *Describe the service area of the supplier.*

The Florence-Graham System is located in Los Angeles County and serves the unincorporated Los Angeles County areas of Florence-Graham, and a portion of the City of Huntington Park. Since 2000, the boundaries of Florence-Graham System have changed. The new service area boundary includes developed and underdeveloped land area to the north of the Florence-Graham System. Figure 3-1 illustrates the service area of the Florence-Graham System. The service area is primarily characterized by residential and commercial areas.

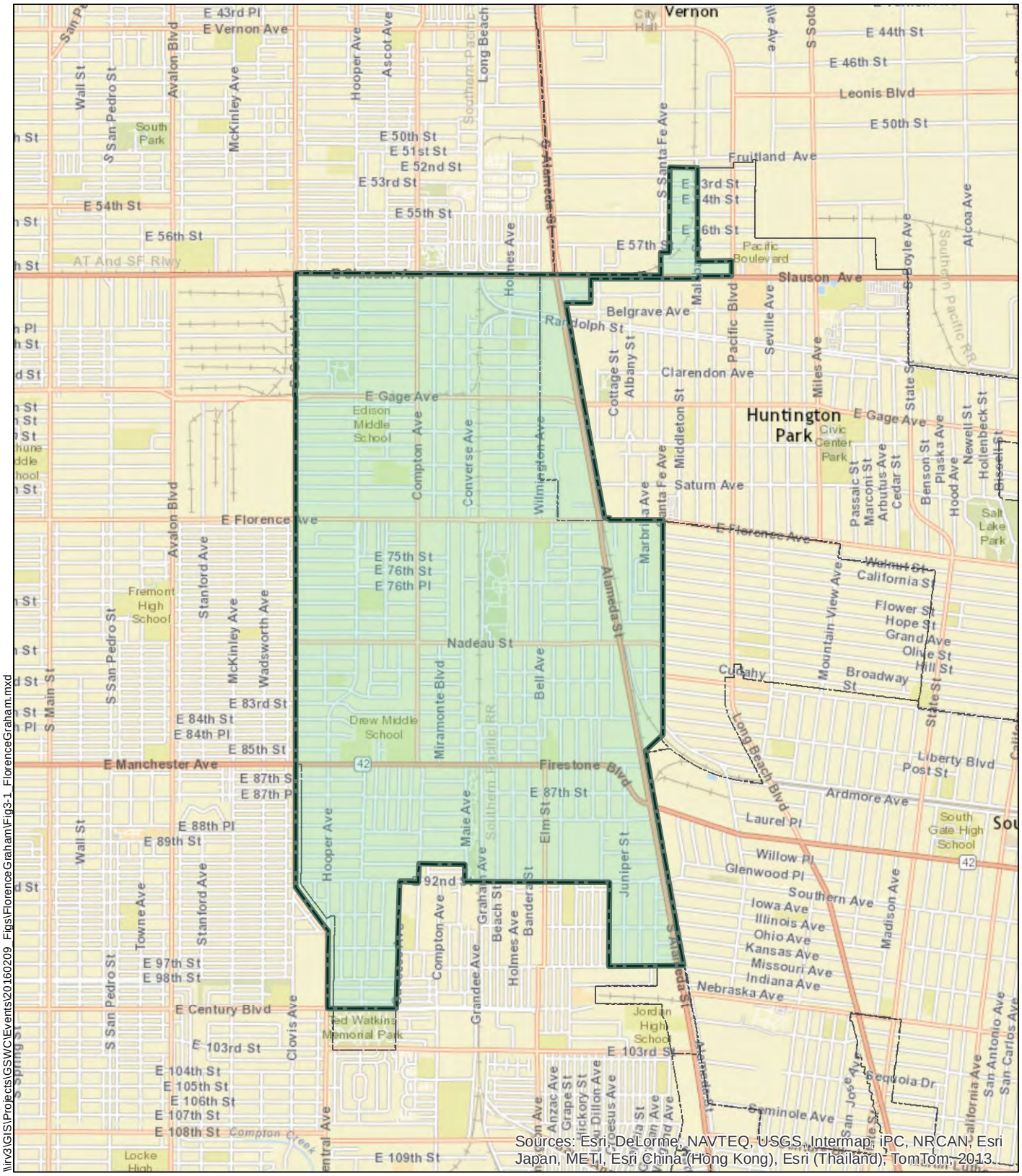
3.2 Service Area Climate

> ***CWC Section 10631***
>
> *Describe the service area of the supplier, including... climate...*

The Florence-Graham System has cool, humid winters and warm, dry summers. Western Regional Climate Center (WRCC) has maintained 30 years of historical climate records for some cities (WRCC 2016). WRCC does not have a station at Florence-Graham and therefore the Los Angeles Downtown USC Campus station, 6 miles from Florence-Graham, was utilized for the climate data analysis. The WRCC's website (www.wrcc.dri.edu) has climate records for the past 138 years for the Los Angeles Downtown USC Campus station.

In the winter, the lowest average monthly temperature is approximately 48 degrees Fahrenheit. The highest average monthly temperature reaches approximately 83 degrees Fahrenheit in the summer. The rainy season is typically from November to March. Monthly precipitation during the winter months ranges from 1 to 4 inches. Low humidity occurs in the summer months from May to October. The moderately hot and dry weather during the summer months typically results in moderately high water demand.

Similar to the WRCC in the Florence-Graham area, the California Irrigation Management Information System (CIMIS) website (http://www.cimis.water.ca.gov) tracks and maintains records of evapotranspiration (ETo) for only a few cities only (DWR 2016b). ETo statistics used for this system come from the Glendale station, which maintains 19 years of climate records. ETo is a standard measurement of environmental parameters that affect the water use of plants. ETo is given in inches per day, month, or year and is an estimate of the evapotranspiration of a large field of well-watered, cool-season grass that is 4- to 7-inches tall. Figure 3-2 presents the monthly average precipitation, ETo, maximum temperature, and minimum temperature. As the figure indicates, a greater quantity of water evaporated during July and August in correlation to high temperatures and low humidity, which may result in high water demand.



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Legend

- Florence Graham System Boundary
- City Boundary

N

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Feet

Kennedy/Jenks Consultants

Golden State Water Company
2015 Urban Water Management Plan

Florence-Graham System Service Area

K/J 1570027.00
July 2016

Figure 3-1

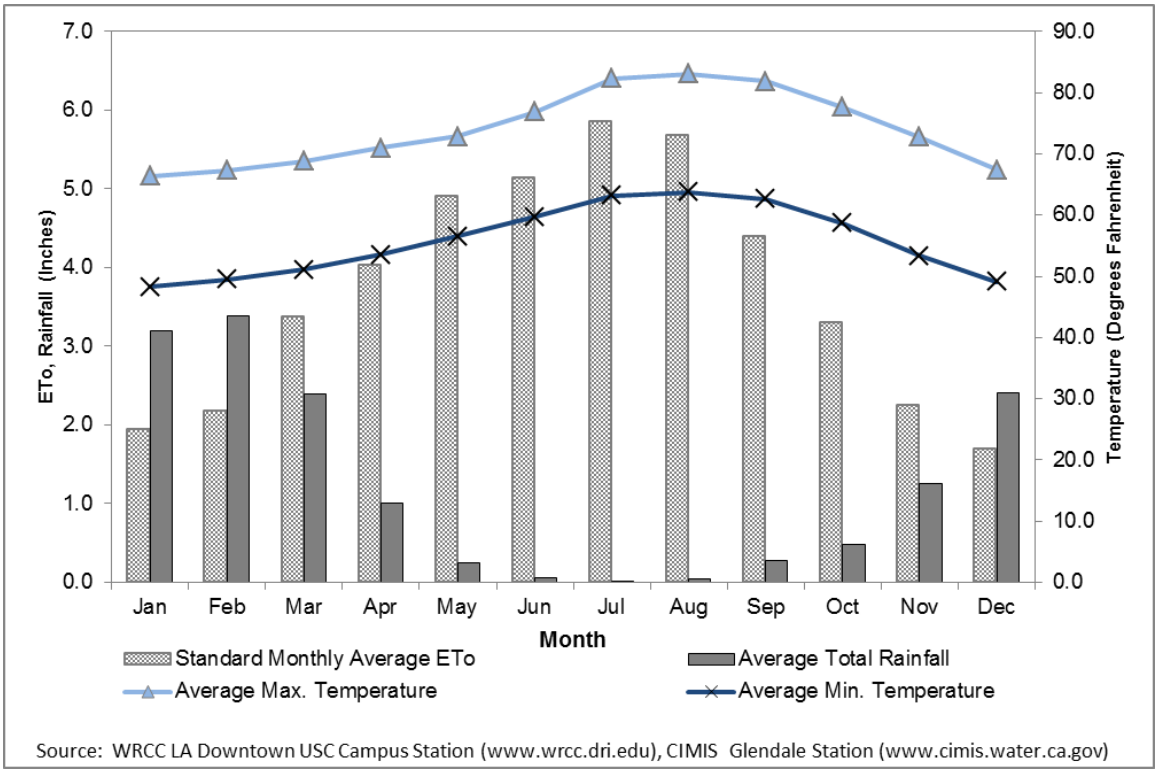

Figure 3-2: Monthly Average Climate Data in Florence-Graham System

3.3 Service Area Population and Demographics

> ***CWC Section 10631***
>
> *Describe the service area of the supplier, including current and projected population ...The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

In 2015 the estimated population of the Florence-Graham service area was 65,559, according to the DWR Population Tool and methodology described in Chapter 5. The following sections discuss population and other demographics that will influence water use.

3.3.1 SCAG Population Projection Development Methodology

Population, housing, and employment projections were developed for the Florence-Graham System using the Southern California Association of Governments (SCAG) population, housing, and employment data. SCAG updated its projections in 2012 for population, household, and employment growth through the year 2035 using 2010 U.S. Census data (SCAG 2012). SCAG's methodology is described below, followed by the derivation of population projections for the Florence-Graham System. Similar to the 2010 UWMP projections, the population projections use 2010 U.S. Census data.

The SCAG is a regional planning agency that provides demographic and economic data analysis for Imperial County, Los Angeles County, Orange County, Riverside County, San Bernardino County, and Ventura County. SCAG's Integrated Growth Forecasting process uses

a variety of estimates and projections from the federal and state governments. Sources include the U.S. Department of Labor, Internal Revenue Service (IRS), U.S. Citizenship and Immigration Services, U.S. Department of Health and Human Services, California Department of Finance (DOF), California Employment Development Department, and information received through the Intergovernmental Review process. On a regional level, the SCAG forecast uses a cohort component model to project birth and death rates based on demographic factors and estimates migration based on economic fluctuations. Projected growth of an individual jurisdiction is assumed to be proportionate to the jurisdiction's historic contribution to county growth.

A detailed explanation of the population, household and employment projection process employed by SCAG can be found in the report: "Growth Forecast", a supplemental report to the SCAG "Regional Transportation Plan, 2012-2035".

3.3.2 Historical and Projected Population

SCAG city-level projections were used to determine projected population from 2020 to 2040. The Florence-Graham System serves the unincorporated Los Angeles County areas of Florence-Graham, and portions of the Cities of Huntington Park, South Gate, and Vernon. The SCAG historic growth rate for the City of South Gate more closely matches that of the Florence-Graham System's historic population growth rate than that for the surrounding cities or unincorporated areas. Therefore, the SCAG growth rate for 2015 through 2035 for the City of South Gate was used to project the population, household, and employment of the Florence-Graham System. This methodology applies the SCAG growth rate to a consistent system boundary through 2040; therefore, it is assumed that the projected population accounts for system in-fill only and does not include geographic growth such as tariff area expansion. Table 3-1 presents the current and projected population for the Florence-Graham System.

Table 3-1: Population – Current and Projected

Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	65,559	67,487	69,389	71,345	73,355	75,423

NOTES:
1. 2015 population estimated using the DWR Online Population Tool.
2. Projected population based on SCAG population growth rate for the City of South Gate.

3.3.3 Other Demographic Factors

CWC 10631

Describe the service area of the supplier, including...other demographic factors affecting the supplier's water management planning.

The City of South Gate was chosen as demographically representative of the Florence-Graham System. According to 2010 U.S. Census Data, the median age of South Gate's residents is 29.4 years. The City of South Gate has an average household size of 4.05 and a median household income of approximately $43,526 in 2014 dollars (2010-2014 American Community Survey 5-Year Estimates).

According to SCAG data for South Gate, population is expected to increase by a total of 17 percent from 2008 to 2035, which translates to a 0.6 percent growth rate per year. The number of households is expected to grow 12 percent during the same period, which equates to an annual household growth rate of 0.4 percent. Employment is expected to grow five (5) percent during the same period, which equates to an annual employment growth rate of 0.2 percent.

Chapter 6: System Supplies

This chapter addresses the water supply sources of the Florence-Graham System of GSWC. GSWC currently obtains its water supply for the Florence-Graham System from local groundwater and imported water from the Central Basin Municipal Water District (CBMWD).

6.1 Purchased and Imported Water

CBMWD is a large purveyor of water in Southern California that provides water to several agencies including GSWC. GSWC obtains water from CBMWD for several systems, including the Florence-Graham System. CBMWD obtains its imported water supply from the Metropolitan Water District of Southern California (Metropolitan). Water imported from the CBMWD is delivered to the Florence-Graham System through the following connections:

- Metropolitan CB-5 connection with a capacity of 2,244 gpm
- Metropolitan CB-6 connection with a capacity of 5,628 gpm
- Metropolitan CB-12 connection with a capacity of 1,795 gpm

These connections have a combined active design capacity of 9,425 gpm. Between 2011 and 2015, purchased water quantities ranged from 491 AFY to 2,021 AFY. It should be noted that the connection capacity to deliver imported water to GSWC is significantly higher than the projected imported water supply that is expected to meet normal year demands.

GSWC entered into a 5-year purchase agreement between GSWC and CBMWD effective January 1, 2008 through December 31, 2012. The agreement was extended an additional two years to December 31, 2014. The purchase agreement established Tier 1 water purchase limits, shared by all of GSWC's systems served by CBMWD. The Tier 1 annual maximum was 90 percent of the Base Allocation of 12,691 AFY, equal to 11,422 AFY, with a total 5-year commitment of 38,073 AF. The agreement stipulated that the purchase commitment for the 5-year period was 60 percent of the Base Allocation over the 5-year period (60% X 5 years X 12,691 = 38,073 AF). Effective January 1, 2015, CBWMD entered into a new 10-year purchase agreement with Metropolitan, through December 31, 2024. CBMWD did not enter into purchased water agreements with its customer agencies but instead staff proposed Tier 1 budgets for each agency establishing annual Tier 1 water purchase limits.

Metropolitan and CBMWD are responsible for meeting all drinking water standards as water leaves the surface water treatment plant and at inter-connections CB No. 5, CB No. 6, and CB No. 12 with the Florence/Graham System.

6.2 Groundwater

The Florence-Graham System is supplied by seven active, GSWC-owned wells in the Central Basin of the Coastal Plain of Los Angeles Groundwater Basin.

6.2.1 Basin Description

> ***CWC 10631***
>
> ***(b)*** *If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*
>
> ***(2)*** *A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

The Central Subbasin of the Coastal Plain of Los Angeles Groundwater Basin in Los Angeles County, commonly referred to as the "Central Basin", is shown on **Figure** 6-1. The Florence-Graham System's wells are located within the adjudicated Central Basin Watermaster Service Area overlies, which overlies approximately 227 square miles in the southeastern part of the 277 square mile Central Basin. The Central Basin Watermaster Service Area is bounded by the Newport-Inglewood Uplift on the southwest, the Los Angeles-Orange County line on the southeast, and an irregular line that approximately follows Stocker Street, Martin Luther King Boulevard, Alameda Street, Olympic Boulevard, the boundary between the City of Los Angeles and unincorporated East Los Angeles, and the foot of the Merced and Puente Hills on the north. Twenty-three incorporated cities and several unincorporated areas are found within the Watermaster Service Area. Within the Central Basin, groundwater provides a significant portion of the water supply (DWR, 2013).

The Central Basin is subdivided into four areas: The Los Angeles Forebay, the Montebello Forebay, the Whittier area, and the Central Basin Pressure Area. The Los Angeles Forebay is located in the northern part of the Central Basin where the Los Angeles River enters the Basin through the Los Angeles Narrows. The Montebello Forebay extends southward from where the San Gabriel River enters the Central Basin through the Whittier Narrows. The Montebello Forebay is considered the most important area of recharge in the Central Basin (DWR, 2004). Both forebay areas have unconfined groundwater conditions and aquifers that extend up to 1,600 feet deep to provide recharge to the aquifer systems of the Central Basin (DWR, 1961). The Whittier area extends south and southwest from the Puente Hills to the axis of the Santa Fe Springs-Coyote Hills uplift. The Whittier area contains up to 1,000 feet of freshwater-bearing sediments (DWR, 2004). The Central Basin pressure area contains many aquifers of permeable sands and gravels separated by semi-permeable to low permeability sandy-clay to clay. Those aquifers in the Central Basin pressure area extend approximately 2,200 feet below the surface (DWR, 1961). Those aquifers in the Whittier area and Central Basin pressure area are generally confined, but areas with semi-permeable aquitards allow some interaction between aquifers (DWR, 2004).

The main freshwater-bearing aquifers are contained within the Holocene alluvium and the Pleistocene Lakewood and San Pedro Formations. The main productive aquifers within the Basin are the Gardena and Gage aquifers in the Lakewood Formation and the Silverado, Lynwood, and Sunnyside aquifers in the San Pedro Formation (DWR, 1961). The Gardena and Gage aquifers are primarily comprised of sand and gravel and have a total maximum thickness of 280 feet (DWR, 2004). Aquifers within the San Pedro Formation are comprised of coarse sand, gravel, and sandy gravel and have a combined maximum thickness of 800 feet (DWR, 2004).

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Legend

- Florence Graham System
- County Boundary

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Miles

Kennedy/Jenks Consultants

Golden State Water Company
2015 Urban Water Management Plan

Groundwater Basin Map

K/J 1570027.00
July 2016

Figure 6-1

Recharge occurs from percolation of precipitation, stream flow, and return flow of applied waters (e.g. irrigation), from artificial recharge activities at spreading grounds, and injection of imported water into the Alamitos Barrier Project (a seawater intrusion barrier located in the southeastern part of the Basin). Recharge of the Basin occurs in the forebay areas due to the presence of permeable sediments, whereas the pressure area is overlain by less permeable silt and clay units that preclude significant recharge in these areas. Purchased water from Metropolitan and recycled water from the Whittier and San Jose Treatment Plants are used for recharge in the spreading grounds in the Montebello Forebay area. The total groundwater storage capacity of the Central Basin is approximately 13,800,000 AF (DWR, 1961). Groundwater flow is predominantly from the foothills northeast of the Central Basin towards the ocean to the southwest.

The groundwater wells in the system meet all current California Title 22 drinking water standards. However, the Florence-Graham System is impacted by VOC contamination. The Florence-Graham System has detections of carbon tetrachloride (CTC), 1,2-dichloroethane (1,2-DCA), tetrachloroethylene (PCE), trichloroethylene (TCE), and perchlorate in excess of the maximum contaminant levels (MCLs). GAC treatment is employed at Converse No. 1, Miramonte Nos. 1, 2 and 3, Nadeau No. 3, and Goodyear No. 4 to address VOC contamination. Ion exchange treatment is employed at Goodyear Well No. 4 and water from Converse Well No. 2 is blended to address perchlorate contamination.

6.2.2 Groundwater Management

CWC 10631

(b) *...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(1) *A copy of any groundwater management plan adopted by the urban water supplier... or any other specific authorization for groundwater management.*

(2) *...For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.*

In 1965, the Central Basin was adjudicated in the case *Central and West Basin Water Replenishment District vs. Charles E. Adams, et al* (Superior Court, County of Los Angeles, Case No. 786656). The Central Basin Judgment (Appendix H) limits the amount of groundwater each party can extract annually from the Basin. This limit is referred to as the "Allowed Pumping Allocation" or APA, which is a fraction of each party's water rights, and is monitored by a court-appointed Watermaster. The Watermaster administers and enforces the terms of the Judgment and reports annually to the Court on significant groundwater-related events that occur in the Basin. In 2013, the Third Amended Judgment was accepted by the Court. The Third Amended Judgment modified the structure of the Watermaster from being administered by DWR to a three panel structure: an administrative body administering Watermaster accounting and reporting, a water rights panel made up of seven water right holders, and a storage panel. The amendment now allows storage in the basin by the water right holders. The Court also retained jurisdiction to monitor ongoing management of the Basin, including the conjunctive use of Basin storage space, to assure the Basin will be capable of supplying sufficient water to meet local needs, including future growth and development.

The Central Basin adjudication limit (total of the allowed pumping allocations of each party) for groundwater extraction across the entire basin is 217,367 AFY. GSWC maintains an APA of

16,439 AFY. GSWC's APA is shared between all of their systems that extract groundwater from the Central Basin: Norwalk, Florence-Graham, Hollydale, Willowbrook, Artesia, Bell/Bell Gardens, and portions of the Southwest System. GSWC reports total groundwater extractions (on a per-well basis) to the Watermaster.

Three agencies, LACDPW, WRDSC, and CBMWD, work with the water producers to ensure that the APA is available to the pumpers in the Central Basin. These agencies include the Los Angeles County Department of Public Works (LACDPW), the Water Replenishment District of Southern California (WRDSC), and CBMWD. LACDPW operates and maintains the Rio Hondo and San Gabriel spreading grounds in the Montebello Forebay. LACDPW diverts and recharges storm flows from the Rio Hondo and San Gabriel Rivers, highly treated wastewater from the Sanitation Districts of Los Angeles County (Whittier and San Jose Wastewater Reclamation Plants), and water from Metropolitan (including both State Water Project water and Colorado River water). LACDPW, in conjunction with Orange County Water District, operates and maintains the Alamitos Barrier Project to recharge imported water into this injection barrier, which is designed to prevent seawater intrusion into the Central Basin. WRDSC collects a replenishment assessment from all groundwater producers in the Basin to pay for water supplies to replenish the Basin. Annually, by statute, WRDSC is required to determine replenishment requirements. WRDSC pays CBMWD for imported and recycled water for recharge into the Central Basin.

Under the Sustainable Groundwater Management Act of 2014, the Central Basin is exempted from the requirements to form a Groundwater Sustainability Agency (SGMA) since it is an adjudicated basin.

6.2.3 Overdraft Conditions

CWC 10631

(b)(2) *For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.*

Prior to adjudication, groundwater supply in the Central Basin was threatened by overdraft and seawater intrusion. The overdraft has since been stopped as groundwater extraction is now limited by the Judgment.

6.2.4 Historical Groundwater Pumping

CWC 10631

(b)*...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

(3) *A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

Table 6-0 lists the wells, along with the well capacity, status, and water quality assessment for the Florence-Graham System. GSWC's Florence-Graham System currently has a total active normal year well capacity of 4,600 gpm (7,424 AFY).

Table 6-0: Well Name and Capacity, and Water Quality Assessment

Well	Design Well Capacity (gpm)[1]	Design Well Capacity (AFY)	Status	Water Quality Issue/Concern	Existing Treatment	Recommendation
Converse No. 1	450	726	Active	TCE, CTC, PCE, 1,2-DCA, Perchlorate	GAC, blending	Continue Treatment
Converse No. 2	550	887	Active	None	None	Continue to Monitor
Goodyear No. 4	850	1,372	Active	TCE, Perchlorate	GAC, Ion Exchange	Continue Treatment
Miramonte No. 1	650	1,049	Active	TCE, CTC	GAC	Continue Treatment
Miramonte No. 2	800	1,290	Active	CTC, TCE	GAC	Continue Treatment
Miramonte No. 3	800	1,290	Active	TCE	GAC	Continue Treatment
Nadeau No. 3	500	807	Active	TCE	by-passed	Continue to Monitor
Total Capacity	**4,600**	**7,424**				

Note:
1. Design production capacity is provided; actual and annual average pumping capacity may vary for each well.

GSWC has historically obtained leases to augment its APA in the Central Basin, averaging 4,294 AFY over the last ten years. Since 1991, GSWC has leased up to 7,366 AFY to augment their Central Basin APA. Leases for additional groundwater in the Central Basin are renewed annually, on an as-needed basis, and after an evaluation of the economic benefits to their rate payers. Since 2004, between 27,392 and 61,067 AFY of available APA has not been pumped each year. A portion of this unpumped water could be available for GSWC to lease, on an annual basis, to augment their Central Basin APA and support overall water supply reliability. Water transfers and exchanges may also be undertaken as part of conjunctive use storage programs to be developed.

Table 6-1 shows the groundwater pumping history for the Florence-Graham System from calendar years 2011 through 2015. The total groundwater pumping for the Florence-Graham System between 2010 and 2015 has ranged from 3,099 to 4,560 AFY. Pumping amounts have generally been consistent over the last 5 years. There were no limitations or challenges for obtaining groundwater during the last 5 years, and the available groundwater quantity was sufficient.

Table 6-1: Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Subbasin of the Coastal Plain of Los Angeles Groundwater Basin	3,099	3,390	3,616	4,560	3,877
	TOTAL	3,099	3,390	3,616	4,560	3,877
NOTES: Volume is in AF.						

6.3 Surface Water

The Florence-Graham System purchases surface water through CBMWD as described in Section 6.1, but does not self-supply surface water. Therefore, this section is left blank.

6.4 Stormwater

In the Florence-Graham System service area, stormwater is managed by the City of Huntington Park and GSWC does not have infrastructure for beneficial reuse of stormwater. Therefore, this section is left blank.

6.5 Wastewater and Recycled Water

6.5.1 Recycled Water Coordination

> ***CWC 10633***
>
> *The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.*

CBMWD, acting as the recycled water wholesaler, would lead the way in implementing the recycled water plan and distribution network. GSWC provides data to CBMWD and Los Angeles County for use in planning a potential recycled water distribution system expansion, and identifying additional recycled water customers.

The Sanitation District of Los Angeles County (LACSD) provides a reliable supply of recycled water that meets California recycled water quality standards set forth in Title 22 of the California Code of Regulations.

6.5.2 Wastewater Collection, Treatment, and Disposal

CWC 10633

(a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

CWC 10633

(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Wastewater in the Florence-Graham System is collected by gravity sewers and lift stations owned by Los Angeles County Sanitation District. The wastewater is transported through trunk sewers to LACSD's Los Coyotes Water Reclamation Plant (WRP) in Cerritos.

The Los Coyotes WRP provides primary, secondary, and tertiary treatment for an average dry weather flow (DWF) design capacity of 37.5 million gallons of wastewater per day (mgd). The plant serves a population of approximately 370,000 people. Of the total water treated, over 21.5 mgd of purified water is reused at more than 270 reuse sites. The uses for recycled water include irrigation of schools, golf courses, parks, nurseries and greenbelts, as well as industrial use at local companies for carpet dying and concrete mixing. The remaining effluent (approximately 19 mgd in 2015) is discharged into the San Gabriel River (LACSD 2016).

Because the Los Coyotes WRP treats wastewater for a larger population than exists in the Florence-Graham System, an estimated per capita wastewater generation factor was used to calculate the volume of wastewater generated by the customers in the Florence-Graham System for Table 6-2. The wastewater generation factor is based on the population served and the average DWF for the treatment plant. The Los Coyotes WRP serves approximately 370,000 residents and treated 24.41 mgd in 2015, making the average per capita wastewater generation factor for the Los Coyotes WRP 66 gpd.

Table 6-2: Wastewater Collected Within Service Area in 2015

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected in 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
Los Angeles County Sanitation District	Estimated	7,443	Los Angeles County Sanitation District	Los Coyotes Water Reclamation Plant	No	
Total Wastewater Collected from Service Area in 2015:		7,443				

NOTES: Volume is in AFY.

Currently, the wastewater that is collected and treated by the Los Coyotes WRP is either recycled, or discharged into the unlined portions of the San Gabriel River. The discharge point is not located within the Florence-Graham System service area; therefore, Table 6-3 is left blank.

All of the effluent from Los Coyotes WRP is treated to meet Title 22 recycled water standards, however, out of the total 24.41 mgd wastewater effluent in 2015, only approximately 5.69 mgd (23 percent) was actively reused throughout the region. None of the recycled water was used in the Florence-Graham service area, according to correspondence from LACSD. While it is not

considered an active recycled water use, the majority of the water that is discharged into the San Gabriel River will contribute to groundwater recharge through the river bed.

Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2015

☑	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
							2015 volumes			
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
						Total	0	0	0	0
NOTES:										

6.5.3 Recycled Water System

> ***CWC 10633***
>
> ***(c)*** *(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*

CBMWD acquires, controls, distributes, and sells recycled water to several cities, agencies, and customers in the greater Los Angeles area. CBMWD owns and operates the recycled water distribution infrastructure in its service area. However, recycled water is not currently used or planned to be used in the Florence-Graham System, so this section is intentionally left blank.

6.5.4 Potential Recycled Water Beneficial Uses

> ***CWC 10633***
>
> ***(d)*** *(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
>
> ***CWC 10633***
>
> ***(e)*** *(Describe) the projected use of recycled water within the supplier's service area at the end of 5,10,15, and 20 years and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*

Metropolitan has partnered with LACSD since 2010 to investigate the technical and regulatory constraints of indirect potable reuse (IPR) and estimate approximate costs associated with a system. In September 2015, representatives gave a presentation to Metropolitan's Board of Directors, detailing the potential to develop an IPR water supply to recharge groundwater basins similar to the Orange County Water District's Groundwater Replenishment System. For additional information on the presentation, the program and potential recycled water use see the CBMWD 2015 UWMP.

Table 6-4: Current and Projected Retailers Provided Recycled Water Within Service Area*								
☑	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:								
Name of Agency Operating the Recycled Water Distribution System:								
Supplemental Water Added in 2015								
Source of 2015 Supplemental Water								
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
		Total:	0	0	0	0	0	0
IPR - Indirect Potable Reuse								
NOTES:								

Table 6-5: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual		
☑	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.	
Use Type	2010 Projection for 2015	2015 actual use
Total	0	0
NOTES:		

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

> ***CWC 10633***
>
> ***(f)*** *(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*
>
> ***CWC 10633***
>
> ***(g)*** *(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

CBMWD is responsible for determining the technical and economic feasibility of supplying recycled water to the Florence-Graham System. Since there are currently no plans to provide recycled water directly to the Florence-Graham System, there are no actions in place at this time by which GSWC is able to encourage the use of recycled water in the Florence-Graham System. Therefore, Table 6-6 is not applicable for this system and has been intentionally left blank.

Indirect water reuse through groundwater recharge benefits all groundwater users and does not necessitate incentives for customers. Groundwater recharge increases the available potable water supply, keeping the cost of water to consumers lower by decreasing the need to import water or develop new water supply sources.

Table 6-6: Methods to Expand Future Recycled Water Use			
☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
6-10	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
		Total	0
NOTES:			

6.6 Desalinated Water Opportunities

> ***CWC 10631***
>
> ***(h)*** *Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

Wholesalers providing water to the Florence-Graham System are actively pursuing seawater desalination projects. Water produced by these desalination projects would increase the total available water supply for the wholesalers and would, in-turn, improve the reliability of water supply for the Florence-Graham System. However, it is not possible at this point to quantify the amount of desalinated water that would be available for the GSWC's Florence-Graham System. The following discussion summarizes the desalination plans of water wholesalers.

Metropolitan and its member agencies view seawater desalination as a future component of a diversified water supply portfolio. Recent and continuous breakthroughs in membrane technology have helped to reduce desalination costs, warranting the consideration of desalination among alternative resource options outlined in Metropolitan's 2010 Integrated Resources Plan (IRP) Update. This updated plan describes a diversified regional strategy to include recycled water, groundwater recharge, and seawater desalination in its portfolio of methods to ensure robust water supply reliability. In 2001, Metropolitan established the Seawater Desalination Program to encourage its member agencies to develop desalination projects, and in the 2004 IRP Update established a target goal of up to 150,000 AFY of seawater desalination by 2025. In 2014, Metropolitan included desalination projects in its Local Resources Program. This is an important component of the total estimated water supply production for the region. (Metropolitan, 2016)

Metropolitan is also involved in efforts to assess current desalination projects and to compare project features and applicability to Southern California. Furthermore, Metropolitan, in association with member agencies, is involved in assessing established and emerging desalination treatment technologies, pretreatment alternatives, and brine disposal issues, as well as the permitting and regulatory approvals associated with the delivery of desalinated seawater to regional and local distribution systems. (Metropolitan, 2016)

CBMWD is land locked without direct access to the ocean and therefore does not view desalination as a practical nor economically feasible water supply option at this time. Additionally, seawater barriers are not employed within CBMWD's service area, so recovery and

desalination of brackish groundwater is not a viable potential water resource. However, CBMWD could provide financial assistance to other SWP contractors or wholesalers such as WBMWD in the construction of their seawater desalination facilities in exchange for SWP supplies.

6.7 Exchanges or Transfers

> ***CWC 10631***
>
> ***(d)*** *Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

No specific transfer or exchange opportunities have been identified in the Florence-Graham System at this time, and there are no anticipated sales to other agencies.

6.7.1 Emergency Interties

The system has an emergency connection with the City of Huntington Park, with a capacity of 2,560 gpm.

6.8 Future Water Projects

> ***CWC 10631***
>
> ***(g)*** *...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

Table 6-7: Expected Future Water Supply Projects or Programs

☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☑	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
6-12	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
NOTES:						

GSWC plans to purchase and store water in the Central Basin in accordance with the Third Amended Judgment. Implementation of storage programs may involve constructing new wells and other infrastructure improvements. In addition, GSWC will construct new wells, pipelines, and treatment systems as part of its normal operations and maintenance. Such efforts are part

of GSWC's ongoing Capital Investment Program to maintain its supply and meet distribution system requirements.

A potential long-term water supply transfer opportunity that GSWC is evaluating is the Cadiz Valley Water Conservation, Recovery and Storage Project (Cadiz Project). The project is designed to capture and conserve thousands of acre-feet of native groundwater currently being lost to evaporation through an aquifer system beneath Cadiz's property in eastern San Bernardino County, California. By implementing established groundwater management practices, the project will create a new, sustainable annual water supply for project participants. In addition, the project offers storage capacity that can be used by participants to carry-over – or "bank" – annual supplies, without the high rates of evaporative loss suffered by local surface reservoirs.

The Cadiz Project will produce up to 50,000 AFY for fifty years. GSWC is one of five entities that have expressed an interest in receiving water from the project. In 2009, GSWC signed a letter of intent to purchase up to 5,000 AFY and committed to paying a share of the cost of the project's environmental evaluation. GSWC continues to evaluate the economics and technical feasibility of this project.

6.9 Summary of Existing and Planned Sources of Water

CWC 10631

(b) *Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision 10631 (a).*

(4) *(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

As described in the preceding sections, GSWC currently obtains its water supply for the Florence-Graham System from two primary sources: imported water and GSWC-operated groundwater wells. Imported water is purchased from CBMWD, which obtains its imported water supply from Metropolitan. GSWC operates several groundwater wells within the Florence-Graham System, and has adjudicated allowed groundwater pumping allocation in the Central Basin. In addition to adjudicated groundwater pumping rights, GSWC also has the ability to lease groundwater rights when they are available. Table 6-8 summarizes the actual water supplied to GSWC for the Florence-Graham System in 2015.

Table 6-8: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
May use each category multiple times		Actual Volume	Water Quality	Total Right or Safe Yield *(optional)*
Purchased or Imported Water	Central Basin Municipal Water District	827	Drinking Water	
Groundwater	Central Subbasin of the Coastal Plain of Los Angeles Groundwater Basin	3,877	Drinking Water	
	Total	4,704		0
NOTES: Volume is in AF.				

Table 6-9 summarizes the planned water supplies available to GSWC for the Florence-Graham System that will meet their projected water demands during normal water year conditions. The availability of water from each source is estimated through the year 2040, in accordance with GSWC's long-term water supply planning projections and those of its wholesale suppliers. GSWC's groundwater rights and future leases within the Central Basin are shared among all GSWC systems in the basin; therefore, the actual pumping amounts for wells in each of their systems could vary based on GSWC's overall system management. Access to local groundwater and imported water affords GSWC flexibility to meet demands in all of its systems. In addition to GSWC's APA in the Central Basin, GSWC also has the ability to annually lease groundwater rights, if needed and available. Leased groundwater quantities are determined annually for all GSWC systems that obtain groundwater from the basin. While quantifiable estimates of groundwater leases are not available for future years, projections are based on historical pumping amounts, including leased groundwater, and assume that available unpumped groundwater will continue to be available as in the past.

GSWC's water supply is projected to increase by about 27 percent from 2015 to 2040 to meet projected water demands, which will be met by groundwater, the expected implementation of conjunctive use groundwater storage programs, and by imported water. There is no recycled water supply planned for this system.

Table 6-9: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	**Projected Water Supply** *Report To the Extent Practicable*				
May use each category multiple times.		**2020**	**2025**	**2030**	**2035**	**2040** *(opt)*
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Purchased or Imported Water	Central Basin Municipal Water District	1,603	1,699	1,797	1,896	1,997
Groundwater	Central Subbasin of the Coastal Plain of Los Angeles Groundwater Basin	4,000	4,000	4,000	4,000	4,000
	Total	5,603	5,699	5,797	5,896	5,997
NOTES: Volume is in AFY.						

Reference:
LACA, 2017

Parcel Details

- Property records are kept at the South District Office
- How frequently is this site updated? (and other FAQs)

Property Information

Assessor's ID No:	6224-032-011
Address:	5042 CECELIA ST SOUTH GATE CA 90280
Property Type:	Commercial / Industrial
Region / Cluster:	26 / 26619
Tax Rate Area (TRA):	00668

- View Assessor Map
- View Index map

Recent Sales Information

Latest Sale Date:	10/23/2015
Indicated Sale Price:	$960,009

Search for Recent Sales

2016 Roll Values

Recording Date:	10/23/2015
Land:	$840,000
Improvements:	$120,000
Personal Property:	$0
Fixtures:	$0
Homeowners' Exemption:	$0
Real Estate Exemption:	$0
Personal Property Exemption:	$0
Fixture Exemptions:	$0

- 2016 Annual taxes
- Property tax payment FAQs
- Estimate supplemental taxes

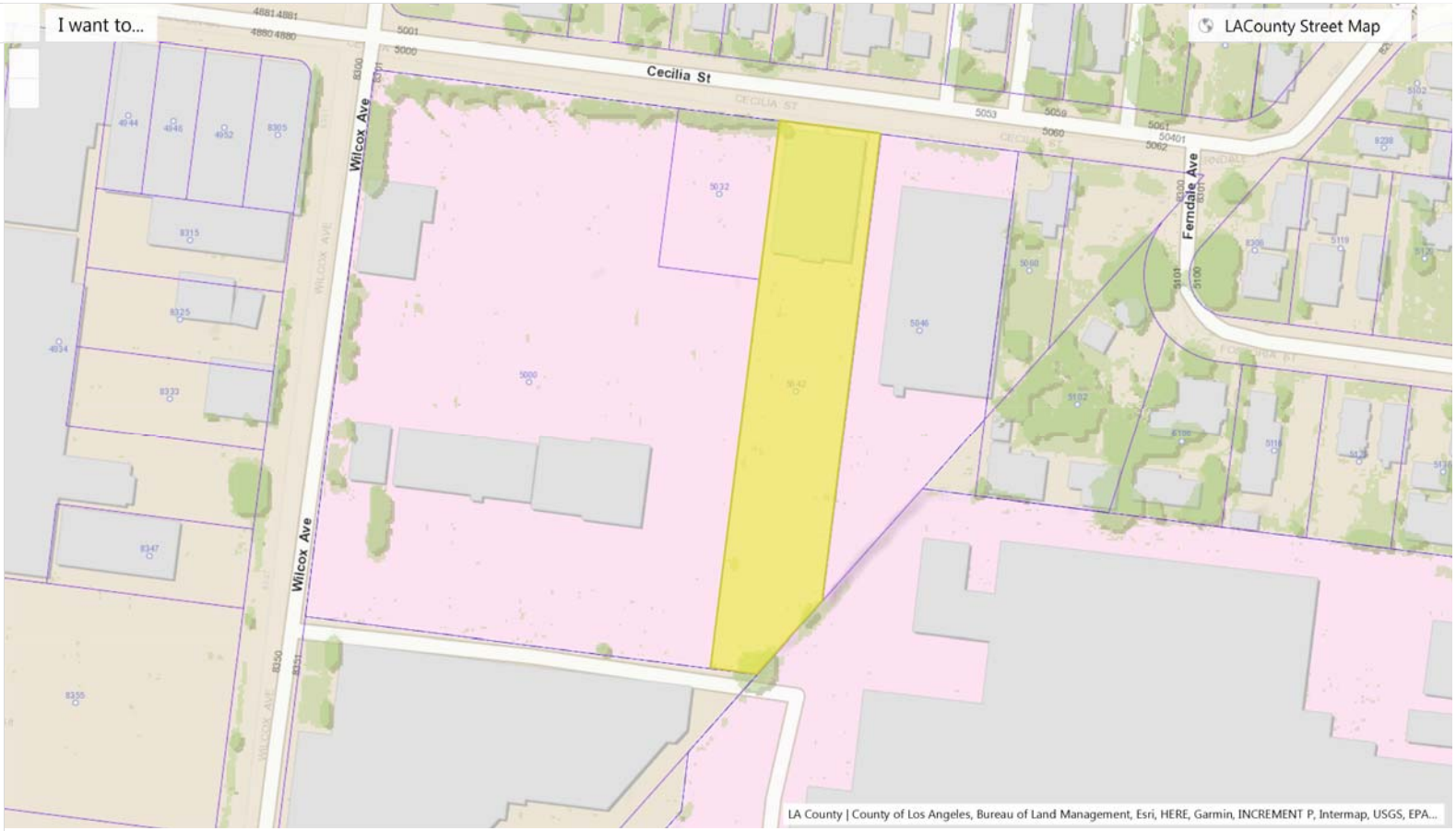
Property Boundary Description

TRACT # 180 LOT 460

Building Description

Building Improvement 1

Square Footage:	7,700
Year Build / Effective Year Built:	1966 / 1966
Bedrooms / Bathrooms	0 / 0
Units	0



0 50 100ft

Parcel Details

- Property records are kept at the South District Office
- How frequently is this site updated? (and other FAQs)

Property Information

Assessor's ID No:	6224-032-017
Address:	5032 CECELIA ST BELL CA 90201
Property Type:	Vacant Land
Region / Cluster:	26 / 26820
Tax Rate Area (TRA):	00668

- View Assessor Map
- View Index map

Recent Sales Information

Latest Sale Date:

Indicated Sale Price:

Search for Recent Sales

2016 Roll Values

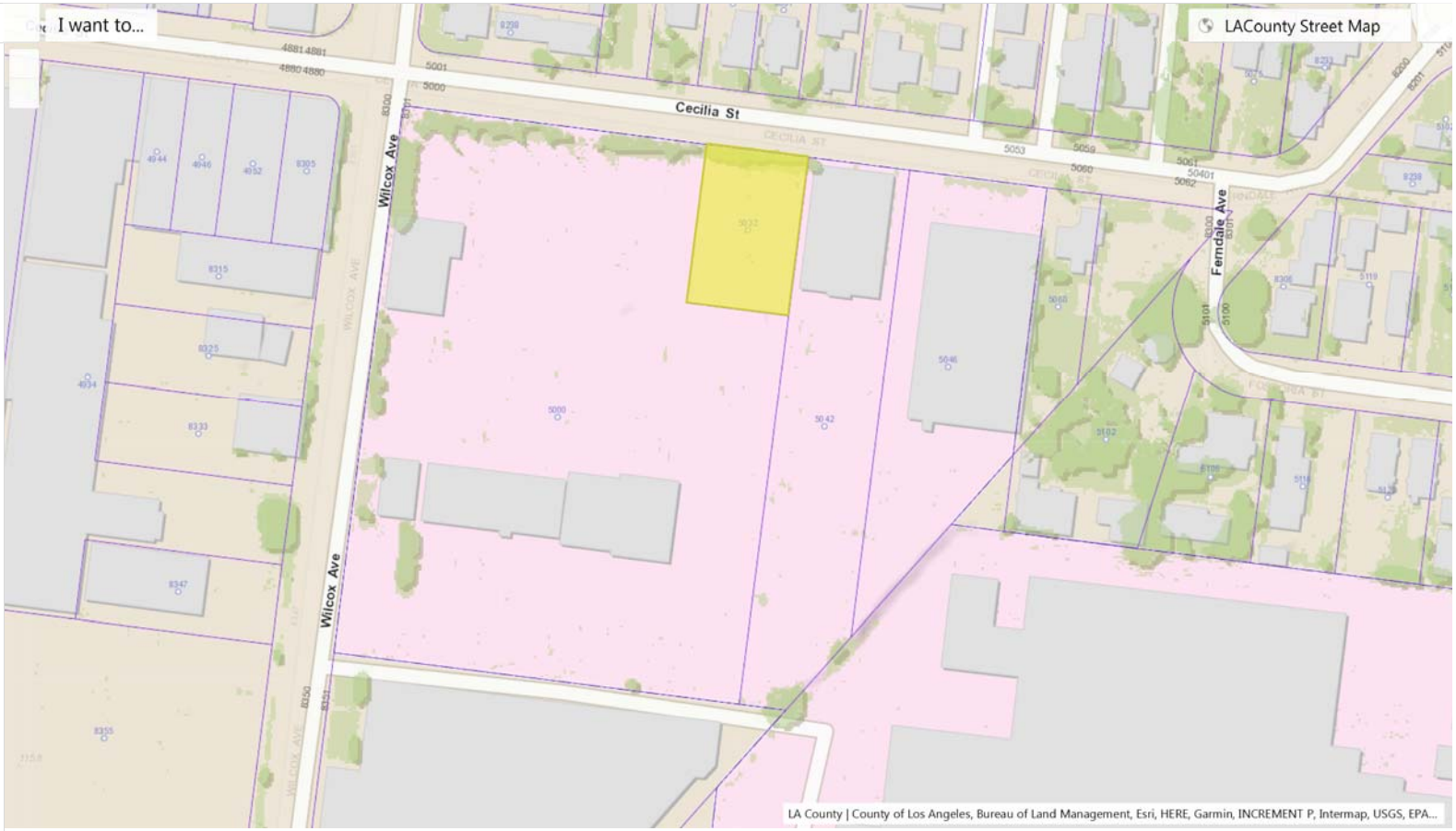
Recording Date:	02/04/1999
Land:	$204,599
Improvements:	$0
Personal Property:	$0
Fixtures:	$0
Homeowners' Exemption:	$0
Real Estate Exemption:	$0
Personal Property Exemption:	$0
Fixture Exemptions:	$0

- 2016 Annual taxes
- Property tax payment FAQs
- Estimate supplemental taxes

Property Boundary Description

*TR=PARCEL MAP AS PER BK 147 P 48-49 OF P M LOT 1

Building Description



0 50 100ft

Parcel Details

- Property records are kept at the South District Office
- How frequently is this site updated? (and other FAQs)

Property Information

Assessor's ID No:	6224-032-018
Address:	5000 CECELIA ST BELL CA 90201
Property Type:	Commercial / Industrial
Region / Cluster:	26 / 26619
Tax Rate Area (TRA):	00668

- View Assessor Map
- View Index map

Recent Sales Information

Latest Sale Date:

Indicated Sale Price:

Search for Recent Sales

2016 Roll Values

Recording Date:	08/28/1998
Land:	$1,170,694
Improvements:	$217,178
Personal Property:	$0
Fixtures:	$0
Homeowners' Exemption:	$0
Real Estate Exemption:	$0
Personal Property Exemption:	$0
Fixture Exemptions:	$0

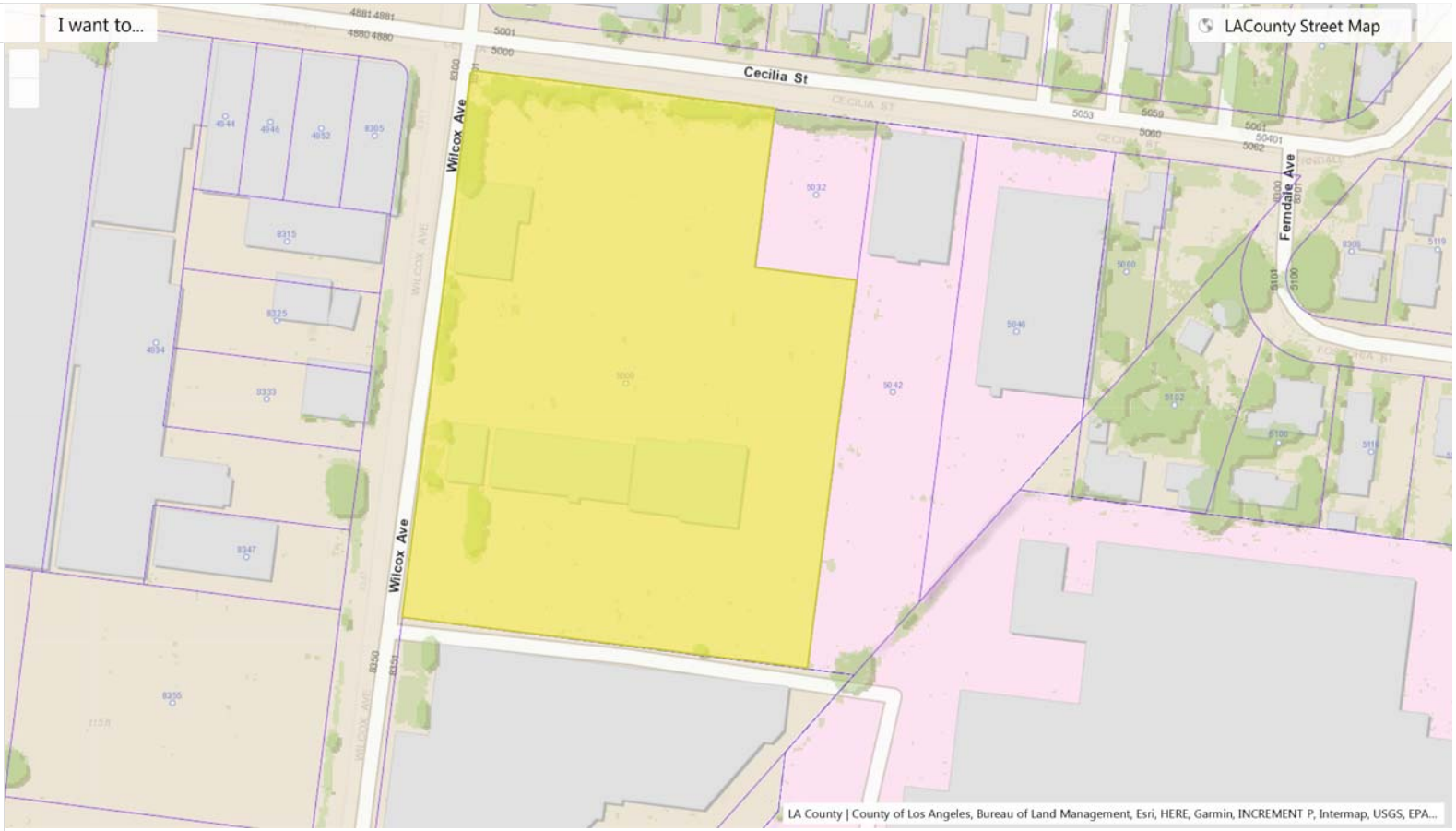
- 2016 Annual taxes
- Property tax payment FAQs
- Estimate supplemental taxes

Property Boundary Description

*TR=PARCEL MAP AS PER BK 147 P 48-49 OF P M LOT 2

Building Description

Building Improvement 1	
Square Footage:	6,100
Year Build / Effective Year Built:	1955 / 1955
Bedrooms / Bathrooms	0 / 0
Units	0
Building Improvement 2	
Square Footage:	90,000
Year Build / Effective Year Built:	1967 / 1970
Bedrooms / Bathrooms	0 / 0
Units	0
Building Improvement 3	
Square Footage:	4,300
Year Build / Effective Year Built:	1958 / 1958
Bedrooms / Bathrooms	0 / 0
Units	0
Building Improvement 4	
Square Footage:	1,250
Year Build / Effective Year Built:	1955 / 1955
Bedrooms / Bathrooms	0 / 0
Units	0



6224	32
SCALE 1" = 80'	

8202111203

REVISED
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1-6-61
9-29-61
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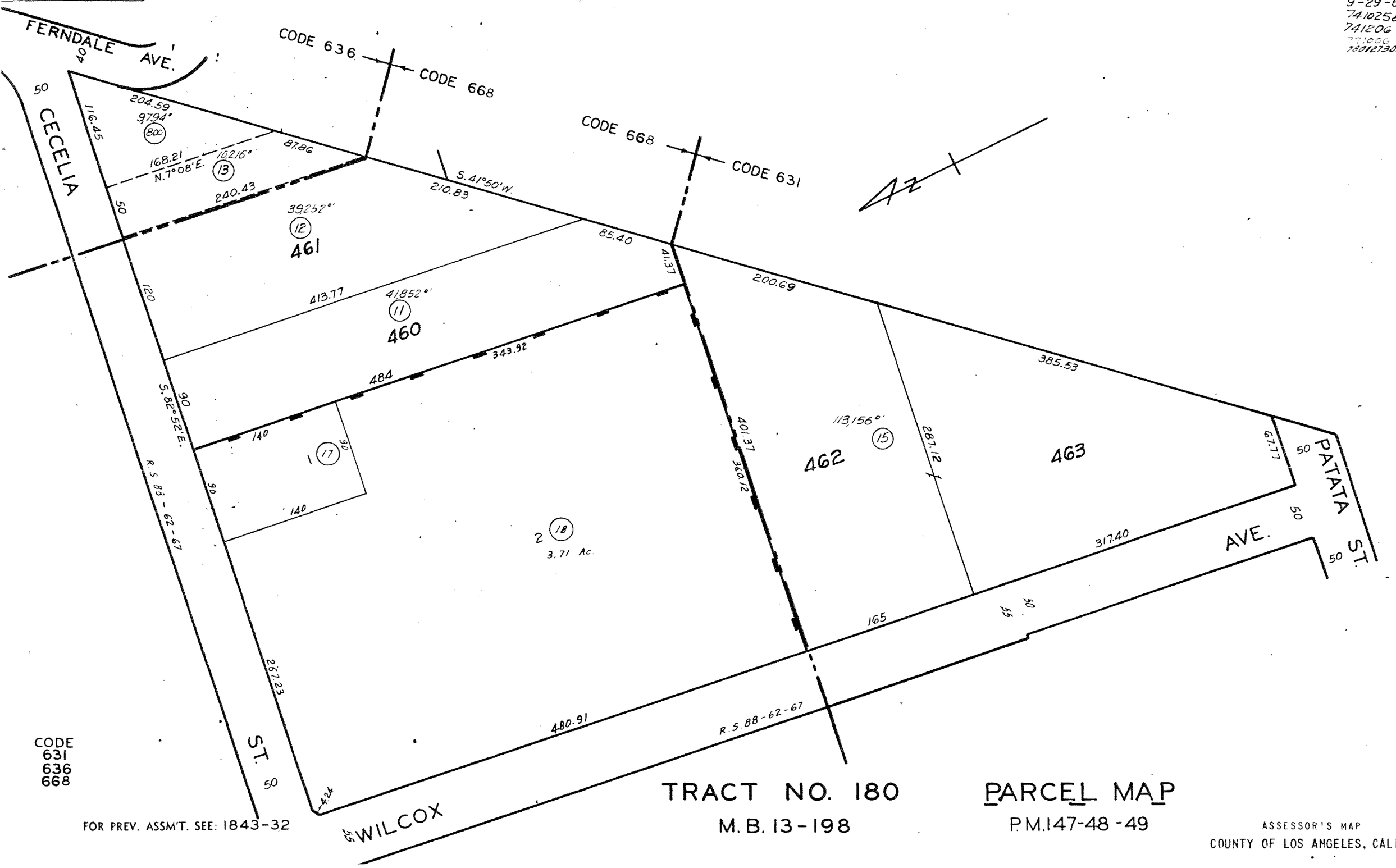
771006
780127303



CODE
631
636
668

FOR PREV. ASSM'T. SEE: 1843-32

TRACT NO. 180

M.B. 13-198

PARCEL MAP

P.M. 147-48-49

ASSESSOR'S MAP
COUNTY OF LOS ANGELES, CALIF.

Reference:
MWM, 2016

Liberty Utilities (Park Water) Corp.
2015 Urban Water Management Plan

FINAL

June 24, 2016

Liberty Utilities

MADDAUS WATER MANAGEMENT INC.

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2. PLAN PREPARATION

This section describes the basis for the 2015 UWMP preparation, regional planning, compliance, calendar year, units of measure, and coordination and outreach.

2.1 Basis for Preparing a Plan

In accordance with the CWC, urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet of water per year are required to prepare an UWMP every five years.

Liberty Park Water, as defined in the California Water Code section 10617, qualifies as an "Urban Water Supplier". Liberty is an investor-owned water utility that provides retail water service to approximately 28,000 connections in southeast Los Angeles County, so an UWMP is required to be completed for 2015 and every five years thereafter and submitted to the California Department of Water Resources.

Current water supplies include Central Basin groundwater (the basin is managed by the Water Replenishment District of Southern California [WRD]), imported water purchased from the Central Basin Municipal Water District (CBMWD), and recycled water. CBMWD is a member agency of the Metropolitan Water District of Southern California (MWD or Metropolitan). This subsection provides the cooperative framework within which the 2015 UWMP will be implemented including agency coordination, public outreach, and resources maximization.

2.1.1 Public Water Systems

Public Water Systems (PWSs) are the systems that provide drinking water for human consumption. These systems are regulated by the State Water Resources Control Board, Division of Drinking Water (DDW). The California Health and Safety Code 116275 (h) defines a "Public Water System" as a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

Table 2-1 lists name and number of connections for each PWS that is managed by Liberty and reported in this UWMP.

Table 2-1. Public Water Systems

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
	Liberty Utilities (Park Water) Corp.	27,353	9,787
1910161	Lynwood/Rancho Dominguez System		
1910211	Bellflower/Norwalk System		
1910021	Compton/Willowbrook System		
	TOTAL	27,353	9,787
NOTES: DDW considers Liberty's service area to be 3 systems.			

2.2 Regional Planning

Before developing the UWMP, water agencies should consider the extent to which they will become involved in regional planning processes. Developing a cooperative 2015 UWMP may be a natural continuation of other regional coordination

efforts, such as Integrated Regional Water Management, or may present an opportunity to begin regional collaboration. Regional planning can deliver mutually beneficial solutions to all agencies involved by reducing costs for the individual agency, assessing water resources at the appropriate geographic scale, and allowing for solutions that cross jurisdictional boundaries. Some of the other possible benefits, depending on the level of regional cooperation, can include:

- More reliable water supplies;
- Increased regional self-reliance; Improved water quality;
- Better flood management;
- Increased economic stability;
- Restored and enhanced ecosystems; and
- Reduced conflict over resources.

2.3 Individual or Regional Planning and Compliance

Table 2-2. Plan Identification

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance** *if applicable*
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		

2.4 Calendar Year and Units of Measure

2.4.1 Calendar Year Reporting

Since Liberty reports on a calendar year basis rather than fiscal, it is required to include the water use and planning data for the entire calendar year of 2015. This UWMP reflects that requirement.

2.4.2 Units of Measure

Water agencies use various units of measure when reporting water volumes, such as acre-feet (AF), million gallons (MG), or hundred cubic feet (CCF). Agencies may report volumes of water in any of these units, but must maintain consistency throughout the 2015 UWMP.

Table 2-3. Agency Identification

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF

2.5 Coordination and Outreach

Water agencies are permitted by the State to work together to develop a cooperative regional plan. Due to Liberty Park Water's dependency on CBMWD and MWD for a large proportion of its water supply, it must be closely coordinated and consistent with CBMWD's and MWD's UWMPs. In addition, Liberty Park Water provides water to a number of cities, including the cities of Artesia, Bellflower, Compton, Lynwood, Norwalk, and Santa Fe Springs. These cities were notified regarding Liberty's 2015 UWMP. Agency coordination for this 2015 UWMP is summarized in Table 2-4.

A public hearing to review the draft UWMP was held on May 3 at Liberty Park Water's office in Downey. The public was notified 60 days in advance of the public hearing. The public comment period remained open through May 30, 2016. A copy of the public outreach materials, including newspaper publication, website postings, and invitation letters, are included in Appendix C.

The Final UWMP was submitted to DWR. Letters were sent to the cities we serve and other agencies noted in Table 2-4 notifying them of how to access the final report from Liberty's website.

2.5.1 Wholesale and Retail Coordination

Because Liberty Park Water relies upon CBMWD for imported water supply and CBMWD, in turn, is supplied by MWD, the suppliers are required to provide each other with information regarding projected water supply and demand.

Table 2-4. Water Supplier Information Exchange

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
Central Basin Municipal Water District
Metropolitan Water District of Southern California
NOTES: Imported water supplies are provided by CBMWD, a MWD member agency.

2.5.2 Coordination with Other Agencies and the Community

Liberty attended the public hearings that CBMWD had regarding their UWMP. In addition, information from MWD's UWMP was consulted in preparing Liberty's plan. Letters were sent to the agencies listed below informing them about the availability of the draft report, requesting their input, and inviting them to the public hearing on May 3.

Liberty has encouraged the involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the 2015 UWMP, as evidenced by the diverse community that received draft notices (see Table 2-5 below).

Table 2-5. Agency Coordination Summary

	Received Link to View Draft Online	Commented on Draft	Contacted for Assistance	Sent Notice of Intent to Adopt
Central Basin Municipal Water District	X		X	X
MWD Water District of Southern California	X		X	X
Water Replenishment District of Southern California	X			X
City of Artesia	X			X
City of Bellflower	X			X
City of Compton	X			X
City of Lynwood	X			X
City of Norwalk	X			X
City of Santa Fe Springs	X			X
Los Angeles County Department of Regional Planning	X			X
County Sanitation Districts of Los Angeles County (LACSD)	X	X		X

2.5.3 Notice to Cities and Counties

Liberty notified the cities within its service area and Los Angeles County of the opportunity to provide input regarding the 2015 UWMP. The timeline for public participation during the development of the 2015 UWMP is shown below. A copy of the public outreach materials, including website postings and invitation letters, are included in Appendix C.

Public Participation Timeline

April 26, 2016	Preliminary Draft UWMP	Preliminary Draft released to solicit input
May 3, 2016	Public Hearing	Solicited input from the public
June 15, 2016	Adoption of UWMP	Board adoption of 2015 UWMP per Resolution
June 24, 2016	Final UWMP	Final UWMP released

The components of public participation include:

Local Media

- Paid notice in the Long Beach Press Telegram

Water Agencies Public Participation

- Metropolitan Water District of Southern California
- Central Basin Municipal Water District
- Water Replenishment District of Southern California
- County Sanitation Districts of Los Angeles County

City/County Outreach

- Planning Divisions of local cities:
  - Artesia
  - Bellflower
  - Compton
  - Lynwood
  - Norwalk
  - Santa Fe Springs
- Los Angeles County Department of Regional Planning

Public Availability of Documents

- Liberty Utilities website

3. SYSTEM DESCRIPTION

3.1 General Description

In January 2016, Liberty Utilities acquired Liberty Park Water. Liberty Utilities is a regulated water, natural gas, and electric transmission and distribution utility that operates in 11 states. The new name is Liberty Utilities (Park Water) Corp., or "Liberty Park Water."

Liberty Park Water, originally named the Los Nietos Water Company, was formed in the post-Great Depression era for the purpose of providing water to the residents east of the Los Angeles River, north and south of Rosecrans. In 1937, this water company became incorporated as Liberty Park Water. Today, Liberty Park Water has approximately 27,300 service connections.

Liberty has been making an effort to maximize the use of available resources while minimizing the use of imported water. In 2006, Liberty became a participant in the Memorandum of Understanding Regarding Water Conservation in California (MOU), and a member of the California Urban Water Conservation Council (CUWCC). Signatories to the MOU pledge to implement fourteen comprehensive conservation Best Management Practices (BMPs).

Liberty's groundwater resources are managed by the Water Replenishment District (WRD). The WRD was formed by the Water Replenishment Act, and manages, regulates, replenishes and protects the quality of the groundwater supplies within its boundaries.

This 2015 UWMP, along with other planning documents, will be used by Liberty staff to guide water use and management efforts through 2035, subject to changing conditions as identified in the required five-year updates of the UWMP.

Several documents and efforts were used to enable Liberty to maximize the use of available resources and minimize use of imported water, including the CBMWD UWMP. Section 6 of this 2015 UWMP describes in detail the water resources available to Liberty for the 25-year period covered by the 2015 UWMP.

3.2 Service Area Boundary Maps

Liberty's service area is divided into three non-contiguous water systems including the Compton/Willowbrook Water System, the Lynwood/Rancho Dominguez Water System and the Bellflower/Norwalk Water System. These water systems are shown on the Service Area Map (Figure 3-1).

3.2.1 Other Agencies

- **Metropolitan Water District of Southern California**

  MWD is a wholesaler of water, and supplies water to most of southern California by obtaining water from the Colorado River and from the State Water Project (SWP) in northern California.

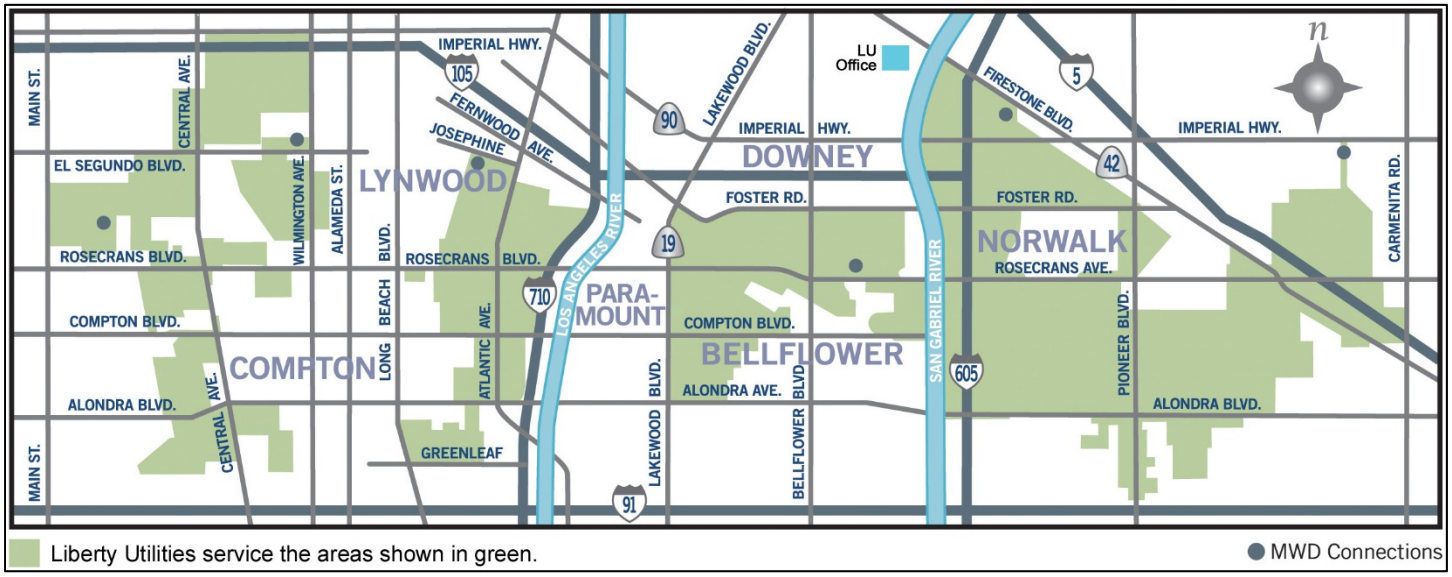
- **Central Basin Municipal Water District**

  CBMWD is a member agency of MWD that wheels MWD water to a specific area of Southern California.

- **Water Replenishment District of Southern California**

  WRD protects and manages the groundwater resources of the Central and West Coast groundwater basins of south Los Angeles County.

Figure 3-1. Liberty Park Water's Service Area Map



3.3 Service Area Climate

The climate in Liberty's service area is generally warm and dry in the summer and cool in the winters, typical of a Mediterranean climate. The average temperature is 74 degrees Fahrenheit. Average rainfall is about 12 inches per year. The average evapotranspiration (ETo) in the region is 46.3 inches per year.

Table 3-0. Period of Record General Climate Summary, Temperature and Precipitation, Long Beach

Month	Max. Temperature (°F)	Min. Temperature (°F)	Mean Temperature (°F)	Mean Precipitation (inches)
January	67.1	45.6	56.3	2.63
February	67.2	47.3	57.2	2.90
March	68.4	49.7	59.1	1.83
April	71.7	52.4	62.0	.70
May	73.5	56.8	65.2	.20
June	76.9	60.3	68.6	.06
July	82.2	63.7	73.0	.02
August	83.9	64.9	74.4	.06
September	82.3	62.9	72.6	.19
October	77.9	57.9	67.9	.42
November	72.2	50.5	61.3	1.21
December	67.0	45.3	56.1	1.80
Annual	74.2	54.8	64.5	12.01

Sources: Western Regional Climate Center. December 2015. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5085 and http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5085

3.3.1 Climate Change

Climate change poses a risk to supply reliability as it is expected to cause weather patterns to shift dramatically and unpredictably, thus affecting water supply planning. Several areas of concern for California water planners include reduction in the Sierra Nevada snowpack; increased intensity and frequency of extreme weather events; and rising sea levels resulting in seawater intrusion, erosion of levees, among other things (MWD, Draft 2015 UWMP, March 2016). At the state level, climate change management is one of DWR's five core values. Through its Climate Action Plan, DWR performs a wide range of activities to help support climate change analysis and adaption planning[1] (DWR, March 2016).

At the regional level in southern California, MWD, as the regional wholesaler of imported water, is committed to performing its due diligence with respect to climate change. Under its 2015 IRP Update, MWD recognizes additional risks and uncertainties from climate change and analyzes how vulnerable the region's reliability is to longer-term risks. The 2015 IRP process involves evaluating a wider range of water management strategies, and seeking robust and adaptive plans that respond to uncertain conditions as they evolve over time, and that ultimately will perform adequately under a wide range of future conditions (MWD, March 2016).

3.4 Service Area Population and Demographics

Table 3-1 lists the current and projected population for Liberty's service area.

Table 3-1. Population – Current and Projected

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	126,637	126,867	127,332	127,797	128,263	129,434

NOTES: Liberty Park Water's 2015 population estimate is determined in the SB X7-7 analysis using the 2010 census based population value and Liberty's 2010 UWMP reported growth rate based on estimates and projections from 2001-2035 onward determined from Department of Finance (DOF) 2010 reported data. The process for determining Liberty's 2010 population is further explained in Appendix M. Population growth from 2020 through 2040 is based on Southern California Area Government (SCAG) Draft 2016 RTP/SCS Growth Forecast by Jurisdictions as a weighted average annual growth rate for the primary Liberty Park Water jurisdictions. SCAG's Regional Council (RC) is scheduled to adopt the RTP/SCS and associated jurisdictional level growth forecasts in April 2016, and RC staff don't anticipate further changes in the growth forecasts figures at jurisdictional level. SCAG provides year 2012, 2020, 2035 and 2040 population by jurisdiction. The weighted annual average 2012-2020 SCAG growth rate was initially applied to year 2015 population to get 2020; then, the weighted annual average 2020-2035 SCAG growth rate was applied to year 2020 population to get year 2025, 2030 and 2035 population values; and finally the 2035-2040 weighted annual average SCAG growth rate was applied to year 2035 population to get year 2040 population for Liberty Park Water.

Source: SCAG Draft 2016 RTP/SCS Growth Forecast by Jurisdictions. Online. 2/25/16v1
http://www.scag.ca.gov/Documents/2016DraftGrowthForecastByJurisdiction.pdf

[1] DWR Climate Change Action Plan <http://www.water.ca.gov/climatechange/CAP.cfm>

4. SYSTEM WATER USE

Accurately tracking and reporting current water demands allow a water supplier to properly analyze the use of their resources and conduct good resource planning. Estimating future demand as accurately as possible allows water agencies to manage their water supply and appropriately plan their infrastructure investments. Assessments of future growth and related water demand, done in coordination with local planning agencies, provide essential information for developing demand projections. Agencies are encouraged to coordinate and communicate with other planning agencies when developing demand projections.

This section describes historic and current water usage and the methodology used to project future demands within Liberty's service area. Water deliveries are divided into sources including imported water, groundwater, and recycled water. Water usage is divided into sectors such as residential, industrial, landscape, and other purposes. For this evaluation, existing land use data and new housing construction information were compiled from Liberty. This information was then compared to historical trends for new water service connections and customer water usage information.

4.1 Recycled versus Potable and Raw Water Demand

Recycled water is an important source of water in southern California due to the cost of imported water supplies, a dry climate, and high demand.

CBMWD's regional water recycling program, called the "Central Basin Water Recycling Project", is comprised of two distribution systems, the E. Thornton Ibbetson Century Water Recycling Project and the Esteban Torres Rio Hondo Water Recycling Project, along with three pumping stations and a reservoir. This system provided an average of 4,800 acre-feet per year of recycled water to more than 200 industrial, commercial, and landscape irrigation sites for the last five years. This system provides the Liberty service area with recycled water.

Several commercial nurseries went out of business and Cal Trans reduced their purchases of recycled water for irrigation in the last few years, resulting in a decrease in recycled water demand. In addition, drought messaging may have contributed to the decrease in recycled demands.

4.2 Water Uses by Sector

Liberty currently serves approximately 27,330 potable water connections and 25 recycled water accounts, all of which are metered accounts. In 2015, approximately 98% of the service connections were residential and commercial. Industrial, institutional, government, and fire protection connections account for approximately 2% of Liberty's total connections.

Predicting future water supply requires accurate historic water use patterns and water usage records.

In the past, Liberty has sold water periodically to the City of Norwalk through an interconnection. Liberty supplied water regularly to Peerless Water Company until 2009.

Table 4-1. Demands for Potable and Raw Water – Actual

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
	Additional Description (*as needed*)	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	6,264
Multi-Family		Drinking Water	901
Commercial		Drinking Water	1,044
Industrial		Drinking Water	87
Institutional/Governmental	Public Authority	Drinking Water	511
Other	Fire Services and Temporary Meter Services	Drinking Water	39
Losses	Non-revenue water	Drinking Water	733
		TOTAL	9,579

Historic population estimates were compared to the historical customer demands to determine historic per capita use. As discussed in the previous section, SBX7-7 calculations were used to provide a baseline and target per capita water use. Future demand estimates were then determined by multiplying the projected population by the base per capita water use. These calculations provided Liberty's projected future water demands as shown in Table 4-2. The anticipated total water demand in 2040 is approximately 10,615 AF. Demand estimates do not include reductions from demand management practices.

Table 4-2. Demands for Potable and Raw Water – Projected

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description (*as needed*)	Projected Water Use				
		2020	2025	2030	2035	2040
Single Family		7,415	7,030	6,696	6,461	6,321
Multi-Family		1,353	1,276	1,209	1,162	1,132
Commercial		1,491	1,470	1,454	1,441	1,438
Industrial		113	114	114	114	115
Institutional/Governmental	Public Authority	775	778	781	784	791
Other	Fire Services and Temporary Meter Services	69	69	69	70	70
Losses	Non-revenue water	853	816	783	760	746
	TOTAL	12,069	11,553	11,107	10,791	10,615
NOTES: Water use includes projected savings from plumbing codes and low-income housing water use. Projected losses represent Liberty's conservative estimate that for planning purposes Losses or Non-revenue Water should be estimated at 7% of production.						

Liberty does not anticipate any regular or single large sales to other agencies in the future. As in the past, Liberty does not anticipate future water use related to saline barriers, groundwater recharge operations or conjunctive use. Recycled water use is expected to remain stable. For the purpose of projections, non-revenue water is assumed to be approximately 7%. Table 4-3 presents information on all projected water uses for the years 2015 to 2040.

Table 4-3. Total Water Demands

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water From Tables *4-1 and 4-2*	9,579	12,069	11,553	11,107	10,791	10,615
Recycled Water Demand* From Table *6-4*	208	224	241	260	280	302
TOTAL WATER DEMAND	9,787	12,293	11,794	11,367	11,071	10,917

4.3 Distribution System Water Losses

Distribution system water losses (also known as "real losses") are the physical water losses from the water distribution system and the supplier's storage facilities, up to the point of customer consumption.

In the past, Liberty Park Water has not had water use related to saline barriers or groundwater recharge operations. Liberty monitors water used for system operations such as hydrant flushing, dead end flushing, flushing for water quality purposes, broken fire hydrants, main leaks, etc.

However, Liberty, like all water agencies does have some non-revenue water. Non-revenue water is the difference between the amount of water produced and the amount of water billed to customers. Over the last five years, non-revenue water has averaged less than one (1) percent of produced water within Liberty's system.

The percentage of non-revenue water was estimated by comparing water production statistics to water sales statistics. Sources of non-revenue water include:

- Fire Hydrant Operations by the Fire Department - This represents the use of water for emergencies.
- Customer Meter Inaccuracies - Customer meters represent one of the main sources of non-revenue water as they tend to under-represent actual consumption in the water system.
- Leaky water lines - Leakage from water pipes is a common occurrence in water systems. A significant number of leaks remain undetected over long periods of time as they are very small. However, these small leaks contribute to the overall non-revenue water.

Table 4-4 indicates non-revenue water loss within the distribution system.

Table 4-4. Water Loss Summary Most Recent 12-Month Period Available (as calculated in AWWA DWR Water Audit Method worksheet)

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2013	384.21
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Used 2013 Audit as it was most recent available that is not an abnormal drought year.	

4.4 Estimating Future Water Savings

The projected demands presented in this 2015 UWMP include estimate plumbing code savings. Liberty's process of estimating future water savings, the passive savings methodology, can be found in Appendix F.

4.5 Water Use for Lower Income Households

Senate Bill 1087 requires that water use projections of an UWMP include the projected water use for single-family and multifamily residential housing for lower income households as identified in the housing element of any city, county, or city and county in the service area of the supplier. Liberty's service area includes seven jurisdictions: the City of Artesia, the City of Bellflower, the City of Compton, the City of Lynwood, the City of Norwalk, and the City of Santa Fe Springs, and an unincorporated portion of Los Angeles County near Compton. The Housing Element of each of these cities described the percentage of "extremely low," "very low," and "low" income households as a percentage of the total number of households. The weighted percentage of low-income households per jurisdiction can be found in Table 4-6. A weighted average of 44% was used for projections of water demand for single-family and multifamily customers from very low and low-income households. The projected future low-income household water use (AF) in presented in Table 4-7.

Further, Liberty will not deny nor condition approval of water services, nor reduce the amount of services applied for by a proposed development that includes housing units affordable to lower income households unless one of the following occurs:

- Liberty specifically finds that it does not have sufficient water supply;
- Liberty is subject to a compliance order issued by the State Water Resources Control Board, Division of Drinking Water that prohibits new water connections; or
- The applicant has failed to agree to reasonable terms and conditions relating to the provision of services.

Table 4-5. Inclusion in Water Use Projections

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc.... utilized in demand projections are found.	Appendix F, Table F-1
Are Lower Income Residential Demands Included In Projections?	Yes

Table 4-6. Weighted Percentage of Low-Income Households

City	Total Number of Households from Housing Element	Weighted Percentage of Households	Percentage Low Income from Housing Element	Weighted Percentage of Low Income Households
Artesia[1]	4,517	5%	44%	2%
Bellflower[2]	24,132	24%	50%	12%
Compton[3]	22,327	22%	58%	13%
Lynwood[4]	15,270	15%	39%	6%
Norwalk[5]	28,045	28%	31%	9%
Santa Fe Springs[6]	4,968	5%	40%	2%
			Weighted Percentage	**44%**

[1] "City of Artesia Housing Element HCD Submittal," November 15, 2013. http://www.cityofartesia.us/DocumentCenter/View/203
[2] *City of Bellflower 2014-2021 Housing Element*, prepared for the City of Bellflower by ESA, adopted September 23, 2013 (p. 48-49).
http://www.hcd.ca.gov/housing-policy-development/housing-resource-center/plan/he/housing-element-documents/bellflower_5th_adopted100713.pdf
[3] Housing Element Compton General Plan 2030.
http://www.comptoncity.org/civicax/filebank/blobdload.aspx?blobid=24234
[4] City of Lynwood, California, *2014-2021 Housing Element*, adopted August 6, 2013 (p. 51).
http://lynwood.ca.us/sites/default/files/City%20of%20Lynwood%20Adopted%202014-2021%20Housing%20Element.pdf
[5] *2013-2021 Housing Element of the General Plan,* Planning Division, Community Development Department.
http://www.hcd.ca.gov/housing-policy-development/housing-resource-center/plan/he/housing-element-documents/norwalk_5th_draft100313.pdf
[6] *City of Santa Fe Springs 2014-2021 Housing Element*, November 2013.
http://www.hcd.ca.gov/housing-policy-development/housing-resource-center/plan/he/housing-element-documents/santa_fe_springs_5th_draft111813.pdf

Table 4-7. Projections of Future Low-Income Household Water Use (AF)

Water Use*	2020	2025	2030	2035	2040
Estimated Very Low and Low-Income Household Water Use	3,842	3,640	3,464	3,341	3,266

* Assumes 44% of all future households in Liberty service area qualify as "very-low" or "low" income per the definition provided in Senate Bill 1087.

4.6 Climate Change

A discussion of potential climate change impacts can assist in providing a comprehensive look at the potential impacts on projected demand. For example, hotter and drier weather may lead to an increased demand in landscape irrigation. Water agencies are encouraged, but not required, to consider potential climate change impacts to their water demand.

Other factors that affect water usage are weather and conservation practices. Historically, when the weather is hot and dry, water usage increases. The amount of increase varies according to the number of consecutive years of hot, dry weather and the conservation activities imposed. During cool, wet years, historical water usage has decreased, reflecting less water usage for exterior landscaping.

California faces the prospect of significant water management challenges due to a variety of issues including population growth, regulatory restrictions and climate change. Climate change is of special concern because of the range of possibilities and their potential impacts on essential operations, particularly operations of the SWP. The most likely scenarios involve increased temperatures, which will reduce the Sierra Nevada snowpack and shift more runoff to winter months, and accelerated sea level rise. These changes can cause major problems for the maintenance of the present water export system since water supplies are conveyed through the fragile levee system of the Sacramento-San

Joaquin Delta. The other much-discussed climate scenario or impact is an increase in precipitation variability, with more extreme drought and flood events posing additional challenges to water managers around the west[2]. The Colorado River Basin has experienced severe multi-year droughts, most recently in the mid-1990s.

In recent years, water conservation has become an increasingly important factor in water supply planning in California. Since the 2005 UWMP, there have been a number of regulatory changes related to conservation including new standards for plumbing fixtures, a state universal retrofit ordinance, new Green Building standards, demand reduction goals and more. In addition, the California Plumbing Code has instituted requirements for new construction that mandate the installation of ultra-low-flow toilets and low-flow showerheads.

Residential, commercial, and industrial usage can be expected to decrease as a result of the implementation of more aggressive water conservation practices. In southern California, the greatest opportunity for conservation is in developing greater efficiency and reduction in landscape irrigation. The irrigation demand can typically represent as much as 70% of the water demand for residential customers depending on lot size and amount of irrigated turf and plants. Conservation efforts will increasingly target this component of water demand. Section 9 discusses Demand Management Measures.

[2] Final California Water Plan Update 2009 Integrated Water Management: Bulletin 160.

5. SB X7-7 BASELINES AND TARGETS

5.1 Updating Calculations from 2010 UWMP

The Water Conservation Bill of 2009 (SB X7-7) is one of four policy bills enacted as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). The Water Conservation Bill of 2009 provides the regulatory framework to support the statewide reduction in urban per capita water use described in the *20 by 2020 Water Conservation Plan*. Consistent with SB X7-7, each water supplier must determine and report its existing baseline water consumption and establish future water use targets in gallons per capita per day (GPCD); reporting began with the 2010 UWMP.

In their 2015 UWMPs agencies may change the years they selected for their baseline periods as compared to their 2010 UWMPs. Agencies may choose to make this change based on changes to their calculated population, which may have affected the baseline and target GPCD values.

5.1.1 Update of Target Method

An urban retail water supplier must set a 2020 water use target (herein called the Compliance Water Use Target) and a 2015 interim target (herein called the Interim Water Use Target). There are four methods for calculating the Compliance Water Use Target:

1. Eighty percent of the urban water supplier's baseline per capita daily water use
2. Per capita daily water use estimated using the sum of the following:
    a. For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of DWR's 2016 report to the Legislature reviewing progress toward achieving the statewide 20% reduction target, this standard may be adjusted by the Legislature by statute.
    b. For landscape irrigated through dedicated or residential meters or connections, water use efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in section 490 et seq. of Title 23 of the California Code of Regulations[3], as in effect the later of the year of the landscape's installation or 1992.
    c. For commercial, industrial, and institutional (CII) uses, a 10% reduction in water use from the baseline CII water use by 2020.
3. Ninety-five percent of the applicable state hydrologic region target as stated in the state's April 30, 2009, draft *20 by 2020 Water Conservation Plan*. Liberty falls within the South Coast Hydrologic Region; the "2020 Plan" regional targets is 149 GPCD. The Method 3 regional targets at 95% of 149 GPCD is 142 GPCD.
4. Reduce the 10- or 15-year Base Daily Per Capita Water Use a specific amount for different water sectors:
    a. Indoor residential water use to be reduced by 15 GPCD or an amount determined by use of DWR's "Best Management Practice (BMP) Calculator".

[3] California Department of Water Resources. Model Water Efficient Landscape Ordinance, California Code of Regulations, Title 23, section 490 et seq. Online: http://www.water.ca.gov/wateruseefficiency/landscapeordinance/docs/2015%20MWELO%20Guidance%20for%20Local%20Agencies.pdf

b. A 20% savings on all unmetered uses.

c. A 10% savings on baseline CII use.

d. A 21.6% savings on current landscape and water loss uses.

The Interim Water Use Target is set as a halfway point between the Base Daily Water Use GPCD and the 2020 Compliance Water Use Target GPCD.

Finally, the selected Compliance Water Use Target must be compared against what DWR calls the "Maximum Allowable GPCD". The Maximum Allowable GPCD is based on 95% of a 5-year average base gross water use ending no earlier than 2003 and no later than 2010. The Maximum Allowable GPCD is used to determine whether a supplier's 2015 and 2020 per capita water use targets meet the minimum water use reduction of the SBX7-7 legislation. If an agency's Compliance Water Use Target is higher than the Maximum Allowable GPCD, the agency must instead use the Maximum Allowable GPCD as their target.

5.1.2 Required Use of 2010 U.S. Census Data

In the 2010 UWMP, "[p]opulation estimates and projections from 2010 onward were calculated using a growth rate determined from Department of Finance (DOF) data." In this UWMP, year 2010 population was determined using 2010 census information gathered in 2014 while developing a water use efficiency plan; the 2010 population estimate of 122,372 is based on a GIS analysis of 2010 census blocks data and the service area population-determining methodology outlined in the California State Water Resources Control Board's Instructions for Estimating Residential Gallons Per Capita per Day. Liberty's 2015 population estimate is determined using the 2010 population value and Liberty's 2010 UWMP reported growth rate based on estimates and projections from 2001-2035 onward determined from Department of Finance (DOF) 2010 reported data.

5.1.3 SB X7-7 Verification Form

In the 2015 UWMP, water agencies must demonstrate compliance with their established water use target for the year 2015. This will also demonstrate whether or not the agency is currently on track to achieve its 2020 target.

Compliance is verified by DWR's review of the SB X7-7 Verification Form submitted with the 2015 UWMP. The SB X7-7 Verification Form is found in Appendix E and summarized in Tables 5-1 and 5-2 of this section.

The two primary calculations required by SB X7-7 are:

- Base Daily Water Use calculation (average GPCD used in past years)
- Compliance Water Use Target (target GPCD in 2015 and 2020)

In addition to calculating base gross water use, SBX7-7 requires that a retail water supplier identify its water demand reduction targets. The methodologies for calculating demand reduction were described in Section 4. Liberty has selected Method 3 to calculate its 2020 Compliance Water Use Target and Interim Water Use Target.

The SB X7-7 Verification Form can be found in Appendix E.

5.2 Baseline Periods

Water use GPCD must be calculated and reported for two baseline periods, the 10- or 15-year baseline (Baseline GPCD) and the 5-year baseline (Target Confirmation). Whether an agency uses a 10- or 15-year baseline depends on the percentage of recycled water delivered in the year 2008.

5.2.1 Determination of the 10-15 Year Baseline Period (Baseline GPCD)

The Base Daily Water Use calculation is based on gross water use by an agency in each year and can be based on a ten-year average ending no earlier than 2004 and no later than 2010 or a 15-year average if 10% of 2008 demand was met by recycled water. Base Daily Water Use must account for all water sent to retail customers, excluding:

- Recycled water
- Water sent to another water agency
- Water that went into storage

Since Liberty's percentage of recycled water used in the year 2008 was less than 10%, the water agency must use a 10-year baseline period. Recycled water deliveries of 2008 and the total water deliveries of 2008 will be entered into SB X7-7 Table 1. The table will calculate the percent of recycled water delivered in 2008.

5.2.2 Determination of the 5-Year Baseline Period (Target Confirmation)

Water suppliers must also calculate water use, in GPCD, for a 5-year baseline period. This will be used to confirm that the selected 2020 target meets the minimum water use reduction requirements (see Section 5.7). This is a continuous 5-year period that ends no earlier than December 31, 2007 and no later than December 31, 2010.

Liberty falls within the South Coast Hydrologic Region which has an Urban Water Use Target of 149 GPCD. Ninety-five percent of this target is 142 GPCD. Since Liberty's 5-year Average Base Daily Per Capita Water Use is lower than 100 GPCD, no adjustments to the Urban Water Use Target are needed.

For the Interim Urban Water Use Target – the water use goal each water supplier is to achieve and report in their 2015 UWMP – the average of the Base Daily Per Capita Water Use and the Urban Water Use Target is normally used. As shown in Table 5-1 for Liberty, since the Average Base Daily Water Use is already below 100 GPCD, the Interim Urban Water Use Target will be 121 GPCD, the average of the Base Daily Per Capita Water Use of 99.8 GPCD and year 2020 target of 142 GPCD.

5.3 Service Area Population

This section describes Liberty's service area population methodologies. Liberty has a current 2015 service area population of approximately 126,637. To determine historic population estimates, Census Tract data from 1990, 2000 and 2010 were compared to GIS data of the service area, providing a population estimate for those three years. The analysis for years 1990 and 2000 was conducted as part of the 2010 UWMP. The 2010 population analysis was conducted in 2014 as part of a water use efficiency study; this analysis is presented in Appendix M. The population for the years between 1990 and 2000, and 2000 and 2010 were linearly interpolated according to the population values. In the Park Water Use Efficiency Plan a 2010 population estimate of 122,372 is based on a GIS analysis of 2010 census blocks data and the service area population-determining methodology outlined in the California State Water Resources Control Board's Instructions for Estimating Residential Gallons Per Capita per Day. Liberty's 2015 population estimate is determined using the 2010 population value and Liberty's 2010 UWMP reported growth rate based on estimates and projections from 2001-2035 onward determined from Department of Finance (DOF) 2010 reported data. Liberty's baseline population estimates can be found in Appendix E's SB X7-7 Table 3: Service Area Population. Projected population estimates can be found in Section 3.4.

5.4 Gross Water Use

Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period (either fiscal or calendar year) with certain allowable exclusions. These exclusions are:

- Recycled water delivered within the service area;

- Indirect recycled water (see Methodology 1 from the *Methodologies* document, DWR 2011);
- Water placed into long term storage (surface or groundwater);
- Water conveyed to another urban supplier;
- Water delivered for agricultural use;
- Process water.

Gross water use must be reported for each year in the baseline periods as well as 2015, the compliance year.

5.5 Baseline Daily per Capita Water Use

Consistent with SBX7-7, the 2015 UWMP must provide an estimate of Base Daily Per Capita Water Use. This estimate utilizes information on population as well as base gross water use. For the purposes of this UWMP, population was estimated as described in Section 2.1.

Recycled water did not make up 10% of the 2008 delivery to the Liberty retail service areas, and for this reason, Base Daily Per Capita Water Use has been based on a 10-year period. In addition, urban retailers must report daily per capita water use for a 5-year period from January 1, 2003 to December 31, 2010. This 5-year base period is compared to the Target Based Daily Per Capita Water Use to determine the minimum water use reduction requirement (this is described in more detail in the following sections). Table 5-1 reports the data used to calculate the Base Daily Per Capita Water Use in GPCD, and the 10- and 5-year base periods.

Liberty has selected the period 1998 to 2007 as the basis for the 10-Year Average Base Daily Per Capita Water Use, which is 99.8 GPCD. Liberty has selected the period 2003 to 2007 as the basis for the 5-year Average, which is 99.0 GPCD.

5.6 2015 and 2020 Targets

The following table presents the baseline and target summary for Liberty. Liberty is below the 100 GPCD threshold for their average baseline GPCD so their 2015 interim GPCD is the average of the baseline and 2020 target GPCD.

Table 5-1. Baselines and Targets Summary

Table 5-1 Baselines and Targets Summary *Retail Agency or Regional Alliance Only*					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	1998	2007	99.8	121	142
5 Year	2003	2007	99.0		
*All values are in Gallons per Capita per Day (GPCD)					

5.7 2015 Compliance Daily per Capita Water Use (GPCD)

The 2015 per capita water use for Liberty is 68 GPCD as referenced in Appendix E, Table 5 and in the following table.

Table 5-2. 2015 Compliances

Table 5-2: 2015 Compliance: *Retail Agency or Regional Alliance Only*								
Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
68	121	0	0	0	0	68	68	Yes
**All values are in Gallons per Capita per Day (GPCD)*								

5.8 Regional Alliance

Liberty Park Water is not part of a regional alliance.

6. SYSTEM SUPPLIES

This section describes the water resources available to Liberty for the 25-year period covered by the 2015 UWMP. These are summarized in Table 6-8 and discussed in more detail below. Both currently available and planned supplies are discussed.

6.1 Purchased or Imported Water

Imported water supplies are provided by CBMWD, a MWD member agency. MWD acquires water from the Colorado River and the SWP and distributes treated and untreated water directly to its 26 member agencies. MWD was established to develop an imported water supply from the Colorado River by constructing and operating the Colorado River Aqueduct (CRA), which has a capacity of 1.25 million acre-feet (MAF). The CRA impounds water from the Colorado River at Lake Havasu on the California-Arizona border west across the Mojave and Colorado deserts to the east side of the Santa Ana Mountains. It is one of the primary sources of drinking water for southern California. The CRA system is composed of two reservoirs, five pumping stations, 63 miles of canals, 92 miles of tunnels, and 84 miles of buried conduit and siphons.

The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. Today, the SWP includes 34 storage facilities, reservoirs and lakes, 20 pumping plants, 4 pumping-generating plants, 5 hydro-electric plants and approximately 700 miles of aqueducts and pipelines. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Storage released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains and the aqueduct then divides into the East and West Branches.

CBMWD was established in 1952 by a vote of the people to protect the Central Groundwater Basin from over-pumping. It was realized pumping would have to be curtailed and the region would require the importation of water. In 1954 CBMWD joined MWD to purchase wholesale imported water from the Colorado River and the SWP and sell it to local water agencies, both public and private.

Record dry conditions in the SWP and the Colorado River systems are the current challenges faced by MWD. Dry conditions persisted into 2015 as the fourth consecutive dry year for California. 2015 began with the driest January on record and the earlier and lowest snowpack peak in recorded history. As a result, MWD received only 20% of its contract water supplies from the SWP in 2015. The declining ecosystem in the Sacramento-San Joaquin River Delta (Bay-Delta) continues to impose operational constraints to the SWP system. SWP delivered restrictions due to regulatory requirements resulted in the loss of about 1.5 MAF of supplies to MWD from 2008 through 2014. This reduces the likelihood for the regional storage to be refilled in the near term. The Colorado River system has also seen a steady decline in total storage levels as it experiences a historic 16-year drought (MWD, 2015).

6.2 Groundwater

This section presents information about Liberty's groundwater supplies. Liberty currently owns 822.3 AF of groundwater rights and leases between 2,500-3,571 AF per year in the past five years (FY 2010-11 to 2014-15). Liberty plans to increase its purchases of groundwater in future years and reduce its purchases of imported water.

In Appendix N, please find a letter from the Water Replenishment District of Southern California, acting as Central Basin Watermaster – Administrative Body, as confirmation of Liberty Utilities (Park Water) Corporation's water rights in the Central Basin.

6.2.1 Central Groundwater Basin Description

The sole source of local groundwater for Liberty's water supply is the Central Groundwater Basin (Basin). This Basin is adjudicated (see Section 6.2.2 for more information), is made up of several large aquifers, and occupies a large portion of the southeastern part of the Coastal Plain of Los Angeles County. It has a total storage capacity of 13,800,000 AF. The Basin is bounded on the north by the La Brea high surface divide and on the northeast and east by emergent less permeable tertiary rocks of the Elysian, Repetto, Merced and Puente Hills. The southeast boundary follows Coyote Creek. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland watersheds and pass across the surface of the Basin on their way to the Pacific Ocean.

Throughout the Basin, groundwater occurs in Holocene and Pleistocene age sediments at relatively shallow depths. The Basin is divided into two forebays and two pressure areas: the Los Angeles Forebay, the Montebello Forebay, the Whittier pressure area, and the Central Basin pressure area. Both forebays have unconfined groundwater conditions and interconnected aquifers that extend 1,600 feet below the surface and provide recharge for the Basin aquifer system. The Whittier pressure area contains up to 1,000 feet depth of freshwater-bearing sediments. The Central Basin pressure area contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay, that extend to about 2,200 feet below the ground surface.

6.2.2 Groundwater Management

In order to halt groundwater overdraft, and sea water intrusion in the Central Basin, groundwater extraction has been limited to the amounts set by a Superior Court Judgment to adjudicate water rights and monitor extraction. Prior to the adjudication of groundwater rights in the early 1960s, annual pumping rates reached levels as high as 259,400 AF in the Central Basin and 94,100 AF in the adjacent West Coast Basin. The combined overdraft of 353,500 AF was more than double the 173,400 AF natural safe yield of the two basins as determined by the California Department of Water Resources (DWR) in 1962. To protect the groundwater basins, the courts adjudicated the two basins to limit pumping. The adjudicated amount (or Allowed Pumping Allocation (APA)) is 217,367 AFY and 64,468.25 AFY, for the Central and West Coast Basins, respectively. The combined amount allowed to be pumped from the two WRD-managed basins are 281,835.25 AFY plus any carryover or other provisions (WRD, 2016).

The most recent judgment, the third amended judgment, in 2013 brought about a restructuring in the governance of Central Basin water rights. The third amended judgment established Water Replenishment District of Southern California (WRD) as the new Watermaster replacing DWR and set up three branches that compose the Watermaster. The three Watermaster arms include the Administrative Body, to administer accounting and reporting functions; the Water Rights Panel, to enforce issues related to the pumping rights within adjudication; and the Storage Panel, to approve certain groundwater storage efforts (WRD, 2015).

The third amended judgment allows water rights holders to carryover a portion of their unused water rights not to exceed an applicable percentage of their APA from one administrative year to the next. The third amended judgment also allows the conversion of carryover to storage, either in an individual storage account (up to 50% of APA) or in a community storage account. The combined storage cannot exceed 200% of APA. Additionally, water rights holders are allowed to extract up to 40% beyond their allowable pumping rights within a given year, excluding amount leased.

The replenishment of the groundwater basin is managed by WRD, a responsibility vested by the Water Replenishment Act. Part of the WRD's role is also to protect the quality of the groundwater supplies, which approximately 3.5 million residents and water users rely upon. WRD is enabled under the California Water Code to purchase and recharge additional water to make up any overdraft, which is known as artificial replenishment. WRD has the authority to levy a replenishment assessment on all pumping within its boundaries to raise monies necessary to purchase the artificial replenishment water and fund projects and programs necessary for replenishment and groundwater quality activities.

WRD relies on artificial replenishment to replace the annual overdraft in the groundwater basin. In addition to stormwater capture and infiltration, the various methods of replenishment include spreading, injection, and in-lieu replenishment water.

- **Spreading** – Groundwater recharge of storm water, imported water from MWD, and recycled water takes place along the spreading grounds adjacent to the Rio Hondo and San Gabriel River and the Whittier Narrows Reservoir.
- **Injection –** WRD also recharges the groundwater by injecting water into the Basin to prevent seawater intrusion. A barrier is formed by the injecting treated water from MWD and highly treated recycled water in wells along the Alamitos Gap.
- **In-lieu Replenishment Water –** The in-lieu program allows the natural recharge of the Basin by offsetting groundwater production with the use of imported water. The reduction in pumping allows the basin to recharge naturally.

WRD's 2016 Engineering Survey and Report discusses WRD's intent to recharge the basins with 103,300 AF of imported and recycled water in water year 2015-16.

6.2.3 Historical Groundwater Pumping

In 2015, 179,704 AF of groundwater was produced from the Central Basin. Groundwater supply met approximately 79% of the water demand for agencies within the CBMWD in 2015. The Central and West Coast groundwater basins are in an overdraft condition. However, the groundwater levels and amount of overdraft fluctuate with time. WRD continually monitors groundwater level trends. WRD's 2015 Engineering Survey and Report discusses groundwater levels within the basins. WRD estimates that the annual overdraft for both basins during water year 2014/2015 was 102,500 AF. WRD or others purchased a total of 89,753 AF of recharge water. The difference between inflows (natural and artificial) and outflows was -12,700 AF, which resulted in a slight decrease in storage in 2014/2015. The accumulated overdraft at the end of the water year 2015/2016 was determined to be 812,100 AF for both basins.

Liberty owns 822.3 AF of groundwater rights to the Central Basin and secures additional water rights through lease agreements with other Central Basin water rights holders. Table 6-1 provides the groundwater volume pumped by Liberty from the Central Basin. Liberty's groundwater production increased annually from 2,539 AF in FY 2010-11 to 3,520 AF in FY 2014-15.

Table 6-1. Groundwater Volume Pumped

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	Central Groundwater Basin	2,539	2,906	3,157	3,384	3,520
	TOTAL	2,539	2,906	3,157	3,384	3,520

Liberty currently produces groundwater from 10 operating wells (seven active, three standby) that vary in depth from 270 feet to 1,052 feet. Groundwater well production varies from 788 gpm to 1,750 gpm in the active wells. A new well (Well 12C) with a design capacity of 2,500 gpm is expected to come online in 2016 and will increase the total system design capacity to 10,182 gpm.

6.3 Surface Water

Liberty's water supply does not include any local surface water sources from local streams, lakes, or reservoirs.

6.4 Stormwater

Liberty's water supply does not include any stormwater captured locally.

6.5 Wastewater and Recycled Water

This section of the 2015 UWMP presents information about the wastewater collection, treatment, and disposal system and the recycled water system within Liberty's service area.

6.5.1 Recycled Water Coordination

Wastewater from Liberty's service area is collected and treated at the Los Coyotes Water Reclamation Plant (WRP) and the Joint Water Pollution Control Plant (JWPCP), which are owned and operated by the Los Angeles County Sanitation District (LACSD). CBMWD purchases recycled water from LACSD and distributed approximately 7,647 AF to customers within its service area in FY 2014-15. Liberty participates in CBMWD's regional water recycling program which comprises two distribution systems, the E. Thornton Ibbetson Century Water Recycling Project and the Esteban E. Torres Rio Hondo Water Recycling Project.

6.5.2 Wastewater Collection, Treatment, and Disposal

Wastewater Collected Within Service Area

Liberty uses the services of LACSD to collect, treat, recycle, and dispose of wastewater. Wastewater from Liberty's service area is collected and treated at the Los Coyotes WRP and the JWPCP in Carson. Municipal wastewater is generated in Liberty's service area from a combination of residential, commercial, and industrial sources. The quantities of wastewater generated are generally proportional to the population and the water used in the service area. It is estimated that customers within Liberty's service area generate wastewater based on 65% of water demand. Wastewater treated at the Los Coyotes WRP is treated to California Department of Public Health's Title 22 recycled water standards.

Table 6-2 lists the volume of wastewater collected within Liberty's service area.

Table 6-2. Wastewater Collected Within Service Area in 2015

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☑	There is no wastewater collection system. The supplier will not complete the table below.					
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Total Wastewater Collected from Service Area in 2015:		0				
NOTES: Liberty does not provide wastewater collection services within its service area. Instead, Liberty utilizes the services of LACSD to collect, treat, and dispose of wastewater. Wastewater from Liberty's service area is collected and treated at the Los Coyotes WRP and the Joint Water Pollution Control Plant in Carson.						

Table 6-3. Wastewater Treatment and Discharge Within Service Area in 2015

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
☑	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
						Total	0	0	0	0

Wastewater Treatment and Discharge Within Service Area

Wastewater is not treated or disposed of within Liberty's service area. As described in Section 6.5.2, Liberty uses the services of LACSD to collect, treat, recycle, and dispose of wastewater at the Los Coyotes WRP and the JWPCP. Both are part of the Joint Outfall System, which is a network of seven treatment plants, trunk sewers, and pumping plants that provides wastewater treatment, reuse, and disposal for 73 cities and unincorporated areas of Los Angeles County (LACSD, 2016a).

The Los Coyotes WRP is located in the city of Cerritos at the northwest junction of the I-650 and I-91 freeways. It serves approximately 370,000 people. The plant provides primary, secondary, and tertiary treatment for 37.5 MGD of wastewater. About 5 MGD is recycled water that is used for landscape irrigation at parks, schools, golf courses, nurseries, and greenbelts, as well as industrial use. The remainder of the recycled water is discharged to the San Gabriel River (LACSD, 2016b).

The JWPCP is downstream of the Los Coyotes WRP in the city of Carson just east of the I-110 freeway. It is LACSD's largest wastewater treatment plant and one of the world's largest. The plant provides primary and secondary treatment for approximately 280 MGD and has a total permitted capacity of 400 MGD serving a population of 3.5 million in Los Angeles County. Effluent from JWPCP is disinfected and discharged into the Pacific Ocean through a network of outfalls (LACSD, 2016c).

6.5.3 Recycled Water System

Liberty's recycled water supply is provided by and purchased from CBMWD. CBMWD purchases tertiary treated recycled water from two LACSD WRP's, the Los Coyotes WRP and the San Jose Creek WRP. These plants provide approximately 100 MGD of tertiary treated (Title 22) water for distribution; no further treatment is required. CBMWD developed a regional water recycling program consisting of two major distribution systems, the E. Thornton Ibbetson Century Water Recycling Project and the Esteban Torres Rio Hondo Water Recycling Project. The two distribution systems are interconnected by a 50-mile pipeline system and operate as one recycled water supply system with three pumping stations, the Rio Hondo Pump Station, Hollydale Pump Station, and Cerritos Pump Station. Together they form the Central Basin Water Recycling Project, which delivered approximately 7,647 AFY of recycled water to 300 industrial, commercial, and landscape customers within the CBMWD's service area in FY 2014-15.

The Ibbetson Century Project began in 1992 and delivers recycled water from the Los Coyotes WRP to the cities of Bell, Bellflower, Bell Gardens, Compton, Cudahy, Downey, Huntington Liberty, Lakewood, Lynwood, Norwalk, Paramount, Santa Fe Springs, South Gate, and Vernon. The Torres Rio Hondo Project began in 1994 and delivers recycled water from the San Jose Creek WRP to the cities of Pico River and Whittier. In 2011, Phase I of the Southeast Water Reliability Project came online (HDR and Pacifica Services, 2012) and extends the recycled pipeline into Pico Rivera and Montebello.

Recycled water is acceptable for most non-potable water purposes such as irrigation and commercial and industrial processes. Although Liberty does not have a Recycled Water Master Plan, in 2008 CBMWD prepared a Recycled Water Master Plan to help identify all potential customers that could benefit from recycled water. The Recycled Water Master Plan was prepared in conjunction with various water purveyors and cities within CBMWD's service area, LACSD, and WRD. The 2008 Recycled Water Master Plan was updated in 2012 to evaluate the expansion of CBMWD's recycled water system. CBMWD's 2012 Recycled Water Master Plan identified potential customers that could benefit from recycled water. It provided potential system expansion routes and developed a phased Capital Improvement Program (CIP). The first phase of the CIP identifies projects to be performed by 2016 and the second phase identifies improvements that do not have a timeline. CBMWD is currently in the process of updating its 2012 Recycled Water Master Plan. CBMWD's recycled water system is projected to increase from its current sales of about 7,647 AF to 13,911 AF by 2040 by expanding from traditional irrigation users such as golf courses and parks to unconventional commercial and industrial users.

6.5.4 Recycled Water Beneficial Uses

This section discusses current and planned recycled water uses within the service area of urban water suppliers where recycled water use is implemented or planned and provides an overview of the current recycled water system.

Current and Planned Uses of Recycled Water

Liberty uses recycled water to augment valuable groundwater and imported water within its service area. In 2015, Liberty provided 208 AF of recycled water to its 29 locations within Liberty's service area for landscape and golf course irrigation. Landscape irrigation will continue to be the leading users of recycled water in Liberty's service area.

All recycled water is treated to tertiary levels and meets Title 22 requirements. It is estimated recycled water sold by Liberty to its customers will remain stable for many years. Liberty will continue to encourage large landscape water users, public authorities and others to consider using recycled water. The current and projected uses of recycled water used within Liberty's service area are summarized in Table 6-4.

Table 6-4. Current and Projected Recycled Water Direct Beneficial Uses Within Service Area*

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area								
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		LACSD						
Name of Agency Operating the Recycled Water Distribution System:		CBMWD						
Supplemental Water Added in 2015		None						
Source of 2015 Supplemental Water		N/A						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)	Landscape customers	Tertiary	198	215	232	251	271	293
Golf course irrigation	Golf course	Tertiary	9	9	9	9	9	9
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other *(Provide General Description)*								
		Total:	208	224	241	260	280	302
**IPR - Indirect Potable Reuse*								
NOTES: Currently, recycled water is served to landscape customers including 1 golf course. All recycled water is treated to tertiary levels and meets Title 22 requirements.								

Table 6-4b. Potential Recycled Water Customers Within 250 Feet of CBMWD's Recycled Line[1]

Business Type	5-Year Average (gallons)[2]	5-Year Average (AF)
City of Norwalk – Golf Course	5,906,956	18.13
City of Norwalk – John Zimmerman Liberty	5,899,476	18.10
City of Norwalk – Vista Verde Liberty	5,817,944	17.85
Nursery Gardens in Bellflower	2,668,864	8.19
City of Norwalk – Nature Liberty Way	2,065,976	6.34
Total		**68.62**

[1] Not all of the potable water used by these customers can be replaced with recycled water.
[2] Based on potable water use between 2011 and 2015.

As a regional effort, CBMWD has been working with its purveyors, including Liberty, to identify new customers and potential recycled water site connections. CBMWD would need to extend their existing recycled water backbone system to reach these new customers. Liberty looked at its top water users within about 250 feet of CBMWD's existing recycled water system and identified several customers that might be candidates for recycled water use as shown in Table 6-4b. Because CBMWD is in the initial stages of identifying customers, prioritizing projects, and considering financing, it is not expected that these projects would come to fruition in the next few years. Liberty supports the advancement of recycled water and will work closely with CBMWD to develop potential customers. However, it is more appropriate to update the future recycled water projections in the next UWMP.

Planned vs. Actual Use of Recycled Water

The total potential annual recycled water demand in Liberty's service area that is practical to serve is approximately 208 AFY. Recycled water use is down since its peak in 2006-2007. With the economic downturn, some nursery customers went out of business. In addition, the cost of water and conservation messaging during the drought contributed to reduced demands.

Table 6-5 compares the 2010 projections of recycled water use for 2015 with the actual recycled water use in 2015 within Liberty's service area.

Table 6-5. 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation			
Landscape irrigation (excludes golf courses)		270	198
Golf course irrigation			9
Commercial use			
Industrial use			
Geothermal and other energy production			
Seawater intrusion barrier			
Recreational impoundment			
Wetlands or wildlife habitat			
Groundwater recharge (IPR)			
Surface water augmentation (IPR)			
Direct potable reuse			
Other	*Type of Use*		
	Total	270	208

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

Liberty works collaboratively with CBMWD to market the use of recycled water within its service area. CBMWD's marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a cost-effective business tool. The target customer is expanding from traditional irrigation users such as golf courses and parks to unconventional commercial and industrial users.

CBMWD encourages the use of recycled water by increased marketing efforts as well as providing financial incentives. Financial incentives include wholesaling recycled water at a rate lower than potable water and funding plumbing retrofits to use recycled water. Liberty's recycled water rate is set below potable water rates to encourage recycled water use.

CBMWD provides other financial incentives as well. Some potential recycled water users do not have the financial capability to pay for on-site plumbing retrofits necessary to accept recycled water. CBMWD advances funds for retrofit expenses and are subsequently reimbursed through monthly payments. The on-site facilities fees are amortized over a period of time up to ten years at CBMWD's cost of funds. Repayment is made using the differential between potable and recycled water rates such that the customer never pays more than the potable rate. Once the loan is repaid, the rate reverts to the current recycled rates.

To accommodate anticipated growth in the CBMWD service area by identifying all potential customers who would benefit from using recycled water, CBMWD also prepared the Recycled Water Master Plan in 2008 and updated it in 2012. The 2012 Recycled Water Master Plan provided potential system expansion routes and developed a phased CIP. Projects included in the FY 2016-17 Adopted Operating Budget & Preliminary CIP Plan include:

- **West San Gabriel Recycled Water Expansion Project** to construct a pipeline to bring recycled water supply into northern area of the City of Montebello, City of San Gabriel and the City of Monterey Park to serve a demand of 800 AFY.
- **La Mirada Recycled Water Expansion Project** to expand the existing recycled water distribution system in south Santa Fe Springs into La Mirada to serve several landscaped facilities with a demand of 1,200 AFY.
- **Gateway Cities Recycled Water Expansion Project** to provide 453 AFY of recycled water to irrigate nine parks and schools in the cities of South Gate, Bell Gardens, and Lynwood.
- **Pico Rivera Mines Avenue Recycled Water Expansion Project** to construct a pipeline to expand the recycled water supply within the City of Pico Rivera to serve a demand of 275 AFY.
- **City of Downey Recycled Water Expansion Project** to construct a pipeline to expand the recycled water supply into the City of Downey to serve a demand of 125 AFY.
- **City of Monterey Park Recycled Water Expansion Project** to expand the recycled water system into the City of Monterey Park to serve a demand of 750 AFY.
- **Pico Rivera North Recycled Water Expansion Project** to expand the recycled water system into north of Pico Rivera to serve a demand of 150 AFY.
- **Pico Rivera South Recycled Water Expansion Project** to expand the recycled water system into south of Pico Rivera to serve a demand of 200 AFY.

Another aspect of optimizing recycled water use is participation in funding opportunities. CBMWD participates in MWD's Local Resources Program and federal and state funding programs for recycled water projects when available.

Table 6-6. Methods to Expand Future Recycled Water Use

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation. Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Marketing	Liberty works collaboratively with CBMWD to market the use of recycled water within its service area. CBMWD's marketing efforts have been successful in changing the perception of recycled water from merely a conservation tool with minimal application to a cost-effective business tool. The target customer is expanding from traditional irrigation users such as golf courses and parks to unconventional commercial and industrial users.	Ongoing	47
Financial Incentives	Financial incentives include wholesaling recycled water at a rate lower than potable water and funding plumbing retrofits to use recycled water. Liberty's recycled water rate is set below potable water rates to encourage recycled water use. CBMWD advances funds for recycled water retrofit expenses and are subsequently reimbursed through monthly payments. The on-site facilities fees are amortized over a period of time up to ten years at CBMWD's cost of funds. Repayment is made using the differential between potable and recycled water rates such that the customer never pays more than the potable rate. Once the loan is repaid, the rate reverts to the current recycled rates.	Ongoing	47
		Total	95

6.6 Desalinated Water Opportunities

The California UWMP Act requires a discussion of potential opportunities for use of desalinated water (Water Code Section 10631[i]). Currently, there are no identified Liberty projects for desalination of seawater or impaired groundwater. However, from a regional perspective, desalination projects within the region would benefit Liberty as they would make imported supplies available to meet demands.

Because Liberty's service area is not in a coastal area, it is neither practical nor economically feasible for Liberty to implement a seawater desalination program. However, Liberty could provide financial assistance to MWD, other SWP contractors, or their member agencies in the construction of their seawater desalination facilities in exchange for SWP supplies.

Liberty has been following existing and proposed seawater desalination projects along California's coast. Most of the existing and proposed seawater desalination facilities are, or would be, operated by agencies that are not SWP contractors. However, in these cases, an exchange for imported water deliveries would most likely involve a third party (SWP contractor), CBMWD, and Liberty.

6.7 Exchanges or Transfers

Outside of groundwater lease agreements with other local pumpers of the Central Basin, Liberty has not entered into any agreements for the exchanges or transfers of water.

6.7.1 Exchanges

None to report.

6.7.2 Transfers

None to report.

6.7.3 Emergency Interties

Liberty has 16 inter-connections with other water utilities in case of any emergency. Emergency interties are addressed further in Section 8 of this 2015 UMWP.

6.8 Future Water Projects

Liberty has several water supply projects planned to increase reliability and reduce water supply costs by transitioning toward increased groundwater pumping and decreased purchasing of imported water. These projects will allow us to meet demands when imported water supplies are unavailable and allow us to use less expensive groundwater supplies. A new 2,000-gallon-per-minute groundwater well will be completed in 2016 and serve customers in the Compton West system. This well is replacing two wells that have reached the end of their useful lives. A new well is planned in the Bellflower-Norwalk system for completion in 2017. This facility will replace several groundwater wells that are reaching the end of their useful lives and are no longer able to be pumped on a regular basis. A 600,000-gallon reservoir and booster pump station are planned for the Compton East system. The reservoir will allow Liberty to pump more water during low demand periods and store it in the reservoir for use during high demand periods. Construction of the reservoir is expected in 2017. Another new well is planned to replace an old existing well in the Compton East system and is expected to be completed around 2019.

Planned future water supply projects for Liberty is discussed in the paragraph above and are not compatible with Table 6-7.

Table 6-7. Expected Future Water Supply Projects or Programs

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☑	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
p. 41	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Agency *This may be a range*
	Drop Down List (y/n)	*If Yes, Agency Name*				

6.9 Summary of Existing and Planned Sources of Water

The following table presents Liberty's actual water supplies in year 2015.

Table 6-8. Water Supplies – Actual

Table 6-8 Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2015	
		Actual Volume	Water Quality
Groundwater	The sole source of local groundwater for Liberty's water supply is the Central Groundwater Basin.	3,520	Drinking Water
Purchased or Imported Water	Imported water supplies are provided by CBMWD, a MWD member agency. MWD acquires water from the Colorado River and the SWP and distributes treated and untreated water directly to its 26 member agencies.	6,059	Drinking Water
Recycled Water	CBMWD owns the Century Recycled Water System in the cities of Vernon, South Gate, Lynwood, Paramount, Lakewood, Bellflower, Downey, and Norwalk. This system provides the Liberty service area with recycled water.	208	Recycled Water
	Total	9,787	

The total anticipated water supply for Liberty from imported water, groundwater, and recycled water is shown in Table 6-9.

Table 6-9. Water Supplies – Projected

Table 6-9 Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply (reasonable available volume AFY)				
		2020	2025	2030	2035	2040
Groundwater	The sole source of local groundwater for Liberty's water supply is the Central Groundwater Basin.	5,030	5,030	5,030	5,030	5,030
Purchased or Imported Water	Imported water supplies are provided by CBMWD, a MWD member agency. MWD acquires water from the Colorado River and the SWP and distributes treated and untreated water directly to its 26 member agencies.	7,039	6,523	6,077	5,761	5,585
Recycled Water	CBMWD owns the Century Recycled Water System in the cities of Vernon, South Gate, Lynwood, Paramount, Lakewood, Bellflower, Downey, and Norwalk. This system provides the Liberty service area with recycled water.	224	241	260	280	302
	Total	12,293	11,794	11,367	11,071	10,917

6.10 Water Quality

The quality of any natural water is dynamic in nature. This is true for the SWP, Colorado River water, and local groundwater. During periods of intense rainfall or snowmelt, routes of surface water movement are changed; new constituents are mobilized and enter the water while other constituents are diluted or eliminated. The quality of water changes over the course of a year. These same basic principles apply to groundwater. Depending on water depth, groundwater will pass through different layers of rock and sediment and leach different materials from those strata. Water depth is a function of local rainfall, snowmelt, and artificial recharge in the Central Basin. During periods of drought, the mineral content of groundwater increases. Water quality is not a static feature of water, and these dynamic variables must be recognized.

As required by the Safe Drinking Water Act, which was reauthorized in 1996, Liberty provides annual Water Quality Reports to its customers, also known as Consumer Confidence Reports (CCR), for each of the three water systems: Bellflower/Norwalk, Lynwood/Rancho Dominguez, and Compton/Willowbrook. This mandate is governed by the U.S. Environmental Protection Agency (EPA) and the Division of Drinking Water Programs (DDW) to inform customers of their drinking water quality. In accordance with the Safe Drinking Water Act, Liberty monitors a number of regulated and unregulated compounds in its water supply and as in years past, the water delivered to Liberty customers meets the standards required by the state and federal regulatory agencies.[4]

[4] Liberty Utilities (Park Water) Corp., Consumer Confidence Reports, 2014-2015.

As mentioned previously, Liberty's source of water is from imported water supplies, local groundwater and recycled water. This section provides a general description of the quality of Liberty's water supplies. A discussion of potential water quality impacts on the reliability of these supplies is also provided.

6.10.1 Quality of Imported Water

Liberty receives imported water through CBMWD from MWD, which receives raw water from Northern California through the SWP and from the Colorado River Basin through the Colorado River Aqueduct. Water quality is identified as a possible risk to MWD's future water supply reliability. Existing supplies could be threatened in the future because of contamination, more stringent water quality regulations, or the discovery of an unknown contaminant. Water quality issues could directly impact the amount of water supplies available to Liberty as shown in the following examples:

- If a groundwater basin becomes contaminated and cannot be used, more water will be required from other sources.
- Imported water from the Colorado River must be blended (mixed) with lower salinity water from the SWP. Higher salinity levels in the Colorado River would increase the proportion of SWP supplies required.
- High total dissolved solids (TDS) in water supplies lead to high TDS in wastewater, which increases the cost of recycled water, if additional treatment such as reverse osmosis is required.
- If diminished water quality causes a need for membrane treatment, the process typically results in losses of up to 15% of the water processed.
- Degradation of imported water supply quality could limit the use of local groundwater basins for storage.
- Changes in drinking water quality standards such as arsenic, chromium VI, radon, or perchlorate could increase demand on imported water supplies.

Because of these concerns, MWD has identified those water quality issues that are most concerning as follows:

- Salinity
- Perchlorate
- Total Organic Carbon and Bromide Formation
- Nutrients
- Arsenic
- Uranium
- Chromium VI
- N-nitrosodimethylamine (NDMA)
- PPCPs

MWD has identified necessary water management strategies to minimize the impact of these contaminants on water supplies. None of these contaminants affects water reliability in Liberty's service area. MWD has not identified any water quality risks that cannot be mitigated. Overall, MWD "anticipates no significant reductions in water supply availability from imported sources due to water quality concerns, over the next five years" (MWD, 2016).

High salinity levels remain a significant issue associated with Colorado River supplies. Under California's current drought conditions, decreased flows have altered Delta flow causing increased seawater intrusion and an observable increase in SWP salinity. However, SWP salinity is still significantly lower than the Colorado River, even under drought conditions (MWD, 2016).

The primary water quality concern for the SWP is disinfection byproduct precursors, specifically total organic carbon and bromide. Disinfection byproducts formed as a result of total organic carbon and bromide reacting with disinfectants can cause near term restrictions to MWD's ability to use SWP water. In order to mitigate this problem, MWD has installed ozone disinfection at four of its treatment plants and construction is underway for an ozone facility at Weymouth Water Treatment Plant.

Perhaps the most important difference in quality between surface water and groundwater is the presence of microbes in surface water. Surface water is exposed to a variety of microbial contaminants while groundwater in general is not. As a result, MWD water is treated at one of three filtration plants - the Jensen Filtration Plant in Mission Hills (San Fernando Valley), the Diemer Filtration Plant in Yorba Linda, and the Weymouth Filtration Plant in LaVerne – before being delivered to Liberty.

MWD tests and treats its water for microbial, organic, inorganic, and radioactive contaminants, as well as pesticides and herbicides. Protection of MWD's water system continues to be a top priority. MWD conducts more than 300,000 water quality tests each year and has contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system.[5] MWD also has one of the most advanced laboratories in the country where water quality staff performs tests, collects data, reviews results, prepares reports, and researches other treatment technologies. Although not required, MWD monitors and samples elements that are not regulated but have captured scientific and/or public interest. MWD has tested for chemicals such as perchlorate, methyl tertiary butyl ether (MTBE), and chromium VI among others. In 2007, MWD implemented a program to determine the occurrence of Pharmaceuticals and Personal Care Products (PPCPs) and other organic wastewater contaminants in MWD's treatment plant effluents and selected source water locations within the Colorado River and SWP watersheds.

Water Quality Programs

In addition to monitoring for and controlling specific identified chemicals in the SWP and Colorado River water supply, Metropolitan Water District is involved in a number of programs to protect the quality of its water supplies. Some of the programs and activities include:

- Source Water Protection – MWD has an active source water protection program and continues to advocate on numerous issues to protect and enhance SWP and Colorado River water quality.
- In accordance with California's Surface Water Treatment Rule, Title 22 of the California Code of Regulations, DDW requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years to identify possible sources of drinking water contamination, evaluate source and treated water quality, and recommend watershed management activities that will protect and improve source water quality. The most recent sanitary surveys for the Colorado River and SWP sources were completed in 2010 and 2011, respectively.
- Colorado Water Quality Partnership – MWD is a member of the Clean Colorado River Sustainability Coalition, formed in 1997 to protect and enhance the Colorado River through monitoring and analysis of water quality. MWD is also a member of the Colorado River Basin Salinity Control Forum, which facilitates coordination between Basin states and federal agencies on salinity matters and the implementation of the Colorado River Basin Salinity Control Program. In 2011, MWD, with Southern Nevada Water Authority (SNWA) and the Central Arizona Project, formed the Lower Colorado River Water Quality Partnership to identify and implement collaborative solutions to address water quality issues facing the Colorado River. MWD is also a participant of the Lake Mead Water Quality Forum, formed in 2012, with the goals to support the protection of human health and the environment and to preserve and improve the water quality of the Las Vegas Wash, Las Vegas Bay, and Lake Mead (and as a result, the Colorado River).
- SWP Water Quality Program – MWD supports DWR's policies and programs to maintain and improve the quality of the SWP water. MWD has implemented selective withdrawals from the Arvin-Edison storage program and exchanges with the Kern Water Bank to improve water quality. These programs were initially designed to

[5] MWD website. http://www.mwdh2o.com/Search-Results/Pages/Default.aspx?k=RUWMP

provide dry-year supply reliability but can also be used to store SWP water during periods of better water quality. During periods of lower SWP water quality, the better quality stored water can be withdrawn to dilute with SWP water deliveries.

- Regulatory and Legislative Action – MWD conducts reviews of regulatory and legislative actions that may have an impact on MWD's source water, including state and federal water quality standards, the California Environmental Quality Act (CEQA) documents for projects within MWD's source watershed, and National Pollution Discharge Elimination System (NPDES) permits for wastewater discharges into the Bay-Delta and Colorado River water systems. MWD also provides policies and funding requests for source water protection priorities, such as the Moab uranium tailings clean up and the Colorado River salinity control.

6.10.2 Quality of Groundwater

WRD's service area contains a large and diverse industrial and commercial base, which can potentially contribute to groundwater contamination sources, such as leaking underground storage tanks, petroleum pipeline leaks at refineries and petrochemical plants, discharges from dry cleaning facilities, and auto repair shops. Consequently, WRD established its Groundwater Contamination Prevention Program as a key component of the Groundwater Quality Program in an effort to minimize or eliminate threats to groundwater supplies.

WRD provides extensive information on groundwater quality in both its current Engineering and Survey Report (May 2015) and the Regional Groundwater Monitoring Report (February 2015). Both reports have a section devoted solely to groundwater quality management. The groundwater quality issues discussed by WRD include 11 key water quality constituents: total dissolved solids (TDS), iron, manganese, nitrate, chloride, trichloroethylene (TCE), tetrachloroethylene (PCE), arsenic, perchlorate, hexavalent chromium, and methane.

None of the contaminants listed above impact the reliability of Liberty's groundwater supplies. The Regional Groundwater Monitoring Report concludes that while there are localized areas of marginal to poor water quality that go untapped or may require treatment prior to use, overall, the groundwater in the Basin continues to be of high quality, suitable for potable and non-potable uses, and continues to meet high standards.

Liberty has not had any violations of any Maximum Contaminant Levels (MCLs), Action Levels (ALs) or Treatment Techniques (TTs). The revised Total Coliform Rule became final on February 13, 2013. Although enforcement of the revised rule in California is expected to begin February 2016, it does not appear that this revised rule will have any significant impacts on Liberty (Liberty, Application No. 15-01-001, 2015).

United States Environmental Protection Agency (USEPA)'s second 6-year regulatory review of existing drinking water regulations may include revisions of the MCLs for two volatile organic chemicals (VOCs) – tetrachloroethylene (PCE) and trichloroethylene (TCE). Liberty has several wells that have detected levels of both PCE and TCE, below the current MCL, but near the potential level of the revised MCLs, which are expected to be near the current detection level of reporting (0.5 µg/L). This could require removing several Liberty wells from service in the future while the Company decides whether to build treatment plants (Liberty, Application No. 15-01-001, 2015).

There are several significant regulatory activities pending in California. The DDW adopted an MCL for hexavalent chromium on July 1, 2014, with compliance beginning on January 1, 2015. Although initial quarterly monitoring of all sources is required in the last quarter of 2014 and continuing for three quarters in 2015, Liberty does not expect any problems with compliance with this new MCL (Liberty, Application No. 15-01-001, 2015).

Water Quality Programs

For Central Basin as a whole, WRD actively monitors the Basin for water quality issues. WRD assists purveyors in its service area in meeting drinking water standards through its Cooperative Basin-Wide Title 22 Groundwater Quality Program. The program includes wellhead testing at 84 groundwater wells from 22 participating pumpers, reservoir sample collecting, and water quality testing and reporting services.[6] WRD conducts a comprehensive Groundwater Quality Program to evaluate water quality compliance in production wells, monitoring wells, and recharge/injection areas.

As part of WRD's Regional Groundwater Monitoring Program, WRD collects groundwater samples twice a year from over 300 monitoring wells. The water quality data collected from these wells are used to assess ambient conditions of the Basin, monitor the effects of extraction, monitor the effectiveness of the seawater intrusion barriers, address poor water quality areas, and also provide early warning of emerging contaminants of concern. WRD supplements their sampling with information from production wells in order to broaden the coverage of the Basin.

CBMWD and WRD support and are involved in many programs that address water quality concerns of the groundwater basin. Some of the programs and activities include:

- WRD's Safe Drinking Water Program – This program promotes the treatment of contaminants at the wellhead for potable purposes. Currently, the program is focusing on Volatile Organic Compounds (VOCs) and provides financial assistance for the design and installation of wellhead treatment systems. This program also focuses on the secondary contaminants iron and manganese.
- CBMWD's Water Quality Protection Project – This project was developed to protect the Basin from TCE and PCE from migrating into the Central Basin from the San Gabriel Valley aquifer. The project includes two extraction wells and a treatment facility. Approximately 3,500 AFY of groundwater are treated at a site within the City of Pico Rivera.
- WRD's Groundwater Quality Program – This program monitors and evaluates the impacts of current and pending drinking regulations on the groundwater basin. Contaminants of concern such as perchlorate, NDMA, hexavalent chromium, and 1,4-dioxane are closely monitored.
- WRD's Water Augmentation Study – This study evaluates the feasibility of capturing more storm runoff in-lieu of discharge to surface waters.
- WRD's Central Basin Groundwater Contamination Study – WRD, in conjunction with the U.S. Geographical Survey (USGS), is characterizing the threat of multiple contaminants moving to deeper potable water aquifers.
- WRD's Los Angeles Forebay Groundwater Task Force – WRD formed the Los Angeles Forebay Groundwater Task Force in 2012 to coordinate and align regulators and water purveyors/agencies to collaboratively address groundwater contamination in the Los Angeles Forebay, specifically VOCs and perchlorate issues.
- WRD's Broadway Neighborhood Stormwater Greenway (Broadway) Project – Funded by Prop 84 money, WRD partnered with the City of Los Angeles Bureau of Sanitation to implement a portion of the concept design to increase stormwater infiltration and to assist the City of Los Angeles in its compliance with total maximum daily load (water quality-related) requirements.

[6] WRD Engineering Survey and Report, May 2015.

- WRD's Regional Water Quality Monitoring Program – This program has been in place for over 50 years to collect basic information used for groundwater basin management, including groundwater level data and water quality data. It currently consists of a network of over 300 WRD and USGS-installed monitoring wells at over 55 locations.

6.10.3 Water Quality Impacts on Reliability

The previous section summarized the general water quality issues of MWD's imported water and the Central Basin's groundwater. The same water quality concerns apply to Liberty's water supply. Similar to MWD's watershed survey, Liberty prepared a Source Water Assessment of its drinking water sources in April 2003. The groundwater sources were found to be most vulnerable to possible contamination from landfills and dumps, irrigated crops, sewer collection systems, gas stations, dry cleaners, metal plating/finishing/fabricating shops, military installations, chemical/petroleum processing and storage facilities, and leaking underground storage tanks. There have been no contaminants detected that exceed any federal or state drinking water standards. Hundreds of samples analyzed every month and thousands every year by Liberty and MWD laboratories assure that all primary (health related) and secondary (aesthetic) drinking water standards are being met.[7] Liberty continues to monitor its groundwater wells for the first indication of problems as part of their water management strategy.

Liberty constructed a wellhead treatment facility to reduce the levels of manganese and arsenic occurring in the water pumped from Well 9D. The installation of this treatment plant allows Liberty to maximize local groundwater supply by pumping about 850 AFY (maximum flow of 1,200 gpm) from Well 9D.

Liberty proactively monitors emerging contaminants and has some wells with 1,4-Dioxane detected at levels above the California Notification Level (not a drinking water standard) of 1 ppb. Four wells in the Bellflower-Norwalk system and one well in the Lynwood/Rancho Dominguez system have detected levels of 1,4-Dioxane ranging from 1.5 to 4.1 ppb. Concentrations have remained relatively stable since 2002. Liberty provides notice of this exceedance of the 1,4-Dioxane NL to its customers annually in its Consumer Confidence Reports (Liberty, Application No. 15-01-001, 2015).

Except for the occurrence of 1,4-dioxane and Well 9D arsenic and manganese, Liberty has not experienced any other significant water quality problems. Liberty is concerned about the potential for increasing levels of VOCs in the Central Basin as well as the potential lowering of the existing MCLs for TCE and PCE. Liberty has additional concerns about VOCs because of several plans being considered to use the Basin for conjunctive use (additional groundwater storage). This would be accomplished by spreading additional imported water and raising the groundwater level in the Basin. Raising groundwater levels has the potential to put water into the previously dry vadose zone[8] and mobilize contaminants like VOCs into the groundwater. Liberty will continue to closely monitor this situation.

The EPA's Stage 2 regulation of the disinfection byproducts rule took effect in 2013 to tighten monitoring requirements of total trihalomethanes (TTHM) and haloacetic acids (HAA5). Stage 1 was implemented in 2002 and lowered the TTHM maximum annual average concentration level in water supplies. Stage 2 changed compliance from a system-wide running annual average to a location running annual average, making it easier for utilities to fall out of compliance. The Liberty water supplies meet the requirements of both Stage 1 and 2. MWD is adding ozone treatment to their Weymouth Filtration Plant as a primary disinfectant to reduce the levels of regulated disinfection byproducts (DBPs).

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[7] Liberty Utilities (Park Water) Corp., *Consumer Confidence Reports*, 2014-2015.
[8] The mostly unsaturated zone between the soil surface and the permanent groundwater table.

Ozone is already in place at the Jensen, Skinner, Mills and Diemer Plants. This should assure Liberty's compliance with Stage 2 DBP Rule into the future.

Liberty does not anticipate any significant or immediate changes in its available water supplies due to water quality issues, in part because of the mitigation actions undertaken by Liberty, MWD, CBMWD, and WRD as described earlier.

Reference:
QDI, 2014

Quality's History

-

1913 – B.F. Leaman and son, Clair, begin a trucking operation hauling lime and milk.

1930 – The Leaman's purchase Motor Mileage Company to haul fuel oil.

1933 – Leaman Transportation Company, Inc. is formed.

1938 – Quality Carriers founded by Pat Torhorst and Lee Barney.

1949 – Chemical Tank Lines is formed to transport chemicals in bulk quantities.

1961 – Chemical Tanks Lines merges with the 2 Leaman companies creating Chemical Leaman Tank Lines.

1965 – Buzz Babbit purchases operating authority of Denver-based carrier J.B. Montgomery.

1977 – All CLTL subsidiaries brought under parent company, Chemical Leaman Corporation (CLC).

1978 – Cletex Trucking joins Montgomery as the Company's first Affiliate Partner.

1981 – Quality Carriers buys McNair Transport.

1984 – Quality Carriers and O'Boyle Tank Lines Merge.

1989 – Montgomery Tank Lines merges with Quality O'Boyle.

1990 – Driver Safety Training School started in Indianapolis, IN

1992 – QualaSystems established as a separate, wholly-owned subsidiary of CLC.

1995 – MTL & CLC joins Responsible Care initiative.

1996 – CLC acquired the assets and business of Fleet Transport Company, Inc.

1997 – CLC forms Leaman Logistics, Inc. and Transplastics, Inc.

1998 – MTL Inc. agrees to merge with a subsidiary of Apollo Management LP, one of the country's leading financial management organizations. MTL & Chemical Leaman Corp. combine, bringing together the industries largest asset base, and most complete service offering, under one umbrella.

1999 – MTL & CLC completed the process they began in June by fully integrating their operations under the single identity of Quality Distribution, Inc. and at the same time announced the formation of Quality Carriers.

2001 – Quality Distribution, Inc. agrees to purchase terminals, equipment and other assets from Matlack Systems, Inc.

2003 – Quality Distribution completed its initial Public Offering on November 7, 2003. 7,875,000 shares sold during the IPO at $17.00 p/share. Quality trades on NASDAQ under the symbol of "QLTY".

2007 – Boasso America Corporation was purchased by Quality Distribution, LLC.

2007 – Quality Carriers becomes one of the 1st carriers certified under Responsible Care's new process.

2009 – Quality Distribution sells all assets of QSI to Qualawash Holdings, LLC. a company formed by Mike Bauer.

Reference:
RMP, 2011

CITY OF COMPTON

2010 Urban Water Management Plan

Prepared By:
Risk Management Professionals

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2 SYSTEM DESCRIPTION

2.1 SERVICE AREA PHYSICAL DESCRIPTION

Urban Water Management Planning Act Requirement:

10631(a) Describe the service area of the supplier.

General Location Overview

The City of Compton (City) is also known as the "Hub City" because of its unique location in the center of Los Angeles County. The City is located approximately six miles north of downtown Long Beach and is bounded by the City of Paramount to the east, the City of Lynwood and an unincorporated County area (the Willowbrook community) to the north, an unincorporated County areas to the west, and unincorporated County areas and the Cities of Carson and Long Beach to the south. One of the City's unique geographic characteristics is that its boundaries enclose three areas of unincorporated County.

The Long Beach Freeway (I-710) generally serves as the City's eastern boundary. The Artesia Freeway (SR-91) traverses the southern portion of Compton, while the Century Freeway (I-105) is located to the north of the City. Figure 2.1.1 shows the location of the City of Compton in a regional context. A Citywide map is provided in Figure 2.1.2

The City has a total land area of 10.2 square miles or approximately 6,514 acres. Land uses within the City are varied. Residential users are scattered throughout the City and includes a mix of single-family homes and multi-family developments (both apartments and condominiums). Commercial uses are concentrated along the major arterials and include retail and small office developments, neighborhood commercial centers, and a number of larger community shopping centers. Industrial users are concentrated along Alameda Street (north of Rosecrans Avenue) and in the westernmost and southern portions of the City.

The predominant land use in the City is residential, accounting for approximately forty (40) percent of the City's total land area. The next largest land use in the City is industrial, which accounts for over seventeen (17) percent of the City's total land area and wealth of jobs. The

third largest land use is commercial uses account for approximately five (5) percent of the City's land area.

Water System Overview

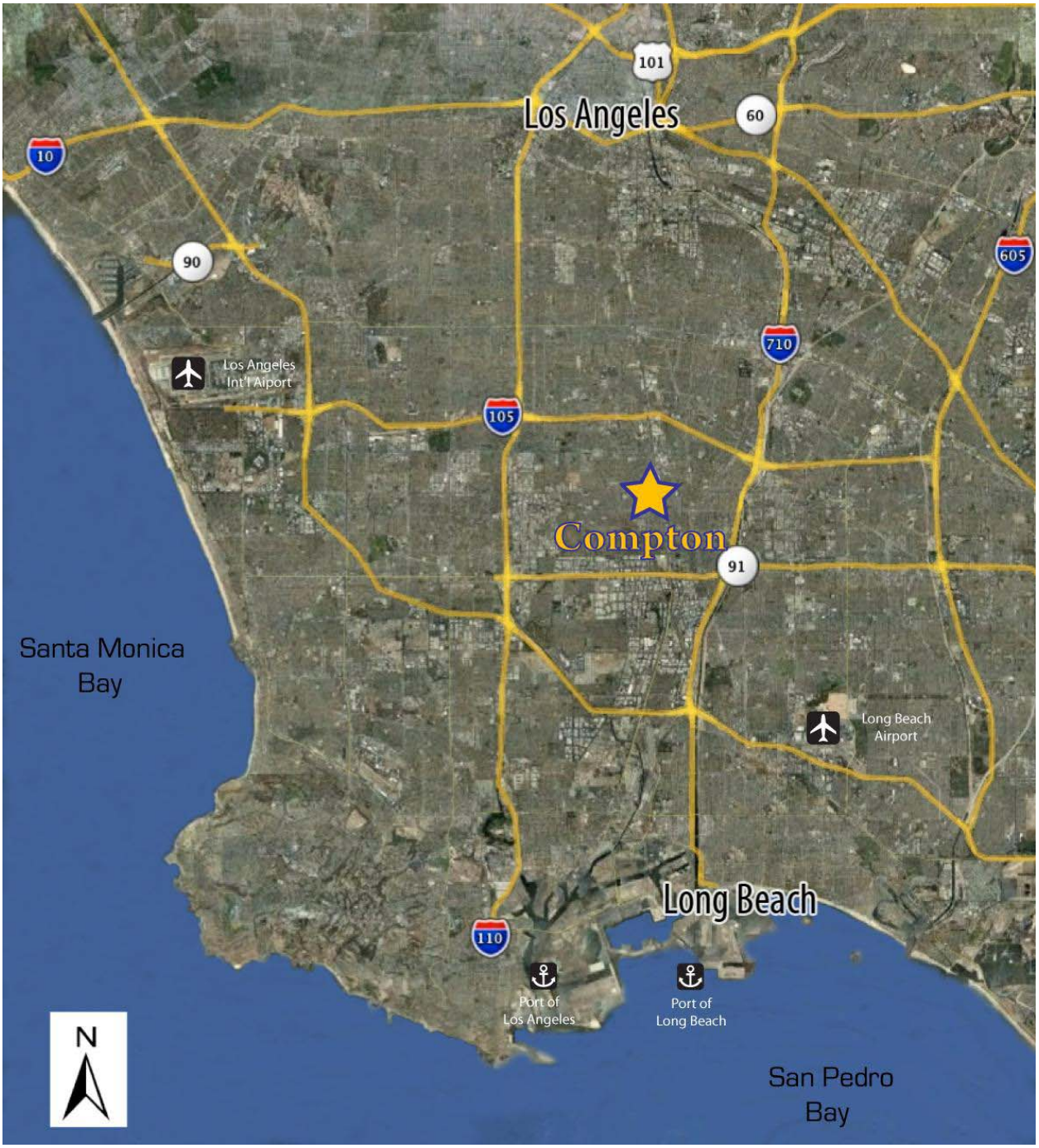
The City of Compton Municipal Water District (CMWD) has two major sources of water. It currently has access to 5,780 acre-feet of groundwater that is supplied via 7 wells. Water is pumped from these wells, and flows into a grid system, which is then distributed using a gravity fed system via 163 miles of 2 to 24-inch diameter pipes. In addition, Metropolitan Water District of Southern California (MWD) supplies approximately 30-60% of the City's water demand. MWD has three active interconnections to the City. The purchased water from MWD augments the water from the wells, via the distribution system, and flows into four 3 million gallon welded steel-plate storage tanks, for a total of 12,000 million gallons of storage. Any fluctuations in system pressure or flow deficiencies are taken up by these tanks. Table 2.1.1 shows the maximum pumping capacity of each well site.

Water supplies are currently adequate to meet normal domestic needs, but overall reservoir capacity is lower than desirable. CMWD retails water to approximately 80 percent of the City of Compton as shown in Figure 2.1.3. Private water companies provide service to the remaining residents.

Table 2.1.1
System Facility Summary

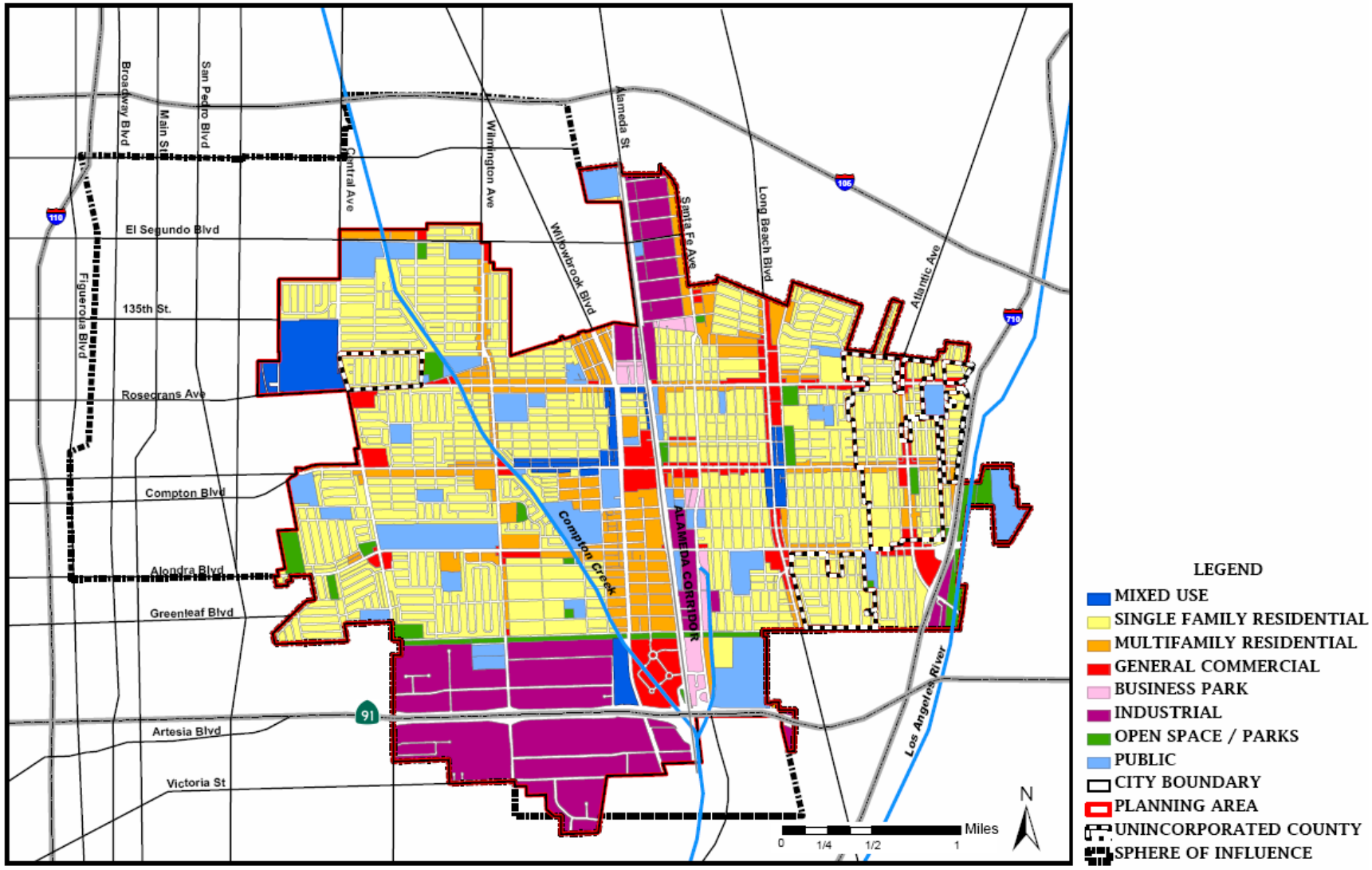
Wells	GPD (Gallons Per Day)	Reservoir (S. Wilmington Ave)	Capacity
Well Site 11	1,440,000	Elevated Tank	3 MG
Well Site 13	1,584,000	Elevated Tank	3 MG
Well Site 15	1,080,000	Elevated Tank	3 MG
Well Site 16	1,656,000	Elevated Tank	3 MG
Well Site 17	1,339,200		
Well Site 18	2,880,000		
Well Site 19	2,592,000		
Total	**9,979,200**		**12 MG**

Figure 2.1.1 – The City of Compton Regional Location[1]



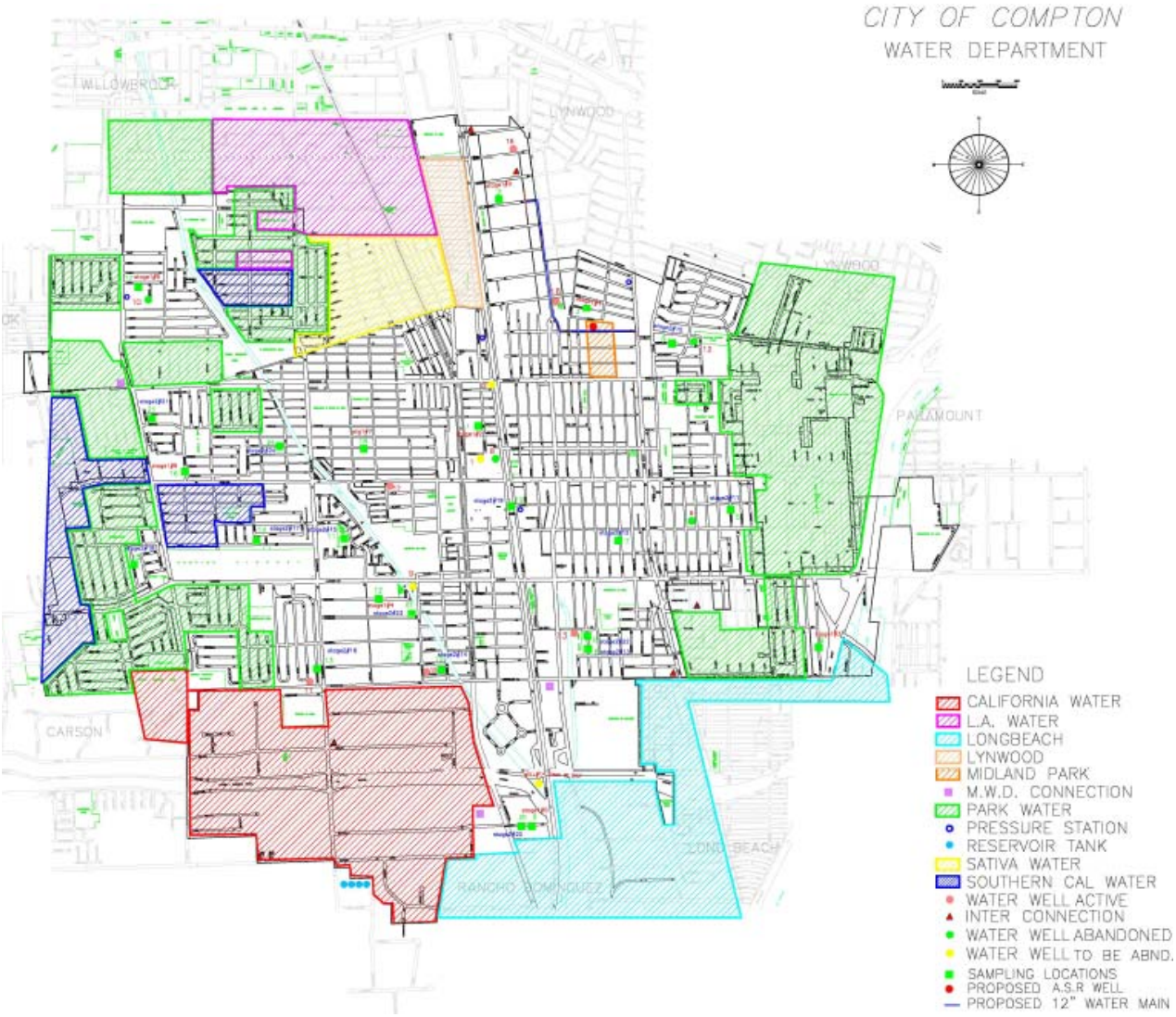
[1]Not to Scale

Figure 2.1.2 – City of Compton Map[1]



[1]Not to Scale

Figure 2.1.3 – The City of Compton Service Area[1]



[1]Not to Scale

2.2 SERVICE AREA CLIMATE

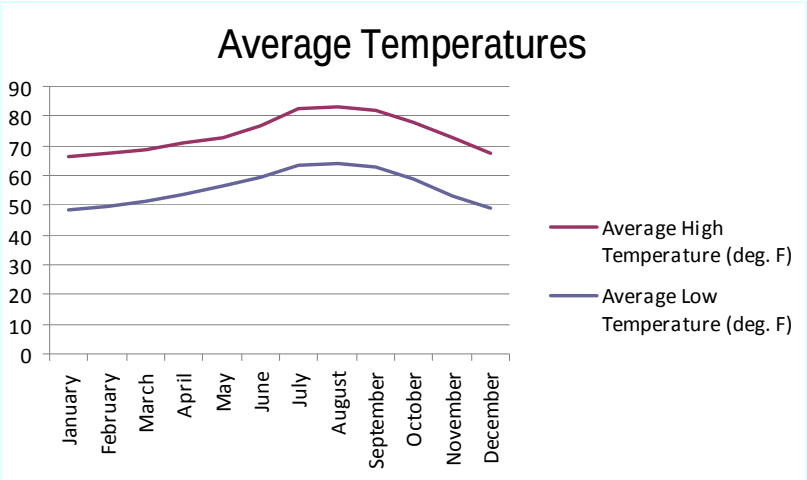
Urban Water Management Planning Act Requirement:

10631(a) Describe the service area – climate.

Temperature

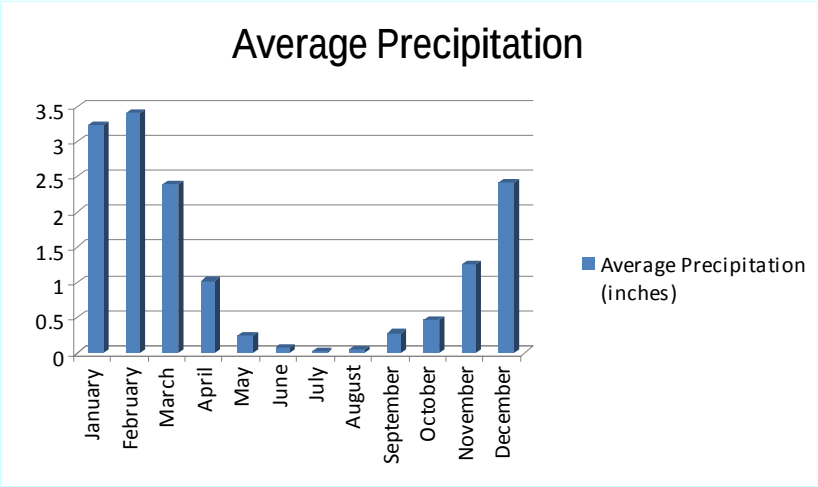
The City of Compton has a Subtropical-Mediterranean climate and receives just enough annual precipitation to avoid Koppen BSh (semi-arid climate) classification. The temperature range is generally moderate as depicted in Figure 2.2.1; the average high temperature is 74 °F and the average minimum annual temperature is 55 °F.

Figure 2.2.1 – Average Temperatures



Precipitation

Figure 2.2.2 – Average Precipitation



The City's annual average precipitation is approximately 15 inches. The average annual monthly precipitation in the City of Compton is presented in Figure 2.2.2.

Additionally, seasonal variation in temperature, rainfall, and evapotranspiration rate are illustrated in Table 2.2.1.

Table 2.2.1
Climate Data[1] (Period Record: 4/1/1906 – 12/31/2010)

	Avg. High Temp. (F)	Avg. Low Temp. (F)	Avg. Precipitation	Avg. (ETo)[2]
January	66.3	48.3	3.24	1.65
February	67.3	49.6	3.41	2.15
March	68.8	51.1	2.39	3.59
April	71.0	53.4	1.02	4.77
May	72.9	56.5	0.25	5.12
June	77.0	59.7	0.07	5.71
July	82.3	63.2	0.01	5.93
August	83.1	63.8	0.05	5.91
September	81.8	62.6	0.28	4.39
October	77.6	58.7	0.47	3.22
November	72.8	53.3	1.25	2.18
December	67.4	49.1	2.42	1.68

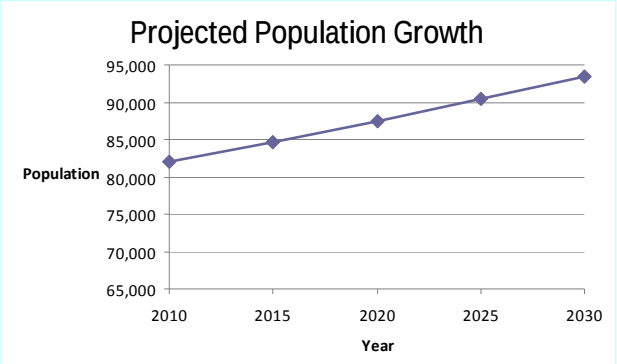
Source: (1) Western Regional Climate Center: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5115
(2) CIMIS: http://wwwcimis.water.ca.gov/cimis - Long Beach Station

2.3 SERVICE AREA POPULATION

Urban Water Management Planning Act Requirement:

10631(a) Describe the service area – current and projected population … The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier …(population projections) shall be in five-year increments to 20 years or as far as data is available.

Figure 2.3.1 – Projected Population Growth



Compton is strategically positioned on the Alameda Corridor, along which 25% of all U.S. waterborne international trade passes. The City is emerging as an industrial center in Los Angeles County for transit and distribution, business services, high technology, home and lifestyle products, and

metals. Compton is also considered an "entrepreneurial hot spot" and the City was recently listed as one of the best places in the United States to start and grow a business. The City is growing; its 2009 population is exceeds its earlier 2015 population projection. The community's population is predominantly Latino (57%) and African-American (40%) according to the most recent 2000 U.S. Census. Table 2.3.1 and Figure 2.3.1 show the service area population projection for the next 20 years.

Compton has a young population, with almost 50 percent of its residents under the age of 25 and a proportionally smaller senior population than that of the County of Los Angeles. Compton has been described as a family-oriented community because over 83% of its households are made up of families, a higher percentage than for Los Angeles County as a whole. Compton's family size is also larger than for Los Angeles County, 4.16 persons per household versus 2.98 persons per household for the County.

Table 2.3.1
Population — Current and Projected

	2010	2015	2020	2025	2030	Data source
Service Area Population[1]	81,963	84,669	87465	90353	93,336	California DOF and Census.gov Estimates

[1] Service area population is defined as the population served by the distribution system. See Technical Methodology 2: Service Area Population (2010 UWMP Guidebook, Section M).

2.4 OTHER DEMOGRAPHIC FACTORS

Urban Water Management Planning Act Requirement:
10631(a) Describe the service area – other demographic factors affecting the supplier's water management planning

Compton's employment levels are forecast to grow by about nine (9) percent over the next 30 years. The majority of jobs will be in the manufacturing, sales and service sectors. The City has about 2,700 licensed businesses. Retail businesses and offices are concentrated along Compton Boulevard, Alameda Street, Long Beach Boulevard, and Rosecrans Avenue. The major industrial businesses are located near the Artesia Freeway (SR-91) and along Alameda Street. City water demand is estimated to increase moderately in the future as a result of the projected increase in population.

3 SYSTEM DEMANDS

3.1 WATER CONSERVATION BILL OF 2009 - BASELINES AND TARGETS

Urban Water Management Planning Act Requirement:

10608.20(e) An urban retail water supplier shall include in its urban water management plan … due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

In order to improve the Sacramento-San Joaquin Delta, in 2008 Governor Schwarzenegger directed State water agencies to develop a plan to achieve a twenty percent per capita water use reduction by the year 2020. The Water Conservation Act of 2009 (Senate Bill x7-7), passed in November 2009, provides the legislative framework to implement the conservation goals, and requires retail water suppliers to detail their strategy for achieving the reduction requirement in their 2010 Urban Water Management Plan Updates. The Urban Water Management Planning Act and SBx7-7 can be found in Appendices C and D of this document, respectively.

Explicit methodologies were developed by the California Department of Water Resources (DWR) to assist retail water suppliers in complying with the Water Conservation Act of 2009, and they are detailed in the technical document, "Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use." The City of Compton utilized the DWR methods when determining its baseline, interim, and water use target values, the steps of which are described in detail in the following sections.

The methodologies laid out by DWR instruct urban water suppliers to determine their baseline and target water use values through performing four main steps, which are as follows:

- Step 1: Determine Base Daily Per Capita Water Use
- Step 2: Determine Urban Water Use Target
- Step 3: Compare Urban Water Use Target to the 5-year Baseline (verification of 95% minimum reduction requirement)

- Step 4: Determine Interim Urban Water Use Target

Water suppliers are given the option of determining their 20x2020 target values either individually, or through a regional alliance. The City of Compton elected not to join a regional alliance, and has determined its baseline and target values individually.

3.1.1 Step 1: Determine Base Daily Per Capita Water Use

Baseline daily per capita water use is defined as an urban water supplier's estimate of its average gross water use, reported in gallons per capita per day (GPCD) and calculated over a continuous base period.

Steps 1A – 1C: Determine Supplier 10- to 15-year, and 5-year Base Periods

Urban retail water suppliers are required to choose a continuous, 10-year baseline period ending no earlier than December 31, 2004 and no later than December 31, 2010 when determining Base Daily Per Capita Water Use. The option to extend the baseline to a 15-year period is given to water suppliers if recycled water accounts for at least 10 percent of their 2008 retail water deliveries. The City of Compton does not utilize recycled water, and therefore a 10-year baseline period was chosen; July 1st, 2000 through June 30th, 2010.

The 5-year baseline period is used to determine the retail water supplier's minimum water use reduction, and the period must end no earlier than December 31st, 2007 and no later than December 31st, 2010. July 1st, 2005 through June 30th, 2010 was chosen as the 5-year baseline period for the City of Compton. Table 3.1.1 summarizes the City of Compton's baseline period selections.

Table 3.1.1 Base Period Ranges			
Base	**Parameter**	**Value**	**Units**
10- to 15-year base period	2008 total water deliveries	9,690	*acre-ft*
	2008 total volume of delivered recycled water	0	*acre-ft*
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in base period	10	Years
	Fiscal Year beginning base period range	2001	
	Fiscal Year ending base period range	2010	
5-year base period	Number of years in base period	5	Years
	Fiscal Year beginning base period range	2006	
	Fiscal Year ending base period range	2010	

Units: acre-feet per year

Steps 1D – 1E: Estimate Service Area Population

The City of Compton Municipal Water Department's service area encompasses approximately 80% of the City's limits. Therefore, U.S. Census data were used in accordance with "Appendix A: Alternative Methodology for Service Area Population" from the DWR Technical Methodologies guidance to estimate the service area's total population for the baseline years (2001 – 2010).

Step 1F: Calculate Gross Water Use

The City of Compton receives potable water from two sources; imported water, purchased through the Metropolitan Water District of Southern California (MWD), and groundwater, extracted via a series of wells. Total annual volumes (reported for each fiscal year) of groundwater and imported water entering the City's distribution system were obtained from the Central Basin Municipal Water District's Watermaster Service Reports. A summary of the calculations, highlighting the steps described in DWR's guidance document, is shown in Table 3.1.2.

Table 3.1.2
Gross Water Use Calculations

Utility Name: City of Compton	12-month period from: 1-Jul to 30-Jun	Volume Units: Million Gallons

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
1	Volume from Own Sources (raw data)	1920	2191	2317	2233	2153	1710	1955	2428	2237	2061
2	Volume from Imported Sources (raw data)	1265	1086	942	1044	971	915	1204	729	704	848
3	***Total Volume Into Distribution System = Line 1 + Line 2***	***3185***	***3277***	***3259***	***3277***	***3124***	***2625***	***3159***	***3157***	***2941***	***2909***
4	Volume Exported to Other Utilities (raw data)	-	-	-	-	-	-	-	-	-	-
5	Change in Distribution System Storage (+/-)	-	-	-	-	-	-	-	-	-	-
6	***Gross Water Use Before Indirect Recycled Water Use Deductions = Line 3 - Line 4 - Line 5***	***3185***	***3277***	***3259***	***3277***	***3124***	***2625***	***3159***	***3157***	***2941***	***2909***
7	Indirect Recycled Water Use Deduction	-	-	-	-	-	-	-	-	-	-
8	***Gross Water Use After Indirect Recycled Water Use Deductions = Line 6 - Line 7***	***3185***	***3277***	***3259***	***3277***	***3124***	***2625***	***3159***	***3157***	***2941***	***2909***
9	*Water Delivered for Agricultural Use (optional deduction)*	-	-	-	-	-	-	-	-	-	-
10	*Process Water Use (optional deduction)*	-	-	-	-	-	-	-	-	-	-
11	**Gross Water Use After Optional Deductions**	***3185***	***3277***	***3259***	***3277***	***3124***	***2625***	***3159***	***3157***	***2941***	***2909***

Steps 1G – 1I: Determine Annual and Base Daily Per Capita Water Use

Annual daily per capita water use for the City of Compton was estimated by dividing the gross water use by the service area's total population for each year of the baseline period. The average of these values over the 10-year baseline was then determined, giving the Base Daily Per Capita Water Use for the City of Compton; **106 GPCD**.

Table 3.1.3 summarizes the data used to determine the City's Base Daily Per Capita Water Use.

Table 3.1.3
Base Daily Per Capita Water Use — 10-Year Range

Base period year		Distribution System Population	Daily System Gross Water Use (MGD)	Annual Daily Per Capita Water Use (GPCD)
Sequence Year	Fiscal Year Ending			
Year 1	2001	77,733	8.73	112
Year 2	2002	78,733	8.98	114
Year 3	2003	79,524	8.93	112
Year 4	2004	80,204	8.98	112
Year 5	2005	80,593	8.56	106
Year 6	2006	80,980	7.19	89
Year 7	2007	80,915	8.66	107
Year 8	2008	80,934	8.65	107
Year 9	2009	81,384	8.06	99
Year 10	2010	81,963	7.97	97
			Base Daily Per Capita Water Use	106

3.1.2 Determine Urban Water Use Target

The Water Conservation Act of 2009 provides the retail water supplier the choice of four methods for determining the urban water use target value. The four methods are:

- Method 1: 80% of Base Daily Per Capita Water Use Value
- Method 2: Performance Standards
- Method 3: 95% of the Hydrologic Region 2020 Target Value
- Method 4: Water Savings (developed by DWR)

The City of Compton decided upon Method 3 for determining its water use reduction target, as it provides a goal that is most appropriate for the City's future plans. Compton is located in the South Coast hydrologic region, which was assigned a 149 GPCD water use target. Ninety five

percent of the region's target, or **142 GPCD**, was therefore chosen as the City of Compton's Urban Water Use Target.

3.1.3 Confirm Urban Water Use Target

The Water Conservation Act of 2009 sets a minimum reduction requirement the water supplier's urban water use target must meet or exceed. The minimum reduction is defined as 95 percent of the 5-year baseline period's Base Daily Per Capita Water Use. However, a water supplier is excluded from this requirement if the 5-year Base Daily Per Capita Water Use is equal to or less than 100 GPCD. The City of Compton's 5-year Base Daily Per Capita Water Use is 100 GPCD, and the City is therefore excluded from the minimum reduction requirement. The Urban Water Use Target is confirmed at 142 GPCD. Table 3.1.4 provides a summary of the 5-year baseline calculations.

Table 3.1.4
Base Daily Per Capita Water Use — 5-Year Range

Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Fiscal Year Ending			
Year 1	2006	80,980	7.19	89
Year 2	2007	80,915	8.66	107
Year 3	2008	80,934	8.65	107
Year 4	2009	81,384	8.06	99
Year 5	2010	81,963	7.97	97
Base Daily Per Capita Water Use				100

3.1.4 Determine Interim Urban Water Use Target

The interim urban water use target is defined as the water use goal the water supplier is to achieve and report in the 2015 UWMP Update, and equals half of the target 2020 reduction. The interim urban water use target for the City of Compton is **124 GPCD**.

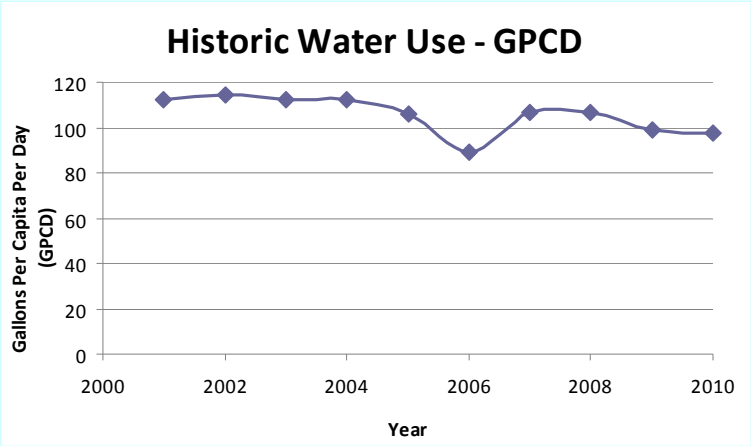
3.2 WATER DEMANDS

Urban Water Management Planning Act Requirement:

10608.20(e)(1)&(2) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural.

3.2.1 Historic Water Use

Figure 3.2.1 – Historic Water Use



The City of Compton's Water System currently serves approximately 82,000 people within its service area. With the City being almost completely built-out, significant growth or increase in water demands are not anticipated in future years.

Key factors that affect water demands are; population growth, increases in land use development, industrial growth and reductions in annual rainfall. For the City of Compton, population and rainfall exhibit the greatest influence. Usage of water per capita day has been fairly steady throughout the past ten years, as shown in Figure 3.2.1. Consumption has ranged from a low 89 GPCD in 2006 to a maximum of 114 GPCD in 2002. The average use per day during the period from 2001 through 2010 was 106 gallons per person.

Table 3.2.1 Historic Water Use			
Fiscal Year	**Gross Water Use (MGY)**	**Population**	**Usage Per Capita Day (GPCD)**
2001	3,185	77,733	112
2002	3,277	78,733	114
2003	3,259	79,524	112
2004	3,277	80,204	112
2005	3,124	80,593	106
2006	2,625	80,980	89
2007	3,159	80,915	107
2008	3,157	80,934	107
2009	2,941	81,384	99
2010	2,909	81,963	97

In the past, the City of Compton has not separated water use deliveries by sector, and records are not available to separate the total water deliveries for 2005. Estimates of total water use for 2005, as obtained from the CBMWD 2005 Watermaster Report, are shown in Table 3.2.2.

Table 3.2.2 Water Deliveries — Estimated, 2005					
	2005				
	Metered		**Not metered**		**Total**
Water use sectors	**# of accounts**	**Volume**	**# of accounts**	**Volume**	**Volume**
Residential, Commercial, Industrial, Institutional/Governmental, Landscape, Agriculture, Other	Records Not Available	9,586	0	0	9,586
Total	Not Available	9,586	0	0	9,586

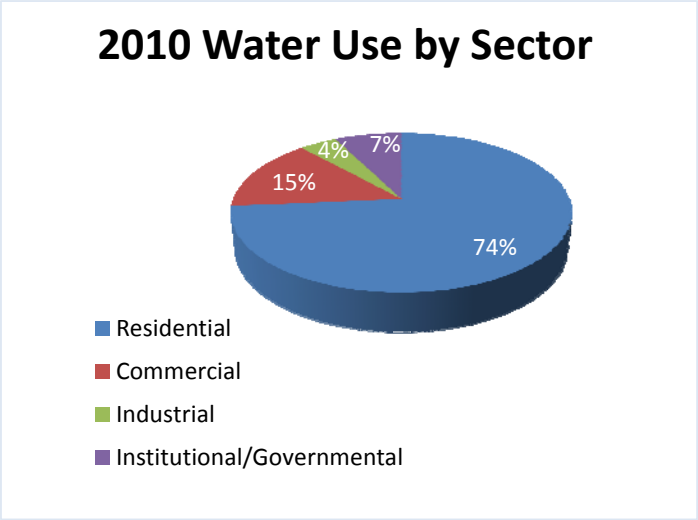
Units: acre-feet per year

3.2.2 Current and Projected Water Use by Sector

In 2010, the City used 7,111 acre-feet of water, as measured by metered sales. Average water deliveries, shown in Figure 3.2.2, are broken down into the following sectors:

- Residential
- Commercial
- Industrial
- Institutional/governmental

Figure 3.2.2 –Water Deliveries



Number of connections and water use are projected for the next 20 years, in five year increments, and are broken down by sector. The future estimations of water use and connections (by sector) are extrapolated based on the current (2010) values, anticipated population growth, and the Interim (2015) and Final (2020) Target Water Use Reduction Goals.

Residential Sector

As Tables 3.2.3 – 3.2.6 indicate, the majority of the water demand in the community will continue to be in the residential sector. Due to the lack of available space, the City of Compton does not have plans for new residential development in the near future. In the next 20 years, some form of residential redevelopment may occur; however, such development is not expected to place a heavy demand on the City's water supply.

Commercial Sector

Commercial water demand has remained fairly stable over the past few years. Current and projected water demands for the City's commercial sector are shown in Tables 3.2.3 – 3.2.6.

Industrial Sector

Industrial water demand has also remained fairly stable over the past few years. Similar to residential development, no new form of large industrial development is anticipated in the near future that will increase industrial water demand. Current and projected water demands for the City's industrial sector are shown in Tables 3.2.3 – 3.2.6.

Landscape Sector

Landscape water use is not currently tracked by the City.

Agricultural Sector

The City of Compton does not provide potable water for agricultural uses.

Table 3.2.3
Water Deliveries — Actual, 2010

	2010				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Residential	12,393	5,232	0	0	5,232
Commercial	900	1,047	0	0	1,047
Industrial	147	299	0	0	299
Institutional/governmental	176	532	0	0	532
Landscape	0	0	0	0	0
Agriculture	0	0	0	0	0
Other	146	1	0	0	1
Total	13,762	7,111	0	0	7,111

Units: acre-feet per year

Table 3.2.4
Water Deliveries — Projected, 2015

	2015				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Residential	12,802	5,557	0	0	5,557
Commercial	930	1,112	0	0	1,112
Industrial	152	318	0	0	318
Institutional/governmental	182	565	0	0	565
Landscape	0	0	0	0	0
Agriculture	0	0	0	0	0
Other	151	1	0	0	1
Total	14,216	7,553	0	0	7,553

Units: acre-feet per year

Table 3.2.5 Water Deliveries — Projected, 2020					
	2020				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Residential	13,225	5,741	0	0	5,741
Commercial	960	1,149	0	0	1,149
Industrial	157	328	0	0	328
Institutional/governmental	188	583	0	0	583
Landscape	0	0	0	0	0
Agriculture	0	0	0	0	0
Other	156	1	0	0	1
Total	14,686	7,803	0	0	7,803

Units: acre-feet per year

Table 3.2.6 Water Deliveries — Projected 2025 and 2030				
	2025		2030	
	metered		metered	
Water use sectors	# of accounts	Volume	# of accounts	Volume
Single family	13,662	5,930	14,113	6,126
Multi-family	992	1,187	1,025	1,226
Commercial/Institutional	162	339	167	351
Industrial	194	603	200	623
Landscape	0	0	0	0
Agriculture	0	0	0	0
Other	161	1	166	1
Total	15,171	8,061	15,672	8,327

Units: acre-feet per year

3.2.3. Sales to Outside Agencies

The City of Compton does not sell wholesale water to other agencies. Table 3.2.7 is provided to quantify that Compton does not intend to sell water to other water agencies within the planning period.

Table 3.2.7
Sales to Other Water Agencies

Water Distributed	2005	2010	2015	2020	2025	2030
Not Applicable	0	0	0	0	0	0
Total	0	0	0	0	0	0

Units: acre-feet per year

3.2.4. Other Water Uses and Losses

Systems losses were estimated by subtracting the total metered deliveries for the year from the total water volume into the system (well production and imported water). The remainder was considered water losses and/or other, unaccounted-for water uses. In 2010, water losses were approximately 20%. Adequate records were not available to estimate system losses for 2005. Current and projected system losses are summarized in Table 3.2.8.

Table 3.2.8
Additional Water Uses and Losses

Water Use	2005	2010	2015	2020	2025	2030
Saline barriers	N/A					
Groundwater recharge	N/A					
Conjunctive use	N/A					
Raw water	N/A					
Recycled water	N/A					
System losses	N/A	1,818	1,931	1,995	2,060	2,128
Other (define)	N/A					
Total	N/A	1,818	1,931	1,995	2,060	2,128

Units: acre-feet per year

3.2.5 Total Water Demands

The total past, current, and future water demands for the City of Compton are summarized in Table 3.2.9.

Table 3.2.9
Total Water Use

Water Use	2005	2010	2015	2020	2025	2030
Total water deliveries (Tables 3.2.2 to 3.2.6)	9,586	7,111	7,553	7,803	8,061	8,327
Sales to other water agencies (Table 3.2.7)	N/A	N/A	N/A	N/A	N/A	N/A
Additional water uses and losses (Table 3.2.8)	N/A	1,818	1,931	1,995	2,060	2,128
Total	9,586	8,929	9,484	9,798	10,121	10,455

Units: acre-feet per year

3.2.6 Lower Income Housing Projections

Urban Water Management Planning Act Requirement:
10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multi-family residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

Table 3.2.10 summarizes the lower income water use projections for the City of Compton, and the lower income water demands are also included as part of the total residential water demand estimates and projections in Tables 3.2.3 – 3.2.6. The Housing Element of the City of Compton's General Plan was used to obtain the lower income housing data, and estimates through 2014 were provided. Single-family and multi-family residential demands were estimated based on values provided in the General Plan. Demand projections beyond 2014 were estimated based on 2014 values and overall population growth to determine lower income housing needs throughout the entire UWMP planning horizon.

Table 3.2.10 Low-Income Projected Water Demands				
Low Income Water Demands	**2015**	**2020**	**2025**	**2030**
Single-family residential	8	16	24	32
Multi-family residential	4	9	14	19
Total	12	25	38	51

Units: acre-feet per year

3.3 WATER DEMAND PROJECTIONS

Urban Water Management Planning Act Requirement:

10631(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for the inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

The City of Compton relies on wholesale water from the Metropolitan Water District of Southern California (MWD) as one of the primary sources of water. Table 3.3.1 is provided to quantify the district demand projections provided to MWD for incorporation into the MWD's Urban Water Management Plan.

Table 3.3.1 Retail Agency Demand Projections Provided to Wholesale Suppliers					
Wholesaler	**2010**	**2015**	**2020**	**2025**	**2030**
MWD	2,803	2,977	3,075	3,177	3,282
Total	2,803	2,977	3,075	3,177	3,282

Units: acre-feet per year

3.4 WATER USE REDUCTION PLAN

Urban Water Management Planning Act Requirement:

CWC §10608.29 Urban wholesale water suppliers shall include in the urban water management plans … an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.

SBx7-7 allows for retail water suppliers whose 5-year Base Daily Per Capita Water Use is equal to or below 100 GPCD to be excluded from further reducing their per capita water demand. The City of Compton, whose 5-year Base Daily Water Use is 100 GPCD, meets this criterion and is not required to further reduce its per capita water use. The City is committed to meeting the twenty percent statewide reduction goal set forth by SBx7-7 and will ensure that water conservation programs and efficient water use continue to be implemented within its service area. As part of this effort, the City will monitor the per capita water use during the upcoming years to verify its per capita water use remains below 100 GPCD.

4 SYSTEM SUPPLIES

4.1 WATER SOURCES

Urban Water Management Planning Act Requirement:

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

The City of Compton obtains its potable water supply from two sources: directly pumped groundwater and purchased through the Metropolitan Water District of Southern California (MWD). The City provided a total of 8,929 AF of water to a population of approximately 82,000 in 2010. As detailed in Chapter 3, demands are expected to continue to increase in the next 20 years by 17%, and identifying the water supplies for this increasing demand is crucial in identifying the reliability of the City's water system. The water supply available to the City of Compton is expected to meet the water demand in 2030. More information comparing the projected water supply and demand can be found in Chapter 5.

The City of Compton obtains its groundwater from the Central Subbasin, one of four subbasins in the Coastal Plain of Los Angeles. The Central Subbasin is commonly referred to as the Central Basin, and is identified as such through the remainder of the report. The Central Basin is an adjudicated Basin. For the supply section, it is assumed that the City of Compton pumps the total allotted amount of groundwater from the Central Basin: 5,780 AF. This is accurate, considering the total pumping capacity of the City's wells: 11,178 AF. More information on the adjudication of the Central Basin can be found in Section 4.2, which discusses the groundwater sources for the City of Compton.

The total projected supplies available to the City through MWD and pumped groundwater are provided in Table 4.1.1.

Table 4.1.1 Water Supplies — Current and Projected					
Water Supply Sources	**2010**	**2015**	**2020**	**2025**	**2030**
Supplier-Produced Groundwater – Central Basin	6,326	5,780	5,780	5,780	5,780
Metropolitan Water District of Southern California	2,603	3,704	4,018	4,341	4,675
Supplier-Produced Surface Water					
Transfers In					
Exchanges In					
Recycled Water					
Desalinated Water					
Total	8,929	9,484	9,798	10,121	10,455

Units: acre-feet per year

Groundwater Supply

The City of Compton utilizes groundwater from the Central Basin, an adjudicated basin. The groundwater supply to the City of Compton is discussed in Section 4.2.

Wholesale Water Supply

Water for use in the City of Compton is purchased through the MWD. MWD obtains its water from a number of sources, including local groundwater and surface water supplies, as well as recycled water. However, the majority of water is supplied to MWD as part of the State Water Project (SWP). The SWP is a series of reservoirs, aqueducts, and pumping facilities that convey water from Northern to Southern California. The water for use within the City of Compton is collected and delivered to MWD via the SWP, which is subsequently treated at either the Weymouth Filtration Plant or the Jensen Filtration Plant. In 2010, MWD delivered approximately 2,603 AF of water to the City of Compton. Historically, the amount of water MWD delivered to the City of Compton has been decreasing, according to the MWD 2010 UWMP, indicating that the City is becoming more reliable on its groundwater supply. However, as demand increases, this trend is expected to change as it is unlikely that the City's allotted pumping rights from the Central Basin will increase to meet demand.

Table 4.1.2 shows the estimates for the amount of imported water that will be necessary to meet the demands for the City of Compton. This number is based on the water available through groundwater and the total demand within the City's service area. The amount of water

projected to be purchased by the City of Compton is provided to MWD at the beginning of each year. If the City consumes more than set forth in the contract, the City can purchase additional water through MWD, where necessary. However, when the contracted volume is exceeded and additional imported water supplies are needed, MWD has the option to penalize the City by imposing additional fees for increased water use beyond the original projections. For this reason, it is desirable that the supplies projected below meet the City's demands in full.

Table 4.1.2
Wholesale Supplies — Existing and Planned Sources of Water

Wholesale Sources	Contracted Volume	2015	2020	2025	2030
Metropolitan Water District of Southern California	Yes	3,704	4,018	4,341	4,675

Units: acre-feet per year

Recycled Water Supply

The City of Compton does not distribute recycled water within its service.

4.2 GROUNDWATER

Urban Water Management Planning Act Requirement:
10631 (b) (Is) groundwater…identified as an existing or planned source of water available to the supplier?

The City of Compton utilizes groundwater pumped from the Central Basin. There are currently no plans to discontinue pumping water from the Central Basin for potable use, as the Central Basin is a reliable source of high quality potable water.

Urban Water Management Planning Act Requirement:
10631 (b)(1) If groundwater is identified as an existing or planned course of water available to the supplier provide…a copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

The Central Basin was adjudicated in 1965, and the Department of Water Resources (DWR) was appointed Watermaster. Every month extractions are reported to the Watermaster by each individual pumper. This allows the Watermaster to regulate the water rights of the Subbasin. The Central Basin does not have a groundwater management plan because it is adjudicated and the DWR manages groundwater extractions.

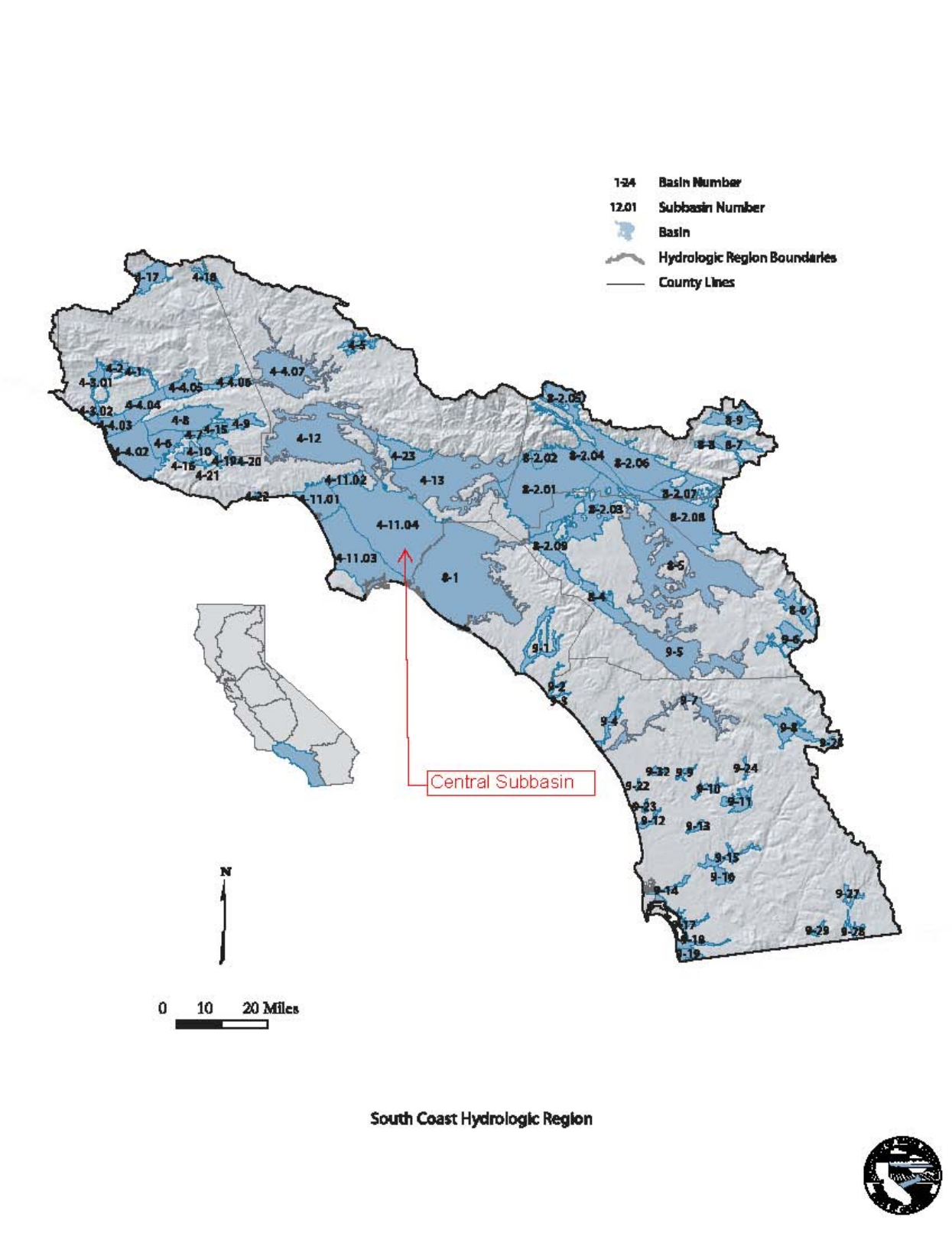
Urban Water Management Planning Act Requirement:

10631 (b)(2) If groundwater is identified as an existing or planned course of water available to the supplier provide…a description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

As mentioned above, the City of Compton pumps water from the Los Angeles County Central Subbasin, a large subbasin that makes up part of the Coastal Plan of Los Angeles Basin. The total surface area of this subbasin is approximately 177,000 acres. It is bounded on the north by a surface divide called the La Brea high, and on the northeast and east by emergent less permeable tertiary rocks of the Elysia, Repetto, Merced and Puente Hills. The southeast boundary between Central Basin and the Orange County Groundwater Basin roughly follows Coyote Creek, which is a regional drainage boundary. The southwest boundary is formed by the Newport Inglewood fault system and the associated folded rocks of the Newport Inglewood uplift. The Los Angeles and San Gabriel Rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean. Average precipitation throughout the Subbasin ranges from 11 to 13 inches with an average of approximately 12 inches.

The description of the Central Basin, as provided in DWR's Bulletin 118 can be found in Appendix E. Additionally, the Central Basin's location as part of the South Coast Hydrologic Region can be seen in Figure 4.2.1.

Figure 4.2.1: Central Subbasin Location



Urban Water Management Planning Act Requirement:

10631 (b)(2) For those basins for which a court or the board has adjudicated the rights to pump groundwater, provide a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

A court ordered adjudication for the Central Basin was issued in 1965. The adjudication was a response to rapidly declining groundwater levels in the basin due to overdraft that caused partial seawater intrusion. The Central Basin Judgment can be found in Appendix F.

The total allotted pumping right from the Central Basin from all wells is 233,894 AFY. The total allotted pumping rights for the City of Compton is 5,780 AFY. The City of Compton may exceed its total allotment under two circumstances. The first of these is in the case that in the previous year, the City did not pump the total 5,780 AF of water. If this occurs, up to 20% of the total allotment may be carried over to the subsequent year. The second case in which the City of Compton may exceed its water pumping rights is if another water retailer chooses to lease water pumping rights to the City. Leased pumping rights from other Cities that do not pump their fully allotted rights may supplement the water supply to the City of Compton and prevent the need to increase imported water from MWD in any given year. The latter of these options has historically been used by the City of Compton to reduce its dependence on MWD imported water. For example, in 2010, the City of Norwalk leased 1,200 AF of water pumping rights to the City of Compton. This allowed the City of Compton to pump up to 6,980 AF, beyond the normal allotment of 5,780, without penalty. Since the City of Compton pumped only 6,326, and had a water carryover from 2009 of -120 AF (due to over-extraction during this year), the City has a carryover of 534 AF for 2011.

It is known that the total allotted pumping rights exceed the natural replenishment of groundwater to the Central Basin. Although the users of the Central Basin pump below their total allotted rights (approximately 174,000 AF were pumped in 2009), possible conditions of overdraft must still be considered. To avoid conditions of overdraft, the Water Replenishment District was formed to ensure that water was purchased where necessary to fully replenish the quantity of groundwater that could not be restored through natural processes. The Water Replenishment District manages the financial and logistical aspect of purchasing water to maintain safe groundwater levels.

Urban Water Management Planning Act Requirement:

10631 (b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

The Central Basin is an adjudicated Subbasin, and therefore this section is not applicable.

Urban Water Management Planning Act Requirement:

10631 (b)(3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

Table 4.2.1 illustrates the amount of groundwater pumped from the Central Basin over the last five years.

Table 4.2.1
Groundwater — Volume Pumped

Basin name(s)	Metered or Unmetered[1]	2006	2007	2008	2009	2010
Central Basin	Metered - volumetric	5,248	6,000	7,453	6,865	6,326
Total groundwater pumped		5,248	6,000	7,453	6,865	6,326
Groundwater as a percent of total water supply		65%	62%	77%	76%	71%

Units: acre-feet per year

Table 4.2.1 shows that in the last five years, the City has pumped more than its water allotment of 5,780 AF. This is due to leased water rights, which the City has obtained from other Cities or organizations that do not pump the total amount allotted to them. The leased rights that the City of Compton has obtained in the last five years are shown in Table 4.2.2.

Table 4.2.2 Historical Pumping Right Leases to the City of Compton		
Year	**Lessor**	**Amount**
2006	Angeles Abbey Memorial Park, Inc	4
	City of Norwalk – La Miranda Unified School District	378
2007	Angeles Abbey Memorial Park, Inc	4
	Smurfit-Stone Container Enterprises	510
2008	Angeles Abbey Memorial Park, Inc	4
	City of Bellflower	1,010
2009	City of Bellflower	471.51
2010	City of Norwalk	1,200

Units: acre-feet per year

Despite the leased water pumping rights, the quantity of groundwater pumped from 2006 – 2010 was still insufficient to meet the demands for the City of Compton. As a result, the City supplemented water supply with potable water purchased from MWD. Together, these two sources were sufficient in meeting the total demands of the City of Compton.

Currently, the groundwater supply is provided through seven wells, Well Nos. 11, 13, 15, 16, 17, 18 and 19. Together, these wells have a total pumping capacity of 14,081 AF; well above the allotted pumping rights available to the City of Compton. The capacity above the allotted pumping rights adds to the reliability of the supply: if one well were to go down, it would not impact the supply, as another well would be available to pump the water necessary for the groundwater supply. Although the City is pumping near its fully allotted rights, the groundwater supply is still insufficient for the City of Compton's total water needs. However, the ability to pump the fully allotted rights does reduce the City's dependence on imported water, so measures are taken (i.e. large pumping capacity) to ensure that City's allotment from the Central Basin is pumped every year.

Urban Water Management Planning Act Requirement:

10631 (b)(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

The City of Compton intends to continue using groundwater pumped from the Central Basin as the majority of the supply for the City's water demand. The projected amount of water to be pumped is shown in Table 4.2.3 below. The numbers projected in Table 4.2.3 are based on the Central Basin adjudication. Due to the large pumping capacity of the City of Compton's water wells, it is not anticipated that the groundwater use in the next 20 years will fall below the amount available to the City through the adjudication.

Table 4.2.3
Groundwater — Volume Projected to be Pumped

Basin name(s)	2015	2020	2025	2030
Central Basin	5,780	5,780	5,780	5,780
Total groundwater pumped	5,780	5,780	5,780	5,780
Percent of total water supply	61%	59%	57%	55%

4.3 TRANSFER OPPORTUNITIES

Urban Water Management Planning Act Requirement:
10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

MWD seeks out opportunities for water transfer and exchanges to ensure reliability within its service area. Water transfers and exchanges help water suppliers distribute water effectively to areas with limited water supplies. For example, the MWD accepts water through the SWP and Colorado River for distribution throughout Southern California. The City of Compton, although not directly involved in the planning of these opportunities, may benefit from additional water supplies as a result of MWD's efforts in securing water transfers and exchanges. Information on new transfer and exchange opportunities to the MWD can be found in the 2010 Urban Water Management Plan.

Additionally, CMWD routinely leases water rights from local groundwater purveyors who are unable to extract groundwater for numerous reasons. This water is used to supplement the local groundwater pumping rights that CMWD is currently allotted and decrease the reliance on MWD. This is also an invaluable source of water in the event of a severe drought. Since the leased water rights are on an annual basis, they are considered a short-term transfer. The following table illustrates the potential transfer opportunities for the City of Compton:

Table 4.3.1 Transfer and Exchange Opportunities			
Transfer Agency	**Transfer or Exchange**	**Short Term or Long Term**	**Proposed Volume**
City of Norwalk	Transfer	Short Term	1,200
City of Bellflower	Transfer	Short Term	1,010
Angeles Abbey Memorial Park, Inc	Transfer	Short Term	4
Total			2,214

Units: acre-feet per year

4.4 DESALINATED WATER OPPORTUNITIES

Urban Water Management Planning Act Requirement:

10631 (i) Describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

The City of Compton is not currently exploring the possibility of using desalinated water as a water source independently. However, MWD is currently exploring the potential for use and distribution of desalinated water as part of its supply source. As an end user of water supplied through MWD, the City of Compton may receive water or benefit in other ways (i.e. increased supplies and reliability) as a result of this effort in discovering the opportunity for desalination. Therefore, a brief description of MWD's efforts in water desalination is discussed.

In 2001, MWD created the Seawater Desalination Project (SDP) to explore the potential for using seawater as a long term water supply. The SDP provides incentives for its member agencies to develop water through desalination; up to $250 per AF for all produced supplies. Currently, four desalination projects are receiving funding through MWD's SDP program. Each program has been vital in discovering and addressing both the technical and legal challenges associated with constructing a desalination plant. As of 2011, MWD reports that the Long Beach, South Orange Coastal, and West Basin Water Desalination Projects are currently in the pilot study process, while the Carlsbad Seawater Desalination Project is in the permitting phase. Table 4.4.1 shows the projected supplies provided by these four water desalination plants. In the coming years, these projects will help to determine the feasibility of using desalinated water for distribution through the City, either by establishing a water desalinating plant or through the purchase of desalinated water through MWD or another source.

Table 4.4.1 Current Desalination Projected Capacities		
Project	**Member Agency**	**Projected Capacity (AFY)**
Long Beach Seawater Desalination Project	Long Beach Water Department	10,000
South Orange Costal Ocean Desalination Project	Municipal Water District of Orange County	16,000-28,000
Carlsbad Seawater Desalination Project	San Diego County Water Authority	56,000
West Basin Seawater Desalination Project	West Basin Municipal Water District	20,000
Total		102,000-114,000

MWD's current goal is to supply 125,000 AFY of water through seawater desalination by 2025.

4.5 RECYCLED WATER OPPORTUNITIES

Urban Water Management Planning Act Requirement:

10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

The City of Compton does not distribute recycled water in its service area at this time. There are no plans to develop a recycled water system that would serve the City of Compton due to alternate priorities by the recycled water wholesaler within the service area, the Central Basin Municipal Water District (CBMWD), and a lack of funds available.

The City of Compton is a member agency of the CBMWD. CBMWD oversees water use and distribution within the Central Basin. Apart from assisting in the groundwater management of the Central Basin, CBMWD also sells potable and recycled water to its member agencies. Although the City purchases wholesale water directly from MWD, if the City of Compton were to develop a recycled water program, it would be in conjunction with CBMWD. CBMWD updated its recycled water master plan in 2008. This plan identifies only one potential recycled water customer within the service area of the City of Compton, with a demand of 42 AFY. Because of this low demand, CBMWD has opted to pursue alternative recycled water projects to expand the recycled water system to areas with a greater demand.

Urban Water Management Planning Act Requirement:

10633 (a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

Wastewater in the City of Compton is collected by the LACSD sewage system and sent to one of eleven treatment or wastewater plants. At these plants, the wastewater goes through a three stage treatment process consisting of primary, secondary, and tertiary treatment stages. After tertiary treatment, water is available for use to recycled water customers, use for groundwater recharge, or discharged into the ocean. Although the City of Compton is not part of a recycled water system, wastewater collected from the City is treated to recycled water standards and can be distributed through the LACSD's recycled water supply system.

Upon collection of wastewater from the Cities of Los Angeles County, wastewater undergoes primary treatment. In this stage, water is collected in long concrete tanks that act as a river. Primary treatment refers to the removal of macroscopic waste particles in the water. Light materials will flow to the top and heavier materials will sink to the bottom. Both the light and heavier materials can be removed and are sent to the Joint Water Pollution Control Plant for disposal.

The primary treated water is sent to the second stage: secondary treatment. Secondary treatment acts as a biological treatment step to reproduce what naturally occurs in water treatment in rivers. The same microorganisms that feed on dissolved organic particles during natural water treatment are used in secondary treatment. Oxygen is supplied to create an ideal feeding environment for the microorganisms, decreasing the overall time required for treatment. As the microorganisms complete the feeding process, they sink to the bottom and are removed to be reused in another batch of wastewater.

Finally, the water enters tertiary treatment, where water is sent through filters to remove any last suspended particles in the water. The filters contain layers of anthracite coal, sand, and gravel. Once sent through the filters, the water is disinfected. Chlorine from the disinfection process must be removed prior to use. Following the disinfection process and the removal of excess chlorine, water is safe for use and is distributed to the customers of the LACSD as reclaimed water. Reclaimed water that is not used is discharged into the ocean.

Urban Water Management Planning Act Requirement:

10633 (b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

All of the wastewater collected by the LACSD is treated to tertiary standards, as described above. Once the water is treated, it is either used as recycled water or discharged to the ocean.

It is estimated that the water used by the City landscape and irrigation needs and water losses is not converted to wastewater. The remainder of the water used is assumed to be sent to the LACSD for treatment. In 2010, approximately 80% of total potable water into the City's system was not used for landscape and irrigation needs, or accounted for through water losses as identified in Chapter 3. To project the total wastewater flows for the next 20 years, this factor was used. These values are shown in Table 4.5.1. In addition, Table 4.5.2 shows the amount of treated wastewater expected to be discharged. This value is obtained by multiplying the percentage of wastewater that is normally discharged by LACSD, which is approximately 56.1% of all recycled water produced. This factor was applied to the values in Table 4.5.1 to estimate the amount of wastewater from the City of Compton that would not be used for recycled water purposes, and instead discharged to the ocean. These projected discharge values are shown in Table 4.5.2.

Table 4.5.1
Recycled Water — Wastewater Collection and Treatment

Type of Wastewater	2005	2010	2015	2020	2025	2030
Wastewater collected & treated in service area	7,669	7,143	7,587	7,838	8,097	8,364
Volume that meets recycled water standard	7,669	7,143	7,587	7,838	8,097	8,364

Units: acre feet per year

Table 4.5.2
Recycled Water — Non-Recycled Wastewater Disposal

Method of Disposal	Treatment Level	2010	2015	2020	2025	2030
Discharge to Ocean	Tertiary	4,007	4,256	4,397	4,542	4,692
	Total	4,007	4,256	4,397	4,542	4,692

Units: acre feet per year

Urban Water Management Planning Act Requirement:

10633 (c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use

Recycled water is not distributed by the City of Compton.

Urban Water Management Planning Act Requirement:

10633 (d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

The 2008 CBMWD Recycled Water Master Plan identifies areas for expansion of the entire CBMWD recycled water system. In total, the plan identifies an additional 55,479 AFY of potential for recycled water use within the service areas of the CBMWD, San Gabriel Valley Municipal Water District (SGVMWD), and the Upper San Gabriel Valley Municipal Water District (USGVMWD). Of this potential additional use, 42 AFY is identified as demand that could be supplied through a City of Compton recycled water system. The type and feasibility of this potential use are shown in Table 4.5.4 below. Expanding the recycled water system is not considered feasible at this time because the current plan by the CBMWD to expand the recycled water system does not include the City of Compton. Instead, the major project, the Southeast Water Reliability Project (SWRP), involves a much higher potential of recycled water users. The SWRP is described below.

Table 4.5.4 Recycled Water — Potential Future Use						
User type	**Description**	**Feasibility**	**2015**	**2020**	**2025**	**2030**
Agricultural irrigation						
Landscape irrigation	Dominguez High School	**No**	42	42	42	42
Commercial irrigation[3]						
Golf course irrigation						
Wildlife habitat						
Wetlands						
Industrial reuse						
Groundwater recharge						
Seawater barrier						
Geothermal/Energy						
Indirect potable reuse						
	Total	**No**	42	42	42	42

Units: acre-feet per year

Urban Water Management Planning Act Requirement:

10633 (e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

Table 4.5.5 shows the projected 2005 use for recycled water in 2010. The City of Compton does not have a recycled water system, and therefore a use of 0 AF in 2010 was identified in the 2005 UWMP.

Table 4.5.5 Recycled Water — 2005 UWMP Use Projection Compared to 2010 Actual		
Use type	**2010 Actual Use**	**2005 Projection for 2010**
Agricultural irrigation	0	0
Landscape irrigation	0	0
Commercial irrigation	0	0
Golf course irrigation	0	0
Wildlife habitat	0	0
Wetlands	0	0
Industrial reuse	0	0
Groundwater recharge	0	0
Seawater barrier	0	0
Geothermal/Energy	0	0
Indirect potable reuse	0	0
Total	0	0

Units: acre-feet per year

Urban Water Management Planning Act Requirement:

10633 (f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

The City of Compton does not distribute recycled water. Therefore, the City does not have incentives in place to encourage the use of recycled water within its service area.

Table 4.5.5 Methods to Encourage Recycled Water Use					
Actions	**Projected Results**				
	2010	**2015**	**2020**	**2025**	**2030**
N/A	0	0	0	0	0
Total	0	0	0	0	0

Units: acre-feet per year

Urban Water Management Planning Act Requirement:

10633 (g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The 2008 Recycled Water Master Plan identifies potential use for recycled water within the City of Compton, as well as many other surrounding cities and water districts. The Plan includes recommendations and suggestions for improvement to the recycled water system. Recommendations were based on cost feasibility, as well as the potential customer demand for recycled water. Because of this, recommendations were not made to include the City of Compton in the Capital Improvement Plan for expanding the recycled water system. Instead, priority was given to a project with larger potential users. The Southeast Water Reliability Project (SWRP) will consist of 11 miles of pipeline extending from Pico Rivera to Vernon. It is expected that the SWRP will increase recycled water sales to 11,000 AFY within the first few years and ultimately up to 16,000 AFY.

4.6 FUTURE WATER PROJECTS

Urban Water Management Planning Act Requirement:

10631 (h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635.

Currently, the City of Compton does not have any planned projects that will diversify or expand the water supply available to the City. The City of Compton has determined that with the adjudication agreement, the current capacity of its wells is sufficient to produce reliable groundwater. To supplement this, the City deems its potable supply from MWD sufficient and reliable, and does not identify the need to identify other water supply projects to eliminate this source. The table provided below illustrates that Compton does not currently plan to implement any projects that will increase the availability of water supply throughout the service area.

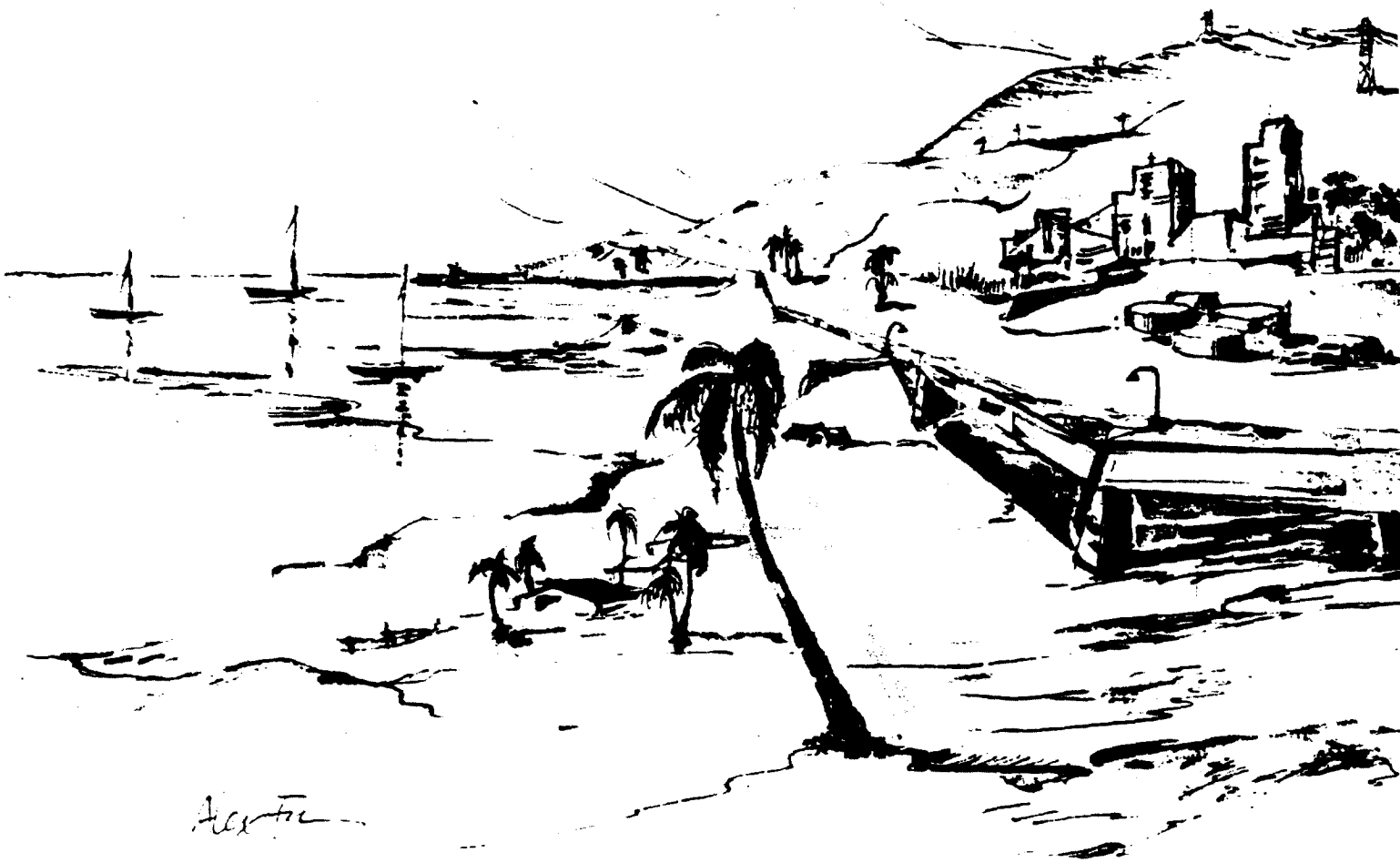
Table 4.6.1 Future Water Supply Projects							
Project Name	**Start & End Date**	**Potential Project Constraints**	**Normal -year supply**	**Single-dry year supply**	**Multiple -dry year first year supply[3]**	**Multiple -dry year second year supply[3]**	**Multiple -dry year third year supply[3]**
N/A	N/A	N/A	0	0	0	0	0
	Total		0	0	0	0	0

Units: acre-feet per year

Reference:
RWQCB, 1994

WATER QUALITY CONTROL PLAN
Los Angeles Region

Basin Plan
for the
Coastal Watersheds of
Los Angeles and Ventura Counties



California Regional Water Quality Control Board

Los Angeles Region (4)

Water Resources/Water Quality Issues

Surface and ground waters within the Los Angeles Region have proven insufficient to support the rapidly growing population in the Los Angeles Region. Water imported from other areas now meets about 50% of fresh water demands in the Region. Restrictions on imported water as well as drought conditions have necessitated water conservation measures which, at present, are voluntary. These conservation measures have slightly lessened the use of potable water in many areas of the Region. In addition, the demand for water is being partially fulfilled by the increasing use of reclaimed water for non-potable purposes such as greenbelt irrigation and industrial processing and servicing.

Surface Waters

Major surface waters of the Los Angeles Region flow from head waters in pristine mountain areas (largely in two National Forests and the Santa Monica Mountains), through urbanized foothill and valley areas, high density residential and industrial coastal areas, and terminate at highly utilized recreational beaches and harbors. Uncontrolled pollutants from nonpoint sources are believed to be the greatest threats to rivers and streams within the Region.

- *Ventura River Watershed:* The Ventura River is the northern-most river system in southern California (south of Point Conception) that supports a large number of sensitive aquatic species, several of which are currently, or proposed to be, endangered or threatened. Water quality in the upper reaches is good but quality in the lower reaches is impacted by a combination of municipal water discharges and agricultural, urban and oil industry nonpoint sources.

- *Santa Clara River Watershed:* The Santa Clara River is the largest river system in southern California that remains in a relatively natural state. Extensive patches of high quality riparian habitat are present along the length of the river and its tributaries. Stream flows are diverted, usually during high flow, for "out-of-stream" beneficial uses. Threats to water quality include increasing development in floodplain areas, necessitating flood control measures such as channelization that results in increased flows, erosion, and loss of habitat.

- *Calleguas Creek Watershed:* Calleguas Creek drains a predominantly agricultural area on the Oxnard Plain and empties into Mugu Lagoon, one of southern California's few remaining large wetlands. While natural flows in the past were intermittent, discharges of municipal, agricultural, and urban wastewaters have increased surface flow in the watershed resulting in increased sedimentation in the lagoon. The general instability of the streambanks, continual destruction of riparian vegetation, and other land use practices have accelerated erosion in this watershed. Erosion problems are intensified in areas where residential development is occurring on steeply sloping upland areas. Should sedimentation continue at the present rate, the lagoon is projected to fill with sediment in about 50 years. Additional problems are produced by irrigation return-flows which add nutrients, pesticides, and other dissolved constituents to the creek and its tributaries.

- *Malibu Creek Watershed:* This watershed has changed rapidly in the last 20 years from a predominantly rural area to a steadily developing area that has doubled in population to nearly 80,000 residents. Increased flows (from imported waters needed to support the growing population base) and channelization of several tributaries to Malibu Creek have caused an imbalance in the natural flow regime in the watershed. Pollutants of concern, many of which are discharged from nonpoint sources, include excess nutrients, sediment, and bacteria.

- *Ballona Creek Watershed:* Pollutants from industrial and municipal effluent as well as urban runoff degrade the quality of Ballona Creek. Specific pollutants include high levels of dissolved solids (chlorides, sulfates, heavy metals) and bacteria. Untreated sewage overflows discharged into Ballona Creek during the rainy season cause beach closures along Santa Monica Bay. In addition, high concentrations of DDT in sediments at the mouth of the creek and in Marina Del Rey provide evidence of past discharges that have resulted in long-term water quality problems.

- *Los Angeles River Watershed:* The Los Angeles River is highly modified, having been lined with concrete along most of its length by the U.S. Army Corps of Engineers from the

1930s to the 1960s. One seven-mile reach in the narrows area (in the middle portion of the river system), where ground water rises into the streambed, is mostly unlined along the stream bottom and provides natural habitat for fish and other wildlife in an otherwise concrete conveyance. The upper reaches of the river carry urban runoff and flood flows from the San Fernando Valley. Below the Sepulveda Basin, flows are dominated by tertiary-treated effluent from several municipal wastewater treatment plants. Because the watershed is highly urbanized, urban runoff and illegal dumping are major contributors to impaired water quality in the Los Angeles River and tributaries.

- *San Gabriel River Watershed:* While the upper San Gabriel River and its tributaries remain in a relatively pristine state, intensive recreational use of this area for picnicking, off road vehicle use, fishing, and hiking threaten water quality and aquatic and riparian habitats. Further problems in the upper San Gabriel River occur as vast amounts of naturally eroding sediment from the rugged San Gabriel Mountains settle into reservoirs behind flood control dams. Improper sediment sluicing operations from these reservoirs can impact aquatic habitats and groundwater recharge areas. In the San Gabriel Valley, the middle reaches of the river have been extensively modified in order to control flood and debris flows and to recharge ground water. Extensive sand and gravel operations are found along these stretches of the river. The lower San Gabriel River (i.e., those stretches flowing through the Los Angeles Coastal Plain) also has been extensively modified and is lined with concrete from approximately Firestone Boulevard to the estuary. Flow in these lower reaches is dominated by effluent from several municipal wastewater treatment facilities and urban runoff. Beneficial uses have been impaired in these lower reaches of the San Gabriel River, as evidenced by ambient toxicity and bioaccumulation of metals in fish tissue.

Other more generalized surface water problems in the Region include:

- Poor mineral quality in some areas due to a variety of reasons including geology, agricultural runoff, discharge of highly mineralized ground water, and poor quality of some imported waters
- Bioaccumulation of toxic compounds in fish and other aquatic life
- Impacts from increased development and recreational uses
- In-stream toxicity from point and nonpoint sources
- Diversion of flows necessary for the propagation of fish and wildlife populations
- Channelization, dredging, and other losses of habitat
- Impacts from transient camps located along creeks and lagoons
- Illegal dumping
- Introduction of non-native plants which are of little value to the biota and clog the streams
- Impacts from sand and gravel mining operations
- Natural oil seeps
- Eutrophication and the accumulation of toxic pollutants in lakes

Ground Waters

Ground water accounts for most of the Region's local (i.e., non-imported) supply of fresh water. Major groundwater basins in the Region are shown in Figure 1-9.

The general quality of ground water in the Region has degraded substantially from background levels. Much of the degradation reflects land uses. For example, fertilizers and pesticides, typically used on agricultural lands, can degrade ground water when irrigation-return waters containing such substances seep into the subsurface. In areas that are unsewered, nitrogen and pathogenic bacteria from overloaded or improperly sited septic tanks can seep into ground water and result in health risks to those who rely on ground water for domestic supply. In areas with industrial or commercial activities, aboveground and underground storage tanks contain vast quantities of hazardous substances. Thousands of these tanks in the Region have leaked or are leaking, discharging petroleum fuels, solvents, and other hazardous substances into the subsurface. These leaks as well as otherdischarges

Reference:
RWQCB, 2015

Well Report

TRACT 349 MUTUAL WATER CO. (CUDAHY)
WELL 03
4630 SANTA ANA STREET
CUDAHY , CA 90201
(Show This Well on Map)

State Well #: 1910160-003
Well Source: Groundwater
Well Status: Active Raw

Detailed Well Information | DPH Water Quality Data

Plot Selected Chemicals | Reset Boxes | **Note: You may select up to 6 chemicals.**

(ALL DATA) | (MOST RECENT) | (MAXIMUM CONCENTRATIONS)

DATE	PARAMETER	QUALIFIER	RESULT	UNITS	MCL	Plot
5/12/2006	1,1,1,2-TETRACHLOROETHANE	<	0.5	UG/L	NA	
10/24/2013	1,1,1-TRICHLOROETHANE	<	0.5	UG/L	200	
10/24/2013	1,1,2,2-TETRACHLOROETHANE	<	0.5	UG/L	1	
10/24/2013	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	<	10	UG/L	1200	
10/24/2013	1,1,2-TRICHLOROETHANE	<	0.5	UG/L	5	
10/14/2010	1,1-DICHLOROETHANE	<	1	UG/L	5	
10/24/2013	1,1-DICHLOROETHYLENE	<	0.5	UG/L	6	
5/12/2006	1,1-DICHLOROPROPENE	<	0.5	UG/L	NA	
5/12/2006	1,2,3-TRICHLOROBENZENE	<	0.5	UG/L	NA	
5/12/2006	1,2,3-TRICHLOROPROPANE	<	0.5	UG/L	NA	
10/24/2013	1,2,4-TRICHLOROBENZENE	<	0.5	UG/L	5	
5/12/2006	1,2,4-TRIMETHYLBENZENE	<	0.5	UG/L	NA	
10/24/2013	1,2-DICHLOROBENZENE	<	0.5	UG/L	600	
10/24/2013	1,2-DICHLOROETHANE	<	0.5	UG/L	0.5	
10/24/2013	1,2-DICHLOROPROPANE	<	0.5	UG/L	5	
5/12/2006	1,3,5-TRIMETHYLBENZENE	<	0.5	UG/L	NA	
5/12/2006	1,3-DICHLOROBENZENE	<	0.5	UG/L	NA	
5/12/2006	1,3-DICHLOROPROPANE	<	0.5	UG/L	NA	
10/24/2013	1,3-DICHLOROPROPENE (TOTAL)	<	0.5	UG/L	0.5	
10/24/2013	1,4-DICHLOROBENZENE	<	0.5	UG/L	5	
4/23/2014	1,4-DIOXANE	.	5.3	UG/L	NA	
5/12/2006	1-PHENYLPROPANE (N-PROPYLBENZENE)	<	0.5	UG/L	NA	
5/12/2006	2,2-DICHLOROPROPANE	<	0.5	UG/L	NA	
5/5/2003	2,3,7,8-TCDD (DIOXIN)		0	PG/L	30	
6/7/1989	2,4,5-TP (SILVEX)	<	1	UG/L	50	
6/7/1989	2,4-D	<	10	UG/L	70	
9/7/2004	2-CHLOROETHYLVINYL ETHER	<	1	UG/L	NA	
5/12/2006	2-CHLOROTOLUENE	<	0.5	UG/L	NA	
5/5/2003	3-HYDROXYCARBOFURAN	<	2	UG/L	NA	
5/12/2006	4-CHLOROTOLUENE	<	0.5	UG/L	NA	
5/4/2007	AGGRSSIVE INDEX (CORROSIVITY)		13		NA	
5/5/2003	ALACHLOR	<	1	UG/L	2	
5/5/2003	ALDICARB	<	2	UG/L	NA	
5/5/2003	ALDICARB SULFONE	<	2	UG/L	NA	
5/5/2003	ALDICARB SULFOXIDE	<	2	UG/L	NA	
5/5/2003	ALDRIN	<	0.075	UG/L	NA	
6/7/1989	ALKALINITY (TOTAL) AS CACO3		178.9	MG/L	NA	
5/26/1992	ALUMINUM	<	100	UG/L	1000	
4/23/2013	ANTIMONY	<	6	UG/L	6	
6/7/1989	ARSENIC	<	10	UG/L	10	
5/5/2003	ASBESTOS	<	0.2	MFL	7	
7/10/1989	ATRAZINE	<	1	UG/L	1	
5/4/2007	BARIUM		190	UG/L	1000	
5/5/2003	BENTAZON	<	2	UG/L	18	
10/24/2013	BENZENE	<	0.5	UG/L	1	
5/5/2003	BENZO (A) PYRENE	<	0.1	UG/L	0.2	
4/23/2013	BERYLLIUM	<	1	UG/L	4	
6/7/1989	BICARBONATE ALKALINITY		218.3	MG/L	NA	
7/17/2001	BIS (2-CHLOROETHYL) ETHER		0	UG/L	NA	

10/1/2001	BORON		150	UG/L	NA
5/5/2003	BROMACIL	<	10	UG/L	NA
5/12/2006	BROMOBENZENE	<	0.5	UG/L	NA
5/12/2006	BROMOCHLOROMETHANE	<	0.5	UG/L	NA
10/24/2013	BROMODICHLORMETHANE (THM)	<	1	UG/L	NA
8/5/2002	BROMOFORM (THM)		1.6	UG/L	NA
5/12/2006	BROMOMETHANE	<	0.5	UG/L	NA
5/5/2003	BUTACHLOR	<	0.38	UG/L	NA
4/23/2013	CADMIUM	<	1	UG/L	5
6/7/1989	CALCIUM		70.3	MG/L	NA
5/5/2003	CARBARYL	<	2	UG/L	NA
5/5/2003	CARBOFURAN	<	5	UG/L	18
5/12/2006	CARBON DISULFIDE	<	0.5	UG/L	NA
10/24/2013	CARBON TETRACHLORIDE	<	0.5	UG/L	0.5
4/23/2013	CARBONATE ALKALINITY	<	2.4	MG/L	NA
5/5/2003	CHLORDANE	<	0.1	UG/L	0.1
5/7/2010	CHLORIDE		54	MG/L	500
5/12/2006	CHLOROETHANE	<	0.5	UG/L	NA
10/24/2013	CHLOROFORM (THM)	<	1	UG/L	NA
5/12/2006	CHLOROMETHANE	<	0.5	UG/L	NA
5/5/2003	CHLOROTHALONIL	<	5	UG/L	NA
9/7/2004	CHROMIUM (TOTAL CR-CRVI SCREEN)	<	0.5	UG/L	NA
4/23/2013	CHROMIUM (TOTAL)	<	10	UG/L	50
10/24/2013	CIS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	6
10/22/2012	CIS-1,3-DICHLOROPROPENE	<	0.5	UG/L	0.5
5/3/2004	COLOR	<	3	UNITS	15
4/23/2013	COPPER	<	50	UG/L	1000
4/23/2013	CYANIDE	<	100	UG/L	150
5/5/2003	DACTHAL	<	0.1	UG/L	NA
5/5/2003	DALAPON	<	0.5	UG/L	200
5/5/2003	DI(2-ETHYLHEXYL)ADIPATE	<	5	UG/L	400
7/12/2012	DI(2-ETHYLHEXYL)PHTHALATE	<	3	UG/L	4
5/5/2003	DIAZINON	<	0.25	UG/L	NA
10/24/2013	DIBROMOCHLOROMETHANE (THM)	<	1	UG/L	NA
2/16/2006	DIBROMOCHLOROPROPANE (DBCP)	<	0.5	UG/L	0.2
5/12/2006	DIBROMOMETHANE	<	0.5	UG/L	NA
5/5/2003	DICAMBA	<	0.6	UG/L	NA
11/13/2007	DICHLORODIFLUOROMETHANE (FREON 12)	<	0.5	UG/L	NA
10/24/2013	DICHLOROMETHANE	<	0.5	UG/L	5
5/5/2003	DIELDRIN	<	0.02	UG/L	NA
5/12/2006	DIISOPROPYL ETHER	<	3	UG/L	NA
5/5/2003	DIMETHOATE	<	1	UG/L	NA
5/5/2003	DINOSEB	<	0.5	UG/L	7
5/5/2003	DIQUAT	<	4	UG/L	20
6/7/1995	DIURON		0	UG/L	NA
5/5/2003	ENDOTHALL	<	45	UG/L	100
5/5/2003	ENDRIN	<	0.1	UG/L	2
11/13/2007	ETHYL-TERT-BUTYL ETHER	<	3	UG/L	NA
10/24/2013	ETHYLBENZENE	<	0.5	UG/L	300
2/16/2006	ETHYLENE DIBROMIDE (EDB)	<	0.5	UG/L	0.05
5/7/2010	FLUORIDE (F) (NATURAL-SOURCE)		0.33	MG/L	2
4/23/2013	FOAMING AGENTS (MBAS)	<	0.1	MG/L	0.5
5/5/2003	GLYPHOSATE	<	6	UG/L	700
7/17/2001	GROSS ALPHA		4.37	PCI/L	15
7/17/2001	GROSS ALPHA COUNTING ERROR		1.92	PCI/L	NA
6/7/1989	HARDNESS (TOTAL) AS CACO3		220.8	MG/L	NA
5/5/2003	HEPTACHLOR	<	0.01	UG/L	0.01
5/5/2003	HEPTACHLOR EPOXIDE	<	0.01	UG/L	0.01
5/5/2003	HEXACHLOROBENZENE	<	0.5	UG/L	1
5/12/2006	HEXACHLOROBUTADIENE	<	0.5	UG/L	NA
5/5/2003	HEXACHLOROCYCLOPENTADIENE	<	1	UG/L	50
5/12/2006	HEXACHLOROETHANE	<	1	UG/L	NA

5/7/2010	HYDROXIDE ALKALINITY	<	2	MG/L	NA
4/23/2013	IRON	<	100	UG/L	300
5/12/2006	ISOPROPYLBENZENE	<	0.5	UG/L	NA
5/26/1992	LANGELIER INDEX AT SOURCE TEMP.		0.8		NA
6/7/1989	LEAD	<	10	UG/L	NA
6/7/1989	LINDANE	<	0.4	UG/L	0.2
10/24/2013	M,P-XYLENE	<	0.5	UG/L	NA
8/5/2002	M-XYLENE		0	UG/L	NA
5/26/1992	MAGNESIUM		14	MG/L	NA
9/1/1998	MANGANESE		75.2	UG/L	50
4/23/2013	MERCURY	<	1	UG/L	2
12/17/1987	METHOD 601 NEGATIVE - NO 602 REPORTED		0		NA
12/17/1987	METHOD 602 NEGATIVE - NO 601 REPORTED		0		NA
5/5/2003	METHOMYL	<	2	UG/L	NA
5/5/2003	METHOXYCHLOR	<	10	UG/L	30
5/12/2006	METHYL ETHYL KETONE	<	5	UG/L	NA
5/12/2006	METHYL ISOBUTYL KETONE	<	5	UG/L	NA
10/24/2013	METHYL-TERT-BUTYL-ETHER (MTBE)	<	3	UG/L	13
5/5/2003	METOLACHLOR	<	0.5	UG/L	NA
5/5/2003	METRIBUZIN	<	0.5	UG/L	NA
7/10/1989	MOLINATE	<	2	UG/L	20
10/24/2013	MONOCHLOROBENZENE	<	0.5	UG/L	70
5/12/2006	N-BUTYLBENZENE	<	0.5	UG/L	NA
5/12/2006	NAPHTHALENE	<	0.5	UG/L	NA
4/23/2013	NICKEL	<	10	UG/L	100
6/7/1989	NITRATE (AS NO3)		4.6	MG/L	45
5/4/2007	NITRATE + NITRITE (AS N)		510	UG/L	10000
5/4/2007	NITRATE NITROGEN (NO3-N)		510	UG/L	10000
11/13/2007	NITRITE (AS N)		460	UG/L	1000
10/24/2013	O-XYLENE	<	0.5	UG/L	NA
5/26/1992	ODOR THRESHOLD @ 60 C		3	TON	3
5/5/2003	OXAMYL	<	2	UG/L	50
5/12/2006	P-ISOPROPYLTOLUENE	<	0.5	UG/L	NA
8/5/2002	P-XYLENE		0	UG/L	NA
5/5/2003	PCB-1016 (AS DECACHLOROBIPHENYL (DCB))	<	0.1	UG/L	NA
5/5/2003	PCB-1221 (AS DCB)	<	0.1	UG/L	NA
5/5/2003	PCB-1232 (AS DCB)	<	0.1	UG/L	NA
5/5/2003	PCB-1242 (AS DCB)	<	0.1	UG/L	NA
5/5/2003	PCB-1248 (AS DCB)	<	0.1	UG/L	NA
5/5/2003	PCB-1254 (AS DCB)	<	0.1	UG/L	NA
5/5/2003	PCB-1260 (AS DCB)	<	0.1	UG/L	NA
5/5/2003	PENTACHLOROPHENOL	<	0.2	UG/L	1
7/11/2013	PERCHLORATE	<	4	UG/L	6
5/26/1992	PH, LABORATORY		8.2		NA
5/5/2003	PICLORAM	<	1	UG/L	500
5/26/1992	POLYCHLORINATED BIPHENYLS, TOTAL, AS DCB		0	UG/L	0.5
5/3/2004	POTASSIUM		3.8	MG/L	NA
5/5/2003	PROMETRYN	<	0.5	UG/L	NA
5/5/2003	PROPACHLOR	<	0.5	UG/L	NA
10/19/2007	RADIUM 226		0.15	PCI/L	NA
10/19/2007	RADIUM 226 COUNTING ERROR		0.11	PCI/L	NA
11/17/2005	RADIUM 228	<	1	PCI/L	NA
11/23/2009	RADIUM 228 COUNTING ERROR		0.28	PCI/L	NA
5/12/2006	SEC-BUTYLBENZENE	<	0.5	UG/L	NA
4/23/2013	SELENIUM	<	5	UG/L	50
4/23/2013	SILVER	<	10	UG/L	100
5/12/2006	SIMAZINE	<	1	UG/L	4
6/7/1989	SODIUM		65	MG/L	NA
5/7/2010	SOURCE TEMPERATURE C		22	C	NA
6/7/1989	SPECIFIC CONDUCTANCE		720	US	1600
10/24/2013	STYRENE	<	0.5	UG/L	100
6/7/1995	SULFATE		111.5	MG/L	600

11/13/2007	TERT-AMYL-METHYL ETHER	<	3	UG/L	NA
5/12/2006	TERT-BUTYL ALCOHOL		3.9	UG/L	NA
5/12/2006	TERT-BUTYLBENZENE	<	0.5	UG/L	NA
10/24/2013	TETRACHLOROETHYLENE	<	0.5	UG/L	5
4/23/2013	THALLIUM	<	1	UG/L	2
7/12/2012	THIOBENCARB	<	1	UG/L	70
10/24/2013	TOLUENE	<	0.5	UG/L	150
4/13/1998	TOTAL DISSOLVED SOLIDS		424	MG/L	1000
8/5/2002	TOTAL TRIHALOMETHANES		2.11	UG/L	80
5/5/2003	TOXAPHENE	<	1	UG/L	3
10/24/2013	TRANS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	10
10/22/2012	TRANS-1,3-DICHLOROPROPENE	<	0.5	UG/L	NA
10/24/2013	TRICHLOROETHYLENE	<	0.5	UG/L	5
10/24/2013	TRICHLOROFLUOROMETHANE	<	5	UG/L	150
5/7/2010	TURBIDITY, LABORATORY		0.48	NTU	5
10/19/2007	URANIUM (PCI/L)	<	1	PCI/L	20
7/17/2001	URANIUM COUNTING ERROR		0.456	PCI/L	NA
10/1/2001	VANADIUM		0	UG/L	NA
10/24/2013	VINYL CHLORIDE	<	0.5	UG/L	0.5
10/24/2013	XYLENES (TOTAL)	<	1	UG/L	1750
4/23/2013	ZINC	<	50	UG/L	5000

Well Report

HUNTINGTON PARK-CITY, WATER DEPT. (HUNTINGTON PARK)
WELL 12
6900 BISSELL STREET
HUNTINGTON PARK , CA 90255255
(Show This Well on Map)

State Well #: 1910049-004
Well Source: Groundwater
Well Status: Active Raw

Detailed Well Information | DPH Water Quality Data

Plot Selected Chemicals | Reset Boxes | **Note: You may select up to 6 chemicals.**

(ALL DATA) | (MOST RECENT) | (MAXIMUM CONCENTRATIONS)

DATE	PARAMETER	QUALIFIER	RESULT	UNITS	MCL	Plot
4/1/2014	1,1,1,2-TETRACHLOROETHANE	<	0.5	UG/L	NA	
4/1/2014	1,1,1-TRICHLOROETHANE	<	0.5	UG/L	200	
4/1/2014	1,1,2,2-TETRACHLOROETHANE	<	0.5	UG/L	1	
4/1/2014	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	<	10	UG/L	1200	
4/1/2014	1,1,2-TRICHLOROETHANE	<	0.5	UG/L	5	
5/11/2010	1,1-DICHLOROETHANE	<	1	UG/L	5	
4/1/2014	1,1-DICHLOROETHYLENE	<	0.5	UG/L	6	
4/1/2014	1,1-DICHLOROPROPENE	<	0.5	UG/L	NA	
4/1/2014	1,2,3-TRICHLOROBENZENE	<	0.5	UG/L	NA	
8/5/2005	1,2,3-TRICHLOROPROPANE	<	0.5	UG/L	NA	
4/1/2014	1,2,4-TRICHLOROBENZENE	<	0.5	UG/L	5	
4/1/2014	1,2,4-TRIMETHYLBENZENE	<	0.5	UG/L	NA	
4/1/2014	1,2-DICHLOROBENZENE	<	0.5	UG/L	600	
4/1/2014	1,2-DICHLOROETHANE	<	0.5	UG/L	0.5	
4/1/2014	1,2-DICHLOROPROPANE	<	0.5	UG/L	5	
4/1/2014	1,3,5-TRIMETHYLBENZENE	<	0.5	UG/L	NA	
4/1/2014	1,3-DICHLOROBENZENE	<	0.5	UG/L	NA	
4/1/2014	1,3-DICHLOROPROPANE	<	0.5	UG/L	NA	
4/1/2014	1,3-DICHLOROPROPENE (TOTAL)	<	0.5	UG/L	0.5	
4/1/2014	1,4-DICHLOROBENZENE	<	0.5	UG/L	5	
7/1/2014	1,4-DIOXANE	.	3.1	UG/L	NA	
4/1/2014	1-PHENYLPROPANE (N-PROPYLBENZENE)	<	0.5	UG/L	NA	
4/1/2014	2,2-DICHLOROPROPANE	<	0.5	UG/L	NA	
9/21/1988	2,4,5-TP (SILVEX)	<	0.2	UG/L	50	
9/21/1988	2,4-D	<	2	UG/L	70	
8/17/2004	2-CHLOROETHYLVINYL ETHER	<	1	UG/L	NA	
4/1/2014	2-CHLOROTOLUENE	<	0.5	UG/L	NA	
4/1/2014	4-CHLOROTOLUENE	<	0.5	UG/L	NA	
4/18/2013	AGGRSSIVE INDEX (CORROSIVITY)		13		NA	
11/20/1995	ALACHLOR		0	UG/L	2	
7/31/2000	ALKALINITY (TOTAL) AS CACO3		180	MG/L	NA	
4/18/2013	ALUMINUM	<	50	UG/L	1000	
4/18/2013	ANTIMONY	<	6	UG/L	6	
9/21/1988	ARSENIC	<	10	UG/L	10	
8/21/2006	ASBESTOS	<	0.2	MFL	7	
2/8/2007	ATRAZINE	<	0.5	UG/L	1	
5/7/2007	BARIUM		150	UG/L	1000	
4/1/2014	BENZENE	<	0.5	UG/L	1	
4/18/2013	BERYLLIUM	<	1	UG/L	4	
7/31/2000	BICARBONATE ALKALINITY		220	MG/L	NA	
7/20/2001	BIS (2-CHLOROETHYL) ETHER		0	UG/L	NA	
12/3/2001	BORON		140	UG/L	NA	
11/20/1995	BROMACIL		0	UG/L	NA	
4/1/2014	BROMOBENZENE	<	0.5	UG/L	NA	
4/1/2014	BROMOCHLOROMETHANE	<	0.5	UG/L	NA	
4/1/2014	BROMODICHLORMETHANE (THM)	<	1	UG/L	NA	
4/10/1992	BROMOFORM (THM)		2.4	UG/L	NA	
4/1/2014	BROMOMETHANE	<	0.5	UG/L	NA	
4/18/2013	CADMIUM	<	1	UG/L	5	

8/4/2003	CALCIUM		72	MG/L	NA
8/10/1995	CARBARYL		0	UG/L	NA
8/5/2005	CARBON DISULFIDE	<	0.5	UG/L	NA
4/1/2014	CARBON TETRACHLORIDE	<	0.5	UG/L	0.5
4/18/2013	CARBONATE ALKALINITY	<	2.4	MG/L	NA
2/19/1998	CHLORDANE		0	UG/L	0.1
8/4/2003	CHLORIDE		48	MG/L	500
4/1/2014	CHLOROETHANE	<	0.5	UG/L	NA
4/1/2014	CHLOROFORM (THM)	<	1	UG/L	NA
4/1/2014	CHLOROMETHANE	<	0.5	UG/L	NA
8/17/2004	CHROMIUM (TOTAL CR-CRVI SCREEN)	<	0.5	UG/L	NA
4/18/2013	CHROMIUM (TOTAL)	<	10	UG/L	50
2/7/2001	CHROMIUM, HEXAVALENT		0	UG/L	10
4/1/2014	CIS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	6
4/18/2013	CIS-1,3-DICHLOROPROPENE	<	0.5	UG/L	0.5
5/7/2007	COLOR		10	UNITS	15
12/10/2007	COMBINED RA 226 + RA 228		0.75	PCI/L	5
12/10/2007	COMBINED RA 226 + RA 228 COUNTING ERROR		0.29	PCI/L	NA
4/18/2013	COPPER	<	50	UG/L	1000
4/18/2013	CYANIDE	<	100	UG/L	150
7/27/2012	DI(2-ETHYLHEXYL)PHTHALATE	<	3	UG/L	4
11/20/1995	DIAZINON		0	UG/L	NA
4/1/2014	DIBROMOCHLOROMETHANE (THM)	<	1	UG/L	NA
8/5/2005	DIBROMOCHLOROPROPANE (DBCP)	<	0.5	UG/L	0.2
4/1/2014	DIBROMOMETHANE	<	0.5	UG/L	NA
4/1/2014	DICHLORODIFLUOROMETHANE (FREON 12)	<	0.5	UG/L	NA
4/1/2014	DICHLOROMETHANE	<	0.5	UG/L	5
4/1/2014	DIISOPROPYL ETHER	<	3	UG/L	NA
1/29/1992	DIMETHOATE		0	UG/L	NA
2/19/1998	DIQUAT		0	UG/L	20
11/20/1995	DIURON		0	UG/L	NA
9/21/1988	ENDRIN	<	0.01	UG/L	2
4/1/2014	ETHYL-TERT-BUTYL ETHER	<	3	UG/L	NA
4/1/2014	ETHYLBENZENE	<	0.5	UG/L	300
8/5/2005	ETHYLENE DIBROMIDE (EDB)	<	0.5	UG/L	0.05
8/4/2003	FLUORIDE (F) (NATURAL-SOURCE)		0.48	MG/L	2
4/18/2013	FOAMING AGENTS (MBAS)	<	0.1	MG/L	0.5
2/19/1998	GLYPHOSATE		0	UG/L	700
3/22/2007	GROSS ALPHA		10.2	PCI/L	15
9/14/2007	GROSS ALPHA COUNTING ERROR		1.9	PCI/L	NA
10/22/2013	GROSS ALPHA MDA95		1.24	PCI/L	NA
8/4/2003	HARDNESS (TOTAL) AS CACO3		250	MG/L	NA
4/1/2014	HEXACHLOROBUTADIENE	<	0.5	UG/L	NA
8/5/2005	HEXACHLOROETHANE	<	1	UG/L	NA
5/11/2010	HYDROXIDE ALKALINITY	<	2	MG/L	NA
5/7/2007	IRON		130	UG/L	300
4/1/2014	ISOPROPYLBENZENE	<	0.5	UG/L	NA
2/8/1999	LANGELIER INDEX AT SOURCE TEMP.		0.34		NA
9/21/1988	LEAD	<	10	UG/L	NA
9/21/1988	LINDANE	<	0.1	UG/L	0.2
4/1/2014	M,P-XYLENE	<	0.5	UG/L	NA
8/21/2002	M-XYLENE		0	UG/L	NA
8/4/2003	MAGNESIUM		17	MG/L	NA
5/11/2010	MANGANESE		50	UG/L	50
4/18/2013	MERCURY	<	1	UG/L	2
9/21/1988	METHOXYCHLOR	<	1	UG/L	30
4/1/2014	METHYL ETHYL KETONE	<	5	UG/L	NA
4/1/2014	METHYL ISOBUTYL KETONE	<	5	UG/L	NA
4/1/2014	METHYL-TERT-BUTYL-ETHER (MTBE)	<	3	UG/L	13
11/20/1995	MOLINATE		0	UG/L	20
4/1/2014	MONOCHLOROBENZENE	<	0.5	UG/L	70
4/1/2014	N-BUTYLBENZENE	<	0.5	UG/L	NA

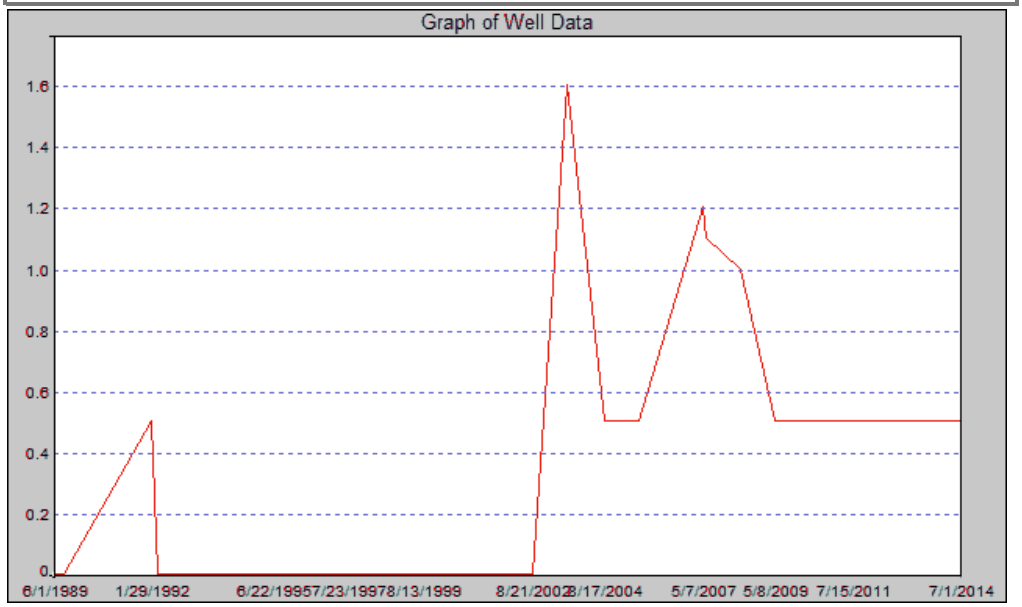
4/1/2014	NAPHTHALENE	<	0.5	UG/L	NA
4/18/2013	NICKEL	<	10	UG/L	100
6/22/1995	NITRATE (AS NO3)		11.4	MG/L	45
5/7/2007	NITRATE + NITRITE (AS N)		1100	UG/L	10000
5/7/2007	NITRATE NITROGEN (NO3-N)		1100	UG/L	10000
4/18/2013	NITRITE (AS N)	<	400	UG/L	1000
4/1/2014	O-XYLENE	<	0.5	UG/L	NA
9/21/1988	ODOR THRESHOLD @ 60 C		2	TON	3
8/5/2005	P-ISOPROPYLTOLUENE	<	0.5	UG/L	NA
8/21/2002	P-XYLENE		0	UG/L	NA
10/18/2012	PERCHLORATE	<	4	UG/L	6
4/18/2013	PH, LABORATORY		8.29		NA
7/31/2000	POTASSIUM		3.4	MG/L	NA
1/29/1992	PROMETRYN		0	UG/L	NA
3/22/2007	RADIUM 226	<	1	PCI/L	NA
3/22/2007	RADIUM 226 COUNTING ERROR		0.192	PCI/L	NA
3/22/2007	RADIUM 228	<	1	PCI/L	NA
10/12/2004	RADIUM 228 COUNTING ERROR		0.495	PCI/L	NA
4/1/2014	SEC-BUTYLBENZENE	<	0.5	UG/L	NA
4/18/2013	SELENIUM	<	5	UG/L	50
4/18/2013	SILVER	<	10	UG/L	100
2/8/2007	SIMAZINE	<	1	UG/L	4
8/15/1994	SODIUM		58.3	MG/L	NA
4/18/2013	SOURCE TEMPERATURE C		25.8	C	NA
5/7/2007	SPECIFIC CONDUCTANCE		710	US	1600
4/1/2014	STYRENE	<	0.5	UG/L	100
8/4/2003	SULFATE		110	MG/L	600
4/1/2014	TERT-AMYL-METHYL ETHER	<	3	UG/L	NA
6/15/2007	TERT-BUTYL ALCOHOL		2.5	UG/L	NA
4/1/2014	TERT-BUTYLBENZENE	<	0.5	UG/L	NA
4/1/2014	TETRACHLOROETHYLENE	<	0.5	UG/L	5
4/18/2013	THALLIUM	<	1	UG/L	2
7/27/2012	THIOBENCARB	<	1	UG/L	70
4/1/2014	TOLUENE	<	0.5	UG/L	150
5/7/2007	TOTAL DISSOLVED SOLIDS		410	MG/L	1000
4/10/1992	TOTAL TRIHALOMETHANES		3.4	UG/L	80
9/21/1988	TOXAPHENE	<	2	UG/L	3
4/1/2014	TRANS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	10
4/18/2013	TRANS-1,3-DICHLOROPROPENE	<	0.5	UG/L	NA
8/4/2003	TRICHLOROETHYLENE		1.6	UG/L	5
4/1/2014	TRICHLOROFLUOROMETHANE	<	5	UG/L	150
5/7/2007	TURBIDITY, LABORATORY		1.7	NTU	5
6/15/2007	URANIUM (PCI/L)		2.4	PCI/L	20
12/3/2001	VANADIUM		0	UG/L	NA
4/1/2014	VINYL CHLORIDE	<	0.5	UG/L	0.5
4/18/2013	XYLENES (TOTAL)	<	1	UG/L	1750
4/18/2013	ZINC	<	50	UG/L	5000

Well Report

HUNTINGTON PARK-CITY, WATER DEPT. (HUNTINGTON PARK)
WELL 12
6900 BISSELL STREET
HUNTINGTON PARK , CA 90255255
(Show This Well on Map)

State Well #: 1910049-004
Well Source: Groundwater
Well Status: Active Raw

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
7/1/2014	TRICHLOROETHYLENE	< 0.5	UG/L	5
4/1/2014	TRICHLOROETHYLENE	< 0.5	UG/L	5
1/9/2014	TRICHLOROETHYLENE	< 0.5	UG/L	5
10/22/2013	TRICHLOROETHYLENE	< 0.5	UG/L	5
7/18/2013	TRICHLOROETHYLENE	< 0.5	UG/L	5
4/18/2013	TRICHLOROETHYLENE	< 0.5	UG/L	5
1/21/2013	TRICHLOROETHYLENE	< 0.5	UG/L	5
10/18/2012	TRICHLOROETHYLENE	< 0.5	UG/L	5
7/27/2012	TRICHLOROETHYLENE	< 0.5	UG/L	5
4/24/2012	TRICHLOROETHYLENE	< 0.5	UG/L	5
1/12/2012	TRICHLOROETHYLENE	< 0.5	UG/L	5
10/20/2011	TRICHLOROETHYLENE	< 0.5	UG/L	5
7/15/2011	TRICHLOROETHYLENE	< 0.5	UG/L	5
4/12/2011	TRICHLOROETHYLENE	< 0.5	UG/L	5
1/10/2011	TRICHLOROETHYLENE	< 0.5	UG/L	5
10/14/2010	TRICHLOROETHYLENE	< 0.5	UG/L	5
7/8/2010	TRICHLOROETHYLENE	< 0.5	UG/L	5
5/11/2010	TRICHLOROETHYLENE	< 0.5	UG/L	5
2/19/2010	TRICHLOROETHYLENE	< 0.5	UG/L	5
5/8/2009	TRICHLOROETHYLENE	< 0.5	UG/L	5
5/22/2008	TRICHLOROETHYLENE	1	UG/L	5
6/15/2007	TRICHLOROETHYLENE	1.1	UG/L	5
5/7/2007	TRICHLOROETHYLENE	1.2	UG/L	5
8/5/2005	TRICHLOROETHYLENE	< 0.5	UG/L	5
8/17/2004	TRICHLOROETHYLENE	< 0.5	UG/L	5
8/4/2003	TRICHLOROETHYLENE	1.6	UG/L	5
8/21/2002	TRICHLOROETHYLENE	0	UG/L	5
7/20/2001	TRICHLOROETHYLENE	0	UG/L	5
7/31/2000	TRICHLOROETHYLENE	0	UG/L	5
8/13/1999	TRICHLOROETHYLENE	0	UG/L	5
7/20/1998	TRICHLOROETHYLENE	0	UG/L	5
7/23/1997	TRICHLOROETHYLENE	0	UG/L	5
8/15/1996	TRICHLOROETHYLENE	0	UG/L	5
8/10/1995	TRICHLOROETHYLENE	0	UG/L	5
6/22/1995	TRICHLOROETHYLENE	0	UG/L	5
4/10/1992	TRICHLOROETHYLENE	0	UG/L	5
1/29/1992	TRICHLOROETHYLENE	0.5	UG/L	5
8/30/1989	TRICHLOROETHYLENE	0	UG/L	5
6/1/1989	TRICHLOROETHYLENE	0	UG/L	5

FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

SOUTH GATE-CITY, WATER DEPT. (SOUTH GATE)
WELL 07 - DESTROYED
8650 CALIFORNIA AVE.
SOUTH GATE , CA 90280280
(Show This Well on Map)

State Well #: 1910152-002
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data

Plot Selected Chemicals | Reset Boxes | **Note: You may select up to 6 chemicals.**

(ALL DATA) | (MOST RECENT) | (MAXIMUM CONCENTRATIONS)

DATE	PARAMETER	QUALIFIER	RESULT	UNITS	MCL	Plot
10/1/2001	1,1,1,2-TETRACHLOROETHANE		0	UG/L	NA	
3/16/1989	1,1,1-TRICHLOROETHANE	<	0.5	UG/L	200	
9/23/1987	1,1,2,2-TETRACHLOROETHANE	<	0.5	UG/L	1	
10/1/2001	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		0	UG/L	1200	
10/10/1985	1,1,2-TRICHLOROETHANE	<	0.5	UG/L	5	
10/10/1985	1,1-DICHLOROETHANE	<	0.5	UG/L	5	
10/11/1999	1,1-DICHLOROETHYLENE		2	UG/L	6	
10/1/2001	1,1-DICHLOROPROPENE		0	UG/L	NA	
10/1/2001	1,2,3-TRICHLOROBENZENE		0	UG/L	NA	
10/1/2001	1,2,3-TRICHLOROPROPANE		0	UG/L	NA	
10/10/1985	1,2,4-TRICHLOROBENZENE	<	5	UG/L	5	
10/1/2001	1,2,4-TRIMETHYLBENZENE		0	UG/L	NA	
10/10/1985	1,2-DICHLOROBENZENE	<	0.5	UG/L	600	
10/10/1985	1,2-DICHLOROETHANE	<	0.5	UG/L	0.5	
10/10/1985	1,2-DICHLOROPROPANE	<	0.5	UG/L	5	
10/1/2001	1,3,5-TRIMETHYLBENZENE		0	UG/L	NA	
10/10/1985	1,3-DICHLOROBENZENE	<	0.5	UG/L	NA	
10/1/2001	1,3-DICHLOROPROPANE		0	UG/L	NA	
10/1/2001	1,3-DICHLOROPROPENE (TOTAL)		0	UG/L	0.5	
10/10/1985	1,4-DICHLOROBENZENE	<	0.5	UG/L	5	
10/1/2001	1-PHENYLPROPANE (N-PROPYLBENZENE)		0	UG/L	NA	
10/1/2001	2,2-DICHLOROPROPANE		0	UG/L	NA	
8/27/1987	2,4,5-TP (SILVEX)	<	0.2	UG/L	50	
10/10/1985	2,4,6-TRICHLOROPHENOL	<	5	UG/L	NA	
8/27/1987	2,4-D	<	2	UG/L	70	
10/10/1985	2,4-DICHLOROPHENOL	<	5	UG/L	NA	
10/10/1985	2,4-DIMETHYLPHENOL	<	5	UG/L	NA	
10/10/1985	2,4-DINITROPHENOL	<	5	UG/L	NA	
10/10/1985	2,4-DINITROTOLUENE	<	5	UG/L	NA	
10/10/1985	2,6-DINITROTOLUENE	<	5	UG/L	NA	
10/10/1985	2-CHLOROETHYLVINYL ETHER	<	0.5	UG/L	NA	
10/10/1985	2-CHLORONAPHTHALENE	<	5	UG/L	NA	
10/10/1985	2-CHLOROPHENOL	<	5	UG/L	NA	
10/1/2001	2-CHLOROTOLUENE		0	UG/L	NA	
10/10/1985	2-METHYL-4,6-DINITROPHENOL	<	5	UG/L	NA	
10/10/1985	2-NITROPHENOL	<	5	UG/L	NA	

10/10/1985	3,3-DICHLOROBENZIDINE	<	20	UG/L	NA	
10/10/1985	4,4-DDD	<	0.02	UG/L	NA	
10/10/1985	4,4-DDE	<	0.01	UG/L	NA	
10/10/1985	4,4-DDT	<	0.02	UG/L	NA	
10/10/1985	4-BROMOPHENYL PHENYL ETHER	<	5	UG/L	NA	
10/10/1985	4-CHLORO-3-METHYLPHENOL	<	5	UG/L	NA	
10/10/1985	4-CHLOROPHENYL PHENYL ETHER	<	5	UG/L	NA	
10/1/2001	4-CHLOROTOLUENE		0	UG/L	NA	
10/10/1985	4-NITROPHENOL	<	5	UG/L	NA	
10/10/1985	ACENAPHTHENE	<	5	UG/L	NA	
10/10/1985	ACENAPHTHYLENE	<	5	UG/L	NA	
10/10/1985	ALACHLOR	<	0.2	UG/L	2	
10/10/1985	ALDRIN	<	0.01	UG/L	NA	
8/13/1992	ALKALINITY (TOTAL) AS CACO3		213.6	MG/L	NA	
10/10/1985	ALPHA-BHC	<	0.01	UG/L	NA	
11/15/2000	ALUMINUM		51	UG/L	1000	
6/4/1990	ALUMINUM, DISSOLVED	<	0.1	UG/L	NA	
12/13/1994	AMMONIA (NH3-N)		0.24	MG/L	NA	
10/10/1985	ANTHRACENE	<	5	UG/L	NA	
11/15/2000	ANTIMONY		0	UG/L	6	
8/27/1987	ARSENIC	<	20	UG/L	10	
8/30/1989	ATRAZINE	<	1	UG/L	1	
11/15/2000	BARIUM	<	100	UG/L	1000	
10/10/1985	BENFLURALIN	<	1	UG/L	NA	
12/13/1994	BENTAZON		0	UG/L	18	
10/10/1985	BENZENE	<	0.5	UG/L	1	
10/10/1985	BENZIDINE	<	5	UG/L	NA	
10/10/1985	BENZO (A) ANTHRACENE	<	10	UG/L	NA	
10/10/1985	BENZO (A) PYRENE	<	10	UG/L	0.2	
10/10/1985	BENZO (B) FLUORANTHENE	<	10	UG/L	NA	
10/10/1985	BENZO (GHI) PERYLENE	<	10	UG/L	NA	
10/10/1985	BENZO (K) FLUORANTHENE	<	10	UG/L	NA	
10/10/1985	BENZYL BUTYL PHTHALATE	<	10	UG/L	NA	
11/15/2000	BERYLLIUM		0	UG/L	4	
10/10/1985	BETA-BHC	<	0.05	UG/L	NA	
8/13/1992	BICARBONATE ALKALINITY		260.6	MG/L	NA	
10/10/1985	BIS (2-CHLOROETHOXY) METHANE	<	5	UG/L	NA	
10/1/2001	BIS (2-CHLOROETHYL) ETHER		0	UG/L	NA	
10/10/1985	BIS (2-CHLOROISOPROPYL) ETHER	<	5	UG/L	NA	
6/12/1995	BORON		170	UG/L	NA	
10/10/1985	BROMACIL	<	10	UG/L	NA	
10/1/2001	BROMOBENZENE		0	UG/L	NA	
10/1/2001	BROMOCHLOROMETHANE		0	UG/L	NA	
10/10/1985	BROMODICHLORMETHANE (THM)	<	0.5	UG/L	NA	
10/10/1985	BROMOFORM (THM)	<	0.5	UG/L	NA	
10/10/1985	BROMOMETHANE	<	2	UG/L	NA	
12/13/1994	BUTACHLOR		0	UG/L	NA	
8/27/1987	CADMIUM	<	5	UG/L	5	
8/27/1987	CALCIUM		98.2	MG/L	NA	
10/10/1985	CAPTAN	<	1	UG/L	NA	

10/10/1985	CARBARYL	<	1	UG/L	NA	
10/10/1985	CARBON TETRACHLORIDE	<	0.5	UG/L	0.5	
8/31/1992	CARBONATE ALKALINITY	<	1	MG/L	NA	
10/10/1985	CHLORDANE	<	0.05	UG/L	0.1	
10/10/1985	CHLORDIMEFORM	<	1	UG/L	NA	
11/15/2000	CHLORIDE		63	MG/L	500	
10/10/1985	CHLOROETHANE	<	0.5	UG/L	NA	
10/4/1988	CHLOROFORM (THM)		2.3	UG/L	NA	
10/10/1985	CHLOROMETHANE	<	0.5	UG/L	NA	
10/10/1985	CHLOROPICRIN	<	1	UG/L	NA	
10/10/1985	CHLOROPROPHAM	<	10	UG/L	NA	
10/10/1985	CHLOROTHALONIL	<	5	UG/L	NA	
8/28/2000	CHROMIUM (TOTAL)		86	UG/L	50	
8/6/2001	CHROMIUM, HEXAVALENT		75	UG/L	10	
10/10/1985	CHRYSENE	<	5	UG/L	NA	
10/1/2001	CIS-1,2-DICHLOROETHYLENE		0	UG/L	6	
10/10/1985	CIS-1,3-DICHLOROPROPENE	<	0.5	UG/L	0.5	
10/10/1985	CIS-PERMETHRIN	<	1	UG/L	NA	
8/27/1987	COLOR	<	5	UNITS	15	
12/2/1997	COPPER		74.5	UG/L	1000	
11/5/1985	CYANAZINE	<	150	UG/L	NA	
6/12/1995	CYANIDE		0	UG/L	150	
10/10/1985	DACTHAL	<	0.1	UG/L	NA	
6/12/1995	DALAPON		0	UG/L	200	
10/10/1985	DELTA-BHC	<	0.05	UG/L	NA	
6/12/1995	DI(2-ETHYLHEXYL)ADIPATE		0	UG/L	400	
10/10/1985	DI(2-ETHYLHEXYL)PHTHALATE	<	5	UG/L	4	
10/10/1985	DI-N-BUTYLPHTHALATE	<	5	UG/L	NA	
10/10/1985	DI-N-OCTYLPHTHALATE	<	5	UG/L	NA	
4/27/1995	DIAZINON		0	UG/L	NA	
10/10/1985	DIBENZO (A,H) ANTHRACENE	<	5	UG/L	NA	
10/10/1985	DIBROMOCHLOROMETHANE (THM)	<	0.5	UG/L	NA	
8/30/1989	DIBROMOCHLOROPROPANE (DBCP)	<	0.01	UG/L	0.2	
10/1/2001	DIBROMOMETHANE		0	UG/L	NA	
12/13/1994	DICAMBA		0	UG/L	NA	
10/10/1985	DICHLORODIFLUOROMETHANE (FREON 12)	<	0.5	UG/L	NA	
10/10/1985	DICHLOROMETHANE	<	0.5	UG/L	5	
10/10/1985	DICOFOL	<	0.1	UG/L	NA	
10/10/1985	DIELDRIN	<	0.05	UG/L	NA	
10/10/1985	DIETHYL PHTHALATE	<	5	UG/L	NA	
2/5/1992	DIMETHOATE		0	UG/L	NA	
10/10/1985	DIMETHYL PHTHALATE	<	5	UG/L	NA	
10/10/1985	DINOSEB	<	100	UG/L	7	
10/10/1985	DIPHENAMIDE	<	10.1	UG/L	NA	
11/4/1998	DIQUAT		0	UG/L	20	
10/10/1985	DIURON	<	1	UG/L	NA	
10/10/1985	DNOC	<	100	UG/L	NA	
10/10/1985	ENDOSULFAN I	<	0.01	UG/L	NA	
10/10/1985	ENDOSULFAN II	<	0.05	UG/L	NA	
10/10/1985	ENDOSULFAN SULFATE	<	0.05	UG/L	NA	

10/10/1985	ENDOTHALL	<	100	UG/L	100
8/27/1987	ENDRIN	<	0.1	UG/L	2
10/10/1985	ENDRIN ALDEHYDE	<	0.05	UG/L	NA
10/10/1985	EPTC	<	10	UG/L	NA
10/1/2001	ETHYL-TERT-BUTYL ETHER		0	UG/L	NA
10/10/1985	ETHYLBENZENE	<	0.5	UG/L	300
8/30/1989	ETHYLENE DIBROMIDE (EDB)	<	0.02	UG/L	0.05
10/10/1985	FLUCHLORALIN	<	1	UG/L	NA
10/10/1985	FLUORANTHENE	<	5	UG/L	NA
10/10/1985	FLUORENE	<	5	UG/L	NA
8/31/1992	FLUORIDE (F) (NATURAL-SOURCE)		0.5	MG/L	2
8/31/1992	FOAMING AGENTS (MBAS)	<	0.02	MG/L	0.5
11/4/1998	GLYPHOSATE		0	UG/L	700
4/13/1998	GROSS ALPHA		5.7	PCI/L	15
4/13/1998	GROSS ALPHA COUNTING ERROR		2.7	PCI/L	NA
12/13/1994	GROSS BETA		7.73	PCI/L	50
6/12/1995	GROSS BETA COUNTING ERROR		3.4	PCI/L	NA
11/15/2000	HARDNESS (TOTAL) AS CACO3		300	MG/L	NA
10/10/1985	HEPTACHLOR	<	0.02	UG/L	0.01
10/10/1985	HEPTACHLOR EPOXIDE	<	0.1	UG/L	0.01
10/10/1985	HEXACHLOROBENZENE	<	5	UG/L	1
10/10/1985	HEXACHLOROBUTADIENE	<	5	UG/L	NA
10/10/1985	HEXACHLOROCYCLOPENTADIENE	<	20	UG/L	50
10/10/1985	HEXACHLOROETHANE	<	5	UG/L	NA
8/31/1992	HYDROXIDE ALKALINITY	<	1	MG/L	NA
10/10/1985	INDENO (1,2,3-CD) PYRENE	<	10	UG/L	NA
6/3/1998	IRON		3430	UG/L	300
10/10/1985	ISOPHORONE	<	10	UG/L	NA
10/1/2001	ISOPROPYLBENZENE		0	UG/L	NA
10/10/1985	KEROSENE	<	1	UG/L	NA
11/4/1998	LANGELIER INDEX AT SOURCE TEMP.		0.293		NA
12/2/1997	LEAD		10.1	UG/L	NA
8/27/1987	LINDANE	<	0.1	UG/L	0.2
10/1/2001	M,P-XYLENE		0	UG/L	NA
10/1/2001	M-XYLENE		0	UG/L	NA
8/13/1992	MAGNESIUM		27.1	MG/L	NA
12/2/1997	MANGANESE		121	UG/L	50
6/4/1990	MERCURY	<	1	UG/L	2
10/10/1985	MERPHOS	<	1	UG/L	NA
10/10/1985	METHOMYL	<	10	UG/L	NA
8/27/1987	METHOXYCHLOR	<	1	UG/L	30
10/10/1985	METHYL ETHYL KETONE	<	1	UG/L	NA
10/10/1985	METHYL ISOBUTYL KETONE	<	1	UG/L	NA
10/1/2001	METHYL-TERT-BUTYL-ETHER (MTBE)		0	UG/L	13
8/30/1989	MOLINATE	<	2	UG/L	20
10/10/1985	MONOCHLOROBENZENE	<	0.5	UG/L	70
10/1/2001	N-BUTYLBENZENE		0	UG/L	NA
10/10/1985	N-NITROSODI-N-PROPYLAMINE (NDPA)	<	5	UG/L	NA
10/10/1985	N-NITROSODIMETHYLAMINE (NDMA)	<	5	UG/L	NA
10/10/1985	N-NITROSODIPHENYLAMINE	<	5	UG/L	NA

10/10/1985	NAPHTHALENE	<	5	UG/L	NA	
10/10/1985	NAPROPAMIDE	<	5	UG/L	NA	
11/15/2000	NICKEL		0	UG/L	100	
8/6/2001	NITRATE (AS NO3)		18	MG/L	45	
6/12/1995	NITRATE + NITRITE (AS N)		2800	UG/L	10000	
12/13/1994	NITRATE NITROGEN (NO3-N)		2800	UG/L	10000	
2/2/1995	NITRITE (AS N)	<	400	UG/L	1000	
10/10/1985	NITROBENZENE	<	5	UG/L	NA	
10/1/2001	O-XYLENE		0	UG/L	NA	
11/15/2000	ODOR THRESHOLD @ 60 C		1	TON	3	
10/10/1985	ORYZALIN	<	1	UG/L	NA	
10/10/1985	OXAMYL	<	10	UG/L	50	
10/1/2001	P-ISOPROPYLTOLUENE		0	UG/L	NA	
10/1/2001	P-XYLENE		0	UG/L	NA	
10/10/1985	PCB-1016 (AS DECACHLOROBIPHENYL (DCB))	<	0.2	UG/L	NA	
10/10/1985	PCB-1221 (AS DCB)	<	0.2	UG/L	NA	
10/10/1985	PCB-1232 (AS DCB)	<	0.2	UG/L	NA	
10/10/1985	PCB-1242 (AS DCB)	<	0.2	UG/L	NA	
10/10/1985	PCB-1248 (AS DCB)	<	0.2	UG/L	NA	
10/10/1985	PCB-1254 (AS DCB)	<	0.2	UG/L	NA	
10/10/1985	PCB-1260 (AS DCB)	<	0.2	UG/L	NA	
10/10/1985	PENTACHLOROPHENOL	<	0.5	UG/L	1	
5/2/2000	PERCHLORATE		0	UG/L	6	
6/12/1995	PH, FIELD		7.5		NA	
8/27/1987	PH, LABORATORY		8.08		NA	
10/10/1985	PHENANTHRENE	<	5	UG/L	NA	
10/10/1985	PHENOL	<	5	UG/L	NA	
6/12/1995	PICLORAM		0	UG/L	500	
6/12/1995	POLYCHLORINATED BIPHENYLS, TOTAL, AS DCB		0	UG/L	0.5	
8/27/1987	POTASSIUM		3.9	MG/L	NA	
11/5/1985	PROMETRYN	<	0.5	UG/L	NA	
10/10/1985	PROPAMIDE	<	1	UG/L	NA	
10/10/1985	PROPARGITE	<	1	MG/L	NA	
10/10/1985	PROPHAM	<	10	UG/L	NA	
10/10/1985	PYRENE	<	5	UG/L	NA	
3/27/2000	RADON 222		270	PCI/L	NA	
8/1/2000	RADON 222 COUNTING ERROR		26	PCI/L	NA	
10/1/2001	SEC-BUTYLBENZENE		0	UG/L	NA	
6/4/1990	SELENIUM	<	5	UG/L	50	
6/4/1990	SILVER	<	10	UG/L	100	
8/30/1989	SIMAZINE	<	1	UG/L	4	
8/13/1992	SODIUM		53.5	MG/L	NA	
6/12/1995	SOURCE TEMPERATURE C		66	C	NA	
11/15/2000	SPECIFIC CONDUCTANCE		850	US	1600	
6/12/1995	STRONTIUM-90	-	0.06	PCI/L	8	
6/12/1995	STRONTIUM-90 COUNTING ERROR		1.35	PCI/L	NA	
10/1/2001	STYRENE		0	UG/L	100	
11/15/2000	SULFATE		120	MG/L	600	
10/1/2001	TERT-AMYL-METHYL ETHER		0	UG/L	NA	
8/6/2001	TERT-BUTYL ALCOHOL		0	UG/L	NA	

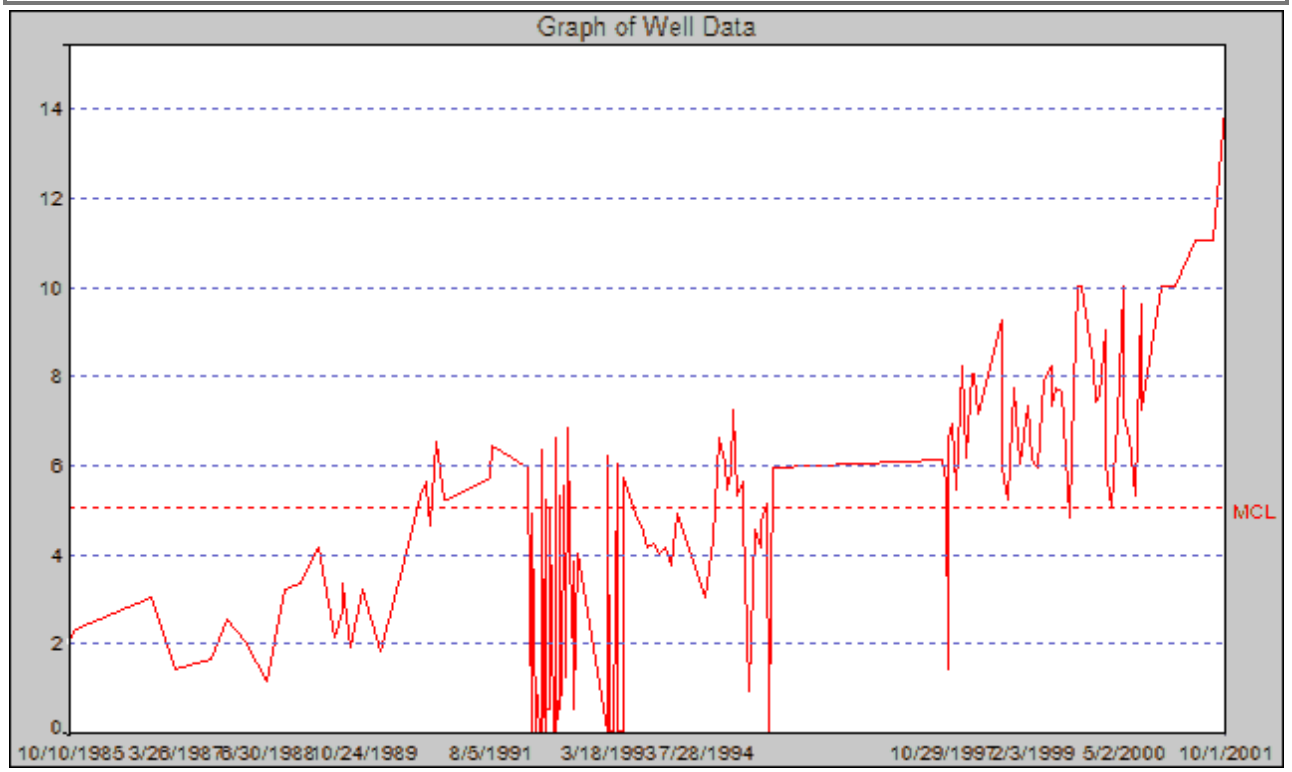
10/1/2001	TERT-BUTYLBENZENE		0	UG/L	NA	
10/1/2001	TETRACHLOROETHYLENE		3.8	UG/L	5	
11/15/2000	THALLIUM		0	UG/L	2	
8/30/1989	THIOBENCARB	<	0.8	UG/L	70	
11/5/1990	TOLUENE		0.7	UG/L	150	
8/27/1987	TOTAL DISSOLVED SOLIDS		545.2	MG/L	1000	
10/1/2001	TOTAL TRIHALOMETHANES		0	UG/L	80	
8/27/1987	TOXAPHENE	<	2	UG/L	3	
10/10/1985	TRANS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	10	
10/10/1985	TRANS-1,3-DICHLOROPROPENE	<	0.5	UG/L	NA	
10/10/1985	TRANS-PERMETHRIN	<	1	UG/L	NA	
10/1/2001	TRICHLOROETHYLENE		14	UG/L	5	
10/10/1985	TRICHLOROFLUOROMETHANE	<	0.5	UG/L	150	
6/12/1995	TRITIUM		17.2	PCI/L	20000	
12/13/1994	TRITIUM COUNTING ERROR		199.7	PCI/L	NA	
12/2/1997	TURBIDITY, LABORATORY		1.45	NTU	5	
4/13/1998	URANIUM (PCI/L)		2.4	PCI/L	20	
12/2/1997	URANIUM COUNTING ERROR		0.85	PCI/L	NA	
10/1/2001	VANADIUM		0	UG/L	NA	
10/10/1985	VINYL CHLORIDE	<	0.5	UG/L	0.5	
10/10/1985	XYLENES (TOTAL)	<	0.5	UG/L	1750	
8/31/1992	ZINC	<	50	UG/L	5000	

Well Report

SOUTH GATE-CITY, WATER DEPT. (SOUTH GATE)
WELL 07 - DESTROYED
8650 CALIFORNIA AVE.
SOUTH GATE , CA 90280280
(Show This Well on Map)

State Well #: 1910152-002
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
10/1/2001	TRICHLOROETHYLENE	14	UG/L	5
8/6/2001	TRICHLOROETHYLENE	11	UG/L	5
5/2/2001	TRICHLOROETHYLENE	11	UG/L	5
1/22/2001	TRICHLOROETHYLENE	10	UG/L	5
11/15/2000	TRICHLOROETHYLENE	10	UG/L	5
8/3/2000	TRICHLOROETHYLENE	7.2	UG/L	5
8/1/2000	TRICHLOROETHYLENE	9.6	UG/L	5
7/6/2000	TRICHLOROETHYLENE	5.3	UG/L	5
6/1/2000	TRICHLOROETHYLENE	6.6	UG/L	5
5/4/2000	TRICHLOROETHYLENE	7.1	UG/L	5
5/2/2000	TRICHLOROETHYLENE	10	UG/L	5
4/6/2000	TRICHLOROETHYLENE	7	UG/L	5
3/2/2000	TRICHLOROETHYLENE	5	UG/L	5
2/3/2000	TRICHLOROETHYLENE	6	UG/L	5
2/1/2000	TRICHLOROETHYLENE	9	UG/L	5
1/6/2000	TRICHLOROETHYLENE	7.5	UG/L	5
12/22/1999	TRICHLOROETHYLENE	7.4	UG/L	5
12/9/1999	TRICHLOROETHYLENE	8.2	UG/L	5
10/11/1999	TRICHLOROETHYLENE	10	UG/L	5
9/15/1999	TRICHLOROETHYLENE	10	UG/L	5
9/2/1999	TRICHLOROETHYLENE	7.7	UG/L	5
8/5/1999	TRICHLOROETHYLENE	4.8	UG/L	5
7/1/1999	TRICHLOROETHYLENE	7.6	UG/L	5
6/3/1999	TRICHLOROETHYLENE	7.7	UG/L	5
5/6/1999	TRICHLOROETHYLENE	7.3	UG/L	5

5/5/1999	TRICHLOROETHYLENE	8.2	UG/L	5
4/1/1999	TRICHLOROETHYLENE	7.9	UG/L	5
3/4/1999	TRICHLOROETHYLENE	5.9	UG/L	5
2/3/1999	TRICHLOROETHYLENE	6.1	UG/L	5
1/7/1999	TRICHLOROETHYLENE	7.3	UG/L	5
12/3/1998	TRICHLOROETHYLENE	6	UG/L	5
11/4/1998	TRICHLOROETHYLENE	7.7	UG/L	5
10/1/1998	TRICHLOROETHYLENE	5.2	UG/L	5
9/3/1998	TRICHLOROETHYLENE	5.9	UG/L	5
9/1/1998	TRICHLOROETHYLENE	9.2	UG/L	5
5/7/1998	TRICHLOROETHYLENE	7.1	UG/L	5
4/13/1998	TRICHLOROETHYLENE	8	UG/L	5
4/2/1998	TRICHLOROETHYLENE	8	UG/L	5
3/5/1998	TRICHLOROETHYLENE	6.13	UG/L	5
2/12/1998	TRICHLOROETHYLENE	8.2	UG/L	5
1/8/1998	TRICHLOROETHYLENE	5.4	UG/L	5
12/18/1997	TRICHLOROETHYLENE	6.9	UG/L	5
12/4/1997	TRICHLOROETHYLENE	6.6	UG/L	5
12/2/1997	TRICHLOROETHYLENE	1.4	UG/L	5
11/20/1997	TRICHLOROETHYLENE	5.6	UG/L	5
10/29/1997	TRICHLOROETHYLENE	6.1	UG/L	5
7/6/1995	TRICHLOROETHYLENE	5.9	UG/L	5
6/12/1995	TRICHLOROETHYLENE	0	UG/L	5
6/1/1995	TRICHLOROETHYLENE	5.1	UG/L	5
5/4/1995	TRICHLOROETHYLENE	4.7	UG/L	5
4/27/1995	TRICHLOROETHYLENE	4.1	UG/L	5
4/6/1995	TRICHLOROETHYLENE	4.5	UG/L	5
3/2/1995	TRICHLOROETHYLENE	0.9	UG/L	5
2/2/1995	TRICHLOROETHYLENE	4.8	UG/L	5
2/2/1995	TRICHLOROETHYLENE	5.6	UG/L	5
1/5/1995	TRICHLOROETHYLENE	5.3	UG/L	5
12/13/1994	TRICHLOROETHYLENE	7.2	UG/L	5
12/1/1994	TRICHLOROETHYLENE	5.8	UG/L	5
11/7/1994	TRICHLOROETHYLENE	5.4	UG/L	5
11/2/1994	TRICHLOROETHYLENE	6	UG/L	5
10/6/1994	TRICHLOROETHYLENE	6.6	UG/L	5
9/1/1994	TRICHLOROETHYLENE	4.3	UG/L	5
7/28/1994	TRICHLOROETHYLENE	3	UG/L	5
3/3/1994	TRICHLOROETHYLENE	4.9	UG/L	5
2/3/1994	TRICHLOROETHYLENE	3.7	UG/L	5
2/1/1994	TRICHLOROETHYLENE	3.7	UG/L	5
1/6/1994	TRICHLOROETHYLENE	4.1	UG/L	5
12/2/1993	TRICHLOROETHYLENE	4	UG/L	5
11/2/1993	TRICHLOROETHYLENE	4.2	UG/L	5
10/7/1993	TRICHLOROETHYLENE	4.1	UG/L	5
9/2/1993	TRICHLOROETHYLENE	4.6	UG/L	5
8/10/1993	TRICHLOROETHYLENE	4.9	UG/L	5
6/3/1993	TRICHLOROETHYLENE	0	UG/L	5
6/3/1993	TRICHLOROETHYLENE	5.7	UG/L	5
5/6/1993	TRICHLOROETHYLENE	6	UG/L	5
5/6/1993	TRICHLOROETHYLENE	0	UG/L	5
4/15/1993	TRICHLOROETHYLENE	0	UG/L	5
4/1/1993	TRICHLOROETHYLENE	0	UG/L	5
3/22/1993	TRICHLOROETHYLENE	6.2	UG/L	5
3/18/1993	TRICHLOROETHYLENE	0	UG/L	5
10/19/1992	TRICHLOROETHYLENE	4	UG/L	5
10/1/1992	TRICHLOROETHYLENE	0.5	UG/L	5
10/1/1992	TRICHLOROETHYLENE	0.8	UG/L	5
10/1/1992	TRICHLOROETHYLENE	1.1	UG/L	5
10/1/1992	TRICHLOROETHYLENE	3.8	UG/L	5
9/17/1992	TRICHLOROETHYLENE	2.1	UG/L	5
9/3/1992	TRICHLOROETHYLENE	6.8	UG/L	5
8/20/1992	TRICHLOROETHYLENE	1.2	UG/L	5
8/6/1992	TRICHLOROETHYLENE	5.5	UG/L	5

7/30/1992	TRICHLOROETHYLENE	0.8	UG/L	5
7/17/1992	TRICHLOROETHYLENE	5.3	UG/L	5
7/16/1992	TRICHLOROETHYLENE	0.5	UG/L	5
7/16/1992	TRICHLOROETHYLENE	0.9	UG/L	5
7/2/1992	TRICHLOROETHYLENE	0	UG/L	5
7/2/1992	TRICHLOROETHYLENE	6.6	UG/L	5
7/2/1992	TRICHLOROETHYLENE	0.5	UG/L	5
7/2/1992	TRICHLOROETHYLENE	0.5	UG/L	5
6/25/1992	TRICHLOROETHYLENE	0.5	UG/L	5
6/18/1992	TRICHLOROETHYLENE	0	UG/L	5
6/4/1992	TRICHLOROETHYLENE	5	UG/L	5
5/28/1992	TRICHLOROETHYLENE	0.5	UG/L	5
5/14/1992	TRICHLOROETHYLENE	0.5	UG/L	5
5/14/1992	TRICHLOROETHYLENE	0	UG/L	5
5/7/1992	TRICHLOROETHYLENE	5.2	UG/L	5
5/7/1992	TRICHLOROETHYLENE	0.7	UG/L	5
5/7/1992	TRICHLOROETHYLENE	0.8	UG/L	5
5/7/1992	TRICHLOROETHYLENE	0	UG/L	5
4/30/1992	TRICHLOROETHYLENE	0.6	UG/L	5
4/17/1992	TRICHLOROETHYLENE	6.3	UG/L	5
4/16/1992	TRICHLOROETHYLENE	0	UG/L	5
4/16/1992	TRICHLOROETHYLENE	0	UG/L	5
4/9/1992	TRICHLOROETHYLENE	0	UG/L	5
4/2/1992	TRICHLOROETHYLENE	0.8	UG/L	5
4/2/1992	TRICHLOROETHYLENE	0.6	UG/L	5
3/19/1992	TRICHLOROETHYLENE	0	UG/L	5
3/5/1992	TRICHLOROETHYLENE	0	UG/L	5
3/5/1992	TRICHLOROETHYLENE	0	UG/L	5
3/5/1992	TRICHLOROETHYLENE	4.9	UG/L	5
2/5/1992	TRICHLOROETHYLENE	5.9	UG/L	5
8/14/1991	TRICHLOROETHYLENE	6.4	UG/L	5
8/5/1991	TRICHLOROETHYLENE	5.7	UG/L	5
1/2/1991	TRICHLOROETHYLENE	5.2	UG/L	5
12/11/1990	TRICHLOROETHYLENE	5.2	UG/L	5
11/5/1990	TRICHLOROETHYLENE	6.5	UG/L	5
10/9/1990	TRICHLOROETHYLENE	4.6	UG/L	5
9/12/1990	TRICHLOROETHYLENE	5.6	UG/L	5
9/12/1990	TRICHLOROETHYLENE	5.5	UG/L	5
8/17/1990	TRICHLOROETHYLENE	5.3	UG/L	5
6/4/1990	TRICHLOROETHYLENE	4	UG/L	5
1/24/1990	TRICHLOROETHYLENE	1.8	UG/L	5
10/24/1989	TRICHLOROETHYLENE	3.2	UG/L	5
8/31/1989	TRICHLOROETHYLENE	1.9	UG/L	5
7/19/1989	TRICHLOROETHYLENE	3.3	UG/L	5
7/19/1989	TRICHLOROETHYLENE	2.7	UG/L	5
6/6/1989	TRICHLOROETHYLENE	2.1	UG/L	5
3/16/1989	TRICHLOROETHYLENE	4.1	UG/L	5
12/15/1988	TRICHLOROETHYLENE	3.3	UG/L	5
10/4/1988	TRICHLOROETHYLENE	3.2	UG/L	5
6/30/1988	TRICHLOROETHYLENE	1.1	UG/L	5
6/30/1988	TRICHLOROETHYLENE	1.1	UG/L	5
3/17/1988	TRICHLOROETHYLENE	2	UG/L	5
12/17/1987	TRICHLOROETHYLENE	2.5	UG/L	5
9/23/1987	TRICHLOROETHYLENE	1.6	UG/L	5
3/26/1987	TRICHLOROETHYLENE	1.4	UG/L	5
12/1/1986	TRICHLOROETHYLENE	3	UG/L	5
11/5/1985	TRICHLOROETHYLENE	2.3	UG/L	5
10/10/1985	TRICHLOROETHYLENE	2	UG/L	5

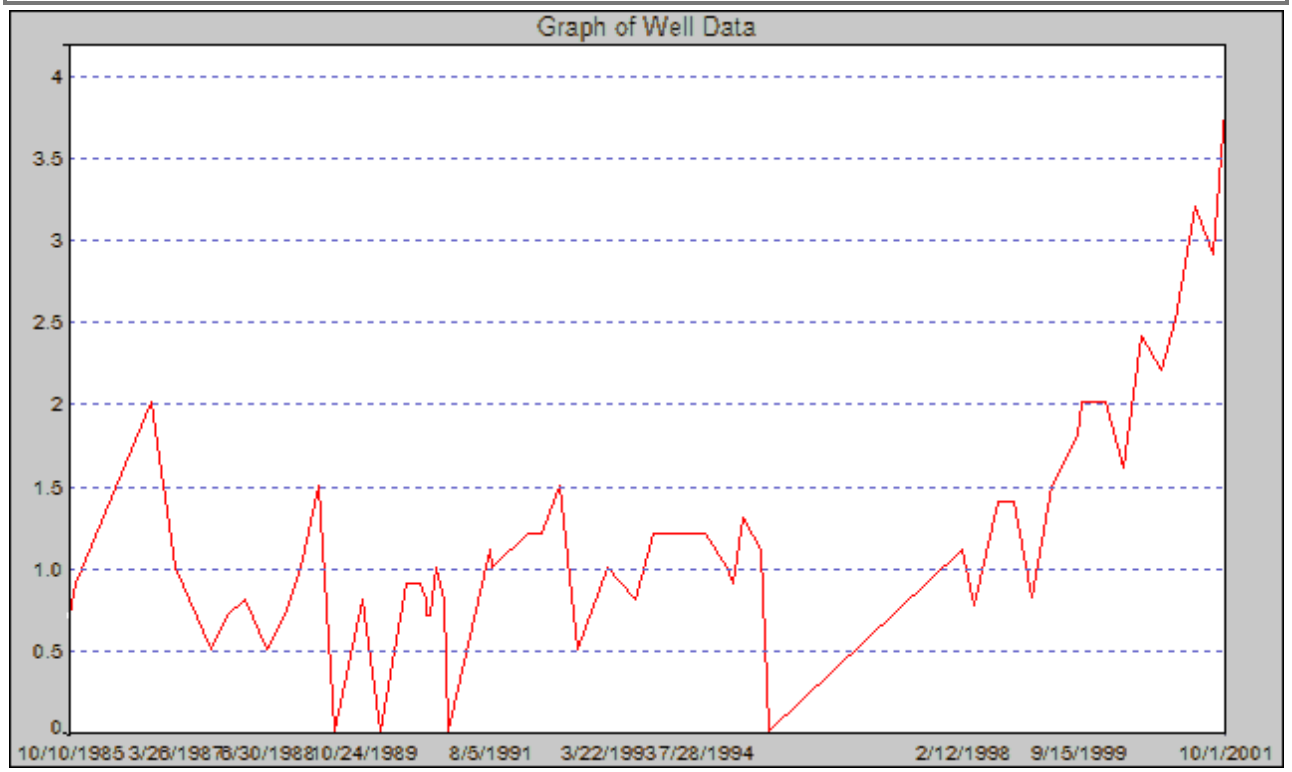
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

SOUTH GATE-CITY, WATER DEPT. (SOUTH GATE)
WELL 07 - DESTROYED
8650 CALIFORNIA AVE.
SOUTH GATE , CA 90280280
(Show This Well on Map)

State Well #: 1910152-002
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
10/1/2001	TETRACHLOROETHYLENE	3.8	UG/L	5
8/6/2001	TETRACHLOROETHYLENE	2.9	UG/L	5
5/2/2001	TETRACHLOROETHYLENE	3.2	UG/L	5
1/22/2001	TETRACHLOROETHYLENE	2.5	UG/L	5
11/15/2000	TETRACHLOROETHYLENE	2.2	UG/L	5
8/1/2000	TETRACHLOROETHYLENE	2.4	UG/L	5
5/2/2000	TETRACHLOROETHYLENE	1.6	UG/L	5
2/1/2000	TETRACHLOROETHYLENE	2	UG/L	5
10/11/1999	TETRACHLOROETHYLENE	2	UG/L	5
9/15/1999	TETRACHLOROETHYLENE	1.8	UG/L	5
5/5/1999	TETRACHLOROETHYLENE	1.5	UG/L	5
2/3/1999	TETRACHLOROETHYLENE	0.81	UG/L	5
11/4/1998	TETRACHLOROETHYLENE	1.4	UG/L	5
9/1/1998	TETRACHLOROETHYLENE	1.4	UG/L	5
8/13/1998	TETRACHLOROETHYLENE	1.4	UG/L	5
4/13/1998	TETRACHLOROETHYLENE	0.76	UG/L	5
2/12/1998	TETRACHLOROETHYLENE	1.1	UG/L	5
6/12/1995	TETRACHLOROETHYLENE	0	UG/L	5
4/27/1995	TETRACHLOROETHYLENE	1.1	UG/L	5
2/2/1995	TETRACHLOROETHYLENE	1.3	UG/L	5
12/13/1994	TETRACHLOROETHYLENE	0.9	UG/L	5
11/7/1994	TETRACHLOROETHYLENE	1	UG/L	5
7/28/1994	TETRACHLOROETHYLENE	1.2	UG/L	5
11/2/1993	TETRACHLOROETHYLENE	1.2	UG/L	5
8/10/1993	TETRACHLOROETHYLENE	0.8	UG/L	5

3/22/1993	TETRACHLOROETHYLENE	1	UG/L	5
10/19/1992	TETRACHLOROETHYLENE	0.5	UG/L	5
7/17/1992	TETRACHLOROETHYLENE	1.5	UG/L	5
4/17/1992	TETRACHLOROETHYLENE	1.2	UG/L	5
2/5/1992	TETRACHLOROETHYLENE	1.2	UG/L	5
8/14/1991	TETRACHLOROETHYLENE	1	UG/L	5
8/5/1991	TETRACHLOROETHYLENE	1.1	UG/L	5
1/2/1991	TETRACHLOROETHYLENE	0	UG/L	5
12/11/1990	TETRACHLOROETHYLENE	0.8	UG/L	5
11/5/1990	TETRACHLOROETHYLENE	1	UG/L	5
10/9/1990	TETRACHLOROETHYLENE	0.7	UG/L	5
9/12/1990	TETRACHLOROETHYLENE	0.8	UG/L	5
9/12/1990	TETRACHLOROETHYLENE	0.7	UG/L	5
8/17/1990	TETRACHLOROETHYLENE	0.9	UG/L	5
6/4/1990	TETRACHLOROETHYLENE	0.9	UG/L	5
1/24/1990	TETRACHLOROETHYLENE	0	UG/L	5
10/24/1989	TETRACHLOROETHYLENE	0.8	UG/L	5
6/6/1989	TETRACHLOROETHYLENE	0	UG/L	5
3/16/1989	TETRACHLOROETHYLENE	1.5	UG/L	5
12/15/1988	TETRACHLOROETHYLENE	1	UG/L	5
10/4/1988	TETRACHLOROETHYLENE	0.7	UG/L	5
6/30/1988	TETRACHLOROETHYLENE	< 0.5	UG/L	5
6/30/1988	TETRACHLOROETHYLENE	< 0.5	UG/L	5
3/17/1988	TETRACHLOROETHYLENE	0.8	UG/L	5
12/17/1987	TETRACHLOROETHYLENE	0.7	UG/L	5
9/23/1987	TETRACHLOROETHYLENE	< 0.5	UG/L	5
3/26/1987	TETRACHLOROETHYLENE	1	UG/L	5
3/26/1987	TETRACHLOROETHYLENE	1	UG/L	5
12/1/1986	TETRACHLOROETHYLENE	2	UG/L	5
11/5/1985	TETRACHLOROETHYLENE	0.9	UG/L	5
10/10/1985	TETRACHLOROETHYLENE	0.7	UG/L	5

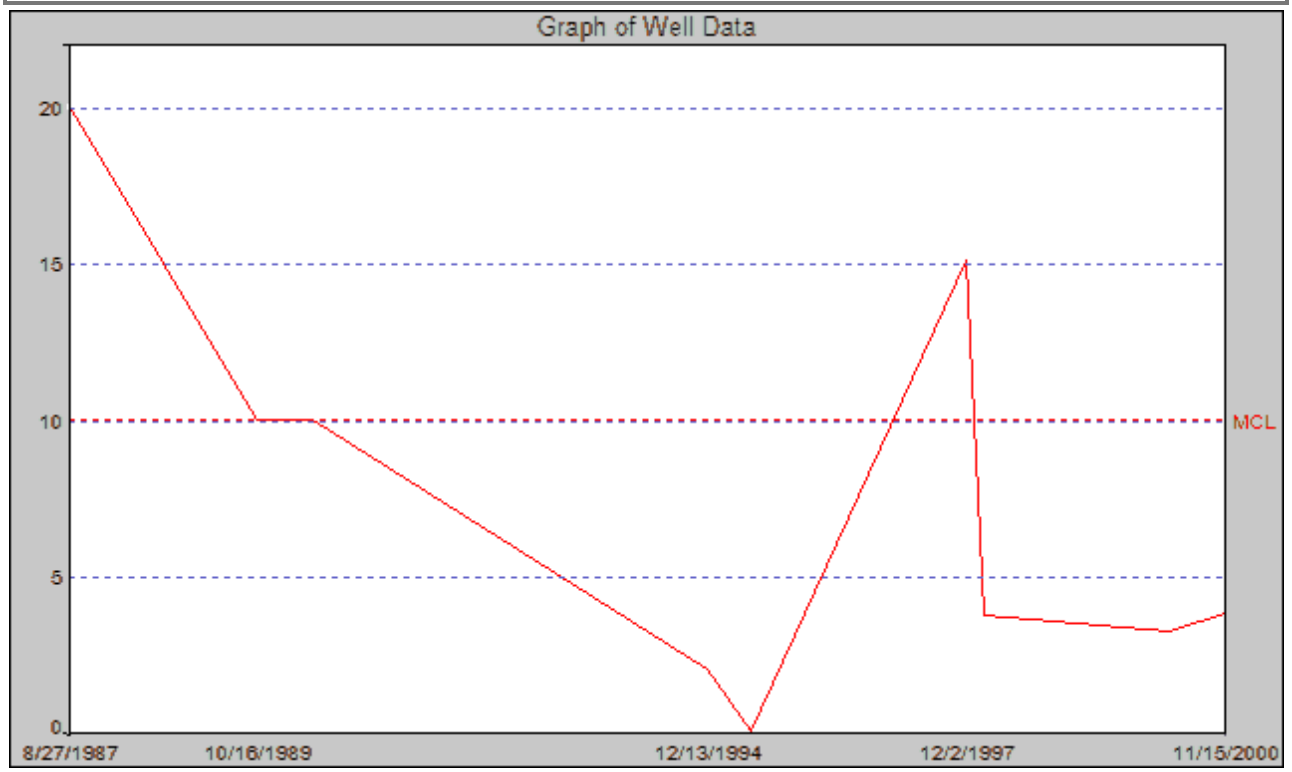
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

SOUTH GATE-CITY, WATER DEPT. (SOUTH GATE)
WELL 07 - DESTROYED
8650 CALIFORNIA AVE.
SOUTH GATE , CA 90280280
(Show This Well on Map)

State Well #: 1910152-002
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
11/15/2000	ARSENIC	3.8	UG/L	10
3/27/2000	ARSENIC	3.2	UG/L	10
2/12/1998	ARSENIC	3.72	UG/L	10
12/2/1997	ARSENIC	15.1	UG/L	10
6/12/1995	ARSENIC	0	UG/L	10
12/13/1994	ARSENIC	2	UG/L	10
6/4/1990	ARSENIC	< 10	UG/L	10
10/16/1989	ARSENIC	< 10	UG/L	10
8/27/1987	ARSENIC	< 20	UG/L	10
8/27/1987	ARSENIC	< 20	UG/L	10

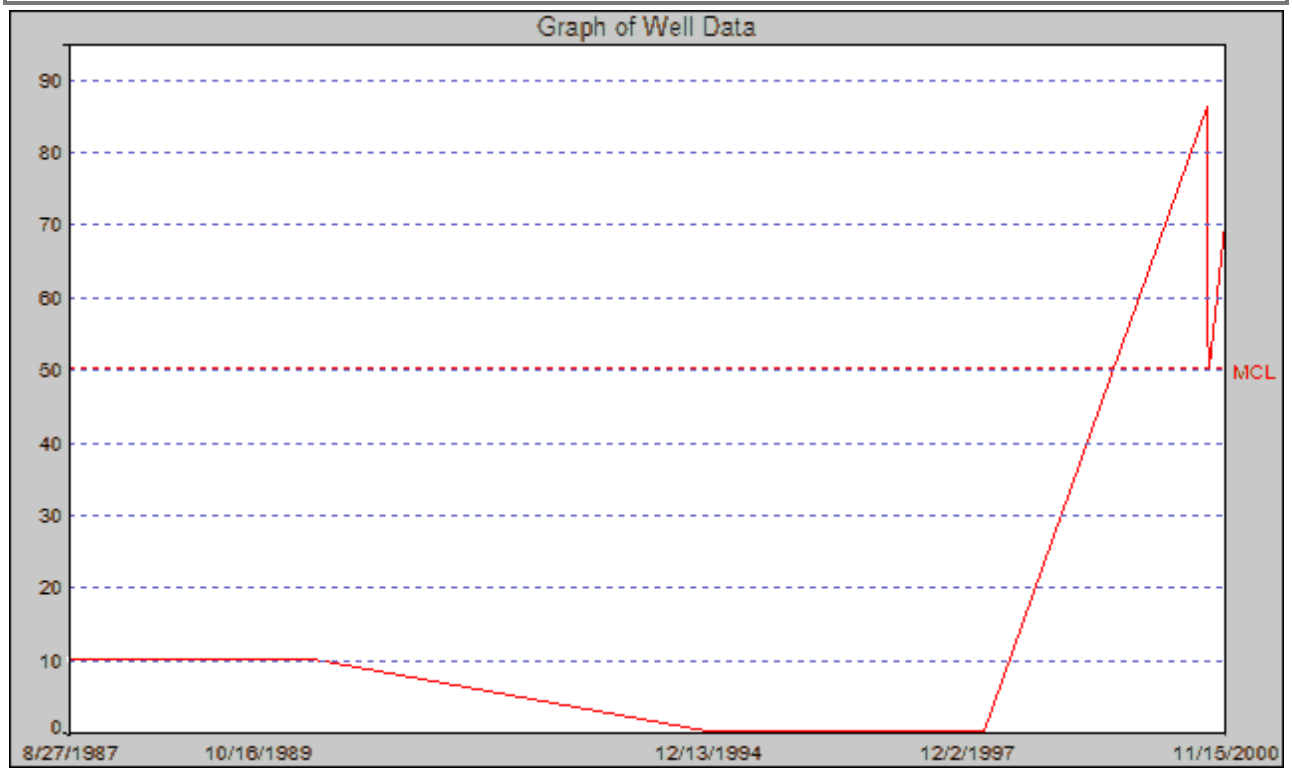
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

SOUTH GATE-CITY, WATER DEPT. (SOUTH GATE)
WELL 07 - DESTROYED
8650 CALIFORNIA AVE.
SOUTH GATE , CA 90280280
(Show This Well on Map)

State Well #: 1910152-002
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
11/15/2000	CHROMIUM (TOTAL)	70	UG/L	50
9/7/2000	CHROMIUM (TOTAL)	50	UG/L	50
9/5/2000	CHROMIUM (TOTAL)	56	UG/L	50
8/31/2000	CHROMIUM (TOTAL)	54	UG/L	50
8/28/2000	CHROMIUM (TOTAL)	86	UG/L	50
2/12/1998	CHROMIUM (TOTAL)	0	UG/L	50
12/2/1997	CHROMIUM (TOTAL)	0	UG/L	50
6/12/1995	CHROMIUM (TOTAL)	0	UG/L	50
12/13/1994	CHROMIUM (TOTAL)	0	UG/L	50
6/4/1990	CHROMIUM (TOTAL)	< 10	UG/L	50
10/16/1989	CHROMIUM (TOTAL)	< 10	UG/L	50
8/27/1987	CHROMIUM (TOTAL)	< 10	UG/L	50
8/27/1987	CHROMIUM (TOTAL)	< 10	UG/L	50

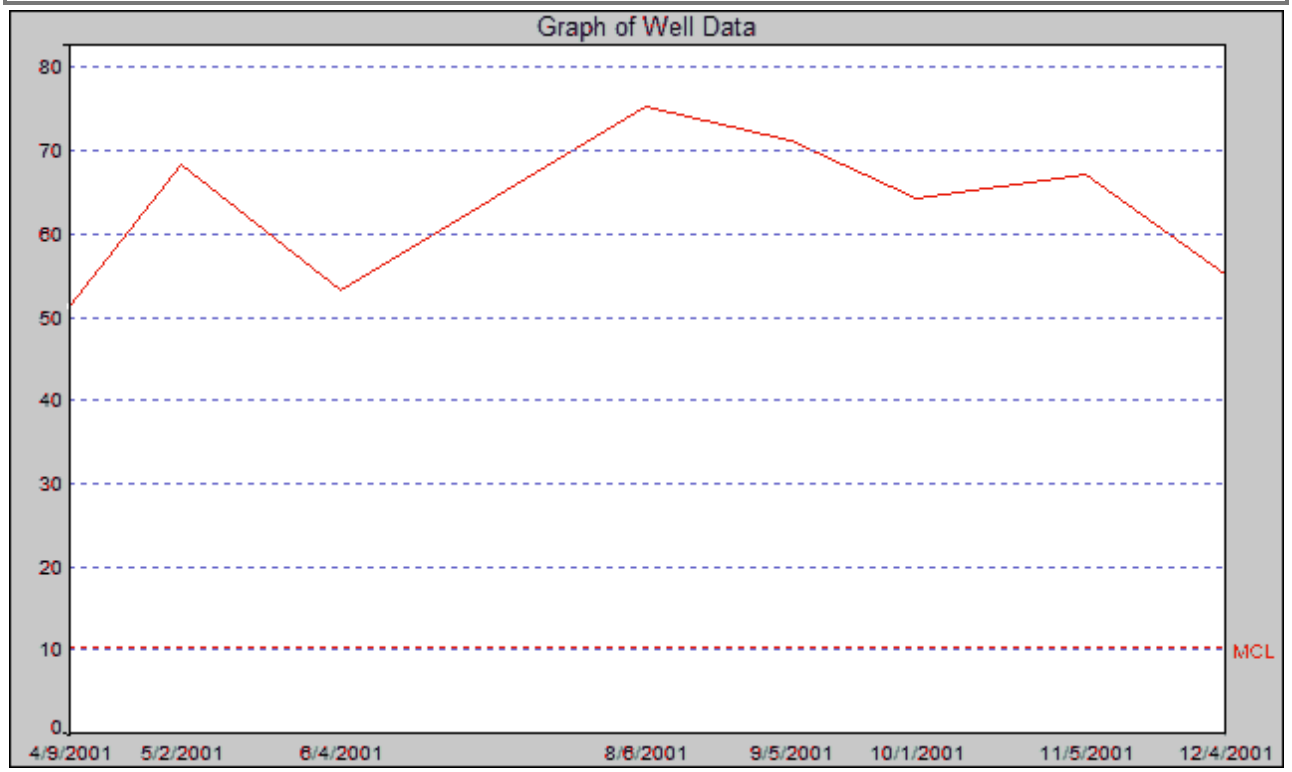
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

SOUTH GATE-CITY, WATER DEPT. (SOUTH GATE)
WELL 07 - DESTROYED
8650 CALIFORNIA AVE.
SOUTH GATE , CA 90280280
(Show This Well on Map)

State Well #: 1910152-002
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
12/4/2001	CHROMIUM, HEXAVALENT	55	UG/L	10
11/5/2001	CHROMIUM, HEXAVALENT	67	UG/L	10
10/1/2001	CHROMIUM, HEXAVALENT	64	UG/L	10
9/5/2001	CHROMIUM, HEXAVALENT	71	UG/L	10
8/6/2001	CHROMIUM, HEXAVALENT	75	UG/L	10
6/4/2001	CHROMIUM, HEXAVALENT	53	UG/L	10
5/2/2001	CHROMIUM, HEXAVALENT	68	UG/L	10
4/9/2001	CHROMIUM, HEXAVALENT	51	UG/L	10

FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

GSWC - BELL, BELL GARDENS (SANTA FE SPRINGS)
HOFFMAN WELL 02 - DESTROYED 10/26/07
12035 Burke Street, #1
SANTA FE SPRINGS , CA 90670670
(Show This Well on Map)

State Well #: 1910011-008
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data

Plot Selected Chemicals | Reset Boxes | **Note: You may select up to 6 chemicals.**

(ALL DATA) | (MOST RECENT) | (MAXIMUM CONCENTRATIONS)

DATE	PARAMETER	QUALIFIER	RESULT	UNITS	MCL	Plot
11/28/2000	1,1,1,2-TETRACHLOROETHANE		0	UG/L	NA	
3/22/1989	1,1,1-TRICHLOROETHANE	<	0.5	UG/L	200	
10/22/1985	1,1,2,2-TETRACHLOROETHANE	<	0.5	UG/L	1	
11/28/2000	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE		0	UG/L	1200	
6/17/1987	1,1,2-TRICHLOROETHANE	<	0.5	UG/L	5	
10/22/1985	1,1-DICHLOROETHANE	<	0.5	UG/L	5	
7/24/1997	1,1-DICHLOROETHYLENE		3.9	UG/L	6	
11/28/2000	1,1-DICHLOROPROPENE		0	UG/L	NA	
11/28/2000	1,2,3-TRICHLOROBENZENE		0	UG/L	NA	
11/28/2000	1,2,3-TRICHLOROPROPANE		0	UG/L	NA	
10/3/1985	1,2,4-TRICHLOROBENZENE	<	5	UG/L	5	
11/28/2000	1,2,4-TRIMETHYLBENZENE		0	UG/L	NA	
10/22/1985	1,2-DICHLOROBENZENE	<	0.5	UG/L	600	
10/22/1985	1,2-DICHLOROETHANE	<	0.5	UG/L	0.5	
10/22/1985	1,2-DICHLOROPROPANE	<	0.5	UG/L	5	
11/28/2000	1,3,5-TRIMETHYLBENZENE		0	UG/L	NA	
10/22/1985	1,3-DICHLOROBENZENE	<	0.5	UG/L	NA	
11/28/2000	1,3-DICHLOROPROPANE		0	UG/L	NA	
11/28/2000	1,3-DICHLOROPROPENE (TOTAL)		0	UG/L	0.5	
10/22/1985	1,4-DICHLOROBENZENE	<	0.5	UG/L	5	
11/28/2000	1-PHENYLPROPANE (N-PROPYLBENZENE)		0	UG/L	NA	
11/28/2000	2,2-DICHLOROPROPANE		0	UG/L	NA	
6/13/1989	2,4,5-TP (SILVEX)	<	1	UG/L	50	
10/3/1985	2,4,6-TRICHLOROPHENOL	<	5	UG/L	NA	
6/13/1989	2,4-D	<	10	UG/L	70	
10/3/1985	2,4-DICHLOROPHENOL	<	5	UG/L	NA	
10/3/1985	2,4-DIMETHYLPHENOL	<	5	UG/L	NA	
10/3/1985	2,4-DINITROPHENOL	<	5	UG/L	NA	
10/3/1985	2,4-DINITROTOLUENE	<	5	UG/L	NA	
10/3/1985	2,6-DINITROTOLUENE	<	5	UG/L	NA	
10/22/1985	2-CHLOROETHYLVINYL ETHER	<	0.5	UG/L	NA	
10/3/1985	2-CHLORONAPHTHALENE	<	5	UG/L	NA	
10/3/1985	2-CHLOROPHENOL	<	5	UG/L	NA	
11/28/2000	2-CHLOROTOLUENE		0	UG/L	NA	
10/3/1985	2-METHYL-4,6-DINITROPHENOL	<	5	UG/L	NA	
10/3/1985	2-NITROPHENOL	<	5	UG/L	NA	

10/3/1985	3,3-DICHLOROBENZIDINE	<	20	UG/L	NA
10/3/1985	4,4-DDD	<	0.02	UG/L	NA
10/3/1985	4,4-DDE	<	0.01	UG/L	NA
10/3/1985	4,4-DDT	<	0.02	UG/L	NA
10/3/1985	4-BROMOPHENYL PHENYL ETHER	<	5	UG/L	NA
10/3/1985	4-CHLORO-3-METHYLPHENOL	<	5	UG/L	NA
10/3/1985	4-CHLOROPHENYL PHENYL ETHER	<	5	UG/L	NA
11/28/2000	4-CHLOROTOLUENE		0	UG/L	NA
10/3/1985	4-NITROPHENOL	<	5	UG/L	NA
10/3/1985	ACENAPHTHENE	<	5	UG/L	NA
10/3/1985	ACENAPHTHYLENE	<	5	UG/L	NA
10/3/1985	ALACHLOR	<	0.2	UG/L	2
10/3/1985	ALDRIN	<	0.01	UG/L	NA
11/28/2000	ALKALINITY (TOTAL) AS CACO3		237	MG/L	NA
10/3/1985	ALPHA-BHC	<	0.01	UG/L	NA
7/22/1991	ALUMINUM	<	200	UG/L	1000
6/13/1989	ALUMINUM, DISSOLVED		0.13	UG/L	NA
10/3/1985	ANTHRACENE	<	5	UG/L	NA
11/28/2000	ANTIMONY	<	6	UG/L	6
6/13/1989	ARSENIC	<	10	UG/L	10
9/29/1989	ATRAZINE	<	1	UG/L	1
11/28/2000	BARIUM	<	100	UG/L	1000
10/3/1985	BENFLURALIN	<	1	UG/L	NA
10/22/1985	BENZENE	<	0.5	UG/L	1
10/3/1985	BENZIDINE	<	5	UG/L	NA
10/3/1985	BENZO (A) ANTHRACENE	<	10	UG/L	NA
10/3/1985	BENZO (A) PYRENE	<	10	UG/L	0.2
10/3/1985	BENZO (B) FLUORANTHENE	<	10	UG/L	NA
10/3/1985	BENZO (GHI) PERYLENE	<	10	UG/L	NA
10/3/1985	BENZO (K) FLUORANTHENE	<	10	UG/L	NA
10/3/1985	BENZYL BUTYL PHTHALATE	<	10	UG/L	NA
11/28/2000	BERYLLIUM	<	1	UG/L	4
10/3/1985	BETA-BHC	<	0.05	UG/L	NA
11/28/2000	BICARBONATE ALKALINITY		289	MG/L	NA
10/3/1985	BIS (2-CHLOROETHOXY) METHANE	<	5	UG/L	NA
11/4/1998	BIS (2-CHLOROETHYL) ETHER		0	UG/L	NA
10/3/1985	BIS (2-CHLOROISOPROPYL) ETHER	<	5	UG/L	NA
10/3/1985	BROMACIL	<	10	UG/L	NA
11/28/2000	BROMOBENZENE		0	UG/L	NA
11/28/2000	BROMOCHLOROMETHANE		0	UG/L	NA
10/22/1985	BROMODICHLORMETHANE (THM)	<	0.5	UG/L	NA
10/22/1985	BROMOFORM (THM)	<	0.5	UG/L	NA
10/3/1985	BROMOMETHANE	<	2	UG/L	NA
11/28/2000	CADMIUM	<	1	UG/L	5
11/28/2000	CALCIUM		144	MG/L	NA
10/3/1985	CAPTAN	<	1	UG/L	NA
10/3/1985	CARBARYL	<	1	UG/L	NA
10/22/1985	CARBON TETRACHLORIDE	<	0.5	UG/L	0.5
7/22/1991	CARBONATE ALKALINITY		1.53	MG/L	NA
10/3/1985	CHLORDANE	<	0.05	UG/L	0.1

10/3/1985	CHLORDIMEFORM	<	1	UG/L	NA
11/28/2000	CHLORIDE		78.2	MG/L	500
10/22/1985	CHLOROETHANE	<	0.5	UG/L	NA
8/19/1991	CHLOROFORM (THM)		8.1	UG/L	NA
10/22/1985	CHLOROMETHANE	<	0.5	UG/L	NA
10/3/1985	CHLOROPICRIN	<	1	UG/L	NA
10/3/1985	CHLOROPROPHAM	<	10	UG/L	NA
10/3/1985	CHLOROTHALONIL	<	5	UG/L	NA
11/28/2000	CHROMIUM (TOTAL)		333	UG/L	50
10/3/1985	CHRYSENE	<	5	UG/L	NA
10/22/1985	CIS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	6
10/22/1985	CIS-1,3-DICHLOROPROPENE	<	0.5	UG/L	0.5
10/3/1985	CIS-PERMETHRIN	<	1	UG/L	NA
11/28/2000	COLOR	<	3	UNITS	15
7/22/1991	COPPER		350	UG/L	1000
10/29/1985	CYANAZINE	<	150	UG/L	NA
11/28/2000	CYANIDE	<	100	UG/L	150
10/3/1985	DACTHAL	<	0.1	UG/L	NA
6/9/1992	DALAPON		0	UG/L	200
10/3/1985	DELTA-BHC	<	0.05	UG/L	NA
10/3/1985	DI(2-ETHYLHEXYL)PHTHALATE	<	5	UG/L	4
10/3/1985	DI-N-BUTYLPHTHALATE	<	5	UG/L	NA
10/3/1985	DI-N-OCTYLPHTHALATE	<	5	UG/L	NA
11/16/1995	DIAZINON		0	UG/L	NA
10/3/1985	DIBENZO (A,H) ANTHRACENE	<	5	UG/L	NA
10/22/1985	DIBROMOCHLOROMETHANE (THM)	<	0.5	UG/L	NA
9/29/1989	DIBROMOCHLOROPROPANE (DBCP)	<	0.01	UG/L	0.2
11/28/2000	DIBROMOMETHANE		0	UG/L	NA
10/22/1985	DICHLORODIFLUOROMETHANE (FREON 12)	<	0.5	UG/L	NA
4/4/1997	DICHLOROMETHANE	<	0.5	UG/L	5
10/3/1985	DICOFOL	<	0.1	UG/L	NA
10/3/1985	DIELDRIN	<	0.05	UG/L	NA
10/3/1985	DIETHYL PHTHALATE	<	5	UG/L	NA
10/3/1985	DIMETHYL PHTHALATE	<	5	UG/L	NA
10/3/1985	DINOSEB	<	100	UG/L	7
10/3/1985	DIPHENAMIDE	<	10.1	UG/L	NA
11/4/1998	DIQUAT		0	UG/L	20
10/3/1985	DIURON	<	1	UG/L	NA
10/3/1985	DNOC	<	100	UG/L	NA
10/3/1985	ENDOSULFAN I	<	0.01	UG/L	NA
10/3/1985	ENDOSULFAN II	<	0.05	UG/L	NA
10/3/1985	ENDOSULFAN SULFATE	<	0.05	UG/L	NA
10/3/1985	ENDOTHALL	<	100	UG/L	100
6/13/1989	ENDRIN	<	0.01	UG/L	2
10/3/1985	ENDRIN ALDEHYDE	<	0.05	UG/L	NA
11/28/2000	ETHYL-TERT-BUTYL ETHER		0	UG/L	NA
10/22/1985	ETHYLBENZENE	<	0.5	UG/L	300
9/29/1989	ETHYLENE DIBROMIDE (EDB)	<	0.02	UG/L	0.05
10/3/1985	FLUCHLORALIN	<	1	UG/L	NA
10/3/1985	FLUORANTHENE	<	5	UG/L	NA

10/3/1985	FLUORENE	<	5	UG/L	NA	
7/26/1994	FLUORIDE (F) (NATURAL-SOURCE)		0.7	MG/L	2	
7/22/1991	FOAMING AGENTS (MBAS)	<	0.05	MG/L	0.5	
11/4/1998	GLYPHOSATE		0	UG/L	700	
4/20/1993	GROSS ALPHA		4.9	PCI/L	15	
3/2/1990	GROSS ALPHA COUNTING ERROR		2.4	PCI/L	NA	
11/28/2000	HARDNESS (TOTAL) AS CACO3		372	MG/L	NA	
10/3/1985	HEPTACHLOR	<	0.02	UG/L	0.01	
10/3/1985	HEPTACHLOR EPOXIDE	<	0.1	UG/L	0.01	
10/3/1985	HEXACHLOROBENZENE	<	5	UG/L	1	
10/3/1985	HEXACHLOROBUTADIENE	<	5	UG/L	NA	
10/3/1985	HEXACHLOROCYCLOPENTADIENE	<	20	UG/L	50	
10/3/1985	HEXACHLOROETHANE	<	5	UG/L	NA	
11/28/2000	HYDROXIDE ALKALINITY	<	1	MG/L	NA	
10/3/1985	INDENO (1,2,3-CD) PYRENE	<	10	UG/L	NA	
11/28/2000	IRON	<	100	UG/L	300	
10/3/1985	ISOPHORONE	<	10	UG/L	NA	
11/28/2000	ISOPROPYLBENZENE		0	UG/L	NA	
10/3/1985	KEROSENE	<	1	UG/L	NA	
7/22/1991	LANGELIER INDEX @ 60 C		0.7		NA	
11/4/1998	LANGELIER INDEX AT SOURCE TEMP.		0.273		NA	
6/13/1989	LEAD	<	10	UG/L	NA	
6/13/1989	LINDANE	<	0.4	UG/L	0.2	
11/28/2000	M,P-XYLENE		0	UG/L	NA	
7/22/1991	MAGNESIUM		26	MG/L	NA	
7/26/1994	MANGANESE	<	30	UG/L	50	
11/28/2000	MERCURY	<	1	UG/L	2	
10/3/1985	MERPHOS	<	1	UG/L	NA	
10/3/1985	METHOMYL	<	10	UG/L	NA	
6/13/1989	METHOXYCHLOR	<	10	UG/L	30	
10/22/1985	METHYL ETHYL KETONE	<	1	UG/L	NA	
10/22/1985	METHYL ISOBUTYL KETONE	<	1	UG/L	NA	
11/28/2000	METHYL-TERT-BUTYL-ETHER (MTBE)		0	UG/L	13	
9/29/1989	MOLINATE	<	2	UG/L	20	
10/22/1985	MONOCHLOROBENZENE	<	0.5	UG/L	70	
11/28/2000	N-BUTYLBENZENE		0	UG/L	NA	
10/3/1985	N-NITROSODI-N-PROPYLAMINE (NDPA)	<	5	UG/L	NA	
10/3/1985	N-NITROSODIMETHYLAMINE (NDMA)	<	5	UG/L	NA	
10/3/1985	N-NITROSODIPHENYLAMINE	<	5	UG/L	NA	
10/3/1985	NAPHTHALENE	<	5	UG/L	NA	
10/3/1985	NAPROPAMIDE	<	5	UG/L	NA	
11/28/2000	NICKEL	<	10	UG/L	100	
11/28/2000	NITRATE (AS NO3)		32.6	MG/L	45	
11/28/2000	NITRATE + NITRITE (AS N)		7360	UG/L	10000	
11/28/2000	NITRITE (AS N)	<	400	UG/L	1000	
10/3/1985	NITROBENZENE	<	5	UG/L	NA	
11/28/2000	O-XYLENE		0	UG/L	NA	
11/28/2000	ODOR THRESHOLD @ 60 C		1	TON	3	
10/3/1985	ORYZALIN	<	1	UG/L	NA	
10/3/1985	OXAMYL	<	10	UG/L	50	

11/28/2000	P-ISOPROPYLTOLUENE		0	UG/L	NA
10/3/1985	PCB-1016 (AS DECACHLOROBIPHENYL (DCB))	<	0.2	UG/L	NA
10/3/1985	PCB-1221 (AS DCB)	<	0.2	UG/L	NA
10/3/1985	PCB-1232 (AS DCB)	<	0.2	UG/L	NA
10/3/1985	PCB-1242 (AS DCB)	<	0.2	UG/L	NA
10/3/1985	PCB-1248 (AS DCB)	<	0.2	UG/L	NA
10/3/1985	PCB-1254 (AS DCB)	<	0.2	UG/L	NA
10/3/1985	PCB-1260 (AS DCB)	<	0.2	UG/L	NA
10/3/1985	PENTACHLOROPHENOL	<	0.5	UG/L	1
11/28/2000	PERCHLORATE	<	5	UG/L	6
7/22/1991	PH, LABORATORY		7.9		NA
10/3/1985	PHENANTHRENE	<	5	UG/L	NA
10/3/1985	PHENOL	<	5	UG/L	NA
6/9/1992	PICLORAM		0	UG/L	500
6/9/1992	POLYCHLORINATED BIPHENYLS, TOTAL, AS DCB		0	UG/L	0.5
11/28/2000	POTASSIUM		3.5	MG/L	NA
10/29/1985	PROMETRYN	<	0.5	UG/L	NA
10/3/1985	PROPAMIDE	<	1	UG/L	NA
10/3/1985	PROPARGITE	<	1	MG/L	NA
10/3/1985	PYRENE	<	5	UG/L	NA
11/28/2000	RADON 222		293	PCI/L	NA
11/28/2000	RADON 222 COUNTING ERROR		7	PCI/L	NA
10/3/1985	S,S,S-TRIBUTYLPHOSPHOROTRITHIOATE	<	1	UG/L	NA
11/28/2000	SEC-BUTYLBENZENE		0	UG/L	NA
11/28/2000	SELENIUM	<	5	UG/L	50
11/28/2000	SILVER	<	10	UG/L	100
9/29/1989	SIMAZINE	<	1	UG/L	4
11/28/2000	SODIUM		68	MG/L	NA
11/28/2000	SOURCE TEMPERATURE C		19.4	C	NA
11/28/2000	SPECIFIC CONDUCTANCE		955	US	1600
11/28/2000	STYRENE		0	UG/L	100
11/28/2000	SULFATE		140	MG/L	600
11/28/2000	TERT-AMYL-METHYL ETHER		0	UG/L	NA
11/28/2000	TERT-BUTYLBENZENE		0	UG/L	NA
11/28/2000	TETRACHLOROETHYLENE		5.7	UG/L	5
11/28/2000	THALLIUM	<	1	UG/L	2
9/29/1989	THIOBENCARB	<	0.8	UG/L	70
10/22/1985	TOLUENE	<	0.5	UG/L	150
11/28/2000	TOTAL DISSOLVED SOLIDS		611	MG/L	1000
8/19/1991	TOTAL TRIHALOMETHANES		8	UG/L	80
6/13/1989	TOXAPHENE	<	0.5	UG/L	3
10/22/1985	TRANS-1,2-DICHLOROETHYLENE	<	0.5	UG/L	10
10/22/1985	TRANS-1,3-DICHLOROPROPENE	<	0.5	UG/L	NA
10/3/1985	TRANS-PERMETHRIN	<	1	UG/L	NA
11/1/1996	TRICHLOROETHYLENE		15.3	UG/L	5
10/22/1985	TRICHLOROFLUOROMETHANE	<	0.5	UG/L	150
7/26/1994	TURBIDITY, LABORATORY		0.6	NTU	5
10/19/1993	URANIUM (PCI/L)		5	PCI/L	20
2/10/1998	URANIUM COUNTING ERROR		0.87	PCI/L	NA
10/22/1985	VINYL CHLORIDE	<	0.5	UG/L	0.5

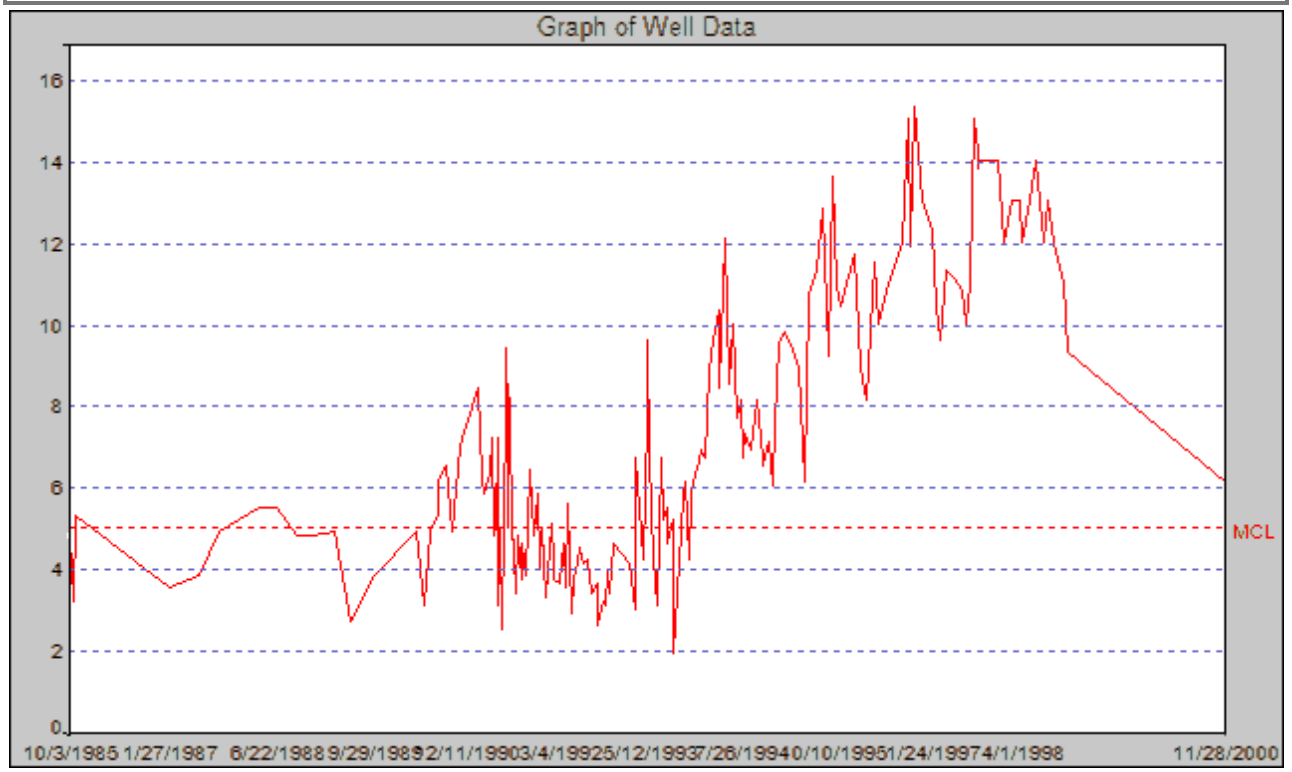
10/22/1985	XYLENES (TOTAL)	<	0.5	UG/L	1750
11/28/2000	ZINC	<	50	UG/L	5000

Well Report

GSWC - BELL, BELL GARDENS (SANTA FE SPRINGS)
HOFFMAN WELL 02 - DESTROYED 10/26/07
12035 Burke Street, #1
SANTA FE SPRINGS , CA 90670670
(Show This Well on Map)

State Well #: 1910011-008
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
11/28/2000	TRICHLOROETHYLENE	6.1	UG/L	5
11/4/1998	TRICHLOROETHYLENE	9.3	UG/L	5
10/21/1998	TRICHLOROETHYLENE	11	UG/L	5
9/3/1998	TRICHLOROETHYLENE	12	UG/L	5
8/6/1998	TRICHLOROETHYLENE	13	UG/L	5
7/9/1998	TRICHLOROETHYLENE	12	UG/L	5
6/4/1998	TRICHLOROETHYLENE	14	UG/L	5
5/7/1998	TRICHLOROETHYLENE	13	UG/L	5
4/1/1998	TRICHLOROETHYLENE	12	UG/L	5
3/23/1998	TRICHLOROETHYLENE	13	UG/L	5
2/10/1998	TRICHLOROETHYLENE	13	UG/L	5
1/7/1998	TRICHLOROETHYLENE	12	UG/L	5
12/3/1997	TRICHLOROETHYLENE	14	UG/L	5
9/5/1997	TRICHLOROETHYLENE	14	UG/L	5
8/28/1997	TRICHLOROETHYLENE	13.8	UG/L	5
8/28/1997	TRICHLOROETHYLENE	14.2	UG/L	5
8/28/1997	TRICHLOROETHYLENE	13.8	UG/L	5
8/14/1997	TRICHLOROETHYLENE	15	UG/L	5
7/24/1997	TRICHLOROETHYLENE	11	UG/L	5
7/11/1997	TRICHLOROETHYLENE	10	UG/L	5
6/13/1997	TRICHLOROETHYLENE	10.8	UG/L	5
5/9/1997	TRICHLOROETHYLENE	11.1	UG/L	5
4/4/1997	TRICHLOROETHYLENE	11.3	UG/L	5
3/5/1997	TRICHLOROETHYLENE	9.6	UG/L	5
2/18/1997	TRICHLOROETHYLENE	10.4	UG/L	5

1/24/1997	TRICHLOROETHYLENE	12.3	UG/L	5
12/6/1996	TRICHLOROETHYLENE	13	UG/L	5
11/1/1996	TRICHLOROETHYLENE	15.3	UG/L	5
10/16/1996	TRICHLOROETHYLENE	11.9	UG/L	5
9/30/1996	TRICHLOROETHYLENE	15	UG/L	5
9/3/1996	TRICHLOROETHYLENE	12	UG/L	5
6/19/1996	TRICHLOROETHYLENE	10.8	UG/L	5
5/16/1996	TRICHLOROETHYLENE	10	UG/L	5
4/19/1996	TRICHLOROETHYLENE	11.5	UG/L	5
3/14/1996	TRICHLOROETHYLENE	8.1	UG/L	5
2/16/1996	TRICHLOROETHYLENE	8.9	UG/L	5
1/19/1996	TRICHLOROETHYLENE	11.7	UG/L	5
11/16/1995	TRICHLOROETHYLENE	10.4	UG/L	5
11/15/1995	TRICHLOROETHYLENE	10.4	UG/L	5
10/26/1995	TRICHLOROETHYLENE	10.9	UG/L	5
10/10/1995	TRICHLOROETHYLENE	13.6	UG/L	5
9/20/1995	TRICHLOROETHYLENE	9.2	UG/L	5
8/15/1995	TRICHLOROETHYLENE	12.8	UG/L	5
7/26/1995	TRICHLOROETHYLENE	11.3	UG/L	5
6/13/1995	TRICHLOROETHYLENE	10.7	UG/L	5
5/26/1995	TRICHLOROETHYLENE	6.1	UG/L	5
4/26/1995	TRICHLOROETHYLENE	8.9	UG/L	5
3/24/1995	TRICHLOROETHYLENE	9.5	UG/L	5
2/15/1995	TRICHLOROETHYLENE	9.8	UG/L	5
1/19/1995	TRICHLOROETHYLENE	9.5	UG/L	5
1/4/1995	TRICHLOROETHYLENE	7.6	UG/L	5
12/20/1994	TRICHLOROETHYLENE	6	UG/L	5
12/7/1994	TRICHLOROETHYLENE	7.1	UG/L	5
11/9/1994	TRICHLOROETHYLENE	6.5	UG/L	5
11/3/1994	TRICHLOROETHYLENE	6.7	UG/L	5
10/5/1994	TRICHLOROETHYLENE	8.1	UG/L	5
9/7/1994	TRICHLOROETHYLENE	6.9	UG/L	5
8/9/1994	TRICHLOROETHYLENE	7.3	UG/L	5
8/3/1994	TRICHLOROETHYLENE	6.7	UG/L	5
7/26/1994	TRICHLOROETHYLENE	8.1	UG/L	5
7/6/1994	TRICHLOROETHYLENE	7.7	UG/L	5
6/16/1994	TRICHLOROETHYLENE	10	UG/L	5
6/1/1994	TRICHLOROETHYLENE	8.5	UG/L	5
5/4/1994	TRICHLOROETHYLENE	12.1	UG/L	5
4/14/1994	TRICHLOROETHYLENE	8.4	UG/L	5
4/6/1994	TRICHLOROETHYLENE	10.3	UG/L	5
3/10/1994	TRICHLOROETHYLENE	9.6	UG/L	5
3/2/1994	TRICHLOROETHYLENE	9.2	UG/L	5
2/24/1994	TRICHLOROETHYLENE	8.8	UG/L	5
2/2/1994	TRICHLOROETHYLENE	6.7	UG/L	5
1/18/1994	TRICHLOROETHYLENE	6.9	UG/L	5
1/5/1994	TRICHLOROETHYLENE	6.6	UG/L	5
12/14/1993	TRICHLOROETHYLENE	6.3	UG/L	5
12/1/1993	TRICHLOROETHYLENE	5.8	UG/L	5
11/18/1993	TRICHLOROETHYLENE	4.2	UG/L	5
11/3/1993	TRICHLOROETHYLENE	6.1	UG/L	5
10/19/1993	TRICHLOROETHYLENE	5.8	UG/L	5
10/6/1993	TRICHLOROETHYLENE	4.9	UG/L	5
9/2/1993	TRICHLOROETHYLENE	1.9	UG/L	5
9/1/1993	TRICHLOROETHYLENE	5.2	UG/L	5
8/4/1993	TRICHLOROETHYLENE	4.6	UG/L	5
8/3/1993	TRICHLOROETHYLENE	5.5	UG/L	5
7/20/1993	TRICHLOROETHYLENE	5.2	UG/L	5
7/7/1993	TRICHLOROETHYLENE	6.7	UG/L	5
6/17/1993	TRICHLOROETHYLENE	3.1	UG/L	5
6/2/1993	TRICHLOROETHYLENE	4.2	UG/L	5
5/12/1993	TRICHLOROETHYLENE	6.7	UG/L	5
5/5/1993	TRICHLOROETHYLENE	9.6	UG/L	5
4/28/1993	TRICHLOROETHYLENE	7.7	UG/L	5

4/14/1993	TRICHLOROETHYLENE	4.2	UG/L	5
3/9/1993	TRICHLOROETHYLENE	6.7	UG/L	5
3/3/1993	TRICHLOROETHYLENE	3	UG/L	5
2/3/1993	TRICHLOROETHYLENE	4.1	UG/L	5
11/16/1992	TRICHLOROETHYLENE	4.6	UG/L	5
11/4/1992	TRICHLOROETHYLENE	3.4	UG/L	5
10/20/1992	TRICHLOROETHYLENE	3.9	UG/L	5
10/14/1992	TRICHLOROETHYLENE	3.1	UG/L	5
10/7/1992	TRICHLOROETHYLENE	3.2	UG/L	5
9/3/1992	TRICHLOROETHYLENE	2.6	UG/L	5
9/2/1992	TRICHLOROETHYLENE	3.6	UG/L	5
8/5/1992	TRICHLOROETHYLENE	3.4	UG/L	5
7/21/1992	TRICHLOROETHYLENE	4.2	UG/L	5
7/1/1992	TRICHLOROETHYLENE	4.1	UG/L	5
6/9/1992	TRICHLOROETHYLENE	4.5	UG/L	5
6/3/1992	TRICHLOROETHYLENE	4.1	UG/L	5
5/18/1992	TRICHLOROETHYLENE	3.7	UG/L	5
5/6/1992	TRICHLOROETHYLENE	2.9	UG/L	5
4/13/1992	TRICHLOROETHYLENE	5.6	UG/L	5
4/1/1992	TRICHLOROETHYLENE	3.5	UG/L	5
3/23/1992	TRICHLOROETHYLENE	4.6	UG/L	5
3/4/1992	TRICHLOROETHYLENE	3.6	UG/L	5
2/11/1992	TRICHLOROETHYLENE	3.7	UG/L	5
2/5/1992	TRICHLOROETHYLENE	4.2	UG/L	5
1/27/1992	TRICHLOROETHYLENE	5.1	UG/L	5
1/2/1992	TRICHLOROETHYLENE	3.3	UG/L	5
12/17/1991	TRICHLOROETHYLENE	5	UG/L	5
12/4/1991	TRICHLOROETHYLENE	4	UG/L	5
11/22/1991	TRICHLOROETHYLENE	5.8	UG/L	5
11/6/1991	TRICHLOROETHYLENE	4.8	UG/L	5
10/17/1991	TRICHLOROETHYLENE	6.4	UG/L	5
10/2/1991	TRICHLOROETHYLENE	3.8	UG/L	5
9/12/1991	TRICHLOROETHYLENE	4.6	UG/L	5
9/4/1991	TRICHLOROETHYLENE	3.7	UG/L	5
8/19/1991	TRICHLOROETHYLENE	4.8	UG/L	5
8/7/1991	TRICHLOROETHYLENE	3.4	UG/L	5
7/24/1991	TRICHLOROETHYLENE	5.2	UG/L	5
7/22/1991	TRICHLOROETHYLENE	4.7	UG/L	5
7/10/1991	TRICHLOROETHYLENE	7.9	UG/L	5
7/2/1991	TRICHLOROETHYLENE	5	UG/L	5
7/2/1991	TRICHLOROETHYLENE	8.5	UG/L	5
6/26/1991	TRICHLOROETHYLENE	9.4	UG/L	5
6/25/1991	TRICHLOROETHYLENE	8.6	UG/L	5
6/19/1991	TRICHLOROETHYLENE	4.5	UG/L	5
6/12/1991	TRICHLOROETHYLENE	5.1	UG/L	5
6/5/1991	TRICHLOROETHYLENE	2.49	UG/L	5
5/29/1991	TRICHLOROETHYLENE	4.7	UG/L	5
5/28/1991	TRICHLOROETHYLENE	4.1	UG/L	5
5/22/1991	TRICHLOROETHYLENE	5	UG/L	5
5/15/1991	TRICHLOROETHYLENE	3.1	UG/L	5
5/15/1991	TRICHLOROETHYLENE	7.2	UG/L	5
5/8/1991	TRICHLOROETHYLENE	5	UG/L	5
4/24/1991	TRICHLOROETHYLENE	4.8	UG/L	5
4/17/1991	TRICHLOROETHYLENE	7.2	UG/L	5
4/10/1991	TRICHLOROETHYLENE	6.3	UG/L	5
3/13/1991	TRICHLOROETHYLENE	5.8	UG/L	5
3/4/1991	TRICHLOROETHYLENE	6.2	UG/L	5
2/11/1991	TRICHLOROETHYLENE	8.4	UG/L	5
12/11/1990	TRICHLOROETHYLENE	7.5	UG/L	5
11/19/1990	TRICHLOROETHYLENE	7	UG/L	5
10/9/1990	TRICHLOROETHYLENE	4.9	UG/L	5
9/10/1990	TRICHLOROETHYLENE	6.5	UG/L	5
8/6/1990	TRICHLOROETHYLENE	6.1	UG/L	5
7/30/1990	TRICHLOROETHYLENE	5.3	UG/L	5

6/26/1990	TRICHLOROETHYLENE	4.9	UG/L	5
5/30/1990	TRICHLOROETHYLENE	3.1	UG/L	5
4/19/1990	TRICHLOROETHYLENE	4.9	UG/L	5
9/29/1989	TRICHLOROETHYLENE	3.8	UG/L	5
9/29/1989	TRICHLOROETHYLENE	3.8	UG/L	5
6/13/1989	TRICHLOROETHYLENE	2.7	UG/L	5
3/22/1989	TRICHLOROETHYLENE	4.9	UG/L	5
12/13/1988	TRICHLOROETHYLENE	4.8	UG/L	5
9/27/1988	TRICHLOROETHYLENE	4.8	UG/L	5
6/22/1988	TRICHLOROETHYLENE	5.5	UG/L	5
3/23/1988	TRICHLOROETHYLENE	5.5	UG/L	5
9/23/1987	TRICHLOROETHYLENE	4.9	UG/L	5
6/17/1987	TRICHLOROETHYLENE	3.8	UG/L	5
1/27/1987	TRICHLOROETHYLENE	3.5	UG/L	5
10/29/1985	TRICHLOROETHYLENE	5.3	UG/L	5
10/22/1985	TRICHLOROETHYLENE	3.2	UG/L	5
10/3/1985	TRICHLOROETHYLENE	4.8	UG/L	5

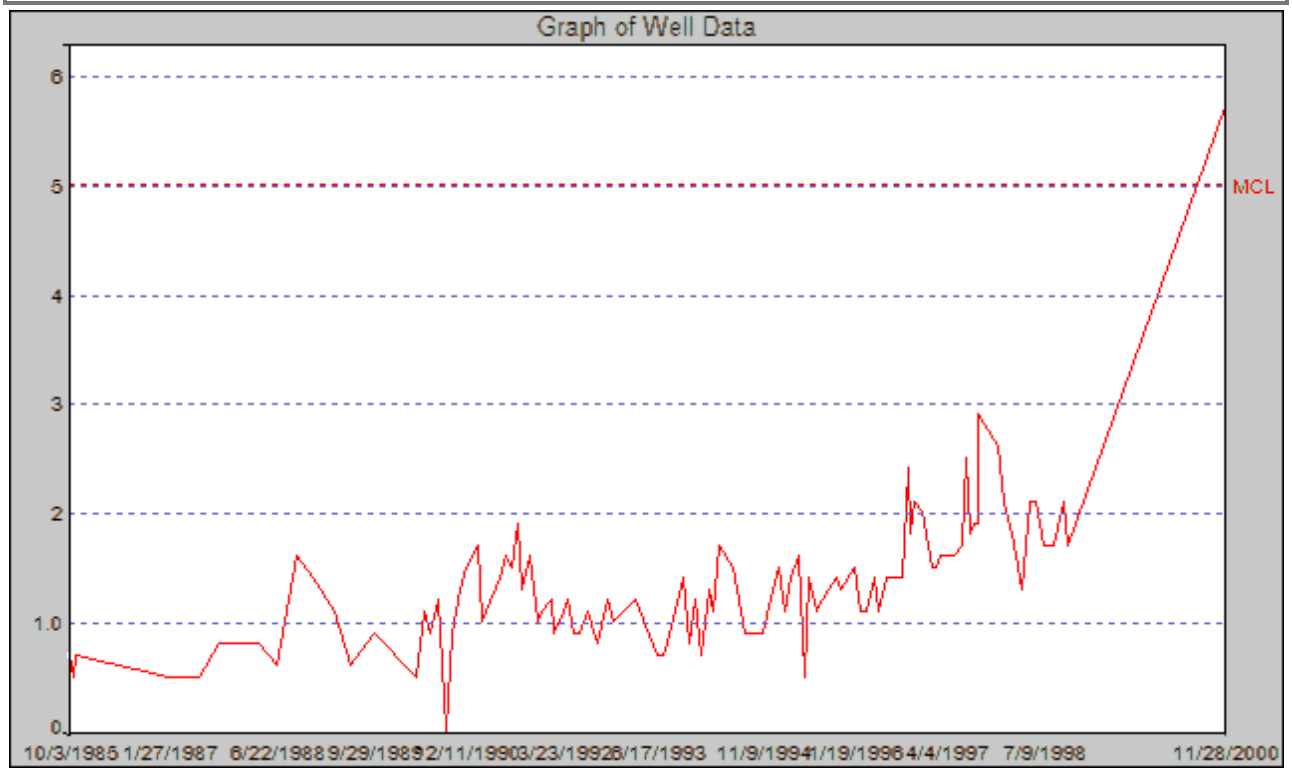
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

GSWC - BELL, BELL GARDENS (SANTA FE SPRINGS)
HOFFMAN WELL 02 - DESTROYED 10/26/07
12035 Burke Street, #1
SANTA FE SPRINGS , CA 90670670
(Show This Well on Map)

State Well #: 1910011-008
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
11/28/2000	TETRACHLOROETHYLENE	5.7	UG/L	5
11/4/1998	TETRACHLOROETHYLENE	1.7	UG/L	5
10/21/1998	TETRACHLOROETHYLENE	2.1	UG/L	5
9/3/1998	TETRACHLOROETHYLENE	1.7	UG/L	5
8/6/1998	TETRACHLOROETHYLENE	1.7	UG/L	5
7/9/1998	TETRACHLOROETHYLENE	1.7	UG/L	5
6/4/1998	TETRACHLOROETHYLENE	2.1	UG/L	5
5/7/1998	TETRACHLOROETHYLENE	2.1	UG/L	5
4/1/1998	TETRACHLOROETHYLENE	1.3	UG/L	5
3/23/1998	TETRACHLOROETHYLENE	1.4	UG/L	5
2/10/1998	TETRACHLOROETHYLENE	1.8	UG/L	5
1/7/1998	TETRACHLOROETHYLENE	2.1	UG/L	5
12/3/1997	TETRACHLOROETHYLENE	2.6	UG/L	5
9/5/1997	TETRACHLOROETHYLENE	2.9	UG/L	5
8/28/1997	TETRACHLOROETHYLENE	1.9	UG/L	5
8/28/1997	TETRACHLOROETHYLENE	2	UG/L	5
8/28/1997	TETRACHLOROETHYLENE	2.2	UG/L	5
8/14/1997	TETRACHLOROETHYLENE	1.9	UG/L	5
7/24/1997	TETRACHLOROETHYLENE	1.8	UG/L	5
7/11/1997	TETRACHLOROETHYLENE	2.5	UG/L	5
6/13/1997	TETRACHLOROETHYLENE	1.7	UG/L	5
5/9/1997	TETRACHLOROETHYLENE	1.6	UG/L	5
4/4/1997	TETRACHLOROETHYLENE	1.6	UG/L	5
3/5/1997	TETRACHLOROETHYLENE	1.6	UG/L	5
2/18/1997	TETRACHLOROETHYLENE	1.5	UG/L	5

1/24/1997	TETRACHLOROETHYLENE	1.5	UG/L	5
12/6/1996	TETRACHLOROETHYLENE	2	UG/L	5
11/1/1996	TETRACHLOROETHYLENE	2.1	UG/L	5
10/16/1996	TETRACHLOROETHYLENE	1.8	UG/L	5
9/30/1996	TETRACHLOROETHYLENE	2.4	UG/L	5
9/3/1996	TETRACHLOROETHYLENE	1.4	UG/L	5
6/19/1996	TETRACHLOROETHYLENE	1.4	UG/L	5
5/16/1996	TETRACHLOROETHYLENE	1.1	UG/L	5
4/19/1996	TETRACHLOROETHYLENE	1.4	UG/L	5
3/14/1996	TETRACHLOROETHYLENE	1.1	UG/L	5
2/16/1996	TETRACHLOROETHYLENE	1.1	UG/L	5
1/19/1996	TETRACHLOROETHYLENE	1.5	UG/L	5
11/16/1995	TETRACHLOROETHYLENE	1.3	UG/L	5
10/26/1995	TETRACHLOROETHYLENE	1.4	UG/L	5
9/20/1995	TETRACHLOROETHYLENE	1.3	UG/L	5
8/15/1995	TETRACHLOROETHYLENE	1.2	UG/L	5
7/26/1995	TETRACHLOROETHYLENE	1.1	UG/L	5
6/13/1995	TETRACHLOROETHYLENE	1.4	UG/L	5
5/26/1995	TETRACHLOROETHYLENE	0.5	UG/L	5
4/26/1995	TETRACHLOROETHYLENE	1.6	UG/L	5
3/24/1995	TETRACHLOROETHYLENE	1.4	UG/L	5
2/15/1995	TETRACHLOROETHYLENE	1.1	UG/L	5
1/19/1995	TETRACHLOROETHYLENE	1.5	UG/L	5
12/20/1994	TETRACHLOROETHYLENE	1.3	UG/L	5
11/9/1994	TETRACHLOROETHYLENE	0.9	UG/L	5
8/9/1994	TETRACHLOROETHYLENE	0.9	UG/L	5
7/26/1994	TETRACHLOROETHYLENE	1.1	UG/L	5
6/16/1994	TETRACHLOROETHYLENE	1.5	UG/L	5
4/14/1994	TETRACHLOROETHYLENE	1.7	UG/L	5
3/10/1994	TETRACHLOROETHYLENE	1.1	UG/L	5
2/24/1994	TETRACHLOROETHYLENE	1.3	UG/L	5
1/18/1994	TETRACHLOROETHYLENE	0.7	UG/L	5
12/14/1993	TETRACHLOROETHYLENE	1.2	UG/L	5
11/18/1993	TETRACHLOROETHYLENE	0.8	UG/L	5
10/19/1993	TETRACHLOROETHYLENE	1.4	UG/L	5
8/3/1993	TETRACHLOROETHYLENE	0.8	UG/L	5
7/20/1993	TETRACHLOROETHYLENE	0.7	UG/L	5
6/17/1993	TETRACHLOROETHYLENE	0.7	UG/L	5
3/9/1993	TETRACHLOROETHYLENE	1.2	UG/L	5
11/16/1992	TETRACHLOROETHYLENE	1	UG/L	5
10/20/1992	TETRACHLOROETHYLENE	1.2	UG/L	5
9/3/1992	TETRACHLOROETHYLENE	0.8	UG/L	5
7/21/1992	TETRACHLOROETHYLENE	1.1	UG/L	5
6/9/1992	TETRACHLOROETHYLENE	0.9	UG/L	5
5/18/1992	TETRACHLOROETHYLENE	0.9	UG/L	5
4/13/1992	TETRACHLOROETHYLENE	1.2	UG/L	5
3/23/1992	TETRACHLOROETHYLENE	1.1	UG/L	5
2/11/1992	TETRACHLOROETHYLENE	0.9	UG/L	5
1/27/1992	TETRACHLOROETHYLENE	1.2	UG/L	5
12/17/1991	TETRACHLOROETHYLENE	1.1	UG/L	5
11/22/1991	TETRACHLOROETHYLENE	1	UG/L	5
10/17/1991	TETRACHLOROETHYLENE	1.6	UG/L	5
9/12/1991	TETRACHLOROETHYLENE	1.3	UG/L	5
8/19/1991	TETRACHLOROETHYLENE	1.9	UG/L	5
7/22/1991	TETRACHLOROETHYLENE	1.5	UG/L	5
6/25/1991	TETRACHLOROETHYLENE	1.6	UG/L	5
5/28/1991	TETRACHLOROETHYLENE	1.4	UG/L	5
3/4/1991	TETRACHLOROETHYLENE	1	UG/L	5
2/11/1991	TETRACHLOROETHYLENE	1.7	UG/L	5
12/11/1990	TETRACHLOROETHYLENE	1.5	UG/L	5
11/19/1990	TETRACHLOROETHYLENE	1.3	UG/L	5
10/9/1990	TETRACHLOROETHYLENE	0.9	UG/L	5
9/10/1990	TETRACHLOROETHYLENE	0	UG/L	5
8/6/1990	TETRACHLOROETHYLENE	1.2	UG/L	5

7/30/1990	TETRACHLOROETHYLENE	1.2	UG/L	5
6/26/1990	TETRACHLOROETHYLENE	0.9	UG/L	5
5/30/1990	TETRACHLOROETHYLENE	1.1	UG/L	5
4/19/1990	TETRACHLOROETHYLENE	0.5	UG/L	5
9/29/1989	TETRACHLOROETHYLENE	0.9	UG/L	5
9/29/1989	TETRACHLOROETHYLENE	0.9	UG/L	5
6/13/1989	TETRACHLOROETHYLENE	0.6	UG/L	5
3/22/1989	TETRACHLOROETHYLENE	1.1	UG/L	5
12/13/1988	TETRACHLOROETHYLENE	1.4	UG/L	5
9/27/1988	TETRACHLOROETHYLENE	1.6	UG/L	5
6/22/1988	TETRACHLOROETHYLENE	0.6	UG/L	5
3/23/1988	TETRACHLOROETHYLENE	0.8	UG/L	5
9/23/1987	TETRACHLOROETHYLENE	< 0.8	UG/L	5
6/17/1987	TETRACHLOROETHYLENE	0.5	UG/L	5
1/27/1987	TETRACHLOROETHYLENE	0.5	UG/L	5
10/29/1985	TETRACHLOROETHYLENE	0.7	UG/L	5
10/22/1985	TETRACHLOROETHYLENE	< 0.5	UG/L	5
10/3/1985	TETRACHLOROETHYLENE	0.7	UG/L	5

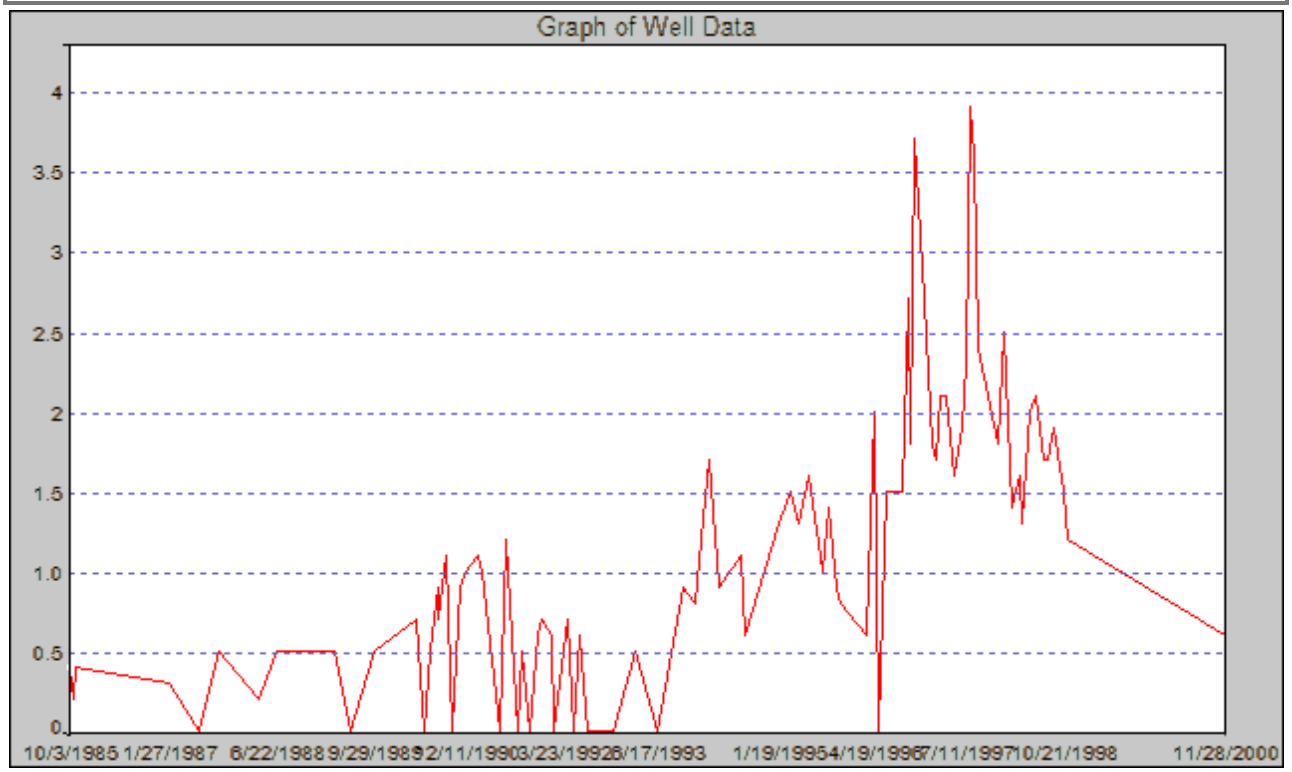
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

GSWC - BELL, BELL GARDENS (SANTA FE SPRINGS)
HOFFMAN WELL 02 - DESTROYED 10/26/07
12035 Burke Street, #1
SANTA FE SPRINGS , CA 90670670
(Show This Well on Map)

State Well #: 1910011-008
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
11/28/2000	1,1-DICHLOROETHYLENE	0.6	UG/L	6
11/4/1998	1,1-DICHLOROETHYLENE	1.2	UG/L	6
10/21/1998	1,1-DICHLOROETHYLENE	1.5	UG/L	6
9/3/1998	1,1-DICHLOROETHYLENE	1.9	UG/L	6
8/6/1998	1,1-DICHLOROETHYLENE	1.7	UG/L	6
7/9/1998	1,1-DICHLOROETHYLENE	1.7	UG/L	6
6/4/1998	1,1-DICHLOROETHYLENE	2.1	UG/L	6
5/7/1998	1,1-DICHLOROETHYLENE	2	UG/L	6
4/1/1998	1,1-DICHLOROETHYLENE	1.3	UG/L	6
3/23/1998	1,1-DICHLOROETHYLENE	1.6	UG/L	6
2/10/1998	1,1-DICHLOROETHYLENE	1.4	UG/L	6
1/7/1998	1,1-DICHLOROETHYLENE	2.5	UG/L	6
12/3/1997	1,1-DICHLOROETHYLENE	1.8	UG/L	6
9/5/1997	1,1-DICHLOROETHYLENE	2.4	UG/L	6
8/14/1997	1,1-DICHLOROETHYLENE	3.6	UG/L	6
7/24/1997	1,1-DICHLOROETHYLENE	3.9	UG/L	6
7/11/1997	1,1-DICHLOROETHYLENE	2.3	UG/L	6
6/13/1997	1,1-DICHLOROETHYLENE	1.9	UG/L	6
5/9/1997	1,1-DICHLOROETHYLENE	1.6	UG/L	6
4/4/1997	1,1-DICHLOROETHYLENE	2.1	UG/L	6
3/5/1997	1,1-DICHLOROETHYLENE	2.1	UG/L	6
2/18/1997	1,1-DICHLOROETHYLENE	1.7	UG/L	6
1/24/1997	1,1-DICHLOROETHYLENE	1.8	UG/L	6
12/6/1996	1,1-DICHLOROETHYLENE	2.9	UG/L	6
11/1/1996	1,1-DICHLOROETHYLENE	3.7	UG/L	6

10/16/1996	1,1-DICHLOROETHYLENE	1.8	UG/L	6
9/30/1996	1,1-DICHLOROETHYLENE	2.7	UG/L	6
9/3/1996	1,1-DICHLOROETHYLENE	1.5	UG/L	6
6/19/1996	1,1-DICHLOROETHYLENE	1.5	UG/L	6
5/16/1996	1,1-DICHLOROETHYLENE	0	UG/L	6
4/19/1996	1,1-DICHLOROETHYLENE	2	UG/L	6
3/14/1996	1,1-DICHLOROETHYLENE	0.6	UG/L	6
11/16/1995	1,1-DICHLOROETHYLENE	0.8	UG/L	6
10/26/1995	1,1-DICHLOROETHYLENE	0.9	UG/L	6
9/20/1995	1,1-DICHLOROETHYLENE	1.4	UG/L	6
8/15/1995	1,1-DICHLOROETHYLENE	1	UG/L	6
6/13/1995	1,1-DICHLOROETHYLENE	1.6	UG/L	6
4/26/1995	1,1-DICHLOROETHYLENE	1.3	UG/L	6
3/24/1995	1,1-DICHLOROETHYLENE	1.5	UG/L	6
1/19/1995	1,1-DICHLOROETHYLENE	1.3	UG/L	6
8/9/1994	1,1-DICHLOROETHYLENE	0.6	UG/L	6
7/26/1994	1,1-DICHLOROETHYLENE	1.1	UG/L	6
4/14/1994	1,1-DICHLOROETHYLENE	0.9	UG/L	6
2/24/1994	1,1-DICHLOROETHYLENE	1.7	UG/L	6
1/18/1994	1,1-DICHLOROETHYLENE	1.2	UG/L	6
12/14/1993	1,1-DICHLOROETHYLENE	0.8	UG/L	6
10/19/1993	1,1-DICHLOROETHYLENE	0.9	UG/L	6
6/17/1993	1,1-DICHLOROETHYLENE	0	UG/L	6
3/9/1993	1,1-DICHLOROETHYLENE	0.5	UG/L	6
11/16/1992	1,1-DICHLOROETHYLENE	0	UG/L	6
10/20/1992	1,1-DICHLOROETHYLENE	0	UG/L	6
9/3/1992	1,1-DICHLOROETHYLENE	0	UG/L	6
7/21/1992	1,1-DICHLOROETHYLENE	0	UG/L	6
6/9/1992	1,1-DICHLOROETHYLENE	0.6	UG/L	6
5/18/1992	1,1-DICHLOROETHYLENE	0	UG/L	6
4/13/1992	1,1-DICHLOROETHYLENE	0.7	UG/L	6
3/23/1992	1,1-DICHLOROETHYLENE	0.5	UG/L	6
2/11/1992	1,1-DICHLOROETHYLENE	0	UG/L	6
1/27/1992	1,1-DICHLOROETHYLENE	0.6	UG/L	6
12/17/1991	1,1-DICHLOROETHYLENE	0.7	UG/L	6
11/22/1991	1,1-DICHLOROETHYLENE	0.6	UG/L	6
10/17/1991	1,1-DICHLOROETHYLENE	0	UG/L	6
9/12/1991	1,1-DICHLOROETHYLENE	0.5	UG/L	6
8/19/1991	1,1-DICHLOROETHYLENE	0	UG/L	6
7/22/1991	1,1-DICHLOROETHYLENE	0.6	UG/L	6
6/25/1991	1,1-DICHLOROETHYLENE	1.2	UG/L	6
5/28/1991	1,1-DICHLOROETHYLENE	0	UG/L	6
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10/9/1990	1,1-DICHLOROETHYLENE	0	UG/L	6
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6/13/1989	1,1-DICHLOROETHYLENE	0	UG/L	6
3/22/1989	1,1-DICHLOROETHYLENE	< 0.5	UG/L	6
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6/22/1988	1,1-DICHLOROETHYLENE	< 0.5	UG/L	6
3/23/1988	1,1-DICHLOROETHYLENE	< 0.2	UG/L	6
9/23/1987	1,1-DICHLOROETHYLENE	< 0.5	UG/L	6
6/17/1987	1,1-DICHLOROETHYLENE	0	UG/L	6
1/27/1987	1,1-DICHLOROETHYLENE	0.3	UG/L	6

10/29/1985	1,1-DICHLOROETHYLENE		0.4	UG/L	6
10/22/1985	1,1-DICHLOROETHYLENE		< 0.2	UG/L	6
10/3/1985	1,1-DICHLOROETHYLENE		0.4	UG/L	6

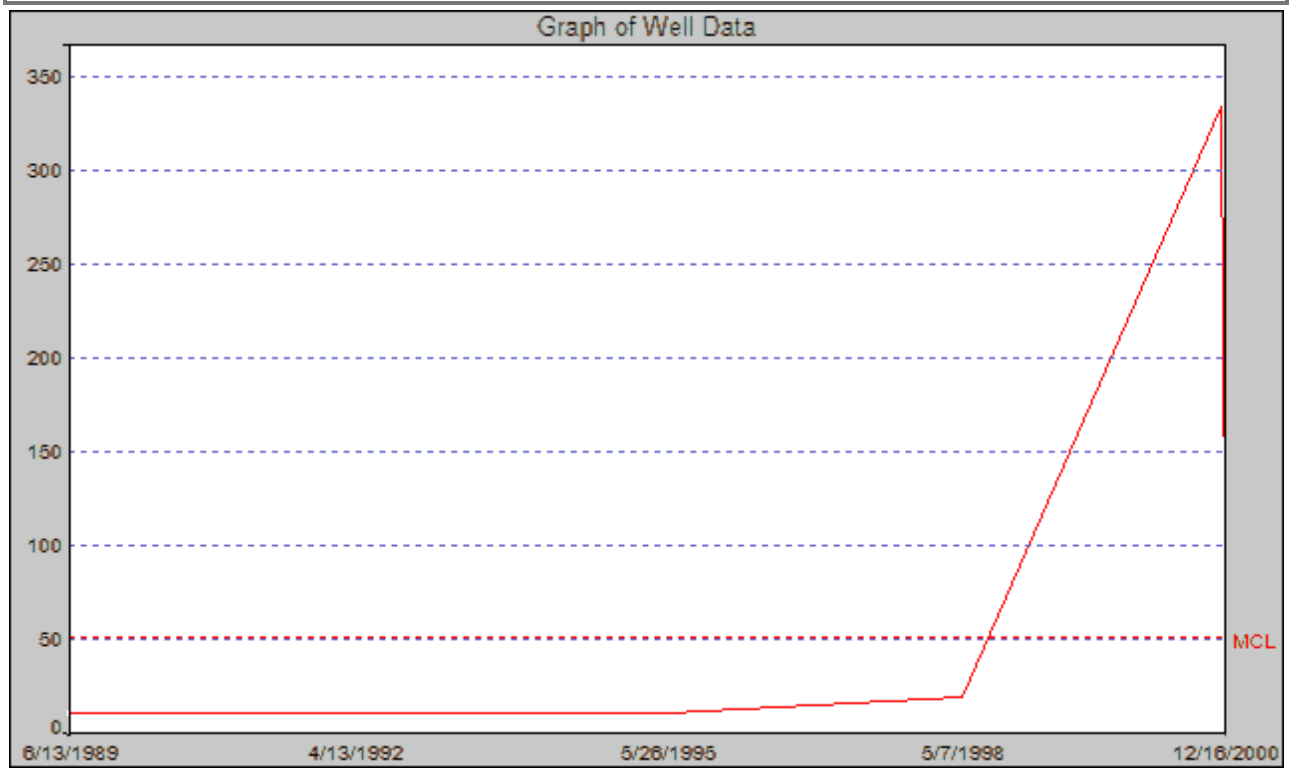
FROM DATE: **TO DATE:** **GRAPH SIZE** Small **NORMALIZED** Redraw

Well Report

GSWC - BELL, BELL GARDENS (SANTA FE SPRINGS)
HOFFMAN WELL 02 - DESTROYED 10/26/07
12035 Burke Street, #1
SANTA FE SPRINGS , CA 90670670
(Show This Well on Map)

State Well #: 1910011-008
Well Source: Groundwater
Well Status: Destroyed

Detailed Well Information | DPH Water Quality Data



DATE	PARAMETER	RESULT	UNITS	MCL
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5/7/1998	CHROMIUM (TOTAL)	17.7	UG/L	50
5/26/1995	CHROMIUM (TOTAL)	< 10	UG/L	50
4/13/1992	CHROMIUM (TOTAL)	< 10	UG/L	50
6/13/1989	CHROMIUM (TOTAL)	< 10	UG/L	50

FROM DATE: TO DATE: GRAPH SIZE Small NORMALIZED Redraw

Reference:
RWQCB, 2017

STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER

Tools Reports UST Case Closures Information

CASE SUMMARY

REPORT DATE
9/3/1992

HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -
UNKNOWN

CREATED BY
UNKNOWN

III. SITE LOCATION

FACILITY NAME
MATLACK INC

FACILITY ID

FACILITY ADDRESS
8332 WILCOX AVE
SOUTH GATE, CA 90280
LOS ANGELES COUNTY

ORIENTATION OF SITE TO STREET

CROSS STREET
CECELIA

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

DIESEL

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGAN

DATE DISCOVERED
6/1/1992

HOW DISCOVERED
Tank Closure

DESCRIPTION

DATE STOPPED

STOP METHOD

DESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGE
Other

CAUSE OF DISCHARGE
Unknown

DISCHARGE DESCRIPTION

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

LOCAL AGENCY CASE NUMBER

REGIONAL BOARD CASE NUMBER
I-11357

LOCAL AGENCY

CONTACT NAME	INITIALS	ORGANIZATION_NAME	EMAIL ADDRESS
JOHN AWUJO	JOA	LOS ANGELES COUNTY	jawujo@dpw.lacounty.gov

ADDRESS
900 S FREMONT AVE
ALHAMBRA, CA 91803

CONTACT DESCRIPTION

PHONE TYPE	PHONE NUMBER	EXTENSION
PHONE	(626)-458-3507	

REGIONAL BOARD

CONTACT NAME	INITIALS	ORGANIZATION_NAME	EMAIL ADDRESS
YUE RONG	YR	LOS ANGELES RWQCB (REGION 4)	yrong@waterboards.ca.gov

ADDRESS
320 W. 4TH ST., SUITE 200
Los Angeles, CA 90013

CONTACT DESCRIPTION

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Reference:
SAA, 2011

2010

City of Lynwood
Urban Water Management Plan

July, 2011

2010

URBAN WATER MANAGEMENT PLAN

City of Lynwood

JULY 2011

Prepared by:

SA ASSOCIATES

CONSULTING ENGINEERS
1130 W. Huntington Drive
Unit 12
Arcadia, CA 91007
(626) 821-3456

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Appendix B ..... Urban Water Management Planning Act
Appendix C ..... DWR UWMP Checklist
Appendix D ..... Coordination, Public Notice & City Council Resolution Adopting 2010 UWMP
Appendix E ..... SBx7-7 Baseline & Target Spreadsheet
Appendix F ..... Conservation Ordinance 1618
Appendix G ..... Efficient Landscape Ordinance 1623
Appendix H ..... Central Basin Judgment
Appendix I ..... MWD RUWMP Sections II & IV

SECTION 1: INTRODUCTION

1.1 PURPOSE AND SUMMARY

This is the 2010 Urban Water Management Plan ("UWMP" or "Plan") for the City of Lynwood ("City"). This plan has been prepared in compliance with the Urban Water Management Planning Act ("Act"), which has been codified at California Water Code sections 10610 through 10657 and can be found in Appendix B to this 2010 Plan.

The legislature declared that waters of the state are a limited and renewable resource subject to ever increasing demands; that the conservation and efficient use of urban water supplies are of statewide concern; that successful implementation of plans is best accomplished at the local level; that conservation and efficient use of water shall be actively pursued to protect both the people of the state and their water resources; that conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and that urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

The Act requires "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt, in accordance with prescribed requirements, an urban water management plan." Urban water suppliers must file these plans with the California Department of Water Resources (DWR) every five years describing and evaluating reasonable and practical efficient water uses, reclamation, and conservation activities. (*See generally* Wat. Code § 10631.)

The Act has been amended on several occasions since its initial passage in 1983. New requirements of the Act due to SBx7-7 state that per capita water use within an urban water supplier's service area must decrease by 20% by the year 2020 in order to receive grants or loans administered by DWR or other state agencies. The legislation sets an overall goal of reducing per capita urban water use by 20% by December 31, 2020. The state shall make incremental progress towards this goal by reducing per capita water use by at least 10% by December 31, 2015. Each urban retail water supplier shall develop water use targets and an interim water use target by July 1, 2011. Effective 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans.

An urban retail water supplier shall include in its water management plan due July 2011 the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. The Department of Water Resources, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part. These new requirements are included in **Section 4: Water Demands**

1.2 COORDINATION

In preparing this 2010 Plan, the City has encouraged broad community participation. Copies of the draft Plan were made available for public review at City Hall and the local

public libraries in the City. The City noticed a public meeting. The notice of the public hearing was published in the local press and mailed to City Clerk. On June 8, 2011, the City held a noticed public forum to review and accept comments on the draft plan. Notice of the public forum was published in the local press. On June 21, 2011, the City held a public hearing to adopt the Plan. Following the consideration of public comments received prior to and at the public hearing, the City adopted the 2010 Plan on June 21, 2011. A copy of the City Council resolution approving the 2010 Plan is included in **Appendix D**.

As required by the Act, this Plan is provided by the City to the California Department of Water Resources, the California State Library, the local City Library, the City Clerk, and the Public Works Department and is available to the public.

Table 1.1
Coordination and Public Involvement

Entity	Participated in Plan Preparation	Contacted for Assistance	Made Comments on Draft	Notified of Public Hearing	Attended Public Hearing
City Public Works Dept/Utilities Division	x	x	x	x	x
City Manager's Dept		x		x	x
Lynwood City Clerk		x		x	x
Lynwood Public Library		x		x	
Lynwood City Mayor		x		x	x
Lynwood City Pro Tem		x		x	x
Lynwood City Council Members		x		x	x
Metropolitan Water District		x		x	
Dept of Water Resources (Glendale Office)		x		x	
Los Angeles Department of Water and Power		x		x	
LA County Board of Supervisors		x		x	
LA County Dept of Public Works		x		x	
Sanitation Districts of LA County		x		x	
Central Basin Municipal Water District		x		x	
LA Regional Water Quality Control Board		x		x	
Water Replenishment District		x		x	
CA State Public Health Dept (Glendale Office)		x		x	
City of Compton		x		x	
City of Paramount		x		x	
City of South Gate		x		x	
Golden State Water Company		x		x	
Park Water Company		x		x	
Interested General Public		x	x	x	x

1.3 FORMAT OF THE PLAN

The chapters in this 2010 Plan correspond to the items presented in the Act and are as follows:

Section 1 - Introduction

This chapter describes the UWMP Act background, new amendments to the Act, City's planning and coordination process, the history of the development of the City's water supply system, a description of its existing service area, the local climate, population served and the City's water distribution system.

Section 2 - Water Sources & Supplies

This chapter describes the existing water supplies available to the City, including imported water purchased from the Central Basin Municipal Water District (CBMWD), local groundwater extracted from the Central Groundwater Basin, and recycled water provided by CBMWD. In addition, this chapter discusses potential future water supplies, including transfers and exchanges, recycled water, and desalinated water.

Section 3 – Water Quality

This chapter discuss water quality issues with the City's imported and groundwater sources and the effect of water quality on management strategies and supply reliability.

Section 4 – Water Demands

This chapter describes past, current and projected water usage within the City's service area prior to the implementation of future demand management measures.

Section 5 – Reliability Planning

This chapter presents an assessment of the reliability of the City's water supplies by comparing projected water demands with expected water supplies under three different hydrologic conditions: a normal year; a single dry year; and multiple dry years. This 2010 Plan concludes that if projected imported and local supplies are available as anticipated, no water shortages are anticipated in the City's service area during the planning period.

Section 6 – Demand Management

This chapter addresses the City's implementation of the current Best Management Practices (BMPs). The BMPs correspond to the 14 Demand Management Measures (DMMs) listed in the UWMP Act and are described in this section.

Section 7 – Contingency Planning

This chapter describes the City's current conservation activities, as well as those efforts that will be utilized in the event of a water supply interruption, such as drought. The City's water shortage contingency plan was developed in consultation and coordination with other MWD member agencies. In addition, MWD's Water Surplus and Drought Management Plan (WSDM) is also described.

Appendices

The appendices contain references and specific documents for the data used to prepare this 2010 Plan.

1.4 WATER SYSTEM HISTORY

The City of Lynwood was founded in the early 1800s by Don Antonio Lugo. The Lugo family later deeded the land. The land was eventually developed and opened as a suburban home site in 1913. To sustain the development of the land, the City's water system began to take shape. The City was later incorporated in 1921, and the City began to drill wells for groundwater production. Well No. 5, drilled in 1932, has remained in operation to this day. As the City continued to grow as a residential and industrial community, the City realized the need to supplement its water sources and began to receive imported water between 1960-1970. The City is located in the Central Basin Municipal Water District (CBMWD) which is a member agency of the Metropolitan Water District (MWD). MWD was originally founded in 1928 to build the Colorado River Aqueduct to supplement the water supplies of the original founding members. In 1972, MWD augmented its supplies to include deliveries from the State Water Project via the California Aqueduct. Today the City continues to receive imported water on an as-needed basis.

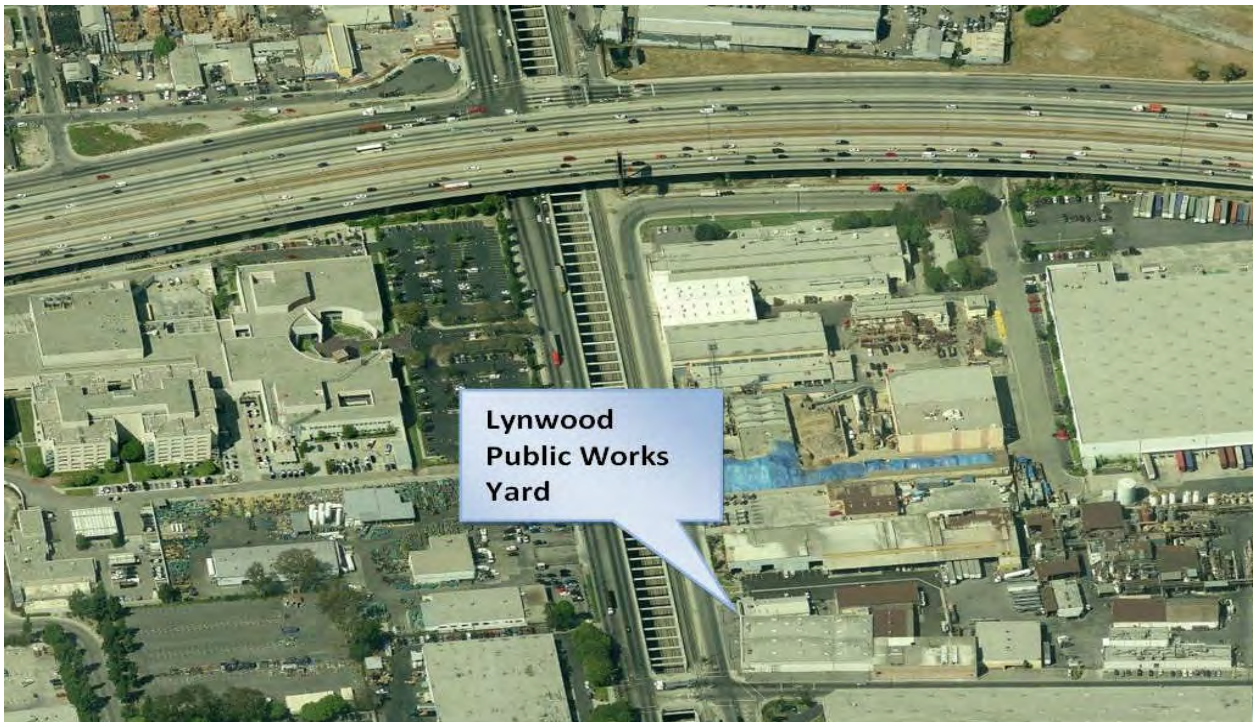


Figure 1.1: Lynwood Public Works Yard (Water Utility)

1.5 CITY WATER SERVICE AREA

The City of Lynwood is approximately 4.7 square miles in size and its water system serves about 90 percent of the land within City limits. The Park Water Company provides water service to the remaining 10% in the southeast section of the City. **Figure 1.3** shows the City's water service area. Topographically, the City is bounded on the North by the City of South Gate, on the East by the City of Paramount, on the South by the City of Compton, and on the West by the City of Los Angeles and the

unincorporated County of Los Angeles (Florence/Willowbrook area).

Land use within the service area is principally composed of single and multi-family residences, business and commercial districts, and some institutional and industrial areas. Since the area is in a built-out condition, additional growth may result from re-development of existing lots.

1.6 CLIMATE

The City has a Mediterranean climate with moderate, dry summers with an average temperature of about 70°F and cool, wet winters with an average temperature of 58°F. The average rainfall for the region is approximately 14 inches. Evapotranspiration (ETo) in the region averages 49.7 inches annually. **Table 1.1** lists the average ETo, and rainfall for the City.

Table 1.1
Lynwood Climate Characteristics

Month	Temp (F)	Rainfall (in)	ETo (in)
Jan	55.9	2.6	1.9
Feb	57.0	2.9	2.2
Mar	58.3	2.2	3.4
Apr	60.8	1.1	4.8
May	63.3	0.2	5.6
Jun	66.7	0.1	6.3
Jul	70.9	0.0	6.5
Aug	71.8	0.1	6.2
Sep	70.5	0.3	4.8
Oct	66.7	0.4	3.7
Nov	62.1	1.6	2.4
Dec	57.6	2.4	1.9
Totals:	**63.5**	**14.0**	**49.7**

Overall, the City's service area climate characteristics are comparable to other cities within the region.

1.7 POPULATION

According to the most recent population figures from the California Department of Finance, the current 2010 resident population of the City is approximately 73,295 persons. Since the City's service area accounts for about 90% of the City's total residents, the total current resident population served by the City's water system is approximately 65,965 persons. Population growth over the past 10 years is approximately 0.48%. Population projections in accordance with an annual growth rate of 0.48% over the next 25 years are shown in **Table 1.2**:

Table 1.2
Population Projections

Year	Service Area Population	Citywide Population
2015	67,580	75,089
2020	69,234	76,927
2025	70,929	78,810
2030	72,665	80,739
2035	74,444	82,715

Since the City is a not a major commercial center for the region, daytime populations estimates are not significantly higher than the City's resident population.

1.8 WATER SYSTEM

The City's Public Works Department manages the City's infrastructure and natural resources, including the City's Public Water Utility. The Public Water Utility consists of efforts from various Public Works sections: Water Utility Division, CIP Division, and Engineering Division. The

Water Utility Division is responsible for providing high quality drinking water through the operation and maintenance of water production, distribution treatment, and storage facilities. The CIP Division is responsible for the Capital Improvement Program which consists of the development and replacement of water system infrastructure. The Utility Division, along with management, is responsible for acting as the liaison with outside agencies, most notable the State and County Health Departments, water districts and other regulatory agencies. In addition, the Engineering Division, along with management functions as an advisor to the City Council. Additional Administrative Services responsibilities include developing and monitoring the Operations budget; monitoring the Capital Improvement budget and water rates; and providing customer service.

Water Supply & Operations

The City of Lynwood has five active groundwater wells (Well Nos. 5, 8, 9, 11, and 19) located throughout the City for groundwater production. The wells range in capacity from 550 to 2,000 gallons per minute (gpm) with a total pumping capacity of 5,650 gpm. The City is also scheduled to complete equipping of its Well No. 22 (capacity of 2,500 gpm) later this year.

The City also receives imported water from its connection to CBMWD, with a 12 CFS connection capacity of 5,376 gpm. Although the City previously used its imported connection to supplement its groundwater supply, the City has recently decided to use imported water only on an as-needed basis. Over the past six years, groundwater has accounted for the majority of the City water supply, providing about 90% of the City's total water supply.

In addition to imported water and groundwater, recycled water is also used in the City by Caltrans to irrigate landscapes along the Interstate 105 and State 710 freeways, and by the City to irrigate 9-acre Burke-Ham Park. Recycled water, however, is not conveyed as part of the City's distribution system infrastructure.

Figure 1.2: Lynwood Well No. 8

The City's day-to-day water operations and maintenance are conducted in its Public Works Yard Building, which houses the Engineering, Street Maintenance, Building Maintenance, Grounds Maintenance, and Water Operations staff along with equipment and vehicles necessary to perform its services. The Public Works Yard is located on the western side of the City at 11750 Alameda Street as shown in **Figure 1.1**.

Distribution System

The City distributes its water to approximately 9,000 service customers through a 90 mile network of distribution mains with pipelines sizes ranging from 4-inches to 16-inches. The water system consists of one (1) pressure zone that provide sufficient water pressure to customers. The City also maintains a booster pump station consisting of 3 pumps that can deliver up to 3,600 gpm. The City of Lynwood water service area map is shown in **Figures 1.3** on the following page:

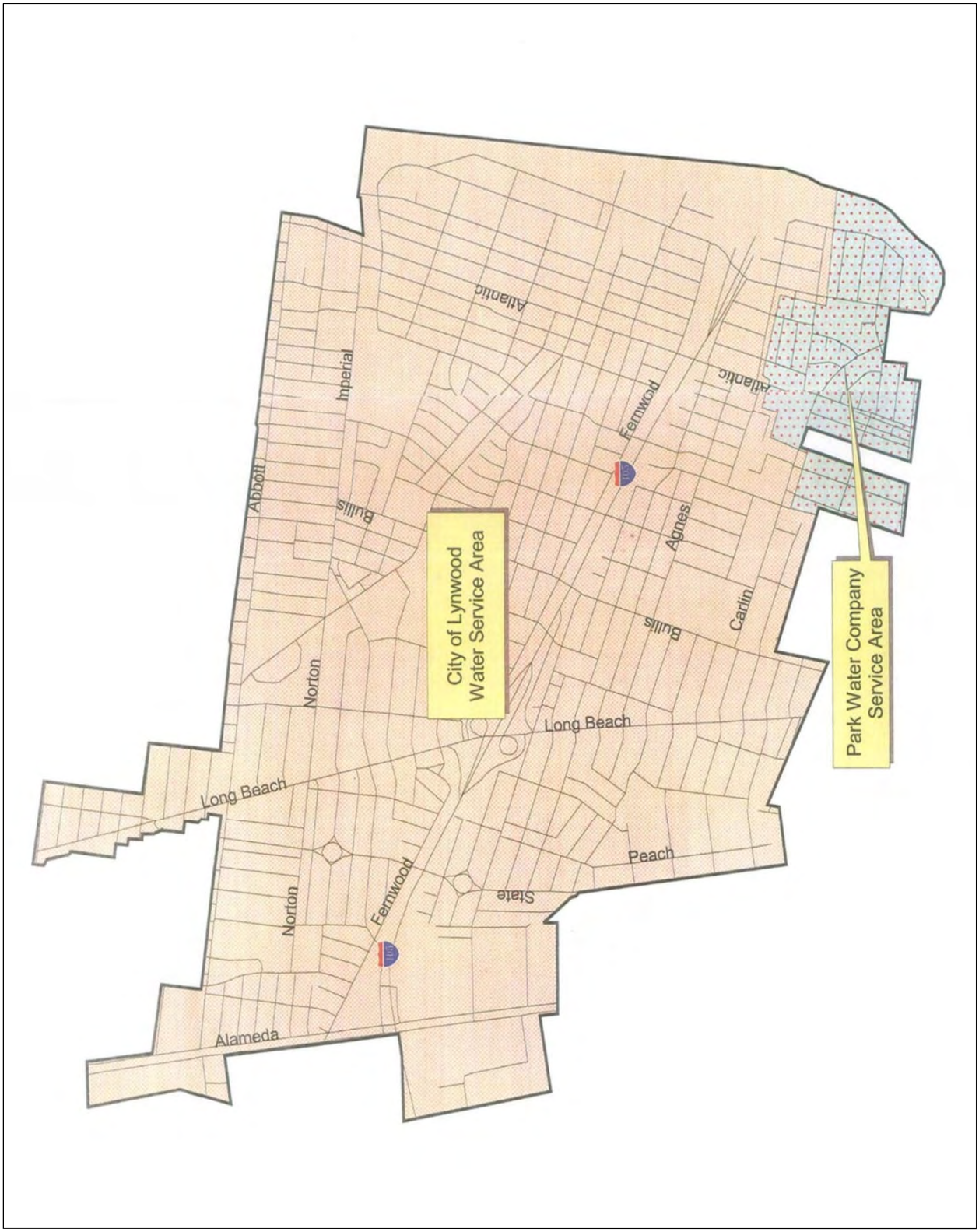


FIGURE 1.3: City Water Service Area Map

Water Storage

For storage and fire flow needs, the City maintains one water storage reservoir with a capacity of 3 million gallons (MG). The reservoir is partially underground and is located adjacent to the City's Well No. 8 and booster pump station just West of City Hall along Bullis Road. The reservoir is shown below in **Figure 1.4**:

Figure 1.4: 3.0 MG City Reservoir

Emergency Interconnections

In addition to imported water and groundwater, the City's water supply system also includes four 8-inch emergency interconnections with the City of Compton and one 8-inch connection with the City of South Gate. The four connections with the City of Compton are manual, two-way connections capable of transferring water for the mutual benefit of both agencies. The one connection with the City of South Gate is an automatic, two-way connection capable of transferring water for the mutual benefit of both agencies. The connections to the Cities of Compton and South Gate are located on the Southerly and Northerly portions of the City's limits, respectively.

SECTION 2: WATER SOURCES & SUPPLIES

2.1 INTRODUCTION

The City's water supply sources consist of imported water from the Metropolitan Water District (MWD) via the Central Basin Municipal Water District (CBMWD), and groundwater produced from the Central Ground Water Basin.

2.2 WATER SUPPLY SOURCES

Imported Water

The City has access to imported water from the Colorado River and the Sacramento-San Joaquin River Delta in Northern California. These two water systems provide Southern California with over 2 million acre-feet (MAF) of water annually for urban uses.

The Colorado River supplies California with 4.4 MAF annually for agricultural and urban uses with approximately 3.85 MAF used for agriculture in Imperial and Riverside Counties. The remaining unused portion (600,000 - 800,000 AF) is used for urban purposes in MWD's service area.

Figure 2.1: Parker Dam at Colorado River

In addition to the Colorado River, the Sacramento-San Joaquin River Delta provides a significant amount of supply annually to Southern California. The Delta is located at the confluence of the Sacramento and San Joaquin Rivers east of the San Francisco Bay and is the West Coast's largest estuary. The Delta supplies Southern California with over 1 MAF of water annually.

Figure 2.2: Sacramento-San Joaquin Delta

The use of water from the Colorado River and the Sacramento-San Joaquin Delta continues to be a critical issue. In particular, Colorado River water allotments have been debated among the seven basin states and various regional water agencies at both the federal and state levels. The use of Delta water has been debated as competing uses for water supply and ecological habitat have jeopardized the Delta's ability to meet either need and have threatened the estuary's ecosystem.

In order to provide Southern California with imported water, MWD utilizes two separate aqueduct systems (one for each source of supply) to obtain its supplies. These two aqueduct systems convey water from each source into two separate reservoirs whereupon MWD pumps the water to one of its five treatment facilities. One of these

aqueduct systems is known as the Colorado River Aqueduct (CRA). The CRA was constructed as a first order of business shortly after MWD's incorporation in 1928. The CRA is 242 miles long and carries water from the Colorado River to Lake Matthews and is managed by MWD.

Figure 2.3: Colorado River Aqueduct

In addition to the CRA, MWD receives water from northern California via the California Aqueduct. Also known as the State Water Project, the California Aqueduct is 444 miles long and carries water from the Delta to Southern California and is operated by the Department of Water Resources.

Figure 2.4: California Aqueduct

The previously mentioned aqueducts supply Southern California with a significant amount of its water and are crucial to its sustainability. In addition to these two water systems, there are also several other aqueducts that are vital to the State. The major aqueducts in California are shown in **Figure 2.5** on page 2-3.

Imported Water Purchases

As a wholesale agency, MWD distributes imported water to 26 member agencies throughout Southern California as shown in **Figure 2.6** on Page 2-4. CBMWD is one of 11 wholesale agencies served by MWD. CBMWD distributes water to its retail agencies, including the City of Lynwood, as shown in **Figure 2.7**. The City has an imported connection to CBMWD with a 12 CFS capacity of 5,376 gpm (about 8,670 AFY). The interconnection supplements the City's groundwater supplies as necessary.

Table 2.1 presents the City's six-year historic imported water purchases from 2005 to 2010:

Table 2.1
Imported Water Supply 2005-2010
(Purchases from CBMWD)

Year	Purchases (AF)
2010	262
2009	584
2008	614
2007	564
2006	1,449
2005	1,076
Average:	**758**

Although the City's imported connection capacity is 8,670 AFY, the amount of imported water available to the City is dependent on CBMWD's supplies from MWD. In 2005, CBMWD's Tier 1 limit from MWD was 72,360 AFY and in 2010 the limit was 72,361 AFY.

Figure 2.5: Aqueduct Systems in California

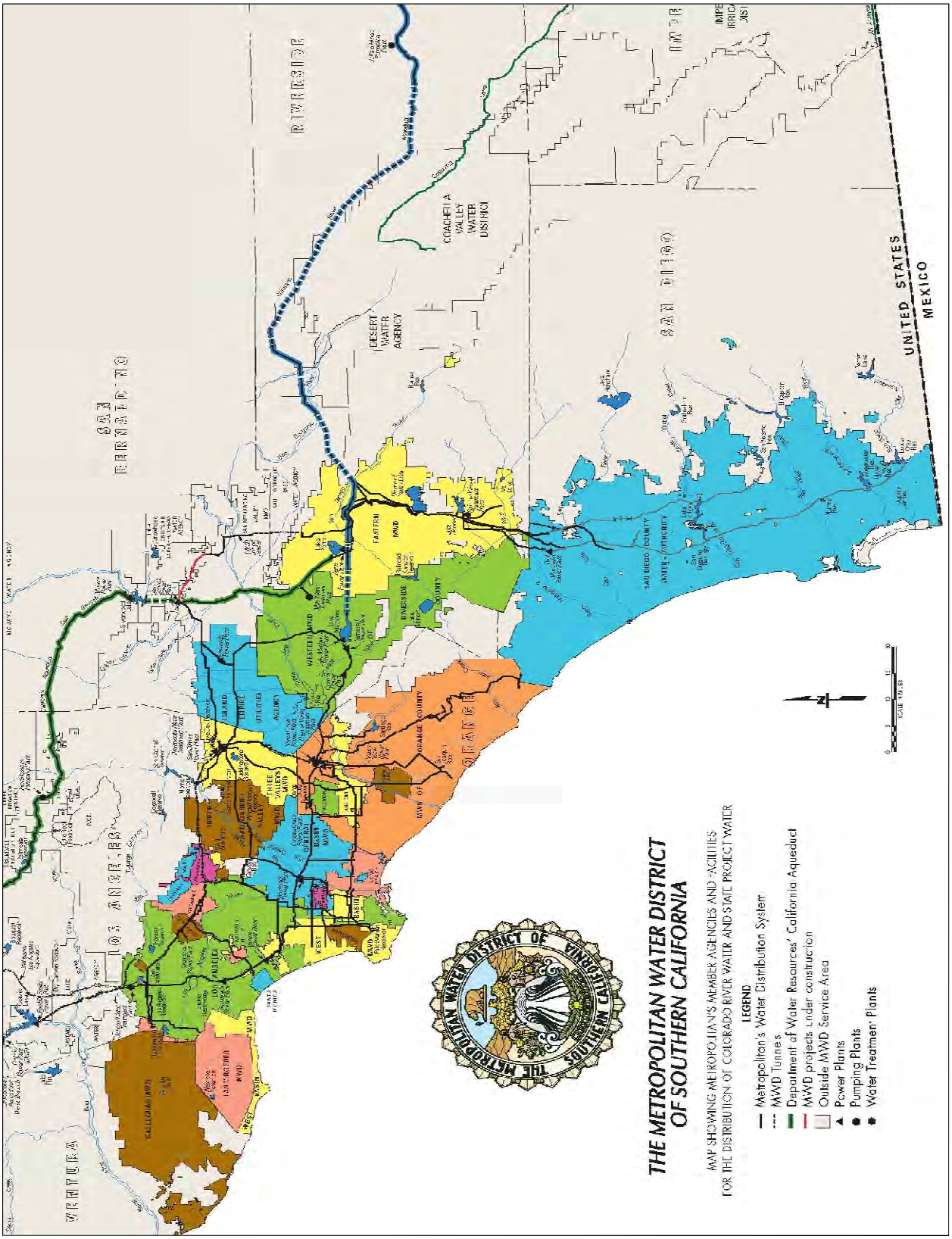


Figure 2.6: MWD Service Area Map

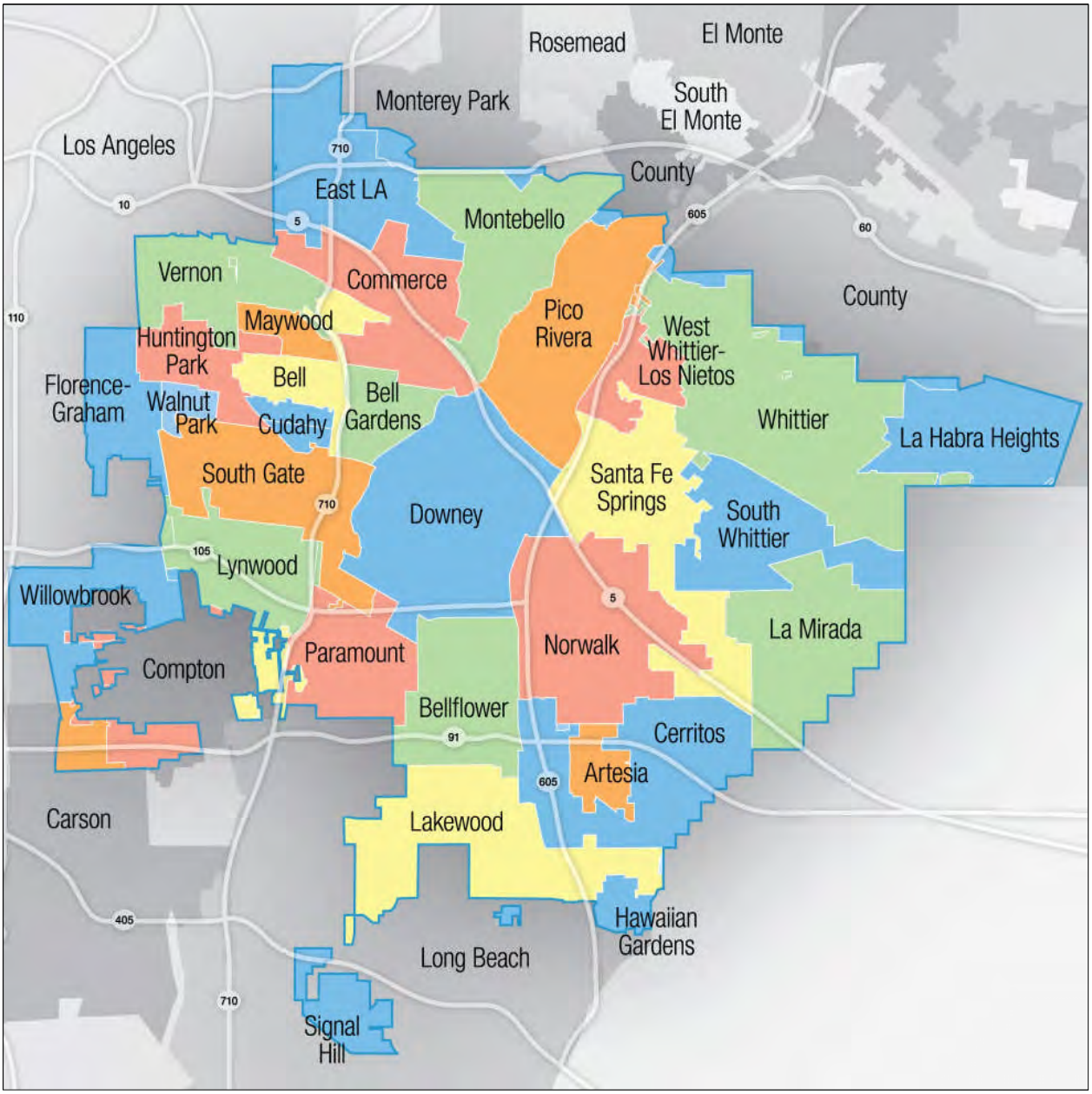


Figure 2.7: CBMWD Service Area Map

Groundwater

The City obtains its groundwater supply from the Central Groundwater Basin. The basin is located in central Los Angeles County and underlies the entire City of Lynwood, and parts of the service areas of West Basin MWD and CBMWD. The Basin has a surface area of 277 square miles of mostly flat to mildly hilly terrain. The basin is bounded by the Elysian, Repetto, Merced, and Puente Hills to the North, the Coyote Creek to the Southeast, and the Newport-Inglewood fault to the Southwest. Adjacent groundwater basins include the Hollywood, Santa Monica, West Coast, Orange County, and Main San Gabriel Basins as shown in **Figure 2.8** below.

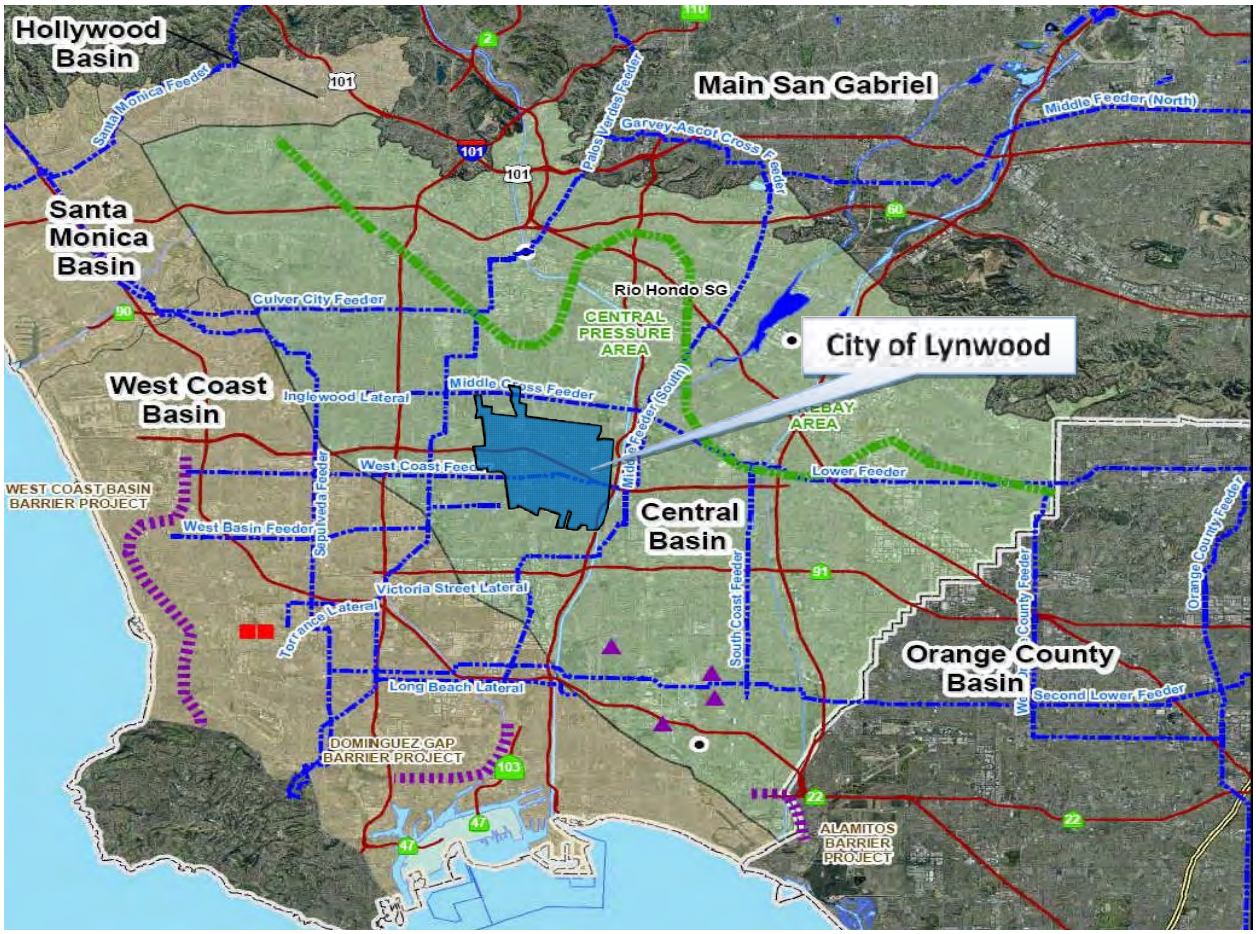


Figure 2.8: Central Groundwater Basin

Water-bearing deposits of the Central Basin include unconsolidated and semi-consolidated marine and alluvial sediments deposited over time. Key production aquifers include the deeper aquifers of the San Pedro Formation (i.e. Lynwood, Silverado, and Sunnyside). These aquifers produce large volumes of groundwater. The shallower aquifers of the Lakewood formation (i.e. Gaspur, Exposition, Hollydale) produce smaller volumes of water. In the area of the Basin known as the pressure area (see **Figure 2.8** above), the aquifers are separated by thick aquitards, which create confined aquifer conditions and protection from surface contamination.

Groundwater in the Basin is replenished naturally by percolation from precipitation, (receiving about 14 inches of rain annually), by subsurface inflows from the San Gabriel Basin through the Whittier Narrows, and by surface flows from local rivers and streams. Since the basin is mostly urbanized and soil surfaces have been paved to construct roads, buildings, and flood channels, natural replenishment to the basin's water-bearing formations is limited to only a small portion of basin soils. However, the Basin receives additional replenishment from the San Gabriel and Rio Hondo Spreading Basins, which receive a blend of storm water runoff, imported water and recycled water.

Groundwater in the Basin naturally and historically flows from the recharge areas in the Northeast (through the Whittier Narrows) towards the West Coast Basin and into Pacific Ocean in the Southwest. The Newport Inglewood fault provides a restrictive barrier on the flow of groundwater in the Basin.

Figure 2.9: Rio Hondo Spreading Grounds

The total storage in the basin is estimated to be approximately 13.8 MAF. Unused storage is estimated to be about 1.1 MAF. The natural safe yield of the Basin (natural replenishment only) is estimated to be about 125,805 AFY. As a result of artificial recharge activities, however, the allowable pumping allocation exceeds this amount.

Groundwater levels in the basin are generally at or above mean sea level (MSL), although low water levels in portions of aquifers adjacent to the Pacific Ocean allow for seawater intrusion to occur. When water levels are low, seawater seeps into the West Coast Basin and into the Central Basin near the Long Beach area of the West Coast Basin.

Figure 2.10: Whittier Narrows

Due to past seawater intrusion, the Water Replenishment District (WRD) maintains the Alamitos Seawater Barrier Project to prevent seawater intrusion and to protect the Basin's groundwater supplies. The Alamitos Barrier consists of 43 injection wells and 239 observation wells over a 2.2 mile course. The injection wells inject a blend of imported and recycled water to build up water pressure in the aquifers below and block seawater intrusion In 2008, the Alamitos Barrier Project injected approximately 6,000 AF into the Basin's aquifers.

The Central Basin is an adjudicated basin and the management of water resources and operations in the basin is provided by DWR, WRD, the LA County Department of Public Works, the Sanitation Districts of LA County, and the Regional Water Quality Control Board. The DWR serves as Watermaster. The California Department of Health Services provides additional

oversight of the Basin's groundwater quality and help monitor contaminant levels. The adjudicated pumping rights of 267,000 AFY are shared among basin agencies at a not-to-exceed allowable pumping allocation (APA) of 217,367 AFY.

The key characteristics of the Central Basin are summarized below in **Table 2.2**:

Table 2.2
Central Basin
Summary of Characteristics

Item	Amount
Max. Depth to Groundwater	2,200 ft.
Thickness of Groundwater Table	180-800 ft.
Storage	13.8 MAF
Natural Safe Yield	125,805 AFY
Adjudicated Rights	267,900 AFY
Allowable Pumping Allocation	217,367 AFY
Spreading Basins (Total)	3
Seawater Intrusion Barriers	1

Groundwater Production

As of April 2011, the City maintains a total of five active wells (Well Nos. 5, 8, 9, 11, and 19) for groundwater extraction. Prior to 2005, the City previously extracted groundwater from its Well No. 15. Since 2005, however, Well No. 15 has been deactivated and is no longer in service.

The City's existing groundwater wells have capacities ranging from 550 gallons per minute (gpm) to 2,000 gpm with a combined production capacity of 5,650 gpm (9,600 AFY). The City's groundwater production well characteristics are displayed in **Table 2.3** below:

Table 2.3
City Groundwater Wells

Well No.	Capacity (gpm)
5	550
8	1,100
9	1,200
11	800
19	2,000
Total Capacity:	**5,650**

The City has adjudicated rights to the Central Basin and has an allowable pumping allocation of 5,337 AFY. In addition, the City recently leased 700 AFY of groundwater rights from another pumper in the Basin for five years. Thus, the City's current combined pumping rights stand at 6,037 AFY.

Figure 2.11: Well No. 9

As a result of increasing costs of imported water, the City intends to achieve 100% sustainability from local groundwater sources. Due to this goal, the City is pursuing additional wells to maximize its groundwater potential and to provide additional reliability of its groundwater well

system. The City is currently in the process of developing an additional well (Well No. 22) at the City's Lynwood Park site. Well No. 22 has recently been drilled and the construction documents for the well facility and connection to the City's distribution system are currently being prepared. Well No. 22 is anticipated to be completed later this year. Once complete, Well No. 22 will have a capacity of 2,500 gpm The location of Well No. 22 is shown below in **Figure 2.12**.

Figure 2.12: Well No. 22 Site

To monitor the City's groundwater extraction, each of the City's wells are equipped with flowmeters to measure well production. Well production is recorded monthly by City water staff and reported annually to the Department of Water Resources (DWR). The City completes DWR's Form No. 38 (Public Water System Statistics) on an annual basis as part of their reporting and documentation efforts. Data records from the past six years indicates that Well No. 19 (capacity of 2,000 gpm) has been the most productive well for the City. Well No. 19 is located in the Western portion of the City just southwest of the Public Works Yard. Well No. 19 was drilled in 1971 by primary reverse circulation (a modern drilling technique) and has a total depth of about 1,000 ft. In 2008, Well No. 19 was measured to have a pumping rate of

about 2,000 gpm. Well No. 5, on the other hand is the City's least productive well with a recently measured pumping rate of 550 gpm. Well No. 5 was drilled in 1932 by the conventional (cable tool) method and has a total depth of 751 ft.

The total groundwater production since 2005 is shown below in **Table 2.4**:.

Table 2.4
Groundwater Production (2005-2010)
(Well Nos. 5, 8, 9, 11, and 19)

Year	Production (AF)
2010	5,559
2009	5,371
2008	5,982
2007	5,570
2006	4,675
2005	5,366
Average:	**5,421**

The groundwater production totals shown in **Table 2.4** represent the majority of the City's water supply since 2005. Overall, groundwater has accounted for about 90% of the City's total water supply for the past six years (an increase of nearly 10% from 2000-2005).

2.3 WATER SUPPLY SUMMARY

Over the past six years, the City's water supply has consisted of imported water and groundwater. In 2005, imported water accounted for 17% of the City's water supply. In 2010, imported water accounted for only 2% of the City's water supply (the lowest total in the City's water history). Imported water purchases have declined from previous years (prior to 2005) due to increases in groundwater pumping. The City's pursuit of groundwater not only has added to its supply reliability (as groundwater is considered to be drought-proof over the short term), but has also offset some of the recent and future economic burdens of purchasing imported water at ever-increasing rates.

2.4 PROJECTED SUPPLY OUTLOOK

As population and land-use densities increase, the City understands the need to discover and support local water supply projects to augment imported supplies. As part of this process, the City intends to continue to upgrade its existing groundwater supply facilities and also intends to pursue the addition of new wells to add to or replace existing wells in the City. Continued upgrades will help the City's groundwater capacity to be maintained at or near their combined pumping rights of 6,037 AFY. As a result of these improvements, the City expects to reduce their dependency on imported water to an as-needed basis, although the City expects both MWD and CBMWD to raise imported water rates in the near future. Through conservation efforts, the use of groundwater is expected to meet all or most of future demands for the next five years.

Overall, the City's supply reliability is expected to increase through the implementation of planned improvements to its groundwater facilities and through continued access to imported water, and through the potential uses of alternative water supplies as discussed in the following section. The City will also continue to benefit indirectly from regional conservation efforts and also through MWD's efforts to augment its supplies and improve storage capacities. **Section 5: Reliability Planning**

discusses reliability issues and compares the City's projected water supplies to projected demands for normal, dry, and multiple dry years through the year 2035.

2.5 ALTERNATE WATER SOURCES

This section provides an overview of alternative water sources (non-potable supplemental supplies) and their potential uses. Alternative water sources including recycled water, recycled stormwater, graywater, and desalinated water.

Recycled Water

Although the City does not currently have the capability to construct a wastewater recycling facility within its limits, the City currently benefits from the use of recycled water in the CBMWD region, including the use of recycled water by the City at Burke-Ham Park and by Caltrans along the Interstate 105 and 710 freeways in the City limits. If the City were to expand its use of recycled water, the City would receive additional benefit.

Figure 2.13: Clarifier Treating Wastewater

Wastewater Collection & Treatment System

The City of Lynwood maintains a local sewer system that collects wastewater. The local sewer mains transfer sewage to County Sanitation District of Los Angeles County (CSD) trunk lines where the sewage is received at the Joint Water Pollution Control Plant (JWPCP) in the City of Carson for treatment. Treated effluent is then discharged into the Ocean. The JWPCP does not produce recycled water. Recycled water is produced at the Los Coyotes Water Reclamation Plant in Cerritos and provided to the City via CBMWD.

Recycled Water Use

Currently the City benefits from the use of groundwater, imported water, and recycled

water at the Burke-Ham Park including landscaped areas and dual-plumbed buildings. Caltrans also used recycled water for irrigation along the Interstate 105 and 710 freeways in the City limits.

Potential Uses of Recycled Water

Since the City uses recycled water, the City has identified potential recycled water users. Typical recycled water uses in the City would include landscape irrigation, dual-plumbing in buildings, and industrial uses. If the City were to expand its use of recycled water, the City could benefit as a number of parks, schools, medians, and dual-plumbed buildings could use recycled water. The City, however, currently lacks the infrastructure required to serve additional potential customers.

Future Plans for Recycled Wastewater

The City expects the use of recycled water in the CBMWD service area to increase. Additionally, recycled water use by Caltrans for irrigation purposes is expected to continue. The City does not have any formal plans in place to expand recycled water use, but expects to increase recycled water use in the near future.

Graywater

Graywater systems have been used in California to provide a source of water supply for subsurface irrigation and also as a means to reduce overall water use. Graywater consists of water discharged from sinks, bathtubs, dishwashers, and clotheswashers. Graywater systems consist of an underground tank and pumping system. Graywater is currently legal for subsurface irrigation in the State of California. However, strict regulations and high installation costs have impeded installation of professional graywater systems and has the unintended consequence of undocumented and noncompliant use of graywater.

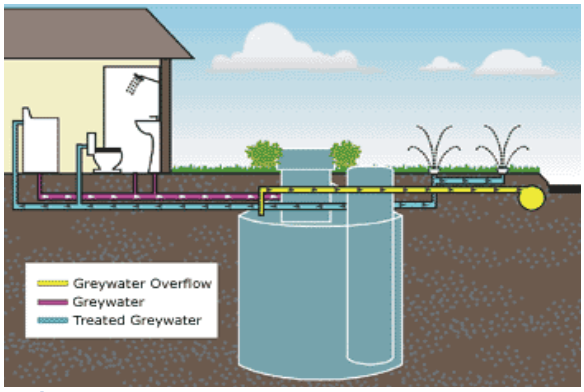


Figure 2.13: Graywater System

The promotion of graywater systems as a means to reduce the City's overall water use is not recommended since the use of graywater is currently limited to subsurface irrigation and therefore the overall Citywide reduction in water use (in AF) would be minimal at best. With the recent passage of SB 1258, however, graywater use is expected to be expanded to include use for toilet flushing, and may have its place as a potential water supply.

Desalinated Seawater

Seawater desalination is a process whereby seawater is treated to remove salts and other contents to develop both potable and non-potable supplies. There are over 10,000 desalination facilities worldwide that produce over 13 million AFY. Desalinated water can add to Southern California's supply reliability by diversifying its water supply sources and mitigating against potential supply reductions. With its Seawater Desalination Program (SDP), the MWD facilitates progress and provides financial incentives for the development of seawater desalination facilities within its service area.

A total of five member agencies submitted projects totaling 142,000 AFY. In 2004, MWD adopted an Integrated IRP update which included a desalination goal of 150,000 AFY by the year 2025. Currently, the five member agency projects are in various levels of development.

Figure 2.3: Seawater Desalination Plant

Since the City is not located adjacent to the ocean, there are no plans to incorporate desalinated seawater into its supply sources.

2.6 TRANSFERS OR EXCHANGES

The City owns rights to extract 5,337 AF of groundwater annually. Due to a lease from another pumper in the region, the City currently maintains an allowable pumping allocation of 6,037 AFY. This current agreement will last for five years and highlights the ability of the sharing of water rights among pumpers in the Central Basin. The City may, at any period when its pumping capacity is reduced due to aging infrastructure or changes in water quality standards, lease a portion of its water rights to another pumper in the region to offset some of the economic burdens of purchasing imported water.

The City also maintains five emergency inter-connections to adjacent water purveyor systems. These connections have the ability to transfer water into the City's distribution system during an emergency. There are four 8-inch connections to the City of Compton, and one 8-inch connection to the City of South Gate. Each has a two-way interconnection, allowing water transfers to and from the City, depending on the emergency situation.

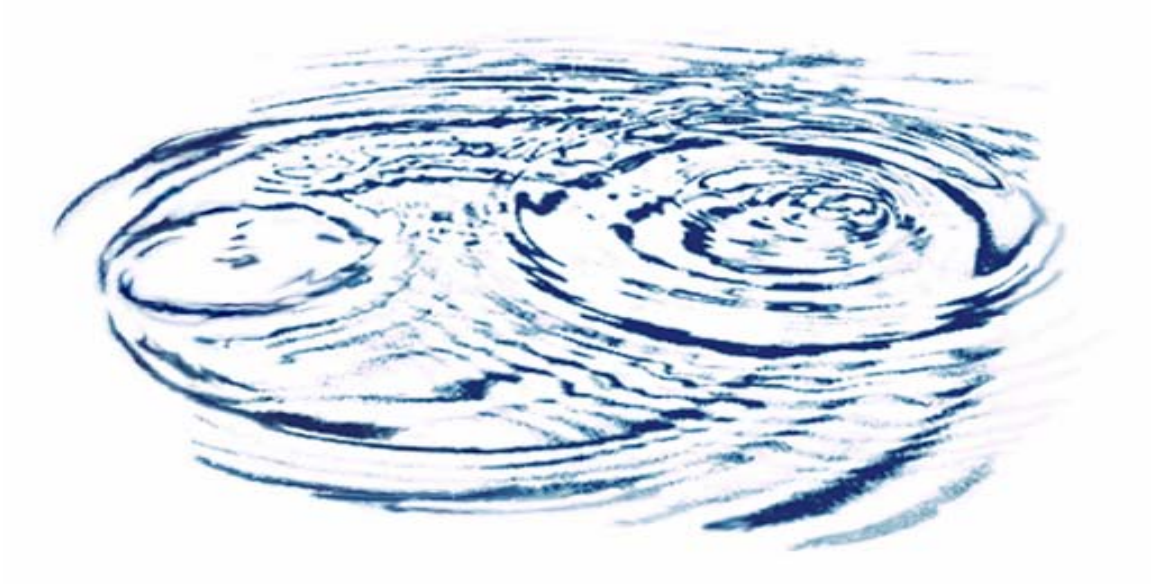
2.7 PLANNED SUPPLY PROJECTS

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff continues to ensure the water quality is safe and the water supply will meet present and future needs in an environmentally and economically responsible manner. The City's water demand within its service area could remain relatively constant over the next 20 years due to minimal growth combined with water use efficiency measures and the potential use of recycled water. Any new water supply sources will be to replace or upgrade insufficient wells rather than to support population growth and new development. Once the City completes its Well No. 22, the City intends to construct another well (Well No. 23) at a site to be determined. The City will also identify specific means of achieving their sustainability goals from local sources which will likely include the drilling of additional wells, alternative water supply projects, and additional leasing of groundwater rights to meet demand.

Reference:
SEI, 2012

CITY OF DOWNEY

2010
Urban Water Management Plan



January 2012

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SECTION 2
SYSTEM DESCRIPTION

2.1 BACKGROUND

2.1.1 CITY OF DOWNEY

The City of Downey is located in an urbanized community approximately 12 miles southeast of downtown Los Angeles (Figures 2-1 and 2-2). The City was incorporated in 1956 as a general law city and became a charter city in 1964. The City of Downey is bounded by the San Gabriel River to the east, Telegraph Road to the north, the Rio Hondo River to the west, and Gardendale Street and Foster Road to the south.

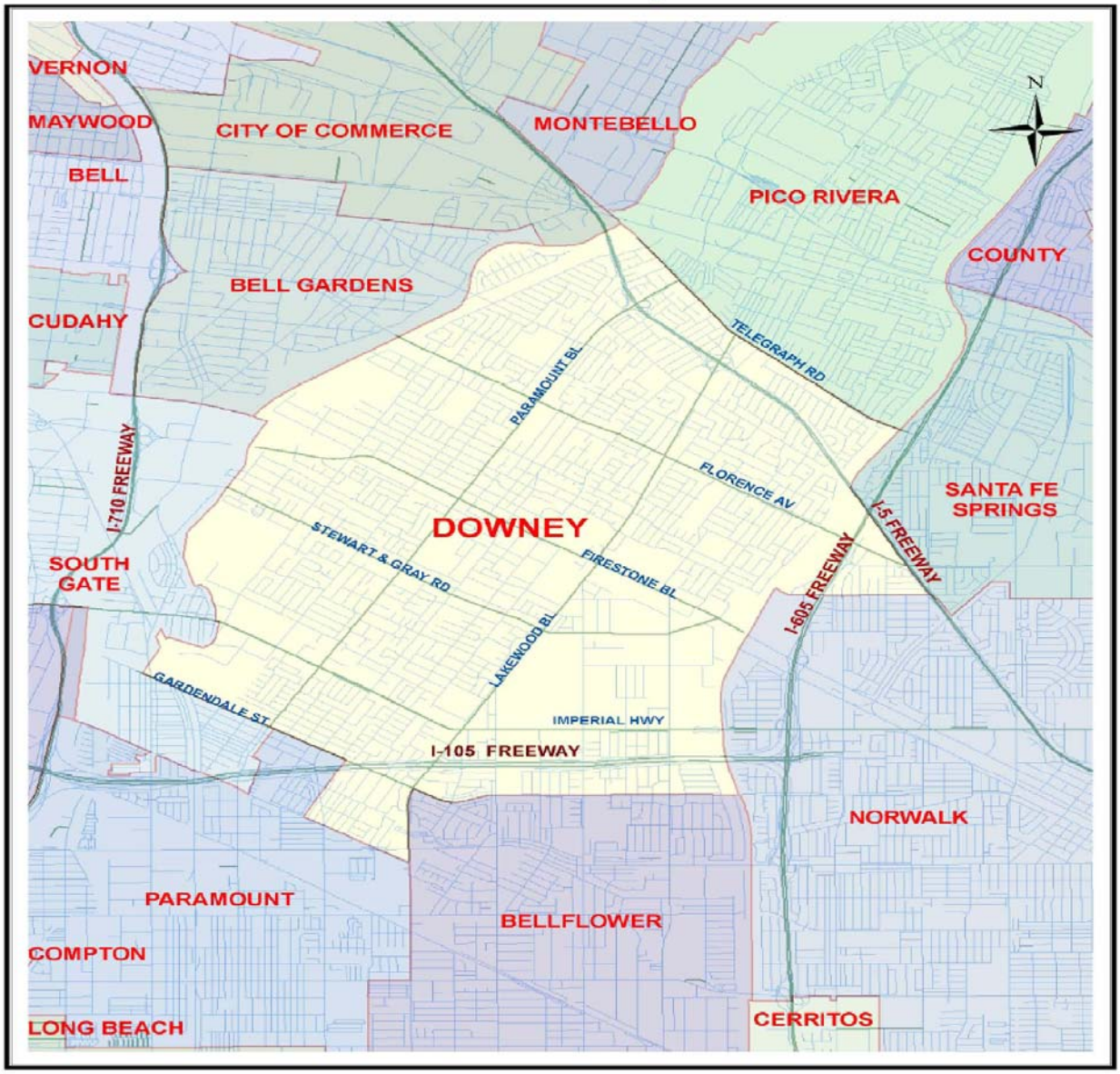
The City of Downey encompasses approximately 12.8 square miles of land and its topography is relatively level. Ground surface elevations range from approximately 85 feet above mean sea level in the southerly portion to 140 feet in the northerly most portion of the City.

Based on the City's General Plan, land use within the City of Downey has been designated as follows: 61 percent residential, 3 percent office, 8 percent commercial, 7 percent industrial, 5 percent mixed use, 8 percent public (including schools), and 8 percent open space.

The City's water system currently serves a population of approximately 110,457 (or approximately 98.8 percent of the City of Downey) through approximately 22,600 service connections. The remaining portions of the City of Downey, including the area that lies east of the San Gabriel River, south of the Interstate-5 Freeway, and north of Cecilia Avenue, are currently served by other water purveyors.

Figure 2-1 City of Downey Regional Map

Figure 2-2 City of Downey Location Map



2.1.2 WATER SYSTEM

The City overlies the Central Basin. Groundwater from the Central Basin is pumped from wells located within the City's boundaries and provides the City with its principal source of potable water.

The groundwater available to the City is of good quality and is currently extracted and pumped directly into the water transmission and distribution systems without disinfection or treatment of any kind. As a result of the use of this high quality groundwater, the City enjoys one of the least expensive water rates in the area.

Until fiscal year (FY) 2000-01, the City purchased small amounts of treated imported water from CBMWD when needed to augment the City's annual potable water supplies. Beginning in FY 2000-01, groundwater became the sole source of drinking water for the City. Due to the high cost of the imported CBMWD water, the City intends to rely solely on its groundwater wells to meet the potable water demands of its customers into the future. However, the City will continue to maintain its imported water connections with CBMWD by paying readiness–to-serve and capacity charges to CBMWD in the event this water is ever needed for emergency purposes.

Emergency interconnections (See Section 2.1.2.4) with adjacent water agencies are also maintained and serve as supplemental sources of water in the event of an emergency.

The City also purchases recycled water from CBMWD and re-sells the recycled water to its customers at a discount of 15 percent from the current rate for domestic water to help promote this potable water conservation measure. Recycled water is presently used for irrigation of landscaping and in several park ponds within the City of Downey (See Section 2.1.2.7) and makes up approximately 4 percent of the City's overall water demand.

2.1.2.1 GROUNDWATER WELLS

There are a total of 31 wells in the City's water system of which 20 are active and available to produce groundwater. These 20 wells have a combined production capacity of approximately 53,200 acre-feet per year (AFY) (theoretical capacity based

on continuous operations) and serve as the City's principle source of potable water. Of the remaining eleven wells, seven are abandoned (destroyed) and four are inactive. The four inactive wells have low production capacities and are considered to be susceptible to groundwater contamination as they are screened in shallow aquifers. The City plans to abandon (destroy) these four wells in accordance with DWR standards in the near future. Table 2-1 provides a summary of the City's 20 active wells and associated capacities. As previously expressed, each of the active wells pumps directly into the water transmission/distribution system without disinfection or treatment of any kind.

Table 2-1 Groundwater Production Wells

City Well No.	Operational Status	Capacity (gpm)[2]	Capacity (AFY)[3]	Well Depth (feet)	Casing Diameter (inches)
2	Active	1,940	3,129	674	16
4	Active	4,567	7,367	1,160	18
5	Active	720	1,161	520	12
7	Active	934	1,507	686	14
8	Active	1,800	2,903	592	16
9	Active	1,095	1,766	594	16
10[1]	Active	1,700	2,742	650	16
11[1]	Active	4,500	7,259	980	20
12	Active	1,800	2,903	444	16
14	Active	866	1,397	572	16
15	Active	1,262	2,036	878	16
16[1]	Active	1,600	2,581	866	16
17	Active	868	1,400	454	16
18[1]	Active	1,863	3,005	674	16
19	Active	1,015	1,637	551	16
23	Active	1,200	1,936	646	16
24[1]	Active	1,759	2,837	544	16
25	Active	1,200	1,936	438	16
29	Active	1,100	1,774	642	16
30	Active	1,200	1,936	662	16
Active Capacity		**32,989**	**53,211**		

Notes:
[1] Equipped with Variable Frequency Drives (VFDs)
[2] gpm = gallons per minute
[3] Capacity is based on continuous operations

The City's water system operates as a closed system within one pressure zone and there are no elevated storage tanks to control the hydraulic grade line. The number of wells that are operational at any given time is based on the system demand.

A 450 megahertz Ultra High Frequency radio system, with peer-to-peer technology, allows the wells to communicate with the central control unit and each other. The City also utilizes Supervisory Control and Data Acquisition (SCADA) software. The SCADA system utilizes a pressure transducer located at the Utilities Yard office to monitor system pressure. A predetermined pump/well sequence control strategy is used to stage pumps on/off based on a pressure-operating band. A system pressure of 60 to 70 pounds per square inch (psi) is desired. When the pressure drops below the pre-determined set point of 60 psi, an additional well is turned on. If the pressure returns to a pre-determined set point of 70 psi, the well is turned off. If the pressure continues to drop, one or more wells, based on the predetermined sequence, are turned on. Once pressure returns to 70 psi, wells are turned off in the reverse sequence of when they were turned on until the pressure remains steady between 60 and 70 psi.

In addition to the centralized pressure transducer located at the Utilities Yard, pressure transducers and associated wiring have also been installed by the City at each of the 20 active groundwater wells. SCADA logic was recently updated to allow such wells to operate based upon localized pressure readings at each well in the event communication with the Master Remote Terminal Unit and associated centralized pressure control is lost.

The wells can also be controlled from Mercoid switches at individual wells and respond to local pressure, by time clocks from the SCADA system or well sites, or manually from switches from the SCADA system or the well sites.

2.1.2.2 IMPORTED WATER MANAGEMENT

If necessary, groundwater can be supplemented with imported water delivered through CBMWD. CBMWD is a member agency of the Metropolitan Water District of Southern California (MWD) which supplies treated, imported water to CBMWD. There are a total of 27 MWD member agencies. MWD provides imported water to much of the southern California coastal plain, including portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. The imported water originates from the State Water Project (SWP) in northern California and the Colorado River Aqueduct. Imported water delivered by MWD has been treated by MWD and is of good quality.

Imported water is actively managed by MWD through the activities described in its Plan, as well as its Integrated Resources Plan (IRP) and Water Surplus and Drought Management Plan (WSDM). MWD's rights to Colorado River water are governed by the provisions of the 1931 Seven-Party Agreement, 1964 U.S. Supreme Court Decree in Arizona v. California, and the present perfected rights possessed by certain Indian reservations and other users in California. SWP deliveries are determined by DWR based on the availability of the water (i.e., precipitation, snowpack of the present and past years) and the effect of SWP operations on biological resources. Estimates of deliveries are based on the amount of water in SWP storage reservoirs, a conservative projection of runoff for the remainder of the year, contractor requests, and SWP operational constraints. These estimates are updated periodically through the spring and summer. Both SWP and Colorado River Aqueduct water are subject to curtailment in dry years. MWD is working to improve the reliability of these sources.

2.1.2.3 PURCHASED WATER CONNECTIONS

The City maintains three connections with CBMWD, designated CENB-18, CENB-20, and CENB-21. Due to the high cost associated with water purchased from CBMWD, these connections are only utilized for emergencies in the event system

demand exceeds the production capacity of the City's groundwater wells. Water purchased from CBMWD is delivered to the City through the MWD Lower Feeder, which runs through the middle of Downey in an east-west direction.

CENB-18 must be opened manually if system demand requires use of this connection. CENB-20 and CENB-21 are set to operate when system pressure decreases to predetermined minimum pressures of 38 and 40 psi, respectively, which are lower than the minimum system pressure of 60 psi established for the groundwater wells. Both of these connections are set to shut down when the system pressure increases to a predetermined maximum pressure of 65 psi. Due to the ease of the pressure-regulated operation, CENB-20 and CENB-21 are always turned on prior to CENB-18 when system demand exceeds the production capacity of the City's groundwater wells. Table 2-2 provides a summary of the City's imported water connections with CBMWD.

Table 2-2 Purchased Water Connections

Purchased Water Connection	Capacity (gpm)[1]	Capacity (AFY)[2]	Diameter (inches)	Operational Status
CENB-18	6,732	10,859	12	Emergency
CENB-20	8,976	14,478	20	Emergency
CENB-21	8,976	14,478	20	Emergency
Total	**24,684**	**39,815**		

Notes:
[1] gpm = gallons per minute
[2] Based on continuous operation

2.1.2.4 EMERGENCY INTERCONNECTIONS

The City maintains five emergency interconnections with adjacent water agencies. Two of the interconnections are equipped with two-way valves, which have the ability of providing water both to and from the City. Of the remaining three interconnections, one has the ability of providing water to the City and the other two are equipped with one-way valves which presently have the ability of providing City water to

the corresponding agencies. The total capacity of the three emergency connections which are able to provide the City with water is approximately 8,000 gallons per minute.

Four of the interconnections are presently in standby mode, with valves on either side of each interconnection closed. In addition, two (Bellflower-Somerset and Santa Fe Springs) of these interconnections lack working meters. Meters would have to be installed prior to use of the Bellflower-Somerset or Santa Fe Springs standby interconnections. Operations personnel from both the City and the respective agency would be required to arrive at the location to open the respective valves and flush the systems prior to full operation of any standby interconnection. The fifth interconnection is set to open and provide water to Bellflower Municipal Water System should pressures in their system drop below a predetermined pressure. This connection is maintained for emergency purposes for Bellflower Municipal Water System and is rarely activated. Table 2-3 provides a summary of the City's emergency interconnections.

Table 2-3 Emergency Interconnections

Agency	Capacity (gpm)[2]	Capacity (AFY)	Diameter (inches)	Operational Status
Bellflower-Somerset Mutual Water Co.	2,000	3,226	8	One-way, no meter, standby (Bellflower Somerset to City)
City of Santa Fe Springs	4,000	6,452	12	Two-way, no meter, standby
City of South Gate	2,000	3,226	8	Two-way, metered, standby
Golden State Water Co.	1,000	1,613	6	One-way, metered, standby (City to Golden State Water)
Bellflower Municipal Water System	750	1,210	4	One-way, metered, automatic (City to Bellflower Municipal)
Total (to City)[1]	**8,000**	**12,904**		

Notes:
[1] Present capacity of emergency interconnections (metered and non-metered) to the City only
[2] gpm = gallons per minute

2.1.2.5 TRANSMISSION AND DISTRIBUTION SYSTEM

The City has approximately 22,600 service connections located throughout the City's service area. All groundwater wells, purchased water connections, and

emergency interconnections pump directly into the City's water transmission/distribution system to be delivered throughout the City's service area. The system consists of large (12 to 24-inch) ductile iron transmission mains along the City's major arterials: Paramount Boulevard, Lakewood Boulevard, Woodruff Avenue, Imperial Highway, Stewart and Gray Road, Firestone Boulevard, and Telegraph Road. These transmission mains act as conduits for moving large volumes of water throughout the City's service area into distribution mains (4 to 10-inch) for delivery to the City's customers. The transmission/distribution system contains approximately 270 miles of intersecting, looped piping. The piping is primarily composed of ductile iron or cast iron (98 percent), and ranges in diameter from 4 to 24 inches with the majority (92 percent) of the piping in the 4 to 8 inch range.

2.1.2.6 WATER STORAGE AND BOOSTER PUMP STATIONS

A circular, 165-foot (diameter) by 30-foot (height), 5 million gallon (MG), pre-stressed concrete reservoir is located at the City Utilities Yard. This reservoir, which was used in the past to help balance system pressure and as a surge tank, has not been used for over twenty years due to the installation of the computerized SCADA system that controls the operation of the wells.

The reservoir is equipped with a booster station. The booster station consists of two, 2,000 gallon per minute (gpm), vertical, turbine pumps capable of transferring water back into the transmission/distribution system through a 20-inch cast iron transmission main running from the booster station down Stewart and Gray Road. This booster station has been out of service since the reservoir was taken out of service.

The City recently rehabilitated the reservoir booster pumps, valves, and other appurtenances allowing for quick reinstatement of this water supply facility should it ever be needed in an effort to increase the reliability of the City's water system.

2.1.2.7 RECYCLED WATER SUPPLY AND DISTRIBUTION

The City receives its recycled water supply from CBMWD as part of the Central Basin Recycled Water Project (CBRWP). CBMWD purchases and resells tertiary-treated recycled water produced at CSDLAC's Los Coyotes and San Jose Creek Water Reclamation Plants (WRPs). Recycled water received by the City is generated from CSDLAC's Los Coyotes WRP.

2.2 SERVICE AREA PHYSICAL DESCRIPTION

Section 10631.

A plan shall be adopted in accordance with this chapter and shall do the following:

a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.2.1 SERVICE AREA

The City of Downey is located in an urbanized community approximately 12 miles southeast of downtown Los Angeles (Figure 2-1). The City of Downey is bounded by the San Gabriel River to the east, Telegraph Road to the north, the Rio Hondo to the west, and Gardendale Street and Foster Road to the south (Figure 2-2).

The City of Downey contains approximately 12.8 square miles of land and its topography is relatively level. Its elevations range from approximately 85 feet above sea level in the southern portion to 140 feet in the northern-most portion. The average elevation is 113 feet above sea level.

Based on the City's General Plan, land use within the City of Downey has been designated as follows: 61 percent residential, 3 percent office, 8 percent commercial, 7

percent industrial, 5 percent mixed use, 8 percent public (including schools), and 8 percent open space.

The City's water system serves a population of approximately 110,457 (or approximately 98.8 percent of the City of Downey) through about 22,600 service connections. The remaining portions of the City of Downey, including the area that lies east of the San Gabriel River, south of the Interstate-5 Freeway, and north of Cecilia Avenue, are currently served by other water purveyors.

2.2.2 CLIMATE

The City has a typical southern California climate comprised of warm-dry summers, and wet-cool winters. Historical average annual rainfall is approximately 14.3 inches per year as shown in Table 2-4. Table 2-5 provides average monthly rainfall, average monthly temperature and monthly evapotranspiration. Although changes in climatic conditions would have an impact on the City's water system, the projected water supplies and demands for the City will be based on average year, single dry year, and multiple-dry year data.

Table 2-4 Historical Rainfall

Water Year	Rainfall (inches)	Water Year	Rainfall (inches)	Water Year	Rainfall (inches)	Water Year	Rainfall (inches)
1925-26	12.63	1950-51	8.27	1975-76	9.55	2000-01	15.60
1926-27	17.33	1951-52	24.68	1976-77	11.23	2001-02	2.80
1927-28	12.12	1952-53	10.53	1977-78	33.85	2002-03	16.93
1928-29	11.48	1953-54	12.33	1978-79	18.68	2003-04	9.37
1929-30	10.84	1954-55	11.84	1979-80	28.29	2004-05	24.86
1930-31	10.15	1955-56	13.97	1980-81	8.74	2005-06	11.36
1931-32	14.37	1956-57	9.89	1981-82	13.41	2006-07	2.85
1932-33	10.02	1957-58	24.65	1982-83	30.30	2007-08	17.11
1933-34	11.10	1958-59	6.68	1983-84	11.96	2008-09	9.49
1934-35	21.94	1959-60	9.84	1984-85	11.96	2009-10	13.02
1935-36	9.65	1960-61	4.30	1985-86	19.47		
1936-37	22.11	1961-62	18.46	1986-87	6.49		
1937-38	21.75	1962-63	10.90	1987-88	11.47		
1938-39	18.69	1963-64	6.86	1988-89	7.82		
1939-40	12.81	1964-65	13.27	1989-90	7.87		
1940-41	34.21	1965-66	17.02	1990-91	12.22		
1941-42	14.66	1966-67	17.78	1991-92	16.07		
1942-43	17.91	1967-68	11.46	1992-93	26.55		
1943-44	17.89	1968-69	22.33	1993-94	9.26		
1944-45	11.25	1969-70	7.52	1994-95	26.82		
1945-46	10.31	1970-71	11.45	1995-96	10.68		
1946-47	15.24	1971-72	6.40	1996-97	13.95		
1947-48	8.62	1972-73	18.57	1997-98	32.72		
1948-49	9.04	1973-74	14.51	1998-99	7.29		
1949-50	10.14	1974-75	15.01	1999-00	9.21		
85-Year Average 14.28							

Source: County of Los Angeles, Department of Public Works – City of Downey Fire Department, Station 107D

Table 2-5 Climate

	Jan	Feb	Mar	Apr	May	Jun
Evapotranspiration (in.)[1]	1.65	2.15	3.59	4.77	5.12	5.71
Average Rainfall (in.)[2]	2.99	3.45	2.26	1.04	0.18	0.06
Average Temperature (F)[3]	58.6	60.0	61.7	65.3	68.2	72.3
Maximum Average Temperature (F)[3]	64.4	65.0	66.4	69.9	74.1	76.8
Minimum Average Temperature (F)[3]	54.9	56.1	57.3	61.2	63.8	67.2

	Jul	Aug	Sep	Oct	Nov	Dec	Total
Evapotranspiration (in.)[1]	5.93	5.91	4.39	3.22	2.18	1.68	46.3
Average Rainfall (in.)[2]	0.02	0.07	0.22	0.44	1.33	2.22	14.28
Average Temperature (F)[3]	76.4	77.4	75.8	70.4	63.4	59.0	67.0
Maximum Average Temperature (F)[3]	79.9	80.7	82.4	75.0	66.4	62.2	68.0
Minimum Average Temperature (F)[3]	72.2	74.4	69.8	66.9	59.5	54.7	66.0

Notes:

[1] Evapotranspiration data from California Irrigation Management Information System (Long Beach Station)

[2] Rainfall data from County of Los Angeles, Department of Public Works – City of Downey Fire Department, Station 107D

[3] Temperature data from Western Regional Climate Center and National Oceanic and Atmospheric Administration (Montebello Station)

2.3 SERVICE AREA POPULATION

Section 10631.

A plan shall be adopted in accordance with this chapter and shall do the following:

a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.3.1 POPULATION

Present and projected populations served water by the City are provided in Table 2-6. Population estimates for 2010 are based upon data collected from the US Census Bureau and the State of California Department of Finance (DOF). Population projections through FY 2029-30 were developed based upon projected percent increases in the City's population, as determined by the Southern California Association of Governments (SCAG). The SCAG data incorporates demographic trends, existing

land use, general plan land use policies, and input and projections from the DOF and US Census Bureau.

Table 2-6 Service Area Population – Current and Projected
(DWR Guidebook Table 2)

Table 2 Population — current and projected							
	2010	2015	2020	2025	2030	2035 - optional	Data source[2]
Service area population[1]	110,457	113,606	116,872	118,960	121,084	--	US Census, DOF, SCAG

[1] *Service area population is defined as the population served by the City's water supply and distribution system, i.e., 98.8 percent of the total population of the City of Downey.*

[2] *DOF = California Department of Finance. SCAG = Southern California Association of Governments.*

2.3.2 OTHER DEMOGRAPHIC FACTORS

There are no other demographic factors affecting the City's water management planning.

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SECTION 3

SYSTEM DEMANDS

3.1 WATER DEMANDS

3.1.1 PAST, CURRENT, AND PROJECTED WATER DEMAND

Section 10631(e)

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

The City's water supply sources include groundwater pumped from the Central Basin, connections with CBMWD for delivery of treated water imported from the Colorado River and the State Water Project, and recycled water. The City's main source of water is groundwater pumped from the Central Basin. The City provides water service to the following water use sectors:

- Residential (Single-Family and Multi-Family)
- Commercial
- Industrial
- Government/Institutional
- Landscape Irrigation.

Table 3-1 and Table 3-2 show the past and current water use, among water use sectors, within the City's service area. Projected water use is calculated based on the urban per capita water use target developed per SBX7-7 (see Section 3.2 below) and population projections. Based on these projections, the City anticipates it will be able to meet future water demands.

Table 3-1 Water Deliveries – Actual, 2005
(DWR Guidebook Table 3)

Table 3 Water deliveries — actual, 2005					
	2005				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	18,637	9,516			9,516
Multi-family	1,935	3,376			3,376
Commercial	1,249	1,820			1,820
Industrial	39	1,007			1,007
Institutional/governmental	241	679			679
Landscape	111	179			179
Agriculture					0
Fire hydrant/service/construction	301	83			83
Operation and maintenance			0	33	33
Total	22,514	16,660	0	33	16,693

Units are in acre-feet per year.

Table 3-2 Water Deliveries – Actual, 2010
(DWR Guidebook Table 4)

Table 4 Water deliveries — actual, 2010					
	2010				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	18,663	8,493			8,493
Multi-family	1,940	3,248			3,248
Commercial	1,252	1,819			1,819
Industrial	39	964			964
Institutional/governmental	241	611			611
Landscape	111	234			234
Agriculture					0
Fire hydrant/service/construction	302	21			21
Operation and maintenance			0	29	29
Total	22,548	15,390	0	29	15,419

Units are in acre-feet per year.

3.2 BASELINES AND TARGETS

Section 10608.20 (e)

An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the basis for determining those estimates, including references to supporting data.

Methodologies for calculating baseline and compliance urban per capita water use consistent with the Water Conservation Act of 2009 (SBX7-7) were published by DWR in its October 2010 guidance document.[3] DWR's guidance document was used by the City to determine the required water use parameters which are discussed below.

The City is a member of the Los Angeles Gateway Region Integrated Regional Water Management Joint Powers Authority (Gateway Authority). The Gateway Authority prepared a Regional Water Conservation Alliance Report in June 2011 which included regional baselines and targets. The regional 2015 and 2020 targets calculated by the Gateway Authority were 110.7 gallons per capita day and 105.4 gallons per capita day, respectively. Although the City participated in the Regional Alliance, the City has developed its baselines and targets independently, as described below.

3.2.1 BASELINE DAILY PER CAPITA WATER USE

Baseline Daily Per Capita Water Use is defined as the average water use, expressed in gallons per capita per day (GPCD), for a continuous, multi-year baseline period. There are two different baseline periods for calculating Baseline Daily Per Capita Water Use, as follows (CWC Sections 10608.20 and 10608.22):

[3] California Department of Water Resources, Division of Statewide Integrated Water Management, Water Use and Efficiency Branch. *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*. October 1, 2010.

- *The first baseline period is a continuous 10 to 15-year period, and is used to calculate Baseline Daily Per Capita Water Use per CWC Section 10608.20. The first baseline period is determined as follows:*

    - *If recycled water makes up less than 10 percent of 2008 retail water delivery, use a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*
    - *If recycled water makes up 10 percent or more of 2008 retail water delivery, use a continuous 10 to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

The City's recycled water use is less than 10 percent of its FY 2007-08 retail water delivery as shown in Table 3-3. (Note: The City's water use data are reported on a fiscal year basis. Therefore, fiscal year 2007-08 data is used instead of calendar year 2008, as stated in the CWC.) Consequently, the first baseline period for the City consists of a continuous 10-year period, FY 1999-00 to FY 2008-09, between the 15-year range allotted (FY 1995-96 and FY 2009-10) (see Table 3-3).

Table 3-3 Base Period Ranges
(DWR Guidebook Table 13)

Table 13 Base period ranges			
Base	**Parameter**	**Value**	**Units**
10- to 15-year base period	2008 total water deliveries	18,402	*acre-feet*
	2008 total volume of delivered recycled water	742	*acre-feet*
	2008 recycled water as a percent of total deliveries	4%	percent
	Number of years in base period[1]	10	years
	Year beginning base period range	1999-00	
	Year ending base period range[2]	2008-09	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2003-04	
	Year ending base period range[3]	2007-08	

Units are in acre-feet per year.
[1] If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.
[2] The ending year must be between December 31, 2004 and December 31, 2010.
[3] The ending year must be between December 31, 2007 and December 31, 2010.

- *The second baseline period is a continuous 5-year period, and is used to determine whether the 2020 per capita water use target meets the legislation's minimum water use reduction per CWC Section 10608.22. The continuous 5-year period shall end no earlier than December 31, 2007, and no later than December 31, 2010.*

  Since the City's water use data are reported on a fiscal year basis, the second baseline period consists of a continuous 5-year period, FY 2003-04 to FY 2007-08, between the 7-year range allotted (FY 2003-04 and FY 2009-10).

Unless the urban water retailer's 5-year Baseline Daily Per Capita Water Use, as calculated above per CWC Section 10608.12(b)(3), is 100 GPCD or less, Baseline Daily Per Capita Water Use must be calculated for both baseline periods, See Section 3.2.4.

The calculation of the Baseline Daily Per Capita Water Use entails the following four steps:

Step 1 *Calculate gross water use for each year in the baseline period using Methodology 1 in DWR's guidance document. According to Methodology 1, gross water use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system. Recycled water deliveries are to be excluded from the calculation of gross water use. Water delivered through the distribution system for agricultural use may be deducted from the calculation of gross water use. Under certain conditions, industrial process water use also may be deducted from gross water use.*

The City's groundwater production and amount of imported water purchased from CBMWD between FY 1995-96 and FY 2009-10 are shown in Table 3-4.

Table 3-4 Historical Potable Water Demands

Fiscal Year	Groundwater Production (Acre-Feet)	Purchased Water (Acre-Feet)	Total Potable Water Demand (Acre-Feet)	Total Potable Water Demand (MGD)
1995-96	16,788	1	16,789	15.0
1996-97	16,914	2	16,916	15.1
1997-98	15,069	20	15,089	13.5
1998-99	16,045	0	16,045	14.3
1999-00	17,340	18	17,358	15.5
2000-01	17,645	1	17,646	15.8
2001-02	17,642	0	17,642	15.7
2002-03	16,976	0	16,976	15.2
2003-04	18,237	0	18,237	16.3
2004-05	16,955	0	16,955	15.1
2005-06	17,434	0	17,434	15.6
2006-07	18,490	0	18,490	16.5
2007-08	17,660	0	17,660	15.8
2008-09	17,221	0	17,221	15.4
2009-10	16,209	0	16,209	14.5

The calculated gross water use, based on recorded groundwater production and purchased water use, excluding recycled water, for each year in the first baseline period (10-year) is shown in Table 3-5.

Table 3-5 Base Daily Per Capita Water Use – 10 to 15-Year Range
(DWR Guidebook Table 14)

Table 14 Base daily per capita water use — 10- to 15-year range				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2000	106,073	15.5	146.1
Year 2	2001	106,511	15.8	147.9
Year 3	2002	106,950	15.7	147.3
Year 4	2003	107,388	15.2	141.1
Year 5	2004	107,827	16.3	151.0
Year 6	2005	108,265	15.1	139.8
Year 7	2006	108,703	15.6	143.2
Year 8	2007	109,142	16.5	151.2
Year 9	2008	109,580	15.8	143.9
Year 10	2009	110,019	15.4	139.7
Year 11				
Year 12				
Year 13				
Year 14				
Year 15				
			Base Daily Per Capita Water Use[1]	145.1

[1] *Add the values in the column and divid by the number of rows.*

Step 2 *Estimate service area population for each year in the baseline period using Methodology 2 in DWR's guidance document. To obtain an accurate estimate of GPCD, water suppliers must estimate population of the areas that they actually serve, which may or may not coincide with either their jurisdictional boundaries or with the boundaries of cities. According to Methodology 2, data published by the California Department of Finance (DOF) or the U.S. Census Bureau must serve as the foundational building block for population estimates. In some instances, data published by these two sources may be directly applicable. In other instances, additional refinements may be necessary. For example, to account for distribution areas that do not match city boundaries, customers with private sources of supply, or other unique local circumstances, water suppliers may have to supplement the above sources of data with additional local data sources such as county assessor data, building permits data, and traffic analysis zone data. These refinements are acceptable as long as they are consistently applied*

over time, and as long as they build upon population data sources of the DOF or the U.S Census Bureau.

The City's service area population for each year in the first baseline period (10-year) is based on US Census Bureau data (see Table 3-5).

Step 3 *Calculate daily per capita water use for each year in the baseline period. Divide gross water use (determined in Step 1) by service area population (determined in Step 2).*

The calculated daily per capita water use for each year in the first baseline period (10-year) is shown in Table 3-5.

Step 4 *Calculate Baseline Daily Per Capita Water Use. Calculate average per capita water use by summing the values calculated in Step 3 and dividing by the number of years in the baseline period. The result is Baseline Daily Per Capita Water Use for the selected baseline period.*

The average per capita water use calculated for a continuous 10-year baseline period (first baseline period) is shown in Table 3-5.

This average per capita water use, also known as Baseline Daily Per Capita Water Use, for the City was determined to be **145.1 GPCD**, based on the highest value calculated for a continuous 10-year period (first baseline period) between FY 1995-96 and FY 2009-10 (see Table 3-5).

3.2.2 URBAN WATER USE TARGET

Section 10608.20 (b)

An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:
(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.
(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.
(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.
(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.
(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:
(A) Consider climatic differences within the state.
(B) Consider population density differences within the state.
(C) Provide flexibility to communities and regions in meeting the targets.
(D) Consider different levels of per capita water use according to plant water needs in different regions.
(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.
(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

The Urban Water Use Target is determined using one of the following methods:

Method 1: Eighty percent of the urban retail water supplier's Baseline Daily Per Capita Water Use.

Using this method, the Urban Water Use Target for the City was calculated as 116.1 GPCD, based on the City's Baseline Daily Per Capita Water Use of 145.1 GPCD.

Method 2: *Estimate using the sum of the specified three performance standards.*

Although this method was reviewed, this method was not considered due to insufficient data.

Method 3: *Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's 20x2020 Water Conservation Plan.*[4]

Based on the 20x2020 Water Conservation Plan, the City's service area lies in DWR Hydrologic Region 4 (South Coast), with an established Baseline Daily Per Capita Water Use of 180 GPCD and a Target Per Capita Daily Water Use of 149 GPCD. Using this method, the Urban Water Use Target for the City was calculated as 142 GPCD.

Method 4: *Water Savings.*

Although this method was reviewed, this method was not considered due to insufficient data.

The City's Urban Water Use Target was determined to be 142 GPCD for 2020, based on Method 3 above (note: this value is required to meet the legislation's minimum water use reduction requirement discussed in Section 3.2.4 below).

3.2.3 COMPLIANCE DAILY PER CAPITA WATER USE

Compliance Daily Per Capita Water Use is defined as the Gross Water Use in GPCD during the final year of the reporting period. The Compliance Daily Per Capita

[4] California Department of Water Resources, State Water Resources Control Board, California Bay-Delta Authority, California Energy Commission, California Department of Public Health, California Public Utilities Commission, and California Air Resources Board. *20x2020 Water Conservation Plan*. February 2010.

Water Use will be reported in the City's 2015 Plan (interim compliance) and 2020 Plan (final compliance).

3.2.4 MINIMUM WATER USE REDUCTION REQUIREMENT

Section10608.22

Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

The following calculation was made because the 5-year Baseline Daily Per Capita Water Use per CWC Section 10608.12(b)(3) is greater than 100 GPCD. The calculation is used to determine whether the water supplier's 2015 and 2020 per capita water use targets meet the legislation's minimum water use reduction requirement per CWC Section 10608.22. The calculation entails three steps:

Step 1: *Calculate Baseline Daily Per Capita Water Use using a continuous 5-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.*

This value was calculated as 145.8 GPCD (see Table 3-6).

Table 3-6 Base Daily Per Capita Water Use – 5-Year Range
(DWR Guidebook Table 15)

Table 15 Base daily per capita water use — 5-year range				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	2004	107,827	16.3	151.0
Year 2	2005	108,265	15.1	139.8
Year 3	2006	108,703	15.6	143.2
Year 4	2007	109,142	16.5	151.2
Year 5	2008	109,580	15.8	143.9
			Base Daily Per Capita Water Use[1]	145.8

[1] *Add the values in the column and divid by the number of rows.*

Step 2: Multiply the result from Step 1 by 0.95. The 2020 per capita water use target cannot exceed this value (unless the water supplier's five-year Baseline Per Capita Water Use is 100 GPCD or less). If the 2020 target is greater than this value, reduce the target to this value.

This value was calculated as 138.5 GPCD. The City's 2020 Urban Water Use Target using Method 3 in Section 3.2.2 was determined to be 142 GPCD, which is higher than the value calculated in this step. Therefore, the City's 2020 Urban Water Use Target was reduced to 138.5 GPCD.

Step 3: Set the 2015 target to the mid-point between the 10 or 15-year Baseline Daily Per Capita Water Use (Section 3.2.1) and the 2020 target determined in Step 2 above.

The City's 2015 Interim Urban Water Use Target is therefore set at 141.8 GPCD.

Therefore, in order to meet the legislation's minimum water use reduction requirement per CWC Section 10608.22, the City's 2020 Urban Water Use Target was reduced to **138.5 GPCD** and the 2015 Interim Urban Water Use Target was set at **141.8 GPCD**.

3.2.5 PROJECTED WATER DEMANDS

Undeveloped residentially zoned land in the City of Downey is almost non-existent. In an effort to help meet SCAG Residential Housing Needs Assessment recommendations for Downey, the City's housing element and zoning ordinances were recently updated to allow for Second Unit Development of single family residential parcels greater than 7,500 square feet in size. Such developments would require installation of separate service lines and meters for each unit resulting in a modest increase in the number of single family residential accounts over the next 20 years as identified in Tables 3-8 through 3-9. Modest increases in commercial accounts are also anticipated as a result of the City's redevelopment of the Downtown and Tierra Luna project areas. Little to no increases in industrial and institutional accounts are anticipated over the next 20 years and potable water usage for landscape irrigation at parks and in street medians is likely to decrease somewhat as the City's recycled water system is expanded.

The City's projected water demands (see Table 3-7) were calculated based on the urban per capita water use target developed per SBX7-7 (see Section 3.2 above) and population projections (see Section 2.3.1, Table 2-6). Using this methodology results in conservatively high projected water demands as the City anticipates reducing its water use beyond its urban water use targets. The projected water use and the number of service connections by customer type estimated to FY 2029-30 are shown in Tables 3-8 through 3-10.

Table 3-7 Projected Water Demands

Fiscal Year	Projected Population[1]	Urban Water Use Target (GPCD)[2]	Projected Water Demand (AF)[3] [4]
2014-15	113,606	141.8	18,048
2019-20	116,872	138.5	18,135
2024-25	118,960	138.5	18,459
2029-30	121,084	138.5	18,789

Notes:
[1] Projected service area population, See Section 2.3.1, Table 2-6
[2] See Section 3.2 for urban water use target; GPCD = gallons per capita per day
[3] Projected water demands based on total groundwater produced and purchased water
[4] (Projected population) x (Urban Water Use Target)

Table 3-8 Water Deliveries – Projected, 2015
(DWR Guidebook Table 5)

Table 5 Water deliveries — projected, 2015					
	2015				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	18,688	9,188			9,188
Multi-family	1,945	3,514			3,514
Commercial	1,287	1,969			1,969
Industrial	39	964			964
Institutional/governmental	241	611			611
Landscape	116	253			253
Agriculture					0
Fire hydrant/service/construction	322	28			28
Operation and maintenance			0	30	30
Total	22,638	16,527	0	30	16,557

Units are in acre-feet per year.

Table 3-9 Water Deliveries – Projected, 2020
(DWR Guidebook Table 6)

Table 6 Water deliveries — projected, 2020					
	2020				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
Single family	18,713	9,208			9,208
Multi-family	1,950	3,521			3,521
Commercial	1,322	1,972			1,972
Industrial	39	964			964
Institutional/governmental	241	611			611
Landscape	121	253			253
Agriculture					0
Fire hydrant/service/construction	342	28			28
Operation and maintenance			0	30	30
Total	22,728	16,557	0	30	16,587

Units are in acre-feet per year.

Table 3-10 Water Deliveries – Projected, 2025 and 2030

(DWR Guidebook Table 7)

Table 7 Water deliveries — projected 2025, 2030, and 2035						
	2025		2030		2035 - optional	
	metered		metered		metered	
Water use sectors	# of accounts	Volume	# of accounts	Volume	# of accounts	Volume
Single family	18,738	9,359	18,763	9,540	--	--
Multi-family	1,955	3,579	1,960	3,648	--	--
Commercial	1,357	2,005	1,392	2,044	--	--
Industrial	39	964	39	964	--	--
Institutional/governmental	241	611	241	611	--	--
Landscape	126	257	131	262	--	--
Agriculture					--	--
Fire hydrant/service/construction	362	28	382	29	--	--
Total (Metered)	22,818	16,803	22,908	17,098	0	0
Operation and maintenance (Not metered)	0	31	0	31		

Units are in acre-feet per year.

The City does not have a practice of selling water to other agencies. However, the City can provide water for emergency purposes through four of its five emergency interconnections with adjacent water agencies (see Section 2.1.2.4, Table 2-3) if necessary. As these interconnections are maintained for emergency purposes only and are rarely if ever used, the City's projected water sales to other agencies are considered to be zero as provided in Table 3-11.

Table 3-11 Sales to Other Water Agencies

(DWR Guidebook Table 9)

Table 9 Sales to other water agencies							
Water distributed	2005	2010	2015	2020	2025	2030	2035 - opt
Bellflower-Somerset Mutual Water Co. (emergency use)	0	0	0	0	0	0	--
City of Santa Fe Springs (emergency use)	0	0	0	0	0	0	--
City of South Gate (emergency use)	0	0	0	0	0	0	--
Golden State Water Co. (emergency use)	0	0	0	0	0	0	--
Bellflower Municipal Water System (emergency use)	0	0	0	0	0	0	--
Total	0	0	0	0	0	0	0

Units are in acre-feet per year.

The City's past, current, and projected recycled water use and unaccounted for system losses are shown in Table 3-12.

Table 3-12 Additional Water Uses and Losses

(DWR Guidebook Table 10)

Table 10 Additional water uses and losses							
Water use[1]	2005	2010	2015	2020	2025	2030	2035 -opt
Saline barriers	0	0	0	0	0	0	--
Groundwater recharge	0	0	0	0	0	0	--
Conjunctive use	0	0	0	0	0	0	--
Raw water	0	0	0	0	0	0	--
Recycled water	617	742	787	841	905	927	--
System losses	261	790	704	707	720	733	--
Other (define)	0	0	0	0	0	0	--
Total	878	1,532	1,491	1,548	1,625	1,660	

Units are in acre-feet per year.
[1] Any water accounted for in Tables 3 through 7 are not included in this table.

The City's past, current, and projected total water use is summarized in Table 3-13.

Table 3-13 Total Water Use

(DWR Guidebook Table 11)

Table 11 Total water use							
Water Use	2005	2010	2015	2020	2025	2030	2035 - opt
Total water deliveries (from Tables 3 to 7)	16,694	15,419	16,557	16,587	16,834	17,129	--
Sales to other water agencies (from Table 9)	0	0	0	0	0	0	--
Additional water uses and losses (from Table 10)	878	1,532	1,491	1,548	1,625	1,660	--
Total	17,572	16,951	18,048	18,135	18,459	18,789	0

Units are in acre-feet per year.

3.2.6 PROJECTED WATER DEMAND FOR LOWER INCOME HOUSEHOLDS

Section 10631.1(a)

The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

Based on information from the City's 2008 Housing Element and the US Census, City staff has indicated that approximately 37 percent of the City's total current (as of 2010) occupied households are classified as lower income households. Based on a 37 percent use factor of total residential water demands, the projected water demand for

lower income households is about 4,880 acre-feet per year by FY 2029-30, as shown in Table 3-14.

Table 3-14 Low-Income Projected Water Demands

(DWR Guidebook Table 8)

Table 8 Low-income projected water demands					
Low Income Water Demands[1]	**2015**	**2020**	**2025**	**2030**	**2035 - opt**
Single-family residential	3,400	3,407	3,463	3,530	
Multi-family residential	1,300	1,303	1,324	1,350	
Total	4,700	4,710	4,787	4,880	

Units are in acre-feet per year.
[1] Provide demands either as directly estimated values or as a percent of demand.

3.2.7 PROGRESS REPORT

10608.40.

Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

The City will report to DWR in future Plans on its progress in meeting its urban water use targets, using a standardized form to be developed by DWR, when the form becomes available.

3.3 WHOLESALE WATER DEMAND PROJECTIONS

Section 10631(k)

Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

The City does not rely upon a wholesale agency for its water supply. However, it does maintain three imported water connections with CBMWD (see Table 2-2) for emergency purposes. Therefore, the City does not project using any imported water from CBMWD, as provided in Table 3-15, unless an emergency arises which requires its use. The City notified CBMWD of the development of its 2010 Plan and made a copy of the draft Plan available to CBMWD. CBMWD in turn provided the City with a copy of their 2010 Plan, which is incorporated by reference in the City's Plan.

Table 3-15 Retail Agency Demand Projections Provided to Wholesale Suppliers

(DWR Guidebook Table 12)

Table 12 Retail agency demand projections provided to wholesale suppliers							
Wholesaler	**Contracted Volume**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035 -opt**
Central Basin Municipal Water District	0	0	0	0	0	0	--
(emergency use)							

3.4 WATER USE REDUCTION PLAN

10608.36.

Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

The City is not an urban wholesale water supplier. Therefore, the requirement for an urban wholesale water supplier to provide an assessment of its present and proposed future measures, programs, and policies to help achieve the water use reductions required is not applicable to the City.

SECTION 4

SYSTEM SUPPLIES

4.1 WATER SOURCES

Section 10631
A plan shall be adopted in accordance with this chapter and shall do the following:
b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

The City's water supply sources include groundwater pumped from the Central Basin, supplemental imported water that can be purchased from CBMWD for emergencies in the event that system demand exceeds the production capacity of the City's groundwater wells, and recycled water from CBMWD. The City's current and projected water supplies are shown in Table 4-1. As provided in Table 4-1, the City meets 100 percent of its potable water demands with groundwater pumped from the Central Basin.

Table 4-1 Water Supplies – Current and Projected

(DWR Guidebook Table 16)

Table 16 Water supplies — current and projected							
Water Supply Sources		2010	2015	2020	2025	2030	2035 - opt
Water purchased from[1]:	Wholesaler supplied volume (yes/no)						
Central Basin Municipal Water District	no	0	0	0	0	0	--
(Not applicable)							--
(Not applicable)							--
Supplier-produced groundwater[2]		16,209	17,261	17,294	17,554	17,862	--
Supplier-produced surface water		0	0	0	0	0	--
Transfers in		0	0	0	0	0	--
Exchanges In		0	0	0	0	0	--
Recycled Water		742	787	841	905	927	--
Desalinated Water		0	0	0	0	0	--
Other		--	--	--	--	--	--
Other		--	--	--	--	--	--
	Total	16,951	18,048	18,135	18,459	18,789	

Units are in acre-feet per year.
[1] Volumes shown here should be what was purchased in 2010 and what is anticipated to be purchased in the future. If these numbers differ from what is contracted, show the contracted quantities in Table 17.
[2] Volumes shown here should be consistent with Tables 17 and 18.

Groundwater

In the Central Basin Judgment of 1965 (Judgment), the Superior Court fixed allowable withdrawals from the Central Basin at a level which was greater than the amount of water returned to the basin through natural replenishment. With a total allowed pumping limit of 217,000 AFY, approximately 80,000 AFY must be artificially replenished in order to maintain a safe yield of 137,000 AFY in the basin. The adjudication allocated the portion of the 217,000 AFY each pumper could extract on an annual basis.

The limit to the amount of groundwater that each pumper is allowed to extract from the basin on an annual basis is referred to as the "Allowed Pumping Allocation" (APA), which corresponds to 80 percent of the party's total water rights. The Judgment contains provisions for exceedence of the APA in the event of an emergency. It also allows for a carryover of any unused allowed pumping allocation, not to exceed 20 percent of the purveyor's APA. A purveyor may also extract an additional 10 percent of its APA, with the understanding that this additional amount will be deducted from its APA for the upcoming year.

The California DWR, Southern Division was appointed Watermaster of the Central Basin. As such, DWR has the responsibility for ensuring that parties adhere to the terms and conditions stipulated by the Judgment as expressed above.

In addition to DWR's role as Watermaster, the Water Replenishment District of Southern California (WRD) and Los Angeles County Department of Public Works (LACDPW) have some responsibilities for groundwater management in the Central Basin. WRD is responsible for purchasing groundwater replenishment water and may address water quality issues in the Central Basin. In order to fund the expense of purchasing imported and recycled water and associated administrative costs, WRD

charges a replenishment assessment on each acre-foot of water extracted from the basin. Groundwater replenishment operations are provided by LACDPW and replenishment water is paid for through revenues raised by WRD.

The City was one of the original parties to the Judgment and has acquired additional water rights since that time resulting in a current (FY 2009-10) APA of 16,554 AFY. The City has 20 active wells which it uses to pump groundwater from the Central Basin. These wells are located throughout the City and have a combined production capacity of approximately 53,211 AFY (based on continuous operations).

Treated Imported Surface Water

As discussed in Section 2.1.2.3, the City maintains three connections with CBMWD, designated CENB-18, CENB-20, and CENB-21. Due to the high cost associated with treated imported water, these connections are only utilized for emergencies in the event that system demand exceeds the production capacity of the City's groundwater wells. It is important to note that the combined capacity of these three purchased water connections with CBMWD is 39,815 AFY, which is more than enough to meet the City's annual water demands. However, since these connections are maintained for emergencies only, the City does not intend to utilize this water source unless absolutely necessary as summarized in Table 4-2 below.

Table 4-2 Wholesale Supplies – Existing and Planned Sources of Water

(DWR Guidebook Table 17)

Table 17 Wholesale supplies — existing and planned sources of water						
Wholesale sources[1,2]	Contracted Volume[3]	2015	2020	2025	2030	2035 - opt
Central Basin Municipal Water District	0	0	0	0	0	--
(Not applicable)						
(Not applicable)						

Units are in acre-feet per year.

[1] *Water volumes presented here should be accounted for in Table 16.*

[2] *If the water supplier is a wholesaler, indicate all customers (excluding individual retail customers) to which water is sold. If the water supplier is a retailer, indicate each wholesale supplier, if more than one.*

[3] *Indicate the full amount of water*

Recycled Water

The City receives its recycled water from CBMWD as part of the Central Basin Recycled Water Project. CBMWD purchases and resells tertiary-treated recycled water produced at CSDLAC's Los Coyotes and San Jose Creek Water Reclamation Plants. Once purchased from CBMWD, recycled water is re-sold by the City of Downey to its customers at a discount of 15 percent off of the current rate for potable water. Since FY 1992-93, the City has purchased an average of 608 AFY of recycled water from CBMWD. Since FY 2000-01, the average amount of recycled water used by the City is 703 AFY, which reflects the general increase in recycled water use in the City over the past several years. Recycled water within the City's service area is currently being used in several parks and golf course ponds and for irrigation of greenbelt areas, landscape medians, golf courses, plant nurseries, and schools. Use of recycled water allows the City to reduce the amount of groundwater production required from the Central Basin and to maintain imported water as an emergency supply.

Additional discussion of recycled water use within the City's service area is provided in Section 4.5.

Total Water Supplies

The City's current and projected water supplies from groundwater, imported surface water, and recycled water are shown in Table 4-1. Tables 5-15 and 5-16 provide the City's projected water supplies during future single and multiple dry year conditions (See Section 5.4.5).

4.2 GROUNDWATER

Section 10631(b)
If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

As indicated in Section 2.1.2.1, the City currently has 20 active wells located in the Central Basin. These 20 wells have a combined production capacity of approximately 53,211 AFY (based on continuous operations) and serve as the City's principle source of potable water.

4.2.1 GROUNDWATER MANAGEMENT

Section 10631(b)
If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

4.2.1.1 CENTRAL BASIN GROUNDWATER MANAGEMENT

CENTRAL BASIN GROUNDWATER MANAGEMENT PLAN

Total groundwater production in the Central Basin is restricted to adjudicated rights fixed by the Central Basin Judgment and subsequent amendments, and managed by DWR, the court-appointed Watermaster. The City was a party to the Central Basin Judgment[5] and is therefore held to the groundwater production requirements provided within. The following section provides a historical overview of groundwater in the Central Basin based on the Central Basin Watermaster Annual Report.

5 Central and West Basin Water Replenishment District, etc, vs. Charles E. Adams etc, Los Angeles County Case No. 786,656, Judgment entered in 1965.

CENTRAL BASIN JUDGMENT

Dramatic increases in groundwater extractions over a long period of time resulted in an overdraft of the Central Basin, creating critical water supply shortages in the late 1940's. Because the groundwater basin is not geologically protected from the sea at its edges, over-pumping also resulted in extensive seawater intrusion into the basin, contaminating wells and reducing the quantity of potable water available to surrounding jurisdictions.

In 1952, the CBMWD was formed and became a member agency of MWD. By doing so, CBMWD was now able to purchase supplemental imported water from MWD and wholesale it to local water retailers. Upon establishing a reliable source of supplemental water, water associations focused on reducing the amount of groundwater pumped by formal adjudication of the rights in the Basin.

On January 2, 1962, the Central and West Basin Water Replenishment District (now WRD), which was formed to replenish the Central Basin, filed Case No. 786,656 in the Superior Court, County of Los Angeles, naming more than 700 parties as defendants. It sought to adjudicate groundwater rights in order to regulate pumping from the Central Basin. By September 1962, a proposed interim agreement was drafted by the Central Basin Water Association and approved by a sufficient number of water producers (producers owning over 75 percent of the Assumed Relative Rights within the Central Basin) to guarantee control over groundwater pumping in the Central Basin. On September 28, 1962, the Court signed the “Order Pursuant to Stipulation and Interim Agreement and Petition for Order” and appointed DWR as Watermaster.

Following the interim agreement, a stipulated judgment was drafted. Approval was received by public water utility companies and other producers representing well over 200,000 acre-feet, or 75 percent, of the total rights within the Central Basin. This was a prerequisite to filing the stipulated judgment with the Court. On May 17, 1965,

the case went to trial before Judge Edmund M. Moor. Following testimony on engineering, geology, hydrology, and safe yield of the Central Basin and arguments on water right entitlement, the case was continued to August 25, 1965. Shortly thereafter, Judge Moor appointed DWR as Watermaster. The final Judgment was signed on October 11, 1965 and became affective on October 1, 1966.[5] A copy of the Central Basin Judgment is provided in Appendix F.

The Judgment was amended on March 21, 1980, to provide for a transition in the administrative year from a water year (October 1 to September 30) to a fiscal year (July 1 to June 30) basis. Under the Judgment, this transition resulted in a "short" administrative year of nine months (October 1, 1980 to June 30, 1981) in order to transition into a fiscal year basis beginning July 1, 1981.

The Judgment was again amended on July 9, 1985, modifying the annual budget ($20 minimum assessment) and exchange pool provisions. The amended Judgment of May 6, 1991 modified the carryover and overproduction provisions (from 10 percent of APA or 10 acre-feet, to 20 percent of APA or 20 acre-feet, whichever is greater), defined drought carryover, and provided for exemptions for those parties extracting contaminated groundwater.

Under the Judgment, water rights are fixed and do not vary from year to year. Water producers can carry over any unused APA, but cannot carry over more than 20 percent or 20 acre-feet, whichever is greater, of their APA for use in the following year. A water producer may also extract an additional 10 percent of its APA, with the understanding that this additional amount will be deducted from its APA for the upcoming year.

4.2.2 DESCRIPTION OF GROUNDWATER BASIN

Section 10631(b)(2)

A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated

the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

DESCRIPTION OF THE CENTRAL GROUNDWATER BASIN

The Central Basin is located in Los Angeles County approximately 20 miles southeasterly of downtown Los Angeles. To the north, the Central Basin is partially bounded by the Hollywood Basin, the boundary of which runs through the City of Los Angeles. The remainder of the northern boundary of the Central Basin extends along the Merced Hills, across the Whittier Narrows, and then along Puente Hills. The northern boundary terminates at the Orange County line, which also forms the eastern boundary of the Central Basin. This boundary is a political and not geologic one, as the aquifers in this area reach into the East Coastal Plane area of Orange County. The south-southwest boundary of the Central Basin is known as the Newport-Inglewood Uplift (NIU), separating Central and West Basins from Long Beach up to the Baldwin Hills just north of the City of Inglewood. DWR Bulletin 118 does <u>not</u> identify the Central Basin as currently being in overdraft.

GEOLOGY

The Central Basin is one of two groundwater basins in the Coastal Plain of Los Angeles County. It is comprised of Quaternary-age sediments (less than 1.8 million years old) of gravel, sand, silt, and clay that were deposited from the erosion of nearby hills and mountains, and from historical beaches and shallow ocean floors that covered the area in the past. Underlying these Quarternary sediments are basement rocks such as the Pliocene Pico Formation that generally do not provide sufficient quantities of groundwater for pumping. Separating the Central Basin from the West Coast Basin is

the NIU, a series of discontinuous faults and folds that form a prominent line of northwest trending hills including the Baldwin Hills, Dominguez Hills, and Signal Hill.

Central Basin covers approximately 270 square miles and is bounded on the north by the Hollywood Basin and the Elysian, Repetto, Merced, and Puente Hills, to the east by the Los Angeles County/Orange County line, and to the south and west by the NIU. The Central Basin is commonly divided into four sections; the Los Angeles Forebay, the Montebello Forebay, the Whittier Area, and the Central Basin Pressure Area.

The two forebays represent areas of unconfined aquifers that allow percolation of surface water down into the deeper aquifers to replenish the basins. The Whittier Area and Central Basin Pressure Area are confined aquifer systems that receive relatively minimal recharge from surface water. They are replenished primarily from the up-gradient forebay areas.

HYDROGEOLOGY

The main surface and subsurface flow into the Basin is through the Los Angeles and Whittier Narrows from the groundwater basins in the interior valleys. The water originates as rainfall in the San Gabriel Mountains, the runoff from which is conveyed to the Los Angeles River, the Rio Hondo, and the San Gabriel River. The Los Angeles River enters Central Basin through the Los Angeles Narrows, crosses the Los Angeles Forebay Area, and proceeds south across the Central Basin, exiting the Central Basin through the Dominguez Gap in the West Basin. The Rio Hondo, enters the Central Basin at the Whittier Narrows parallel to the San Gabriel River, proceeds southwesterly across the Montebello Forebay Area and joins the Los Angeles River midway across the Basin. The San Gabriel River also enters the Central Basin through the Whittier Narrows, crosses the Montebello Forebay, and runs south to the Pacific Ocean near Long Beach at the Orange County line.

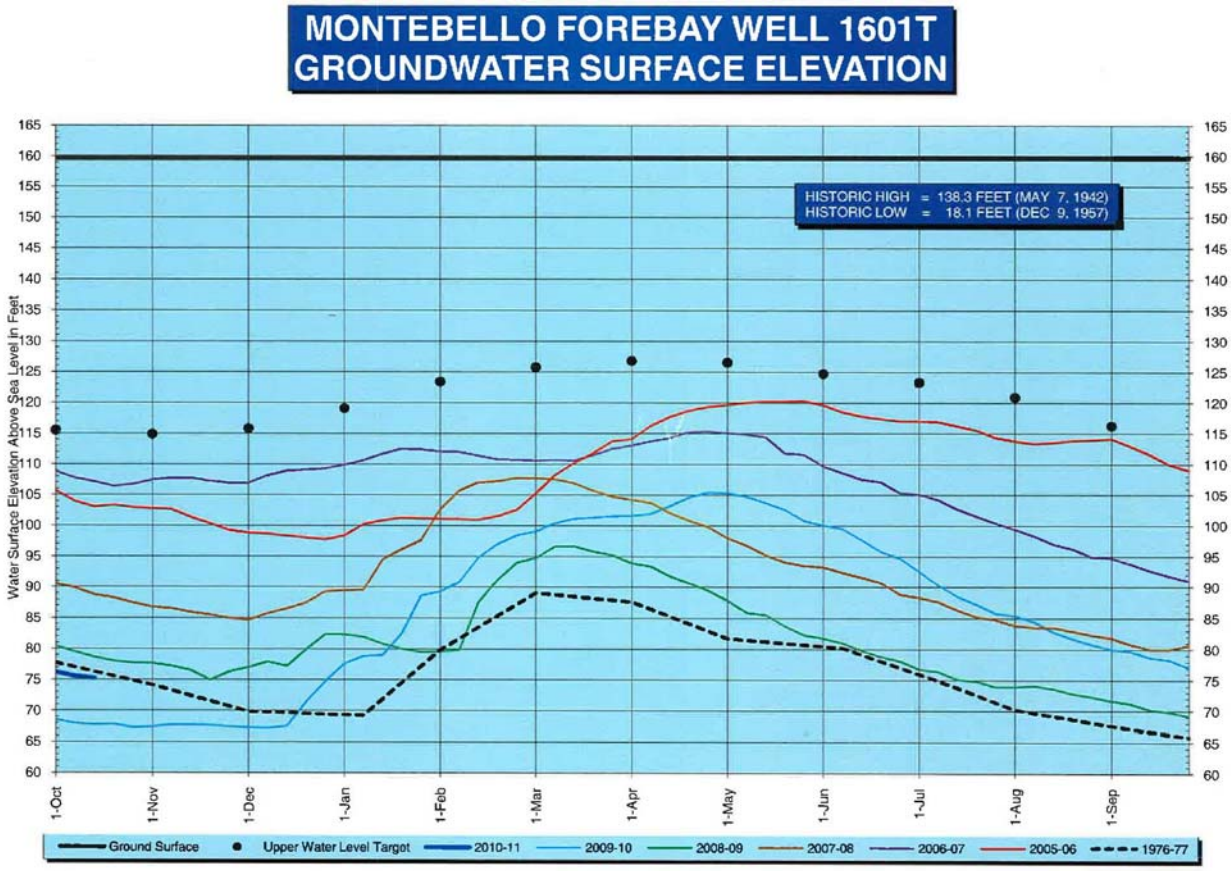
As the Rio Hondo and San Gabriel Rivers flow through the Upper San Gabriel Valley toward the Whittier Narrows, much of their flow percolates into the Main San Gabriel Basin (Main Basin). This water crosses the Whittier Narrows and enters the Central Basin as subsurface flow into the aquifers of the Central Basin. At the same time, the surface flows of the Rio Hondo and the San Gabriel River percolate downward into the aquifers of the Central Basin in the Montebello Forebay. In the Montebello Forebay, the underground aquifers merge and are unconfined, and thus are capable of receiving large quantities of water from percolation through the sand and gravel surface of the forebay area.

The Los Angeles Forebay area is also favorably situated for percolation from the flows of the Los Angeles River, but the Los Angeles Forebay has been largely eliminated as a source of water replenishment to the Central Basin, due to lining of the Los Angeles River channel and the paving over of the forebay area. In the Montebello Forebay area, by contrast, flood flows have been largely controlled through the construction of the Whittier Narrows Dam, and the river channels have not been lined in the area, so percolation still occurs.

Groundwater in the Central Basin provides a substantial portion of the water supply needed by residents and industries in the overlying area. Groundwater exists and flows via the pore spaces of the sediments in the basin. The major aquifers identified in Central Basin include the following, from shallowest to deepest: a) the Gaspur and semi-perched aquifers of the Holocene Alluvium Formation; b) the Exposition, Artesia, Gage, and Gardena aquifers of the Upper Pleistocene Lakewood Formation; c) the Hollydale, Jefferson, Lynwood, and Silverado aquifers of the Lower Pleistocene Upper San Pedro Formation; and d) the Sunnyside Aquifer of the Lower Pleistocene Lower San Pedro Formation. Water levels have exhibited a general recovery since the mid-1970s, as shown in Figure 4-1. Aquifer depths can reach more

than 2,000 feet in the Central Basin although production wells generally do not need to be drilled this deep to tap sufficient water.

Figure 4-1 Central Basin Groundwater Levels



4.2.3 LOCATION, AMOUNT, AND SUFFICIENCY OF GROUNDWATER PUMPED FOR THE PAST FIVE YEARS

Section 10631(b)(3)

> *A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

The City produces groundwater from the Central Basin via its 20 active wells as discussed in Section 4.1. The City has an active water well capacity of 53,211 AFY,

which far exceeds its average annual water requirements, but is limited by its current (FY 2009-10) APA of 16,554 AFY and stipulations provided in the Central Basin Judgment. The City's annual water demands regularly exceed its APA. However, the Central Basin Judgment allows for a carryover of any unused allowed pumping allocation, not to exceed 20% of the purveyor's APA. The City typically leases water from other Central Basin purveyors on an annual basis in order to maintain carryover for flexibility in case of drought or other emergency and to ensure the difference between water demand and APA is met. From FY 2000-01 to FY 2009-10, the City has maintained an average carryover of approximately 2,900 AFY and has leased an average of approximately 1,002 AFY. The City's groundwater production in the Central Basin over the past 15 years is provided in Section 3.2.1, Table 3-4. Over the past 5-years (FY 2005-06 to FY 2009-10) the City has produced an average of 17,403 AFY of groundwater from the Central Basin. Groundwater production in each of the last 5-years is provided in Table 4-3 below.

Table 4-3 Groundwater – Volume Pumped

(DWR Guidebook Table 18)

Table 18 Groundwater — volume pumped						
Basin name(s)	**Metered or Unmetered[1]**	**2006**	**2007**	**2008**	**2009**	**2010**
Central Basin	Metered	17,434	18,490	17,660	17,221	16,209
Total groundwater pumped		17,434	18,490	17,660	17,221	16,209
Groundwater as a percent of total water supply		**96.6%**	**95.7%**	**96.0%**	**95.8%**	**95.6%**

Units are in acre-feet per year.
[1] Indicate whether volume is based on volumeteric meter data or another method

LACDPW owns, operates and maintains the spreading grounds that are utilized to recharge the Central Basin. The recharge occurs in the spreading grounds adjacent to the Rio Hondo and the San Gabriel River, within the unlined portion of the San Gabriel River, and behind the Whittier Narrows Dam in the Whittier Narrows Reservoir. Sources of spreading water include imported untreated MWD water, recycled water, and local runoff. Approximately 122,000 acre-feet of water was recharged into the Central Basin during FY 2009-10.

The successful management of Central Basin groundwater supplies by DWR via the Central Basin Judgment, combined with the recharge/replenishment program in the spreading grounds and the guaranteed minimum inflow from the Main Basin (see Sections 4.2.2 and 4.2.3), have resulted in the recovery of water levels in wells throughout the Central Basin over the past several decades. As shown on Figure 4-1, water levels have remained steady since the mid-1970s despite several drought periods. Therefore, based on the historical and on-going management practices, the City will be able to rely on the Central Basin for adequate groundwater supplies over the next 20 years under single year and multiple dry year scenarios.

4.2.4 LOCATION AND AMOUNT OF GROUNDWATER PROJECTED TO BE PUMPED

Section 10631(b)(4)

A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

The City of Downey overlies the Central Basin. Groundwater from this basin, pumped from 20 active wells located within the City's boundaries, constitutes the City's principal source of potable water. As previously expressed, successful management of Central Basin groundwater supplies by DWR via the Central Basin Judgment, combined with the recharge/replenishment program and the guaranteed minimum inflow from the Main Basin (see Sections 4.2.2 and 4.2.3), have resulted in the stabilization and reliability of water levels in wells throughout the Central Basin. A summary of the City's current and projected groundwater production from the Central Basin is provided in Table 4-4.

Table 4-4 Groundwater – Volume Projected to be Pumped

(DWR Guidebook Table 19)

Table 19 Groundwater — volume projected to be pumped					
Basin name(s)	**2015**	**2020**	**2025**	**2030**	**2035-opt**
Central Basin	17,261	17,329	17,590	17,899	--
Total groundwater pumped	17,261	17,329	17,590	17,899	--
Percent of total water supply	**95.6%**	**95.4%**	**95.1%**	**95.1%**	**--**

Units are in acre-feet per year.
Include future planned expansion

4.3 TRANSFER OPPORTUNITIES

Section 10631(d)

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

The City's water transfer opportunities are described below and are summarized in Table 4-5.

Table 4-5 Transfer and Exchange Opportunities

(DWR Guidebook Table 20)

Table 20 Transfer and exchange opportunities			
Transfer agency	**Transfer or exchange**	**Short term or long term**	**Proposed Volume**
Bellflower-Somerset Mutual Water Co.	Transfer	Short Term	0
City of Santa Fe Springs	Transfer	Short Term	0
City of South Gate	Transfer	Short Term	0
Central Basin Producers	Transfer	Long Term	1,002
County Sanitation Districts of Los Angeles County	Transfer	Long Term	7,281
Total			8,283

Units are in acre-feet per year.

4.3.1 SHORT-TERM

As discussed in Section 2.1.2.4, the City maintains emergency interconnections with adjacent water agencies. Two of the interconnections (City of Santa Fe Springs and City of South Gate) are equipped with two-way valves, which have the ability of providing water both to and from the City. An additional interconnection (Bellflower-Somerset Mutual Water Company) has the ability of providing water to the City. The total capacity available to the City from these three interconnections in the event of an emergency is 8,000 gpm.

4.3.2 LONG-TERM

As discussed in Section 4.2.3, the City typically leases water from other Central Basin purveyors on an annual basis in order to maintain carryover for flexibility in the case of drought or other emergency and to ensure the difference between water demand and APA is met. Leasing is the City's most common form of transfer and has averaged approximately 1,002 AFY from FY 2000-01 to FY 2009-10. In addition to annual leases, the City pursues purchases of additional water rights as they become available.

The City continues to look for opportunities to supplement its current groundwater Allowed Pumping Allocation, through storage of groundwater within the Central Basin. Potential opportunities include:

- Purchase of surplus, untreated imported water from CBMWD during years when there is excess available water. This is projected to occur three years out of every ten years.
- Purchase Kern County Water Bank water, and other available water from sources outside of the area, and utilize MWD facilities to wheel the untreated waters to the spreading grounds.

- Purchase excess water for spreading purposes from adjacent groundwater basin producers as it becomes available.
- Enter into a contract with LACDPW to spread imported water as it becomes available

The City is considering a 6.5 million gallon per day (MGD) (5 MGD effluent product water) Downey Regional Water Reclamation and Groundwater Augmentation Project (DRWRGAP) consisting of an advanced recycled water treatment facility in which the City would purchase tertiary treated recycled water from CSDLAC, treat it through a new, City-owned advanced treatment facility, and inject into the Central Basin to increase its supply. For this type of storage project, the City would have to initiate an agreement with CSDLAC and the City of Cerritos. The City would pay CSDLAC for tertiary treated recycled water and pay the City of Cerritos to pump the water to the City's boundary. The City would then further treat the recycled water with advanced technologies and inject or recharge it into the Central Basin via aquifer storage and recovery (ASR) wells. The City would have to enter into an agreement with LACDPW if it decided it wanted to incorporate this recharge into one of LACDPW's existing recharge facilities.

CBMWD also describes transfer opportunities within its 2010 Plan, which is incorporated by reference.

4.4 DESALINATED WATER OPPORTUNITIES

Section 10631(i)

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

The average total dissolved solids (TDS) concentrations for Central Basin groundwater are less than the recommended secondary Maximum Contaminant Level (MCL) of 500 milligrams per liter for TDS, based on the most recent available data published by DWR for the period 2001-02 through 2005-06 in its annual Central Basin

Watermaster reports (data not available in the annual reports from 2006-07 through 2009-10). Therefore, groundwater produced from the Central Basin does not require desalination. However, there may be opportunities for use of desalinated ocean water as a future potential water supply source, if needed, by partnering with other agencies that develop ocean desalination programs.

4.5 RECYCLED WATER OPPORTUNITIES

4.5.1 RECYCLED WATER AND POTENTIAL FOR USE

Section 10633

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

The City recognizes the importance of using recycled water as a means of reducing reliance on other water sources (i.e. imported water, groundwater) both regionally and within the City. Demand for recycled water within the City has increased since the City's customers began receiving and using recycled water in 1992. As population within the City continues to grow, the City looks to promote the expansion of recycled water infrastructure and use of this water source where feasible. Table 4-6 summarizes the names and roles of the agencies primarily responsible for the initial development as well as the continued and future use of this water source within the City of Downey and surrounding areas. These roles along with a description of past, current and future recycled water use within the City are explained in more detail below.

Table 4-6 Recycled Water Participating Agencies

Participating Agencies	Role in Plan Development
MWD	Recycled water usage incentives for member agencies (i.e. CBMWD)
CBMWD	Development of Master Plan; Recycled water distribution; Provider of recycled water to City of Downey
CSDLAC	Operation and maintenance of water reclamation plants; Producer of recycled water; Recycled water distribution
City of Downey	Recycled water usage incentives to City customers; Usage requirements for new developments; Recycled water distribution

CBMWD purchases and resells tertiary treated recycled water produced by CSDLAC to the City. Since FY 2000-01, the City has purchased and used an average of 703 AFY of recycled water from CBMWD. Recycled water is primarily used for irrigation of landscaping within the City of Downey. It is also used for lakes and ponds at locations such as the Rio Hondo Golf Course and Wilderness Park. The use of recycled water has gained support in the community, and there are more potential customers who would like to begin using recycled water to meet some of their water demands.

4.5.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

Section 10633

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Wastewater produced within the City of Downey is composed primarily of effluent water generated from the City's various customers (i.e. residential, commercial,

industrial). The quantity of wastewater generated is related to the population and the water use within the corresponding service area. Upon generation, wastewater is transferred, by way of service connections (i.e. laterals) and collection mains, to trunk sewers and interceptors. Sewer connections (laterals) are privately owned, operated, and maintained, while collection mains and trunk sewers are owned, operated, and maintained by the City and CSDLAC respectively.

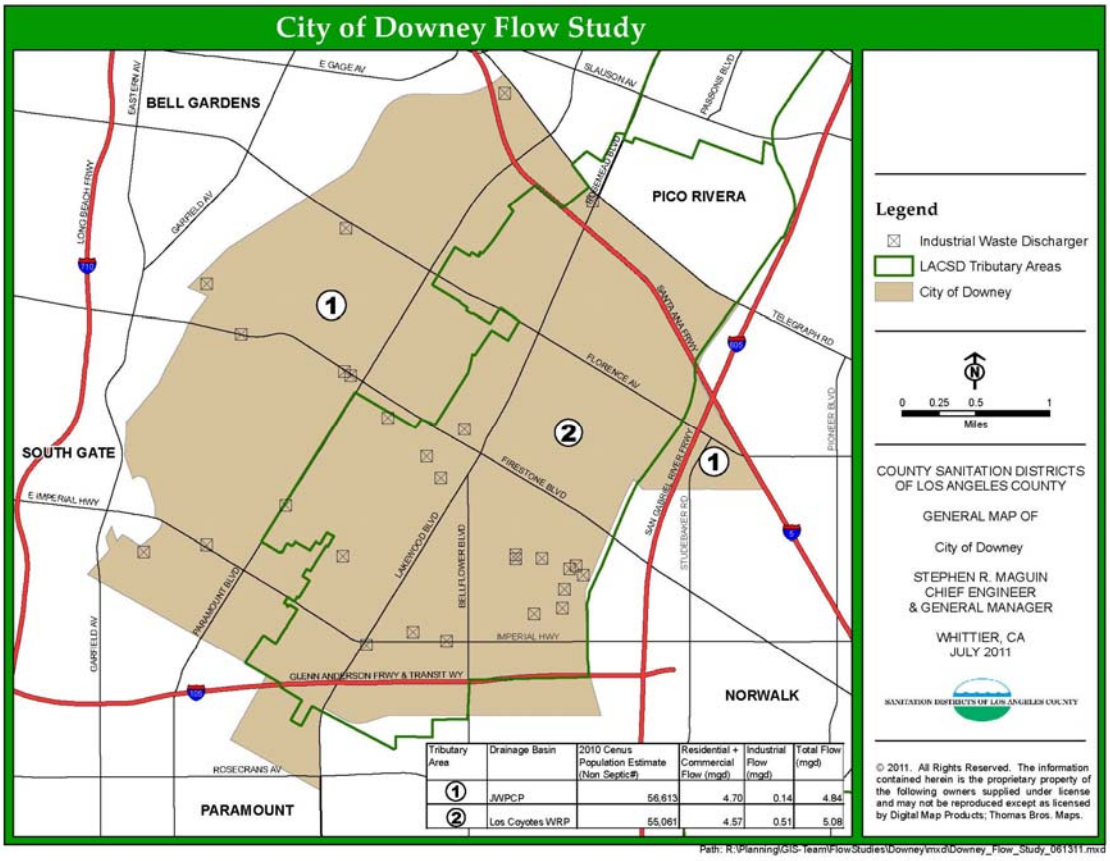
The City's Sanitary Sewer System is comprised of approximately 200 miles of sewer collection mains, 4,300 manholes, 2 lift stations, and other associated facilities. The piping is primarily composed of vitrified clay, and ranges in diameter from 6-inches to 21-inches with the majority (90 percent) of the piping 8-inches. CSDLAC owns, operates, and maintains a network of approximately 27 miles of trunk sewers within the City of Downey that range in size from 10-inches to 78-inches in diameter.

In addition to providing sewage conveyance via trunk sewers and interceptors, CSDLAC also provides treatment services for the City. CSDLAC owns and operates a total of ten water reclamation plants (WRPs) and a main processing plant, that form an interconnected network known as the Joint Outfall System (JOS). Sewer systems within the JOS convey wastewater to WRPs for water reclamation and hydraulic relief, or flow directly to the main processing facility, the Joint Water Pollution Control Plant (JWPCP), for secondary treatment and solids processing. Wastewater generated within the City of Downey is ultimately sent to either the Los Coyotes WRP or the JWPCP depending on the location of the site producing the waste.

In preparation of the 2010 Plan, CSDLAC performed a 2010 wastewater flow analysis for Downey. A 2010 US Census Bureau population estimate of 111,772 was used by the CSDLAC to conduct the 2010 analysis for Downey. A sewage generation rate of 83 GPCD was applied to the population estimate in order to derive the amount of wastewater generated by residential and commercial areas. This rate was based on the historical average number of persons served within the JOS divided by the total flow

received at all plants. Industrial water discharges were ultimately added to the estimate in order to account for flows generated by warehouses and manufacturing within the City. CSDLAC's Geographic Information System (GIS) was then used to determine what portion of Downey's flow is tributary to the Los Coyotes WRP versus the JWPCP. Population estimates were redistributed to only those portions of Downey that contained residential or commercial land use. The total industrial flows were determined by adding the permitted discharges located within each drainage area. Figure 4-2, provided by CSDLAC, illustrates the results of the analysis including a breakdown of how much of the wastewater generated in Downey flows to the JWPCP and how much flows to the Los Coyotes WRP.

Figure 4-2 City of Downey Wastewater Flow Analysis



Tributary Area	Drainage Basin	2010 Cenus Population Estimate (Non Septic#)	Residential + Commercial Flow (mgd)	Industrial Flow (mgd)	Total Flow (mgd)
1	JWPCP	56,613	4.70	0.14	4.84
2	Los Coyotes WRP	55,061	4.57	0.51	5.08

The Los Coyotes WRP, which began operation in 1970, has a treatment capacity of about 37.5 MGD and provides disinfected tertiary treated effluent. The Los Coyotes WRP serves a total regional population of approximately 370,000 people and produced an average of 24.16 MGD (27,059 AFY) of disinfected tertiary treated recycled water during FY 2009-10. The total volume of wastewater collected and treated at the Los Coyotes WRP, as well as the amount available for re-use as recycled water, are shown in Table 4-7. An average of 5.23 MGD (5,855 AFY), or 21.6 percent of the recycled water produced during FY 2009-10 at the Los Coyotes WRP was re-used for landscape irrigation, industrial applications, and groundwater replenishment. The level of treatment necessary for wastewater to be re-used as recycled water is approved by the California Department of Public Health (CDPH). These requirements are contained in Title 22 of the California Code of Regulations along with a list of approved recycled water uses. Extensive monitoring is conducted by CSDLAC to ensure compliance with all applicable local, state, and federal water quality regulations. Any recycled water generated from the Los Coyotes WRP that is not reused is dechlorinated and discharged to the ocean via the San Gabriel River (see Table 4-8). Discharge water meets all applicable local, state, and federal water quality standards for discharge water including National Pollutant Discharge Elimination System (NPDES) requirements. Waste solids generated from the treatment processes at the Los Coyotes WRP are transferred via trunk sewers to the JWPCP for solids processing.

Table 4-7 Recycled Water – Wastewater Collection and Treatment

(DWR Guidebook Table 21)

Table 21 Recycled water — wastewater collection and treatment							
Type of Wastewater	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035 - opt**
Wastewater collected & treated in service area	399,000	338,000	373,300	408,600	443,900	479,000	--
Los Coyotes Water Reclamation Plant	37,000	24,000	28,500	33,000	37,500	42,000	--
Joint Water Pollution Control Plant	362,000	314,000	344,800	375,600	406,400	437,000	--
Volume that meets recycled water standard[1]	37,000	24,000	28,500	33,000	37,500	42,000	--

Units are in acre-feet per year.

[1] Based on flow from the Los Coyotes Water Reclamation Plant

Table 4-8 Non-Recycled Wastewater Disposal

(DWR Guidebook Table 22)

Table 22 Recycled water — non-recycled wastewater disposal							
Method of disposal	Treatment Level	2010	2015	2020	2025	2030	2035 - opt
San Gabriel River (Los Coyotes WRP)	Tertiary	21,000	23,250	25,500	27,750	30,000	--
	Total	21,000	23,250	25,500	27,750	30,000	
Units are in acre-feet per year.							

The JWPCP, which began operation in 1928, currently provides treatment for approximately 300 MGD of wastewater. The facility provides primary and secondary treatment with disinfection. The JWPCP serves a population of approximately 3.5 million people throughout LA County. In FY 2009-10, the JWPCP produced 280.47 MGD (314,284 AFY) of disinfected secondary water. The total volume of treated wastewater discharged from the JWPCP is shown in Table 4-8. Solids collected in primary and secondary treatment are processed in anaerobic digestion tanks where bacteria break down organic material and produce methane gas. Following digestion, the solids are dewatered and hauled off-site for use in composting, land application, or combined with municipal solid waste for co-disposal. The methane gas generated in the anaerobic digestion process is used to produce power and digester heating steam in a combined cycle power plant that utilizes gas turbines and waste-heat recovery steam generators. Due to the onsite generation of power, the JWPCP is self-sufficient with respect to energy requirements. Treated wastewater is ultimately disinfected prior to being sent to the Pacific Ocean through a network of outfalls. The outfalls extend two miles off the coast of Southern California into the Palos Verdes Peninsula to a depth of 200 ft. Though highly treated, effluent from the JWPCP does not meet recycled water standards and is therefore not re-used for such purposes. However, all water discharged to the ocean is monitored to ensure compliance with applicable local, state, and federal standards for discharge water.

4.5.3 CURRENT RECYCLED WATER USE

Section 10633

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use

The City of Downey receives its recycled water from CBMWD as part of the Central Basin Recycled Water Project (CBRWP). CBMWD purchases and resells tertiary-treated recycled water produced at CSDLAC's Los Coyotes and San Jose Creek WRPs. The CBRWP is comprised of two separate projects: E. Thornton Ibbetson Century (Ibbetson Century Project) and Esteban E. Torres Rio Hondo (Torres Project) Recycled Water Projects. CBMWD authorized design of the Ibbetson Century Project in 1990. By 1992, transmission mains, distribution mains, pump stations, and associated facilities were constructed, and the project had begun delivering recycled water from the Los Coyotes WRP to recycled water users within the City of Downey and surrounding jurisdictions. In 1994, the Ibbetson Century Project was expanded to include the northern portion of CBMWD's service area. The expansion, referred to as the Esteban E. Torres Rio Hondo Recycled Water Project, delivers recycled water from the San Jose Creek WRP to cities outside of the Ibbetson Century Project service area.

As a follow-up to the Ibbetson Century and Torres Projects, CBMWD is currently expanding its distribution of recycled water by looping the two systems under the Southeast Water Reliability Project (SWRP). The SWRP is expected to increase the number of recycled water use sites as well as increase pressure and flow to many existing customers through connection of the two distribution systems emanating from the Los Coyotes and San Jose Creek WRPs. Though such benefits are not expected to have a large impact on the City of Downey, the anticipated increase in water demand from the San Jose Creek WRP may help free additional pumping capacity at the Los Coyotes WRP.

Once purchased from CBMWD, recycled water is re-sold by the City of Downey to its customers at a discount of 15 percent off the current rate for potable water. Since FY 1992-93, the City has purchased an average of 608 AFY of recycled water from CBMWD. Since FY 2000-01, the average amount of recycled water used by the City is 703 AFY, which reflects the general increase in recycled water use in the City over the

past several years. Table 4-9 summarizes the City's current recycled water users, location, and corresponding annual usage. Table 4-10 compares recycled water use projections for FY 2009-10 from the City's 2005 Plan to actual FY 2009-10 recycled water use.

Table 4-9 FY 2009-10 Recycled Water Usage Summary

Site	User	Location Information	Meter Size	Usage (AF)
1	Downey Unified School District	Columbus School	4"	**18.75**
2	Palm Growers Nursery	East City Limits @ Foster Rd.	2"	**0.00**
3	Humedo Nursery	South Side of Imperial @ East City Limits	3"	**7.15**
4	Downey Unified School District	Lewis School	3"	**4.48**
5	Caltrans	105 Freeway & Bellflower	3"	**21.23**
6	City of Downey	Foster Rd @ Premier Ave	2"	**0.89**
7	Downey Unified School District	Carpenter Elementary School	4"	**9.16**
8	City of Downey	Downey Cemetery	3"	**26.19**
9	Caltrans	S/S 105 Freeway & E/S Lakewood	2"	**1.51**
10	Caltrans	S/S 105 Freeway & E/S Lakewood	2'	**7.14**
12	Caltrans	N/S 105 Freeway & W/S Lakewood	3"	**4.43**
13	Caltrans	N/S 105 Freeway & W/S Lakewood	1-1/2"	**0.04**
14	Caltrans	S/S 105 Freeway & W/S Lakewood	1-1/2"	**0.07**
16	Downey Unified School District	South Middle School	3"	**13.43**
17	City of Downey	Independence Park	3"	**15.79**
18	Downey Unified School District	Gauldin Elementary School	3"	**6.46**
19	City of Downey	Rio San Gabriel Park	4"	**41.53**
20	Downey Unified School District	Rio San Gabriel Elementary School	3"	**13.71**
21	Downey Unified School District	East Middle School	4"	**20.62**
22	City of Downey	Wilderness Park	6"	**103.94**
23	LA County Dept. of Public Works	Rio Hondo Channel S/O Florence	2"	**0.27**
24	City of Downey	Rio Hondo Golf Course South Lake #6	8"	**65.85**
25	City of Downey	Rio Hondo Golf Course North Lake #3	8"	**194.95**
26	City of Downey	Crawford Park	3"	**7.91**

27	City of Downey	Temple Park	1-1/2"	**1.36**
28	Downey Unified School District	West Middle School	4"	**15.87**
29	City of Downey	S/S Steve Horn Way E/O Bellflower	3"	**1.51**
30	Kaiser	Kaiser Admin. Building @ Bellflower/Steve Horn	3"	**3.60**
31	Downey Studios	Film Studios Back Lot off of Bellflower	2"	**5.61**
32	City of Downey	W/S Bellflower N/O Steve Horn Way	2"	**11.06**
33	City of Downey	W/S Bellflower S/O Stewart & Gray Rd.	2"	**2.48**
34	Downey Unified School District (Vacant)	Downey High School - S/S Fifth @ Lakewood	4"	**0.00**
35	City of Downey	E/S Lakewood Between 3rd & 5th	2"	**0.67**
36	Big Lots Stores	9020 Firestone Lakewood Side/Back of Carls Jr.	2"	**3.53**
37	City of Downey	W/S Lakewood S/O 11215 Lakewood	2"	**0.75**
38	City of Downey	Rose @ E/S Lakewood For Triangle Park	2"	**1.23**
39	IRG (Vacant)	E/S Lakewood @ Alameda	2"	**0.00**
40	Downey Landing	E/S Lakewood N/O Landing Mid Entrance	2"	**4.82**
41	City of Downey	E/S Lakewood N/O Hall Rd	3"	**2.95**
42	Coca Cola	W/S Lakewood S/O bellflower	2"	**10.08**
43	City of Downey	E/S Lakewood Between 2 S Landing Entrance	2"	**3.66**
44	Downey Landing	W/S Bellflower @ Entrance to Landing	2"	**4.64**
45	Downey Landing	S/S Stewart & Gray Behind Chile's Restaurant	2"	**5.06**
46	City of Downey	S/S S&G for N Pkwy Vultee to Corrigan	2"	**1.31**
47	Desert Reign Church	S/E Corner Of Lakewood & Hall Rd.	2"	**3.50**
48	City of Downey	E/S Lakewood @ S/O Rose	2"	**4.75**
49	Cornerstone Commerce Center	N/S of Stewart & Gary across from Utilities Yard	2"	**5.28**
50	City of Downey (Vacant)	S/S Stewart & Gary in front of Utilities Yard	2"	**0.00**
51	Space Learning Center/Park	N/S of park on Steven Horn Way	4"	**34.38**
52	City of Downey	E/O Lakewood @ 9002 Imperial Hwy	2"	**0.31**
53	City of Downey	N. Steve Horn Pkwy at 2nd Kaiser Dr from East	3"	**10.43**
54	Kaiser Hospital	S. Steve Horn Pkwy W/O E Kaiser Driveway	4"	**12.94**
55	SCE Sub Station Landscape	S. Steve Horn Pkwy W/O Driveway	2"	**0.90**
56	City of Downey	SW Corner of Lakewood/Imperial	1"	**0.74**
57	Vacant	S of Imperial/W of Lakewood @ 12631 Lkwd	2"	**0.00**
58	Downey Unified School District (Vacant)	Ward Elementary School; Sidewalk between 12731 & 12725 Lakewood	3"	**0.00**

59	City of Downey	E/S of Lakewood next to cemetery	2"	**0.33**
60	City of Downey	E/S Lakewood across from #12209/15	2"	**2.15**
61	City of Downey	8740 Firestone S/W Corner of Firestone & Nash	2"	**0.50**
62	CitiBank	8764 Firestone S/S Firestone; W/O Drive Way	1"	**0.44**
	Total User Sites: 60	**Total Usage (AF):**		**742.35**

Notes:

Sites 11 and 15 are no longer active

Table 4-10 2005 UWMP Use Projection Compared to 2010 Actual

(DWR Guidebook Table 24)

Table 24
Recycled water — 2005 UWMP use projection compared to 2010 actual

Use type	2010 actual use	2005 Projection for 2010[1]
Agricultural irrigation	--	--
Landscape irrigation/Ponds[2]	417	1,035
Commercial irrigation[3]	64	--
Golf course irrigation/Ponds	261	--
Wildlife habitat	--	--
Wetlands	--	--
Industrial reuse	--	--
Groundwater recharge	--	--
Seawater barrier	--	--
Getothermal/Energy	--	--
Indirect potable reuse	--	--
Other (user type)	--	--
Other (user type)	--	--
Total	742	1,035

Units are in acre-feet per year.

[1] From the 2005 UWMP. There has been some modification of use types. Data from the 2005 UWMP can be left in the existing catagories or modified to the new catagories, at the discretion of the water supplier.

[2] Includes parks, schools, cemeteries, churches, residential, or other public facilities)

[3] Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

Recycled water is currently being used in several park and golf course ponds and for irrigation of greenbelt areas, landscape medians, parks, golf courses, plant nurseries, and schools. As recycled water is primarily used for irrigation of landscaping within the City of Downey, such demand in any particular year is highly dependent on precipitation. This is particularly evident in the reduction of recycled water demand in FY 2004-05 for example, which was characterized by larger than average annual precipitation. Regardless of the yearly fluctuations resulting from varying rainfall totals, the overall trend of recycled water demand is expected to increase along with the City's population and development over the next 20 years.

4.5.4 POTENTIAL USES OF RECYCLED WATER

Section 10633

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

CBMWD has established itself as one of the leaders in the marketing of recycled water, since the establishment of its recycled water distribution system in the early 1990's. CBMWD views the use of recycled water as a key component of its efforts to augment potable water supplies and reduce dependence on imported water.

In 2008, CBMWD prepared a Recycled Water Master Plan, which identified and prioritized areas within Central Basin's service area where recycled water has the potential to expand. As part of this study, a database was prepared to locate and identify future customers. CBMWD's 2008 Recycled Water Master Plan estimated a total potential recycled water demand of approximately 1,700 AFY within the City's service area. Although CBMWD's 2008 Recycled Water Master Plan is currently being updated, CBMWD's goal is to maximize the potential usage of recycled water throughout its service area.

In addition to actions being implemented by CBMWD to identify new recycled water customers, the City has taken an aggressive approach to the idea of expanding the use of recycled water throughout its service area. In an effort to lower CBMWD's cost of expanding its recycled water distribution system, the City has taken the lead on the construction of recycled water facilities through several of its capital improvement projects over the last eight years allowing for the extension of recycled water mains on several major streets including Lakewood Blvd., Independence Park/Bellflower Blvd., Stewart and Gray Rd., and Congressman Steve Horn Way. The City will continue to coordinate with CBMWD and take advantage of such opportunities to expand recycled

water facilities throughout its borders to allow for optimization of recycled water use within the City.

The City has identified potential non-irrigation applications for use of recycled water such as installation of dual plumbing for use in toilets and cooling systems at proposed future developments. However, the primary potential recycled water application moving forward will still be irrigation of landscaping at schools and future developments adjacent to recently constructed mains as well as irrigation of landscaping at schools, parks, medians, freeway abutments, and developments which would require further extension of the recycled water distribution system to accommodate connection of the irrigation systems to this source of water.

As discussed previously, the City is also considering a 6.5 MGD Downey Regional Water Reclamation and Groundwater Augmentation Project consisting of an advanced recycled water treatment facility in which the City would purchase tertiary treated recycled water from CSDLAC, treat it through a new, City-owned advanced treatment facility, and inject into the Central Basin via ASR wells to increase its supply. The City has estimated a potential product water capacity of 5 MGD or 5,601 AFY after treatment.

The City's potential recycled water usage over the next 20-years is summarized in Table 4-11 and is based on existing uses and potential landscape irrigation, dual plumbing (toilets, cooling), and groundwater recharge applications identified by the City, CBMWD's Master Plan, and CSDLAC's Status Report on Recycled Water, along with projected recycled water usage resulting from recent and ongoing improvements to the recycled water distribution facilities within the City.

Table 4-11 Recycled Water – Potential Future Use

(DWR Guidebook Table 23)

Table 23 Recycled water — potential future use							
User type	Description	Feasibility[1]	2015	2020	2025	2030	2035 - opt
Agricultural irrigation			0	0	0	0	--
Landscape irrigation/Ponds[2]	Existing and potential sites	Feasible	427	532	760	840	--
Commercial irrigation[3]	Landscpe/dual plumbing/cooling	Feasible / Cost	199	245	268	293	--
Golf course irrigation/Ponds	Existing Site	NA- Existing	261	261	261	261	--
Wildlife habitat			0	0	0	0	--
Wetlands			0	0	0	0	--
Industrial reuse			0	0	0	0	--
Groundwater recharge	DRWRGAP	Cost	0	0	0	7,281	--
Seawater barrier			0	0	0	0	--
Getothermal/Energy			0	0	0	0	--
Indirect potable reuse			0	0	0	0	--
Other (user type)			0	0	0	0	--
Other (user type)			0	0	0	0	--
	Total	0	887	1,038	1,289	8,675	0

Units are in acre-feet per year.
[1] Technical and economic feasibility.
[2] Includes parks, schools, cemeteries, churches, residential, or other public facilities)
[3] Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

4.5.5 PROJECTED RECYCLED WATER USE

Section 10633

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15 and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision

Despite the availability of recycled water from the Los Coyotes WRP and the potential use identified in Table 4-11, the implementation of recycled water use at a particular site is primarily dependent upon the cost of the capital improvements necessary to meet the pressure and flow requirements of the proposed customer versus the amount of recycled water projected to be used by that customer. In some cases the costs to construct facilities necessary to provide recycled water to the new customer exceed the benefits associated with the increased use of recycled water. The recycled water use projections provided in this section focus primarily on potential use sites that appear to be the most economically feasible based on proximity to existing, recently-constructed, or planned distribution facilities. Based on economically feasible projects, the City's recycled water demands are projected to increase from 742 AFY in FY 2009-10 to approximately 927 AFY by FY 2029-30. The City's projected recycled water demands are provided in Table 4-1.

Table 4-10 (See Section 4.5.3) compares recycled water use projections for FY 2009-10 from the City's 2005 Plan to actual FY 2009-10 recycled water use.

4.5.6 ENCOURAGING USE OF RECYCLED WATER

Section 10633

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

The City has recognized the use of recycled water as a means by which to reduce the City's reliability on groundwater and imported water sources. To help promote the use of recycled water, the City buys recycled water from CBMWD and sells it to customers within the City at 85 percent of the potable water rate.

Under recycled water projects managed by the City, potential customers are also often given the option of allowing the City to oversee the extension of service laterals thereby eliminating what would otherwise be an overhead cost for the proposed customer.

In addition, CBMWD may offer customers, lacking financial capability, advanced funds to cover the costs of onsite plumbing retrofits required as a result of using recycled water. The plumbing retrofit costs can be amortized over a period of up to 10 years at CBMWD's cost of funds. Repayment is ultimately provided through charges seen on the customer's water bill. The rate charged on the customer's bill is determined by the differential between the potable and recycled water rates to ensure that the customer is never charged in excess of the current potable water rate. Upon repayment of the loan, the rate would revert back to the current recycled water rates.

CBMWD promotes the use of recycled water within its system as a more reliable water source than imported water. To help promote its use, MWD offers CBMWD an incentive payment for every AF of recycled water delivered by CBMWD up to 10,500

AFY through FY 2019. According to CBMWD (2010 UWMP), efforts are currently focused on maximizing the recycled water usage potential of the original regional system, in order to take advantage of MWD's incentive program.

Both CBMWD and the City pursue different sources of funding to help subsidize new recycled water distribution facilities by submitting applications for grant funds when available. Use of such funds, when approved, help increase the economic feasibility of constructing distribution system improvements necessary to reach new customers.

The above methods implemented to encourage the use of recycled water and the recycled water use projections resulting from these actions are summarized in Table 4-12.

Table 4-12 Methods to Encourage Recycled Water Use

(DWR Guidebook Table 25)

Table 25 Methods to encourage recycled water use						
	Projected Results					
Actions	2010	2015	2020	2025	2030	2035 - opt
Financial incentives						
CBMWD, MWD, and City Financial Incentives	742	787	841	905	927	--
Total	742	787	841	905	927	--
Units are in acre-feet per year.						

4.5.7 PLAN FOR OPTIMIZING USE OF RECYCLED WATER

Section 10633

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

CBMWD is updating its Recycled Water Master Plan (Master Plan) in an effort to take advantage of the unused capacity of recycled water at both the Los Coyotes and San Jose Creek WRPs. The focus of the Master Plan will be to capture changes in the industrial and commercial customer base and identify existing and emerging

applications for recycled water use. The process will result in an updated identification and prioritization of potential recycled water customers within CBMWD's service area including the City of Downey.

CBMWD plans to interface with agencies in its service area, including the City of Downey, during the development of the Master Plan update. Downey hopes to have the opportunity at such time to provide input regarding potential recycled water use within City limits and the expansion of recycled water facilities to serve potential customers.

In addition to actions being implemented by CBMWD to identify new recycled water customers, the City of Downey has taken an aggressive approach to the idea of expanding the use of recycled water throughout its service area. In an effort to lower CBMWD's cost of expanding its recycled water distribution system, the City has taken the lead on the construction of recycled water facilities through several of its recent capital improvement projects allowing for the extension of recycled water mains on several major streets including Lakewood Blvd., Independence Park/Bellflower Blvd., Stewart and Gray Rd., and Congressman Steve Horn Way. The City will continue to coordinate with CBMWD and take advantage of such opportunities to expand recycled water facilities throughout its borders to allow for optimization of recycled water use within Downey.

To help ensure the use of the recycled water upon expansion of facilities, the City also requires developments to provide and use recycled water for landscape irrigation and other non-potable water needs, if approved, in cases where recycled water facilities are located in the vicinity of the developments. Such requirements coupled with the City's efforts to expand the recycled water distribution system, and customer cost incentives previously discussed, help promote the increased use of recycled water within the City. Increasing the use of recycled water within the City will help offset increases in potable water demand anticipated as a result of an expanding population

and future development, thus helping to ensure the reliability of future potable water supplies for the City's growing customer base.

4.6 FUTURE WATER PROJECTS

Section 10631

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water uses as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

The City's future water supply projects are summarized in Table 4-13 and include the following:

- New Groundwater Wells – The City plans to construct three new groundwater wells with generators and associated water main improvements over the next 15 years. The proposed wells are anticipated to have a capacity of 3,000 gpm each and would be used to provide redundancy to allow for abandonment of old, low capacity wells.
- Groundwater Well Refurbishment – The City plans to increase the frequency of existing groundwater well and associated infrastructure refurbishment (pump, motor, etc.) to a 5-year schedule to ensure delivery of high quality groundwater. This will help restore capacity of the City's wells and allow for greater redundancy in meeting water demands.
- Purchase of Water Rights and/or Conservation Projects – Based on the recently adopted water rate structure, the City will have the ability to purchase additional groundwater rights in the Central Basin over the next 15 years to meet future water demand needs and/or implement water conservation (i.e. recycled water, other) projects to help offset increases in potable water demands.

- Water Distribution Rehabilitation and Replacement – The City will continue to replace aging water meters, fire hydrants, water mains, and associated facilities to help minimize water loss.
- Downey Regional Water Reclamation and Groundwater Augmentation Project - As discussed in Section 4.3.2, the City is considering an advanced recycled water treatment facility in which the City would purchase tertiary treated recycled water from CSDLAC, treat it through a new, City-owned advanced treatment facility, and inject into the Central Basin via ASR wells to increase its supply.

Table 4-13 Future Water Supply Projects

(DWR Guidebook Table 26)

Table 26
Future water supply projects

Project name[1]	Projected start date	Projected completion date	Potential project constraints[2]	Normal-year supply[3]	Single-dry year supply[3]	Multiple-dry year first year supply[3]	Multiple-dry year second year supply[3]	Multiple-dry year third year supply[3]
Purchase of Water Rights / Conservation	Current	2025	Availability	2,340	2,340	2,340	2,340	2,340
Water Rights Leases	Current	On-going	Availability	1,308	2,546	2,546	2,809	2,884
Additional Groundwater Wells (3)	2012	2025	--	--	--	--	--	--
Groundwater Well Refurbishment	Current	On-going	--	--	--	--	--	
DRWRGAP	NA	NA	Cost	7,281	7,281	7,281	7,281	7,281
		Total		10,929	12,167	12,167	12,430	12,505

Units are in acre-feet per year.
[1] Water volumes presented here should be accounted for in Table 16.
[2] Indicate whether project is likely to happen and what constraints, if any, exist for project implementation.
[3] Provide estimated supply benefits, if available.

Reference:
SWRCB, 2017

CA Drinking Water Watch

Links

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Water System Details

Water System No. :	CA1910160	**Federal Type :**	C
Water System Name :	TRACT 349 MUTUAL WATER CO.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	4630 SANTA ANA STREET CUDAHY,CA 90201	Business	323-560-1601	
Physical Location Contact	CA1910160-TRACT 349 MUTUAL WATER CO.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 07 - HOLLYWOOD	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	7500

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	7	ME	0
CM	90	ME	0
IN	44	ME	0
RS	764	ME	0

Sources of Water

Name	Type Code	Status
MWD CONN CB-8 THROUGH HUNTINGTON PARK	CC	A
WELL 02	WL	A
WELL 03	WL	A
WELL 01 - DESTROYED	WL	I
WELL 04 - PENDING	WL	P

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	004

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Water System Details

Water System No. :	CA1910049	**Federal Type :**	C
Water System Name :	HUNTINGTON PARK-CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	6550 MILES AVE HUNTINGTON PARK,CA 90255	Business	323-584-6253	
Physical Location Contact	CA1910049-HUNTINGTON PARK-CITY, WATER DE			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	17246

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	886	ME	0
RS	4661	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB-8 - TREATED	CC	A
WELL 12	WL	A
WELL 14	WL	A
WELL 15	WL	A
WELL 16	WL	A
WELL 18	WL	A
WELL 09	WL	I
WELL 10	WL	I
WELL 11	WL	I
WELL 17	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	011

CA Drinking Water Watch

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Water System Details

Water System No. :	CA1910152	**Federal Type :**	C
Water System Name :	SOUTH GATE-CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	8650 CALIFORNIA AVENUE SOUTH GATE,CA 90280	Business	323-563-5790	
Physical Location Contact	CA1910152-SOUTH GATE-CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	96057

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	46	ME	0
CM	1352	ME	0
IN	75	ME	0
RS	12745	ME	0

Sources of Water

Name	Type Code	Status
MWD CONN. CB-11 - TREATED	CC	A
MWD CONN. CB-7 - TREATED	CC	A
WELL 13 - STANDBY	WL	A
WELL 14	WL	A
WELL 18	WL	A
WELL 19	WL	A
WELL 23 - STANDBY	WL	A
WELL 24	WL	A
WELL 25 - STANDBY	WL	A
WELL 26	WL	A
WELL 27	WL	A
WELL 28	WL	A
WELL 02 - DESTROYED	WL	I
WELL 07 - DESTROYED	WL	I
WELL 08 - DESTROYED	WL	I
WELL 09 - DESTROYED	WL	I
WELL 12 - DESTROYED	WL	I
WELL 20 - DESTROYED	WL	I
WELL 22-A - DESTROYED	WL	I
WELL 22-B - INACTIVE	WL	I
WELL 29 - PENDING	WL	P

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	025
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	023

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Water System Details

Water System No. :	CA1910159	**Federal Type :**	C
Water System Name :	TRACT 180 MUTUAL WATER CO.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	4544 Florence Avenue CUDAHY,CA 90201	Business	323-771-6682	
Physical Location Contact	CA1910159-TRACT 180 MUTUAL WATER CO.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 07 - HOLLYWOOD	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	14000

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	27	ME	0
CM	367	ME	0
IN	21	ME	0
RS	733	ME	0

Sources of Water

Name	Type Code	Status
WELL 05	WL	A
WELL 06	WL	A
WELL 02-02E - DESTROYED	WL	I
WELL 02E - DESTROYED	WL	I
WELL 04-01N - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	CA1910011	**Federal Type :**	C
Water System Name :	GSWC - BELL, BELL GARDENS	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	03-22-1979

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	12035 Burke Street, Suite 1 SANTA FE SPRINGS,CA 90670			
Physical Location Contact	CA1910011-GSWC - BELL, BELL GARDENS	Business	562-907-9200	WWW.GSWATER.COM

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 15 - METROPOLITAN	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	58048

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	26	ME	0
CM	704	ME	0
IN	8	ME	0
RS	6578	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB3 - TREATED	CC	A
BISSELL WELL #3	WL	A
BISSELL WELL 02	WL	A
CLARA WELL 02	WL	A
GAGE WELL 02	WL	A
OTIS WELL 03	WL	A
WATSON WELL 01	WL	A
BISSELL WELL 01 - INACTIVE	WL	I
CHANSLOR WELL - INACTIVE	WL	I
CLARA WELL 01 - DESTROYED	WL	I
DARWELL 01 - DESTROYED	WL	I
FLORENCE WELL 01 - ABANDONED	WL	I
GAGE WELL 01 - INACTIVE 10/15/12	WL	I
HOFFMAN WELL 02 - DESTROYED 10/26/07	WL	I
OTIS WELL 01 - DESTROYED	WL	I
OTIS WELL 02 - DESTROYED	WL	I
PRIORY WELL 02 - INACTIVE 10/15/12	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	018

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Water System Details

Water System No. :	CA1910086	**Federal Type :**	C
Water System Name :	MAYWOOD MUTUAL WATER CO. #3	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	03-22-1979

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	6151 HELIOTROPE AVENUE MAYWOOD,CA 90270	Business	323-560-3657	
Physical Location Contact	CA1910086-MAYWOOD MUTUAL WATER CO. #3			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 16 - CENTRAL	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	9500

Service Connections

Type	Count	Meter Type	Meter Size Measure
IN	60	ME	0
RS	1945	ME	0

Sources of Water

Name	Type Code	Status
MWD CONN. CB-31A-MIDDLE FEEDER/TREATED	CC	A
WELL 04	WL	A
WELL 07	WL	A
WELL 08	WL	A
57TH STREET WELL 03 - DESTROYED	WL	I
DISTRICT PLANT WELL 02 - ABANDONED	WL	I
PROSPECT WELL 01 - INACTIVE	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	005

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Water System Details

Water System No. :	CA1900679	**Federal Type :**	NTNC
Water System Name :	RANCHO LOS AMIGOS HOSPITAL	**State Type :**	NTNC
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	08-08-2016

Water System Contacts

Type	Address	Phone	Email - Web Address
Administrative Contact	7601 E IMPERIAL HWY DOWNEY,CA 90242-3456		

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
LPA49 - LA COUNTY	626-430-5420	waterquality@ph.lacounty.gov	5050 Commerce Drive BALDWIN PARK CA 91706

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	NT	8800

Service Connections

Type	Count	Meter Type	Meter Size Measure
CB	12	UN	0

Sources of Water

Name	Type Code	Status
WELL 01 (DAIRY WELL)	WL	A
WELL 02 (DAIRY WELL)	WL	A
WELL 03 (POWERHOUSE WELL)	WL	A

Service Areas

Code	Name
NT	MEDICAL FACILITY

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	CA1910084	**Federal Type :**	C
Water System Name :	MAYWOOD MUTUAL WATER CO. #1	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	5953 GIFFORD AVENUE HUNTINGTON PARK,CA 902	Business	323-560-2439	
Physical Location Contact	CA1910084-MAYWOOD MUTUAL WATER CO. #1			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 16 - CENTRAL	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	3619

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	8	ME	0
CM	177	ME	0
RS	978	ME	0

Sources of Water

Name	Type Code	Status
MWD CONN. - CB31-MIDDLE FEEDER/TREATED	CC	A
WELL 03	WL	A
WELL 04	WL	A
WELL 02 - ABANDONED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	004

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Water System Details

Water System No. :	CA1910034	**Federal Type :**	C
Water System Name :	DOWNEY - CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	11111 Brookshire Ave. DOWNEY,CA 90241	Business	562-622-3578	
Physical Location Contact	CA1910034-DOWNEY - CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 16 - CENTRAL	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	112585

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	126	ME	0
CM	1268	ME	0
IN	40	ME	0
RS	21616	ME	0

Sources of Water

Name	Type Code	Status
MWD CONN. CB-18 - LOWER FEEDER/TREATED	CC	A
MWD CONN. CB-20 - LOWER FEEDER/TREATED	CC	A
MWD CONN. CB-21 - LOWER FEEDER/TREATED	CC	A
WELL 02 (OLD WELL 08)	WL	A
WELL 04	WL	A
WELL 05 (STOAKES 13)	WL	A
WELL 07 (OLD WELL 302)	WL	A
WELL 08 (OLD WELL 05)	WL	A
WELL 09 (OLD WELL 04)	WL	A
WELL 10 (OLD PWC WELL 42C)	WL	A
WELL 11	WL	A
WELL 12 (OLD PWC WELL 42B)	WL	A
WELL 14 (OLD WELL 02)	WL	A
WELL 15 (OLD WELL 06)	WL	A
WELL 16 (OLD WELL 10)	WL	A
WELL 17 (OLD PWC WELL 05E)	WL	A
WELL 18 (OLD WELL 11)	WL	A
WELL 19 (OLD WELL 01)	WL	A
WELL 23 (OLD WELL 07)	WL	A
WELL 24 (OLD PWC WELL 08B)	WL	A
WELL 25 (OLD WELL 09)	WL	A
WELL 29 (OLD PWC WELL 01C)	WL	A
WELL 30 (OLD PWC WELL 01D)	WL	A
OLD PWC WELL 11-A - DESTROYED	WL	I
OLD PWC WELL 42A - DESTROYED	WL	I
ROSEMEAD WELL 11 - DESTROYED	WL	I
STOAKES WELL 12 - DESTROYED	WL	I
WELL 01 (OLD WELL 13) - INACTIVE	WL	I
WELL 03 (OLD WELL 12) - DESTROYED	WL	I
WELL 06 (OLD PWC WELL 02C) - DESTROYED	WL	I
WELL 13 (OLD PWC WELL 05D) - INACTIVE	WL	I
WELL 20 (OLD PWC WELL 11B) - INACTIVE	WL	I
WELL 21 (OLD GOLF COURSE WL) - DESTROYED	WL	I
WELL 26 (OLD RUNDELL WELL) - DESTROYED	WL	I
WELL 27 (OLD SPRINGER WELL) - DESTROYED	WL	I
WELL 301 - DESTROYED	WL	I
NEW WELL	WL	P

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	036
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	034
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	035

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Water System Details

Water System No. :	CA1910079	**Federal Type :**	C
Water System Name :	LYNWOOD-CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	03-22-1979

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	11330 Bullis Road LYNWOOD,CA 90262	Business	310-603-0220 EXT. 500	
Physical Location Contact	CA1910079-LYNWOOD-CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	65965

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	855	ME	0
RS	8214	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION - TREATED	CC	A
WELL 05 - ACTIVE	WL	A
WELL 08 - ACTIVE	WL	A
WELL 09 - ACTIVE	WL	A
WELL 11 - ACTIVE	WL	A
WELL 19 - ACTIVE	WL	A
WELL 01 - INACTIVE	WL	I
WELL 02 - DESTROYED	WL	I
WELL 03 - INACTIVE	WL	I
WELL 04 - INACTIVE	WL	I
WELL 06 - INACTIVE	WL	I
WELL 07 - INACTIVE	WL	I
WELL 10 - DESTROYED	WL	I
WELL 15A - INACTIVE	WL	I
WELL 17A - DESTROYED	WL	I
WELL 17B - DESTROYED	WL	I
WELL 18 - DESTROYED	WL	I
WELL 20 - INACTIVE	WL	I
WELL 22	WL	P

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	018

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Water System Details

Water System No. :	CA1910108	**Federal Type :**	C
Water System Name :	LIBERTY UTILITIES - BELL GARDENS	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	03-22-1979

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	9750 Washburn Road DOWNEY,CA 90241	Business	562-299-5124	
		Business	310-710-8004	
Physical Location Contact	CA1910108-BELL GARDENS-CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 15 - METROPOLITAN	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	11879

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	330	ME	0
RS	1303	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB-31 - TREATED	CC	A
WELL 01	WL	A
WELL 03-C - DESTROYED	WL	I
WELL 03-F	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	003

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Water System Details

Water System No. :	CA1910085	**Federal Type :**	C
Water System Name :	MAYWOOD MUTUAL WATER CO. #2	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	04-21-1978

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	3521 E SLAUSON AVE MAYWOOD,CA 90270	Business	323-581-5816	
Physical Location Contact	CA1910085-MAYWOOD MUTUAL WATER CO. #2			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 16 - CENTRAL	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	7118

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	5	ME	0
CM	22	ME	0
RS	1897	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION NO. CB-31A - TREATED	CC	A
52ND STREET WELL	WL	A
MAY AVENUE WELL	WL	A
52ND STREET WELL FE&MN SEQ-PHOSPHATE	WL	I
MAYWOOD AVE WELL - FE&MN SEQ - PHOSPHATE	WL	I
PAE WELL - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	006

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Water System Details

Water System No. :	CA1910169	**Federal Type :**	C
Water System Name :	WALNUT PARK MUTUAL WATER CO.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	2460 E. FLORENCE AVENUE HUNTINGTON PARK,CA 90255	Business	323-581-3226	
Physical Location Contact	CA1910169-WALNUT PARK MUTUAL WATER CO.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 07 - HOLLYWOOD	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	16180
1	1	12	31	W	35

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	1	UN	0
CM	10	UN	0
RS	2820	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION - TREATED	CC	A
WELL 10	WL	A
WELL 11	WL	A
WELL 12	WL	A
WELL 08 - DESTROYED	WL	I
WELL 09 - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	005

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Water System Details

Water System No. :	CA1910195	**Federal Type :**	C
Water System Name :	GSWC - HOLLYDALE	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	12035 Burke Street, Suite 1 SANTA FE SPRINGS,CA 90670	Business	562-907-9200 EXT. 404	
Physical Location Contact	CA1910195-GSWC - HOLLYDALE			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 15 - METROPOLITAN	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	7666

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	5	ME	0
CM	105	ME	0
IN	6	ME	0
RS	1540	ME	0

Sources of Water

Name	Type Code	Status
CENTURY WELL 01	WL	A
MCKINLEY WELL 03	WL	A
COOLIDGE WELL 02 - DESTROYED	WL	I
MCKINLEY WELL 02 - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System No. :	CA1910167	**Federal Type :**	C
Water System Name :	VERNON-CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	4305 SANTA FE AVE VERNON,CA 90058	Business	323-583-8811 EXT. 245	
Physical Location Contact	CA1910167-VERNON-CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 15 - METROPOLITAN	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	45000

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	930	ME	0
IN	228	ME	0
RS	17	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION - TREATED	CC	A
WELL 11	WL	A
WELL 12	WL	A
WELL 14 - STANDBY	WL	A
WELL 15	WL	A
WELL 16	WL	A
WELL 17	WL	A
WELL 19	WL	A
WELL 20	WL	A
WELL 21	WL	A
WELL 05	WL	I
WELL 07 - DESTROYED	WL	I
WELL 09	WL	I
WELL 10	WL	I
WELL 13 - DESTROYED	WL	I
WELL 18 - DESTROYED	WL	I
SMURFIT WELL 10	WL	P

Service Areas

Code	Name
NT	INDUSTRIAL/AGRICULTURAL

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	015

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Water System Details

Water System No. :	CA1910077	**Federal Type :**	C
Water System Name :	GSWC - FLORENCE/GRAHAM	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	12035 Burke Street, Suite 1 SANTA FE SPRINGS,CA 90670			
Physical Location Contact	CA1910077-GSWC - FLORENCE/GRAHAM	Business	562-907-9200	WWW.GSWATER.COM

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 15 - METROPOLITAN	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	65182

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	21	ME	0
CM	848	ME	0
IN	42	ME	0
RS	8620	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB12 - TREATED	CC	A
MWD CONNECTION CB5 - TREATED	CC	A
MWD CONNECTION CB6 - TREATED	CC	A
CONVERSE WELL 01	WL	A
CONVERSE WELL 02 - ACTIVE 6/22/2010	WL	A
GOODYEAR WELL 04	WL	A
MIRAMONTE WELL 01	WL	A
MIRAMONTE WELL 02	WL	A
MIRAMONTE WELL 03	WL	A
NADEAU WELL 03	WL	A
HAMPSHIRE WELL 14 - DESTROYED 1/21/00	WL	I
NADEAU WELL 02 - INACTIVE 2/5/09	WL	I
ROSS WELL 03 - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	013
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	012
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	011

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Water System Details

Water System No. :	CA1910026	**Federal Type :**	C
Water System Name :	COMPTON-CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	205 S WILLOWBROOK AVE. COMPTON,CA 90220	Business	310-605-5555	
Physical Location Contact	CA1910026-COMPTON-CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	81963

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	4	ME	0
CM	1299	ME	0
IN	135	ME	0
RS	12815	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB-1 - TREATED	CC	A
MWD CONNECTION CB-3 - TREATED	CC	A
MWD CONNECTION CB-4 - TREATED	CC	A
WELL 11	WL	A
WELL 13	WL	A
WELL 15	WL	A
WELL 16	WL	A
WELL 17	WL	A
WELL 18	WL	A
WELL 19	WL	A
RICHLAND WELL 01 - ABANDONED	WL	I
RICHLAND WELL 02 - ABANDONED	WL	I
WELL 01 - DESTORYED	WL	I
WELL 02 - DESTORYED	WL	I
WELL 06 - ABANDONED	WL	I
WELL 08 - ABANDONED	WL	I
WELL 09 - DESTORYED	WL	I
WELL 10 - DESTORYED	WL	I
WELL 12 - ABANDONED	WL	I
WELL 14 - DESTROYED	WL	I
WELL 20 - PENDING	WL	P

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	018
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	016
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	017

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Water System Details

Water System No. :	CA1910050	**Federal Type :**	C
Water System Name :	COMMERCE-CITY, WATER DEPT.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	04-21-1978

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	1720 NORTH FIRST STREET SAN JOSE,CA 95112	Business	408-367-8593	
Physical Location Contact	CA1910050-COMMERCE-CITY, WATER DEPT.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	3828

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	13	ME	0
CM	429	ME	0
IN	209	ME	0
RS	395	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION - TREATED	CC	A
WELL 04L	WL	A
WELL 06-01-STANDBY	WL	A
WELL 07-01	WL	A
WELL 02 - DESTROYED	WL	I
WELL 03 - DESTROYED	WL	I
WELL 03D - DESTROYED	WL	I
WELL 03E - INACTIVE	WL	I
WELL 05 - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	009

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Water System Details

Water System No. :	CA1910081	**Federal Type :**	C
Water System Name :	LYNWOOD PARK MUTUAL WATER CO.	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	2644 E. 124TH STREET COMPTON,CA 90222	Business	310-631-2625	
Physical Location Contact	CA1910081-LYNWOOD PARK MUTUAL WATER CO.			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 16 - CENTRAL	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	2300

Service Connections

Type	Count	Meter Type	Meter Size Measure
RS	453	ME	0

Sources of Water

Name	Type Code	Status
WELL 01 - NW 25	WL	A
WELL 02 - SOUTH	WL	A
WELL 03 - MONA	WL	A

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

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Water System Details

Water System No. :	CA1910036	**Federal Type :**	C
Water System Name :	CALIFORNIA WATER SERVICE CO. - ELA	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	1720 NORTH FIRST STREET SAN JOSE,CA 95112	Business	408-367-8593	
Physical Location Contact	CA1910036-CALIFORNIA WATER SERVICE CO. -			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	150729

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	4945	ME	0
IN	107	ME	0
RS	21032	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION ELA CB14 - TREATED	CC	A
MWD CONNECTION, CB 01 - TREATED	CC	A
MWD CONNECTION, CB 39 - TREATED	CC	A
WELL 07-02 - STANDBY	WL	A
WELL 10-03	WL	A
WELL 13-02	WL	A
WELL 22-01	WL	A
WELL 25-01	WL	A
WELL 38-02	WL	A
WELL 39-02	WL	A
WELL 43-01	WL	A
WELL 51-01 - STANDBY	WL	A
WELL 52-01 - STANDBY	WL	A
WELL 54-01	WL	A
WELL 63-01	WL	A
WELL 01-02 - ABANDONED	WL	I
WELL 06-02 - DESTROYED	WL	I
WELL 11-03 - ABANDONED	WL	I
WELL 15-02 - DESTROYED	WL	I
WELL 19-03 - INACTIVE	WL	I
WELL 19-04 - INACTIVE	WL	I
WELL 20-01 - INACTIVE	WL	I
WELL 26-01 - ABANDONED	WL	I
WELL 28-01 - DESTROYED	WL	I
WELL 29-01 - INACTIVE	WL	I
WELL 29-02 - DESTROYED	WL	I
WELL 32-01 - ABANDONED	WL	I
WELL 33-01 - INACTIVE	WL	I
WELL 34-01 - ABANDONED	WL	I
WELL 35-01 - ABANDONED	WL	I
WELL 37-01 - INACTIVE	WL	I
WELL 38-01 - ABANDONED	WL	I
WELL 39-01 - INACTIVE	WL	I
WELL 44-01 - ABANDONED	WL	I
WELL 46-01 - DESTROYED	WL	I
WELL 47-02 - ABANDONED	WL	I
WELL 49-01 - ABANDONED	WL	I
WELL 50-01 - ABANDONED	WL	I
WELL 53-01 - INACTIVE	WL	I
WELL 56-01 - INACTIVE	WL	I
WELL 53-02 - PENDING	WL	P
WELL 62-01 - PENDING	WL	P

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	038
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	036
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	037

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Water System Details

Water System No. :	CA1910072	**Federal Type :**	C
Water System Name :	GSWC - WILLOWBROOK	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	03-22-1979

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	12035 Burke Street, Suite 1 SANTA FE SPRINGS,CA 90670			
Physical Location Contact	CA1910072-GSWC - WILLOWBROOK	Business	562-907-9200	WWW.GSWATER.COM

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 15 - METROPOLITAN	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	10682

Service Connections

Type	Count	Meter Type	Meter Size Measure
AG	7	ME	0
CM	66	ME	0
RS	1327	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB51 - TREATED	CC	A
WELL 01	WL	A
WELL 03	WL	A
WELL 02 - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	004

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Water System Details

Water System No. :	CA1910021	**Federal Type :**	C
Water System Name :	LIBERTY UTILITIES - COMPTON	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	SWP
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	P.O.BOX 7002 DOWNEY,CA 90241-7002	Business	562-299-5123	
Physical Location Contact	CA1910021-LIBERTY UTILITIES - COMPTON			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	24698

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	75	ME	0
IN	2	ME	0
RS	6785	ME	0

Sources of Water

Name	Type Code	Status
MWD CONNECTION CB-50 - TREATED	CC	A
MWD CONNECTION CB-9 - TREATED	CC	A
WELL 19C	WL	A
WELL 09-A - DESTROYED	WL	I
WELL 09-C - DESTROYED	WL	I
WELL 12-A - DESTROYED	WL	I
WELL 12-B	WL	I
WELL 13-A - DESTROYED	WL	I
WELL 13-B - INACTIVE	WL	I
WELL 13-C	WL	I
WELL 18-A - DESTROYED	WL	I
WELL 19-A - DESTROYED	WL	I
WELL 31-A - DESTROYED	WL	I
WILLOWBROOK WELL 01 - DESTROYED	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.
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CA1910087	METROPOLITAN WATER DIST. OF SO. CAL.			CC	013

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Water System Details

Water System No. :	CA1910147	**Federal Type :**	C
Water System Name :	SATIVA-L.A. CWD	**State Type :**	C
Principal County Served :	LOS ANGELES	**Primary Source :**	GW
Status :	A	**Activity Date :**	01-01-1976

Water System Contacts

Type	Address	Phone		Email - Web Address
Administrative Contact	2015 EAST HATCHWAY STREET COMPTON,CA 90222	Business	310-631-8176	
Physical Location Contact	CA1910147-SATIVA-L.A. CWD F			

Division of Drinking Water District / County Health Dept. Info

Name	Phone	Email	Address
DISTRICT 22 - ANGELES	818-551-2004		500 N. Central Ave. Suite 500 GLENDALE CA 91203

Annual Operating Periods & Population Served

Start Month	Start Day	End Month	End Day	Population Type	Population Served
1	1	12	31	R	6837

Service Connections

Type	Count	Meter Type	Meter Size Measure
CM	1	UM	0
RS	1639	UM	0

Sources of Water

Name	Type Code	Status
WELL 02	WL	A
WELL 03	WL	A
WELL 05	WL	A
WELL 03-A - INACTIVE	WL	I
WELL 04 - INACTIVE	WL	I

Service Areas

Code	Name
R	RESIDENTIAL AREA

Water Purchases

Seller Water System No.	Water System Name	Seller Facility Type	Seller State Asgn ID No.	Buyer Facility Type	Buyer State Asgn ID No.

Reference:
Weston, 2014

Preliminary Assessment Report
Univar USA
South Gate, Los Angeles County, California

EPA ID No.: CAN000909573
USACE Contract No.: W91238-11-D-0001
Interagency Agreement No.: 95777001-0
Document Control No.: 20074.063.105.1004

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U.S. Environmental Protection Agency
Region 9

Prepared by:
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Walnut Creek, California 94597

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LIST OF ACRONYMS

APN	Assessor Parcel Number
AST	aboveground storage tank
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CoHP	City of Huntington Park
CoL	City of Lynwood
CoSG	City of South Gate
CoV	City of Vernon
DCE	dichloroethylene
DTSC	Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
ft^2	square-feet
GSWC	Golden State Water Company
HRS	Hazard Ranking System
LAC	Los Angeles County
LACFD	Los Angeles County Fire Department
LED	light-emitting diode
MEK	methyl ethyl ketone
MWC	Mutual Water Company
MWD	Metropolitan Water District
NPL	National Priorities List
PA	Preliminary Assessment
PCE	tetrachloroethylene
PVF	pipes/valves/fittings
QualaWash	QualaWash Holdings LLC
RCRAInfo	Resource Conservation and Recovery Act Information
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SCWC	Southern California Water Company
TCE	trichloroethylene
Univar	Univar USA site
UST	underground storage tank
VOC	volatile organic compound
WESTON	Weston Solutions, Inc.
Winsome	Winsome Enterprises, Inc.
µg/L	microgram per liter

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), Weston Solutions, Inc. (WESTON®) has been tasked to conduct a Preliminary Assessment (PA) of the Univar USA (Univar) site, located in South Gate, Los Angeles County, California.

The purpose of the PA is to review existing information on the site and its environs, to assess the threat(s), if any, posed to public health, welfare, or the environment, and to determine if further investigation under CERCLA/SARA is warranted. The scope of the PA includes the review of information available from federal, state, and local agencies.

Using the sources of existing information, the site is then evaluated using the United States Environmental Protection Agency's (EPA's) Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites where the EPA may conduct remedial response actions. This report summarizes the findings of these preliminary investigative activities.

The Univar site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on October 1, 2013 (EPA ID No.: CAN000909573). The site was brought to the attention of the EPA by the California Department of Toxic Substances Control (DTSC) as part of a joint effort in identifying potential sources of volatile organic compound (VOC) contamination in the vicinity of the "710 Corridor" area (EPA, 2014c).

More information regarding the Superfund Program is available on the EPA website at http://www.epa.gov/superfund. The EPA's site assessment process is described in Appendix E.

1.1 Apparent Problem

The apparent problems at the Univar site, which contributed to EPA's determination that a PA was necessary, are as follows:

- The site has been used for bulk chemical tank truck distribution and/or bulk chemical tank trailer cleaning operations since at least 1986 and potentially since at least 1972 (DTSC, 2013; HA, 2014).

- Hazardous substances documented as having been used and/or stored on the site include, but are not limited to: halogenated solvents, including tetrachloroethylene (PCE) and

methyl ethyl ketone (MEK); and metals, including chromium, cadmium, arsenic, and mercury. Specific hazardous substance storage and disposal practices have not been adequately documented (DTSC, 2013).

- The site is situated upgradient with respect to the regional groundwater flow from several municipal supply wells that have been identified with elevated concentrations of VOCs. In addition, the site boundary is located within 200 feet of the former Hoffman #2 municipal groundwater supply well, which was destroyed due to excessive trichloroethylene (TCE) concentrations (DTSC, 2013; Google, 2014).

- No known soil gas, soil matrix, or groundwater sampling has been conducted at the site.

2.0 SITE DESCRIPTION

2.1 Location

The Univar site is located at 5000-5042 Cecelia Avenue and 8332 Wilcox Avenue in South Gate, Los Angeles County, California. The geographic coordinates for the geometric center of the site are 33° 57' 25.6" North latitude and 118° 10' 43.9"West longitude. The site location is shown in Figure 2-1 (EPA, 2014c; Google, 2014).

2.2 Site Description

The Univar site is located in a mixed industrial and residential area at the northeastern portion of the city of South Gate, California; adjacent to the border with the city of Cudahy. Specifically, the site occupies approximately five acres at the southeast corner of the intersection of Wilcox Avenue and Cecelia Street. The site encompasses three Los Angeles County (LAC) parcels, designated as Assessor Parcel Numbers (APNs) 6224-032-011, 6224-032-017, and 6224-032-018 (Google, 2014; LACA, 2014; USCB, 2012).

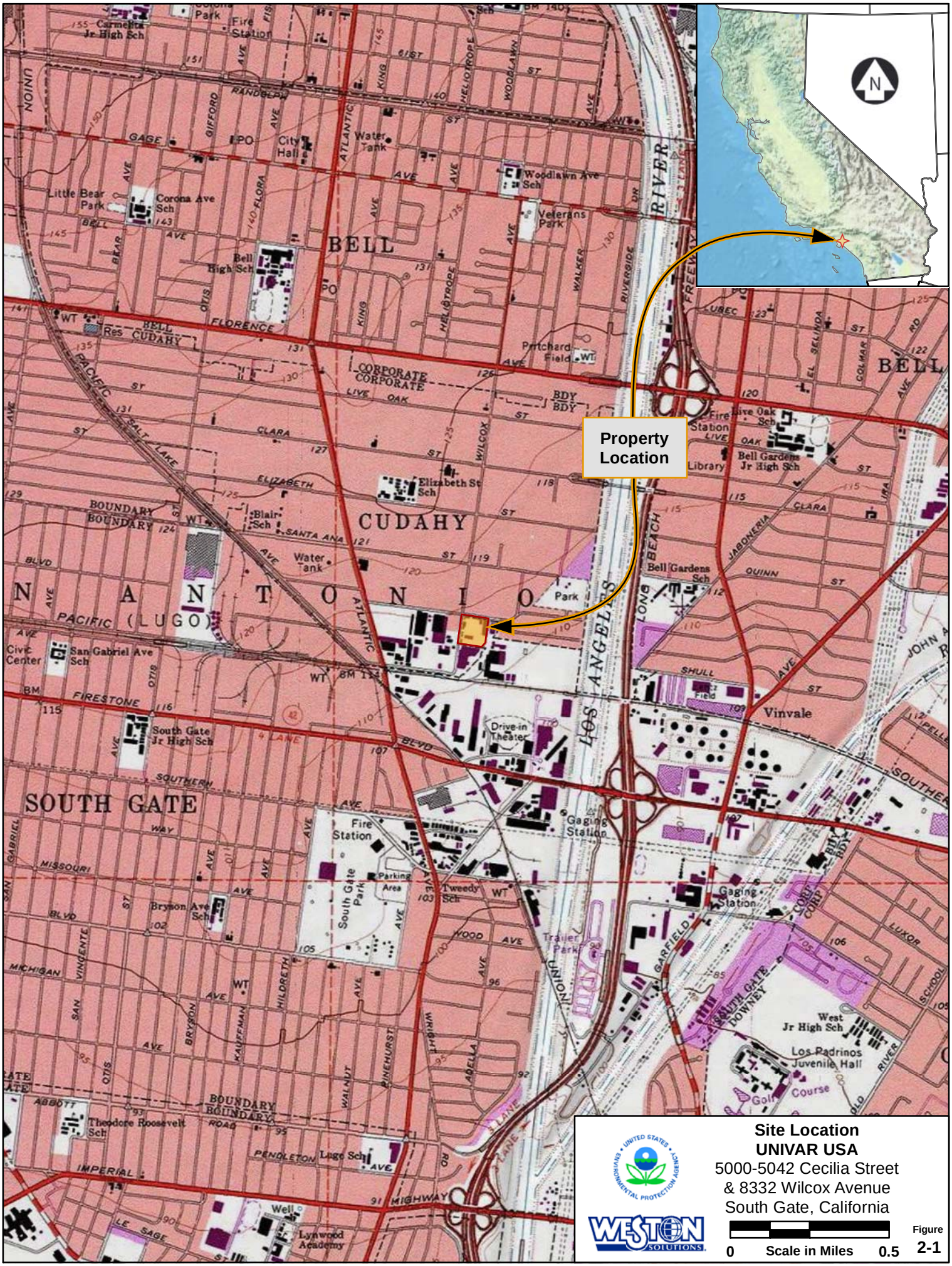
As of May 2013, the site was bound to the north by single- and multi-family residential properties (across Cecelia Street); to the east by an apparent light-emitting diode (LED) manufacturing and/or warehousing facility (5046 Cecelia); to the east by the Consolidated Precision Products - Cudahy Operations Plant, which specializes in high-precision aluminum manufacturing and processing for the aerospace industry (8333 Wilcox); to the south by the approximately 70,000 square-foot (ft^2) Val-Fit Los Angeles pipes/valves/fittings (PVF) products distribution warehouse (8360 Wilcox); and to the southeast by the Armstrong World Industries site (CERCLIS ID No. CAN000909482), which manufactures vinyl floor tiles (DSTC, 2013; EPA, 2014b; Google, 2014).

As of May 2013, the Univar site was occupied by six primary structures that included: the approximately 7,700 ft^2 Quality Carriers Office and Warehousing Building at the northeast corner; the approximately 4,000 ft^2 Quality Carriers Maintenance Building at the northwest corner; and the approximately 1,700 ft^2 QualaWash Office Building, the approximately 6,300 ft^2 QualaWash Operations Building, the approximately 2,800 ft^2 truck bay, and the approximately 3.800 ft^2 truck bay at the west-central portion. An additional building, which was removed in the early 2000s, was formerly located adjacent west of the Quality Carriers Office and Warehousing Building. The entire site is paved with asphalt or concrete. The site layout is shown in Figure 2-2 (DSTC, 2013; Google, 2014).

Four large aboveground storage tanks (ASTs) along with several smaller ASTs are located on the Univar site adjacent north to the eastern portion of the QualaWash Operations Building. In addition, numerous 55-gallon drums and plastic storage totes are stored on the site, primarily in the vicinity of the QualaWash buildings. A diesel underground storage tank (UST) was formerly located at the site; however, the specific location of this UST is not known. A large clarifier is

also reportedly located at the site; however, the specific location of this clarifier is not known (DSTC, 2013; Google, 2014).

The site was first developed prior to 1954. In 1954, it was occupied primarily by single-family residential buildings and vacant land. By 1974, all but two of the single-family homes, which were located at the northwest and north-central portions of the site, had been removed and the present-day buildings, as well as an additional approximately 5,000 ft^2 building located adjacent-west of the Quality Carriers Office and Warehousing Building, had been constructed. The QualaWash buildings and the Quality Carriers Maintenance building were reportedly constructed in 1955 and the Quality Carriers office building was reportedly constructed in 1966. By 1994, the remaining single-family residences had been removed and by 2003 the building adjacent to the Quality Carriers office had also been removed (Google, 2014; HA, 2014; LACA, 2014).



Site Location
UNIVAR USA
5000-5042 Cecilia Street
& 8332 Wilcox Avenue
South Gate, California

0 Scale in Miles 0.5

Figure 2-1

Site Layout
UNIVAR USA
5000-5042 Cecilia Street
& 8332 Wilcox Avenue
South Gate, California

Figure
2-2

2.3 Operational History

The Univar site is currently owned by Quala Systems, Inc., which has owned the larger western parcel (6224-032-018) since approximately the early 1990s and the two eastern parcels (6224-032-017 and -011) since approximately the late 1990s. The site is operated primarily by two entities: Winsome Enterprises, Inc. (Winsome), which is a partner affiliate of Quality Carriers, which is in turn a subsidiary of Quality Distribution, Inc.; and QualaWash Holdings LLC (QualaWash), which is an independent entity that prior to 2009 was a subsidiary of Quality Distribution, Inc. doing business as Quala Systems, Inc. QualaWash originated in approximately 1993 as a spin-off company of the former Chemical Leaman Tank Lines. Additional historic owner and operator information for the site is not known (DTSC, 2013; QDI, 2014; WEI, 2014; Appendix C-1).

Operations at the Univar site are primarily divided into two separate activities that include bulk chemical tank truck distribution, which is conducted by Winsome, and bulk chemical tank trailer cleaning, which is conducted by QualaWash. The two entities both utilize the property for tractor and trailer parking. Winsome maintains an office at the northeastern portion of the site and a tractor trailer maintenance facility at the northwestern portion of the facility. QualaWash utilizes the central portion for tank washing activities that typically operate 24 hours a day, seven days a week, and service approximately 40 tankers per day. The site has reportedly been used for tank trailer hauling and washing activities since at least 1986. In addition, activities involving tractor trailers have been conducted at the site since at least 1972; however, the specific operations associated with these earlier activities are not known (DTSC, 2013; HA, 2014; Quala, 2014).

The four large ASTs located adjacent to the QualaWash Operations building are reportedly used to store wash fluid for tanker cleaning operations. The volume and type of hazardous substances stored at the site is variable and is dependent on tanker cleaning operations as well as the payload of the on-site tractor trailers. A QualaWash representative indicated during an interview with the DTSC that caustics, soaps, polymers, and latex are generally stored for a short time on the site. Based on identified hazardous waste manifests and generator reports, hazardous substances used and/or stored on the site include, but are not limited to: halogenated solvents, including PCE; hydrocarbon solvents; oxygenated solvents; non-halogenated solvents, including MEK; and metals, including chromium, cadmium, arsenic, and mercury. Specific hazardous substance storage and disposal practices are not known (DSTC, 2013).

Unaltered petroleum products, as well as any substances that are purposefully added to the indigenous petroleum product during the refining process, are excluded from consideration under CERCLA.

2.4 Regulatory Involvement

2.4.1 U.S. Environmental Protection Agency

The Univar site has multiple listings in the Resource Conservation and Recovery Act Information (RCRAInfo) database. Quala Systems Inc. (HANDLER ID: CA0000031997) is addressed as Wilcox Avenue (contact is listed at 8332 Wilcox) and listed as a Large Generator. QualaWash Holdings, Inc. (HANDLER ID: CAD000031997) is addressed as Wilcox Avenue and listed as a Large Generator. National Process Industry Corp (HANDLER ID: CAD009604893) is addressed as Cecilia St (contact is listed at 5032 Cecilia St.) and a handler type is not listed. Ashland Distribution (HANDLER ID: CAR000174078) is addressed as 8332 Wilcox Ave and a handler type is not listed. Leaseway Bulk Services, Inc. (HANDLER ID: CAD009864679) is addressed as 8332 Wilcox Avenue and listed as a Small Generator. Bulk Freightways (HANDLER ID: CAD027896208) is addressed as 8332 Wilcox Avenue and listed as a Transporter (EPA, 2014a).

2.4.2 Regional Water Quality Control Board

The Univar site is listed in the Regional Water Quality Control Board's (RWQCBs) GeoTracker database as Matlack Inc. (GeoTracker ID: T0603703785; Case No. I-11357) at 8332 Wilcox Avenue. The site is listed as a LUST Cleanup Site with a cleanup status as 'Completed - Case Closed as of 2/8/1993.' The potential contaminant of concern is listed as diesel and the potential media affected is soil. No additional pertinent information is listed in the GeoTracker database for the site and the RWQCB has had no known additional involvement with the site (RWQCB, 2014).

2.4.3 Department of Toxic Substances Control

The Univar site is listed in the DTSC's EnviroStor database as Quality Distribution AKA Univar USA (Envirostor ID: 60001785) at 5042 'Cecila' Street. The site is listed as an 'Evaluation' site that was referred to the EPA as of September 17, 2013. The DTSC completed a Site Screening that was approved by the EPA on September 30, 2013. The DTSC has had no known additional involvement with the site (DTSC, 2014).

2.4.4 Los Angeles County

As part of the September 2013 Site Screening Assessment conducted by DTSC for the Univar site, a public records request was made to the Los Angeles County Fire Department (LACFD). LACFD reported that they had no files for the site addresses (DSTC, 2013).

3.0 HAZARD RANKING SYSTEM FACTORS

3.1 Sources of Contamination

For HRS purposes, a source is defined as an area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

Potential hazardous substance sources associated with the Univar site include, but may not be limited to:

- On-site soils contaminated with VOCs (primarily PCE and MEK), and metals (primarily chromium, cadmium, arsenic, and mercury) (DTSC, 2013).

3.2 Groundwater Pathway

In determining a score for the groundwater migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to groundwater; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on the number of people who regularly obtain their drinking water from wells that are located within 4 miles of the site. The HRS emphasizes drinking water usage over other uses of groundwater (e.g., food crop irrigation and livestock watering), because, as a screening tool, it is designed to give the greatest weight to the most direct and extensively studied exposure routes.

3.2.1 Hydrogeological Setting

The Univar site lies within the Central Subbasin in the Coastal Plain of the Los Angeles Groundwater Basin. The Central Subbasin is bound to the north by a surface divide called the La Brea high; to the northeast and east by the less permeable tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills; to the southeast by Coyote Creek; and to the southwest by the Newport Inglewood fault system and the Newport Inglewood uplift. The Los Angeles and San Gabriel rivers drain inland basins and pass across the surface of the Central Basin on their way to the Pacific Ocean. The regional groundwater flow direction within the subbasin is generally to the southwest at the northeastern portion of the subbasin and shifts to the south in the central portion of the subbasin. The average net annual precipitation in the Central Subbasin is approximately 12 inches (DWR, 2004; WRD, 2011).

Throughout the Central Subbasin, groundwater occurs in Holocene alluvium, the upper Pleistocene Lakewood Formation, and the lower Pleistocene San Pedro Formation. The aquifers underlying the site are, in descending order: the Gaspur, Exposition, Gage/Gardena, Jefferson,

Lynwood, Silverado, and Sunnyside. Underlying the Recent alluvium (Gaspur), sediments of the upper Pleistocene Lakewood Formation (Exposition and Gage/Gardena) are present to a depth of approximately 300 to 400 feet below ground surface (bgs). Sediments of the lower Pleistocene San Pedro Formation (Lynwood through Sunnyside) unconformably underlie the Lakewood Formation and extend to approximately 1,300 feet (DWR, 1961; DWR, 2004).

Throughout much of the subbasin, the Pleistocene-age aquifers are under confined conditions due to the presence of fine-grained, low-permeability interbedded sediments. Although these fine-grained sediments, or aquicludes, generally restrict the downward migration of groundwater from overlying aquifers, semipermeable zones within the aquicludes allow aquifers to be interconnected in some areas. In addition, improperly constructed and/or abandoned groundwater wells, especially those screened within multiple aquifers, may act as a conduit to allow the comingling of groundwater between aquifers that would be otherwise disconnected. As of the end of the 2012-2013 fiscal year, there were 537 known extraction wells (306 active and 231 inactive) within the subbasin. Aquifer interconnection within two miles of the site has been documented between the Gaspur through Gage/Gardena and between the Jefferson through Silverado. Aquifer interconnection between the Gage/Gardena and Jefferson, and between the Silverado and Sunnyside, has not been documented within two miles of the site. However, due to the relatively large number of older and poorly documented groundwater wells within the subbasin, which are considered to have a significant potential of acting as conduits between aquifers, interconnection between the Gage/Gardena and Jefferson, and between the Silverado and Sunnyside, is projected for HRS purposes (DWR, 1961; DWR, 1991; DWR, 2004; DWR, 2013).

The groundwater flow direction in the vicinity of the Univar site is estimated to follow the regional trend towards the south to southwest. The depth to groundwater at the site is not known; however, a RWQCB cleanup site located at 8411 South Atlantic, approximately 0.3 mile west of the site, measured a depth to first groundwater of approximately 53 feet bgs. In addition, the geologic materials encountered during the installation of a monitoring well at this site were reported to be primarily composed of silty fine sands to fine sands. Since the Univar site is situated in a relatively similar hydrogeologic setting to the 8411 South Atlantic site, the depth to groundwater and geologic materials reported at that site are considered to be a good approximation for the subsurface conditions at the Univar site (AEGI, 2012; N&M, 2005; WRD, 2011).

3.2.2 Groundwater Targets

Thirty-one distinct water purveyors were identified as operating public drinking water wells within four miles of the Univar site. For HRS purposes, the aquifers underlying the site were considered to be interconnected (see Section 3.2.1) and no distinction was made based on the screening interval depths of evaluated wells. The nearest maintained active or standby public drinking water well to the site is Well 03, which is operated by the Tract 349 Mutual Water

Company (MWC) and is located approximately 0.45 mile west-northwest of the geometric center of the site (WESTON, 2014).

Tract 349 Mutual Water Company

The Tract 349 MWC operates a blended drinking water system that serves a population of approximately 7,500 and consists of two active wells (Well 02 and Well 03). In addition, the MWC previously operated at least one other well (Well 01), which has since been destroyed. The purveyor obtains approximately 100 percent of its drinking water from groundwater; however, it does maintain a connection with the Metropolitan Water District (MWD). With respect to regional groundwater flow, the system is located in a generally cross-gradient (northwesterly) direction from the Univar site. During routine annual water quality sampling conducted in October 2013, neither of the system's active wells exhibited detectable concentrations of regulated VOCs. Both of the wells operated by the company are located within 4 miles of the site (CDPH, 2014a; CDPH, 2014e; WESTON, 2014).

City of South Gate

The City of South Gate (CoSG) Water Division operates a blended drinking water system that serves a population of approximately 98,434 and consists of six active wells (Wells 14, 18, 19, 24, 26, and 28), four designated standby wells (13, 23, 25, and 27), and one inactive well (Well 22-B). In addition, the city previously operated at least seven other wells (Wells 2, 7, 8, 9, 12, 20, and 22-A), which have since been destroyed. The CoSG obtains approximately 99 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of recycled water (approximately 1 percent). In addition, the city maintains two connections with the MWD for emergency supply. With respect to regional groundwater flow, the system is located in a generally down-gradient (southerly) direction (Wells 13, 14, 18, 19, 23, 24, and 25) and cross-gradient (west-southwesterly) direction (Wells 26, 27, and 28) from the Univar site. During routine annual water quality sampling conducted in October and December 2013, the system's active and standby wells exhibited detectable concentrations of regulated VOCs including TCE up to 3.1 micrograms per liter (µg/L) and PCE up to 6.4 µg/L. No additional regulated VOCs were detected during the sampling events. All ten of the active and/or standby wells maintained by the city are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014d; CDPH, 2014e; WESTON, 2014; App. C-2).

Tract 180 Mutual Water Company

The Tract 180 MWC operates a blended drinking water system that serves a population of approximately 14,000 and consists of two active wells (Well 05 and Well 06). In addition, the MWC previously operated at least three other wells (Well 02-02E, Well 02E, and Well 04-01N), which have since been destroyed. The purveyor obtains approximately 100 percent of its drinking water from groundwater. With respect to regional groundwater flow, the system is located in a generally up-gradient (north-northwesterly) direction from the Univar site. During

routine annual water quality sampling conducted in May 2013 and January 2014, Well 05 exhibited detectable concentrations of TCE (4.9 µg/L), PCE (1.3 µg/L), and 1,1-dichloroethylene (DCE) (0.8 µg/L) and Well 06 exhibited detectable concentrations of PCE (1.7 µg/L). No additional regulated VOCs were detected during the sampling events. Both of the wells operated by the company are located within 4 miles of the site (CDPH, 2014a; CDPH, 2014e; WESTON, 2014).

Golden State Water Company - Bell/Bell Gardens

The Golden State Water Company (GSWC) [formerly the Southern California Water Company (SCWC)], Bell/Bell Gardens district operates a blended drinking water system that serves a population of approximately 24,536 and includes six active wells (Bissell 3, Bissell 2, Clara 2, Gage 2, Otis 3, and Watson 1) and four inactive wells (Bissell 1, Chanslor, Gage 1, and Priory 2). In addition, the district has previously operated at least six other wells (Clara 1, Darwell 1, Florence 1, Hoffman 2, Otis 1, and Otis 2), which have since been either destroyed or abandoned. The Hoffman 2 well, which is located approximately 200 feet east of the northeastern Univar site boundary, was destroyed in approximately 2007 due to TCE concentrations exceeding 10 µg/L. The GSWC-Bell/Bell Gardens district obtains approximately 99 percent of its drinking water from groundwater. The remaining portion is primarily composed of purchased surface water from the MWD (approximately 1 percent). With respect to regional groundwater flow, the system is located in a generally up-gradient (northerly and northeasterly) direction from the Univar site. During routine annual water quality sampling conducted in February 2014, Gage 2 exhibited detectable concentrations of TCE (0.6 µg/L) and PCE (3.5 µg/L), Watson 1 exhibited detectable concentrations of TCE (3.8 µg/L) and PCE (4.8 µg/L), and Clara 2 exhibited detectable concentrations of TCE (1.4 µg/L) and PCE (1.3 µg/L). No additional regulated VOCs were detected during the sampling event. All six of the active wells maintained by the district are located within 4 miles of the site (CDPH, 2009; CDPH, 2014b; CDPH, 2014e; WESTON, 2014; App. C-3).

City of Huntington Park

The City of Huntington Park (CoHP) Water Department operates a drinking water system that serves a population of approximately 21,740 and includes five active wells (Wells 12, 14, 15, 16, and 18), no designated standby wells, and four inactive wells (Wells 9, 10, 11, and 17). The CoHP obtains approximately 72 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of imported surface water purchased from the MWD (approximately 27 percent) and recycled water (approximately 1 percent). With respect to regional groundwater flow, the system is located in a generally cross-gradient (northwesterly) direction from the Univar site. During routine annual water quality sampling conducted in April 2013 and January 2014, none of the system's active wells exhibited detectable concentrations of regulated VOCs. All five of the active wells maintained by the city are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014d; CDPH, 2014e; WESTON, 2014).

City of Lynwood

The City of Lynwood (CoL) Water Department operates a drinking water system that serves a population of approximately 64,769 and includes five active wells (Wells 5, 8, 9, 11, and 19) and seven inactive wells (Wells 1, 3, 4, 6, 7, 15A, and 20). In addition, the City has a new pending well (Well 22) and previously operated at least five other wells (Wells 2, 10, 17A, 17B, and 18), which have since been destroyed. The CoL obtains approximately 84 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of imported surface water purchased from the MWD (approximately 15 percent) and recycled water (approximately 1 percent). With respect to regional groundwater flow, the system is located in a generally down-gradient (southwesterly) direction from the Univar site. During routine annual water quality sampling conducted in October 2013 and January 2014, the system's active wells exhibited detectable concentrations of regulated VOCs including TCE up to 1.5 µg/L (Well 11 only) and PCE up to 3.2 µg/L. No additional regulated VOCs were detected during the sampling events. All five of the active wells maintained by the city are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014d; CDPH, 2014e; WESTON, 2014; App. C-4).

Maywood Mutual Water Company #3

The Maywood MWC #3 purveyor operates a drinking water system that serves a population of approximately 9,500 and includes two active wells [Well 4 (District 4), and Well 7 (Warehouse 7)] and one inactive well (Prospect 1). Maywood MWC #3 previously operated at least two other wells (57th Street 3 and District Plant 2), which have since been either destroyed or abandoned. The MWC obtains 92 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of imported surface water purchased from the MWD (approximately 3 percent) and recycled water (approximately 5 percent). With respect to regional groundwater flow, the system is located in a generally up-gradient (northerly) direction from the Univar site. During routine annual water quality sampling conducted in January 2014, Well 7 exhibited detectable concentrations of TCE (5.0 µg/L). No additional regulated VOCs were detected during the sampling event. Both of the active wells maintained by the purveyor are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014c; CDPH, 2014e; WESTON, 2014; App. C-5).

Maywood Mutual Water Company #2

The Maywood MWC #2 purveyor operates a drinking water system that serves a population of approximately 6,700 and includes two active wells (May Avenue Well and 52nd Street Well). Maywood MWC #2 previously operated at least one other well (Pae Well), which has since been destroyed. The MWC obtains approximately 80 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of imported surface water purchased from the MWD (approximately 19 percent) and recycled water (approximately 1 percent). With respect to regional groundwater flow, the system is located in a generally up-gradient (north-northwesterly) direction from the Univar site. During routine annual water

quality sampling conducted in April 2013, none of the system's active wells exhibited detectable concentrations of regulated VOCs. Both of the active wells maintained by the purveyor are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014c; CDPH, 2014e; WESTON, 2014; App. C-6).

City of Vernon

The City of Vernon (CoV) Water Department operates a drinking water system that serves a population of approximately 45,000 and includes seven active wells (Wells 11, 12, 15, 16, 17, 19, and 20), one designated standby wells (Well 14), and three inactive wells (Wells 5, 9, and 10). In addition, the City has two pending wells (Smurfit 10, and Smurfit 9) and previously operated at least three other wells (Wells 7, 13, and 18), which have since been destroyed. The CoV obtains approximately 78 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of imported surface water purchased from the MWD (approximately 21.5 percent) and recycled water (approximately 0.5 percent). With respect to regional groundwater flow, the system is located in a generally up-gradient (north-northwesterly) direction from the Univar site. During routine annual water quality sampling conducted in February 2013, May 2013, and February 2014, none of the system's active or standby wells exhibited detectable concentrations of regulated VOCs. Five of the eight active and/or standby wells maintained by the city are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014b; CDPH, 2014e; WESTON, 2014; App. C-7).

Walnut Park Mutual Water Company

The Walnut Park MWC purveyor operates a drinking water system that serves a population of approximately 17,000 and includes three active wells (Wells 10, 11, and 12). In addition, the purveyor has previously operated at least two other wells (Wells 8 and 9), which have since been destroyed. The Walnut Park MWC obtains 73 percent (10-yr average) of its drinking water from groundwater. The remaining portion is primarily composed of imported surface water purchased from the MWD (approximately 27 percent). With respect to regional groundwater flow, the system is located in a generally cross-gradient (northwesterly) direction from the Univar site. During routine annual water quality sampling conducted in June 2013, October 2013, and January 2014, none of the system's active or standby wells exhibited detectable concentrations of regulated VOCs. All three of the active wells maintained by the purveyor are located within 4 miles of the site (CBMWD, 2011; CDPH, 2014a; CDPH, 2014e; WESTON, 2014; App. C-May2; App. C-8).

Additional water purveyors operate wells within four miles of the site; however, based on the HRS model, it was not necessary to evaluate these systems (WESTON, 2014).

3.2.3 Groundwater Pathway Conclusion

The depth to groundwater at the Univar site is estimated to be approximately 53 feet bgs with a flow direction towards the south to southwest. The geologic materials in the unsaturated zone between ground surface and the top of the aquifer are estimated to be composed of silty fine sand to fine sands. Forty-two municipal drinking water wells that are located within 4 miles of the site were evaluated for this PA. These wells, which are operated by 10 distinct water purveyors, serve an estimated apportioned population of 253,000. The nearest of these wells, Well 03, is an active well maintained by the Tract 349 MWC and is located approximately 0.45 mile west-northwest of the site. Approximately 21 additional water purveyors operate wells within four miles of the site; however, based on the HRS model, it was not necessary to evaluate these systems (CBMWD, 2011; CDPH, 2014a; CDPH, 2014b; CDPH, 2014c; CDPH, 2014d; CDPH, 2014e; WESTON, 2014).

3.3 Surface Water Pathway

In determining the score for the surface water pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to surface water (e.g., streams, rivers, lakes, and oceans); 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, persistence, bioaccumlulation potential, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on drinking water intakes, fisheries, and sensitive environments associated with surface water bodies within 15 miles downstream of the site.

Surface water runoff from the Univar site is expected to flow from the paved surfaces at the site to adjacent public roadways (i.e., Wilcox Ave, Cecelia St.) and into curbside municipal stormwater drains. The nearest surface water body to the site is the Los Angeles River, which is located approximately 0.4 mile east. The Los Angeles River is highly modified, having been lined with concrete along a majority of its length by the U.S. Army Corps of Engineers in the 1950s. Flows in the river are dominated by urban runoff and tertiary-treated effluent from several municipal wastewater treatment plants. The river empties into the Pacific Ocean at San Pedro Bay approximately 13.5 miles downstream of the site. There are no surface water intakes, fisheries, or sensitive environments associated with the Los Angeles River downstream of the site; however, there is a potential for fisheries and/or recreational areas to exist within San Pedro Bay (Google, 2014; RWQCB, 1994).

3.4 Soil Exposure and Air Pathways

In determining the score for the soil exposure pathway, the HRS evaluates: 1) the likelihood that there is surficial contamination associated with the site (e.g., contaminated soil that is not covered by pavement or at least 2 feet of clean soil); 2) the characteristics of the hazardous substances in the surficial contamination (i.e., toxicity and quantity); and 3) the people or

sensitive environments (targets) who actually have been or potentially could be, exposed to the contamination. For the targets component of the evaluation, the HRS focuses on populations that are regularly and currently present on or within 200 feet of surficial contamination. The four populations that receive the most weight are residents, students, daycare attendees, and terrestrial sensitive environments.

In determining the score for the air migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to ambient outdoor air; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on regularly occupied residences, schools, and workplaces within 4 miles of the site. Transient populations, such as customers and travelers passing through the area, are not counted.

As of May 2013, there were no residences, schools, or daycare facilities located on the Univar site. The nearest residential property to the site was located approximately 55 feet north, across Cecelia Street from the northwest corner of the site. No sensitive environments were located on the site and the surface of the site appeared to be entirely covered with pavement or buildings. The site appeared entirely fenced and generally inaccessible to the public. The total number of employees working at the site is not known (DTSC, 2013; Google, 2014).

4.0 EMERGENCY RESPONSE CONSIDERATIONS

The National Contingency Plan [40CFR 300.415 (b) (2)] authorizes the EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region 9's Emergency Response Office does not appear to be necessary:

- As of May 2013, there were no residences, schools, or daycare facilities located on the Univar site. In addition, no sensitive environments were located on the site and the surface of the site was entirely covered in pavement or buildings (DTSC, 2013; Google, 2014).

5.0 SUMMARY

The Univar USA (Univar) site is located at 5000-5042 Cecelia Avenue and 8332 Wilcox Avenue in South Gate, Los Angeles County, California. The site is situated on three county parcels and occupies approximately five acres in a mixed industrial and residential area at the northeastern portion of the city of South Gate; adjacent to the border with the city of Cudahy.

As of April 2013, the site was occupied by six primary structures that include: the Quality Carriers Office and Warehousing Building, the Quality Carriers Maintenance Building, the QualaWash Office Building, the QualaWash Operations Building, and two large truck bays. An additional building, which was removed in the early 2000s, was formerly located adjacent west of the Quality Carriers Office and Warehousing Building. The site was first developed prior to 1954 as single-family residential buildings and vacant land. By 1974, all but two of the single-family homes, which were located at the northwest and north-central portions of the site, had been removed and the present-day buildings had been constructed. By 1994, the remaining single-family residences had been removed.

The site is currently owned by Quala Systems, Inc., which has owned the site parcels since the 1990s. The site is operated primarily by two entities: Winsome Enterprises, Inc. (Winsome), which is a subsidiary of Quality Distribution, Inc.; and QualaWash Holdings LLC (QualaWash), which prior to 2009 was Quala Systems, Inc., a subsidiary of Quality Distribution, Inc.

Operations at the site are primarily divided into two separate activities that include bulk chemical tank truck distribution, which is conducted by Winsome, and bulk chemical tank trailer cleaning, which is conducted by QualaWash. QualaWash utilizes the central portion of the site for tank washing activities that typically operate 24 hours a day, seven days a week. The site has reportedly been used for tank trailer hauling and washing activities since at least 1986. In addition, activities involving tractor trailers have been conducted at the site since at least 1972; however, the specific operations associated with these early activities are not known.

Four large aboveground storage tanks (ASTs), along with several smaller ASTs, are located on the site adjacent north of the QualaWash Operations Building and are reportedly used store wash fluid for tanker cleaning operations. In addition, numerous 55-gallon drums and plastic storage totes are stored on the site, primarily in the vicinity of the QualaWash buildings. A diesel underground storage tank (UST) was formerly located at the site; however, the specific location of this UST is not known. A large clarifier is also reportedly located at the site; however, the specific location of this clarifier is not known.

The volume and type of hazardous substances stored at the site is variable due to the nature of the on-site operations. Caustics, soaps, polymers, and latex are generally stored for a short time on the site. Based on identified hazardous waste manifests and generator reports, hazardous substances used and/or stored on the site include, but are not limited to: halogenated solvents, including tetrachloroethylene (PCE); hydrocarbon solvents; oxygenated solvents; non-

halogenated solvents, including methyl ethyl ketone (MEK); and metals, including chromium, cadmium, arsenic, and mercury. Specific hazardous substance storage and disposal practices are not known.

The site boundary is located approximately 200 feet west of the former Hoffman Well 2, which was historically operated by the Golden State Water Company and was destroyed in approximately 2007 due to concentrations of trichloroethylene (TCE) that exceeded 10 micrograms per liter (µg/L).

The site has at least six listings in the Resource Conservation and Recovery Act Information (RCRAInfo) database with listings as 'Large Generator,' 'Small Generator,' and 'Transporter.'

The state and local regulatory agencies have had no known significant involvement with the site.

The following pertinent Hazard Ranking System (HRS) factors are associated with the Univar site:

- The depth to groundwater is estimated to be approximately 53 feet below ground surface (bgs) with a flow direction towards the south to southwest. Geologic materials in the unsaturated zone between ground surface and the top of the aquifer are primarily composed of clays to sandy silts with interbedded lenses of silty sands to sands. The average net annual precipitation is approximately 12 inches.

- The nearest drinking water well is the Tract 349 Mutual Water Company's Well 03, which is located approximately 0.45 mile west-northwest. There are at least 42 municipal drinking water wells located within 4 miles of the site that serve an apportioned population of approximately 253,000.

- Surface water runoff is expected to flow from the paved surfaces at the site to adjacent public roadways and into curb municipal stormwater drains. The nearest surface water body to the site is the Los Angeles River, which is located approximately 0.4 mile east. No drinking water intakes are located within 15 miles downstream; however, there is the potential for fisheries and/or recreation areas to exist within this distance.

- As of May 2013, there were no residences, schools, or daycare facilities located on the site. No sensitive environments were located on the site and the surface of the site appeared to be entirely covered with pavement or buildings. The site appeared entirely fenced and generally inaccessible to the public. The total number of employees working at the site is not known.

6.0 REFERENCE LIST

AEGI, 2012 — Ardent Environmental Group, Inc.; *Second 2011 Semi-Annual Groundwater Monitoring Report, 8411 South Atlantic Avenue, Cudahy, California, SCP No. 1148, Site ID No. 2040226*; 18 January 2012.

CBMWD, 2011 — Central Basin Municipal Water District; *Water Use Report, Fiscal Year 2010-2011, City of South Gate, City of Huntington Park, City of Lynwood, Maywood Mutual Water Co. #3, Maywood Mutual Water Co. #2, City of Vernon, Walnut Park Mutual Water Co.*; 2011.

CDPH, 2009 — California Department of Public Health; Safe Drinking Water State Revolving Fund, *September 2009 Final SDWSRF Project Priority List, p. 93*; September 2009.

CDPH, 2014a — California Department of Public Health; *District 07 Hollywood, Drinking Water Monitoring Schedule, Tract 349 Mutual Water Company, Tract 180 Mutual Water Company, Walnut Park Mutual Water Co.*; 12 March 2014.

CDPH, 2014b — California Department of Public Health; *District 15 Metropolitan, Drinking Water Monitoring Schedule, GSWC - Bell/Bell Gardens, City of Vernon*; 12 March 2014.

CDPH, 2014c — California Department of Public Health; *District 16 Central L.A., Drinking Water Monitoring Schedule, Maywood Mutual Water Co. #3, Maywood Mutual Water Co. #2*; 12 March 2014.

CDPH, 2014d — California Department of Public Health; *District 22 Angeles, Drinking Water Monitoring Schedule, City of South Gate, City of Huntington Park, City of Lynwood*; 12 March 2014.

CDPH, 2014e — California Department of Public Health; Drinking Water Watch, Public Water Supply Systems query results; *Tract 349 Mutual Water Company, City of South Gate, Tract 180 Mutual Water Company, GSWC - Bell/Bell Gardens, City of Huntington Park, City of Lynwood, Maywood Mutual Water Co. #3, Maywood Mutual Water Co. #2, City of Vernon, Walnut Park Mutual Water Co.; http://drinc.ca.gov:8080/DWW/index.*jsp; data extracted 24 April 2014.

DTSC, 2013 — Department of Toxic Substances Control; *Site Screening Assessment, Quality Distribution, Inc. aka: Univar USA*; 30 June 2013.

DTSC, 2014 — Department of Toxic Substances Control; Envirostor Database, Search Results, *QUALITY DISTRIBUTION AKA UNIVAR USA (60001785);* http://www.envirostor.dtsc.ca.gov/public/search.asp; data extracted 24 April 2014.

DWR, 1961 — Department of Water Resources, State of California; *Bulletin No. 104, Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County, Appendix A, Ground Water Geology*; June 1961.

DWR, 1991 — Department of Water Resources, State of California; *Bulletin No. 74-90, California Well Standards, Chapter 1 Introduction*; June 1991.

DWR, 2004 — Department of Water Resources, State of California; *California's Groundwater Bulletin 118, Coastal Plain of Los Angeles Groundwater Basin, Central Subbasin*; 27 February 2004.

DWR, 2013 — Department of Water Resources, State of California; *Watermaster Service in the Central Basin, Los Angeles County, July 1, 2012 – June 30, 2013*; October 2013.

EPA, 2014a — U.S. Environmental Protection Agency; Envirofacts Warehouse, RCRAInfo query results; *Quala Systems Inc., QualaWash Holdings, Inc., National Process Industry Corp, Ashland Distribution, Leaseway Bulk Services, Inc., Bulk Freightways;* http://www.epa.gov/enviro/facts/rcrainfo/search.html; data extracted 24 April 2014.

EPA, 2014b — U.S. Environmental Protection Agency; Superfund Site Information query results; *Armstrong World Industries*; http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm; data extracted 24 April 2014.

EPA, 2014c — U.S. Environmental Protection Agency; Superfund Site Information query results; *Univar USA*; http://cumulis.epa.gov/supercpad/cursites/srchsites.cfm; data extracted 24 April 2014.

Google, 2014 — Google Earth; *33.957103°, -118.178869°, 30 May 1994, 30 November 2003, 30 July 2007, 16 April 2013*; http://earth.google.com; data extracted 24 April 2014.

HA, 2014 — HistoricAerials.com; Aerial Photographs, *1954, 1972;* http://www.historicaerials.com; data extracted 21 April 2014.

LACA, 2014 County of Los Angeles, Department of the Assessor; *Property Information, Assessor's ID NO. 6222-032-018, 6222-032-017, 6222-032-011, Parcel Map 6224-32*; http://maps.assessor.lacounty.gov/mapping/viewer.asp; data extracted 24 April 2014.

N&M, 2005 Ninyo & Moore; *Monitoring Well Log, MW-1, 8411 South Atlantic Avenue, Cudahy, California*; July 2005.

QDI, 2014 Quality Distribution, Inc.; Driver Guide; *Company History*; http://driver.qualitydistribution.com/driverguide/Pages/History.aspx; data extracted 24 April 2014.

Quala, 2014 Quala; *The Premier Provider of Sustainable Container Solutions, Quala Location Finder;* http://quala.us.com; data extracted 24 April 2014.

RWQCB, 1994 Regional Water Quality Control Board; *Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watershed of Los Angeles and Ventura Counties*; 13 June 1994.

RWQCB, 2014 Regional Water Quality Control Board; Geotracker Database, Search Results, *MATLACK INC (T0603703785);* http://geotracker.swrcb.ca.gov/search.asp; data extracted 24 April 2014.

USCB, 2012 U.S. Census Bureau; *2013 Boundary and Annexation Survey (BAS): Cudahy city, CA (10600017498)*; 31 October 2012.

WEI, 2014 Winsome Enterprises, Inc.; *About the Company*; http://www.winsomeqc.com; data extracted 24 April 2014.

WESTON, 2014 Weston Solutions, Inc.; *Draft GIS Well Report, Univar USA, EPA ID: CAN000909573*; April 2014.

Note: This document is confidential and is included in the confidential information packet.

WRD, 2011 Water Replenishment District of Southern California; *Engineering Survey and Report*; March 4, 2011.

APPENDIX A:
Transmittal List

TRANSMITTAL LIST

Date: **September 2014**
Site Name: **Univar USA**
EPA ID No.: **CAN000909573**

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A copy of the Preliminary Assessment (PA) report for the above-referenced site should be sent to the following recipients:

Eva Ramirez
Site Owner Representative (Corporate Owner)
8332 Wilcox Avenue
South Gate, CA 90280

Sayareh Amirebrahimi
California Environmental Protection Agency
Department of Toxic Substances Control
9211 Oakdale Avenue
Chatsworth, CA 91311-6505

U.S. Environmental Protection Agency, Superfund Records Center
c/o Matt Mitguard
USEPA - Superfund Division
75 Hawthorne Street, SFD-6-1
San Francisco, CA 94105

APPENDIX B:
Site Reconnaissance Interview and Observation Report/Photographic Documentation

SITE RECONNAISSANCE INTERVIEW AND OBSERVATIONS REPORT/PHOTOGRAPHIC DOCUMENTATION

Date: **April 2014**
Site Name: **Univar USA**
EPA ID No.: **CAN000909573**

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(Note: No Site Reconnaissance Interview and Observations Report/Photographic Documentation was required for the completion of this report)

APPENDIX C:
Contact Log and Contact Reports

CONTACT LOG

SITE: Univar USA
EPA ID: CAN000909573

NAME	AFFILIATION	PHONE	DATE	INFORMATION
Ana Chavez	Golden State Water Company, Central District	(714) 535-7711 ext. 219	03/10/2011	See Contact Report 3
Martin Gonzales	Walnut Park Mutual Water Company	(323) 585-7321	10/29/10; 6/30/2011	See Contact Report 8
Ron Hernandez	City of South Gate, Public Works	(323) 563-5796	01/04/2011; 06/22/2011	See Contact Report 2
Jose Molina	City of Lynwood, Public Works	(310) 603-0220 ext. 800	05/25/2011	See Contact Report 4
Scott Rigg	City of Vernon, Water Department	(323) 583-8811 ext. 279	12/02/2010	See Contact Report 7
Bob Rohlf	Maywood Mutual Water Company #3	(323) 560-3657	12/2/2010; 8/24/2011	See Contact Report 5
Susan	Los Angeles County, Office of the Assessor	(818) 901-3455	03/19/2014	See Contact Report 1
Gustavo Villa	Maywood Mutual Water Company #2	(323) 581-5816	12/21/2010	See Contact Report 6

CONTACT REPORT 1

AGENCY/AFFILIATION: County of Los Angeles		
DEPARTMENT: Office of the Assessor		
ADDRESS/CITY: 14340 Sylvan Street, Van Nuys		
COUNTY/STATE/ZIP: Los Angeles, California, 91401		
CONTACT(S)	TITLE	PHONE
Susan	Assessment Clerk	(818) 901-3455
PERSON MAKING CONTACT: Brian P. Reilly		DATE: 19 March 2014
SUBJECT: Parcel Ownership Information		
SITE NAME: Univar USA		EPA ID#: CAN000909573

The current owner and recorded owner address of the three parcels associated with the Univar site (i.e., 6224-032-011, 6224-032-017, and 6224-032-018) as indicated by the Assessor's Office is: Quala Systems, Inc. at 4041 Park Oaks Blvd., Suite 200, Tampa, FL 33610.

CONTACT REPORT 2

CONTACT REPORT

AGENCY/AFFILIATION: City of South Gate		
DEPARTMENT: Public Works		
ADDRESS/CITY: 4244 Santa Ana Street, South Gate		
COUNTY/STATE/ZIP: Los Angeles, California, 90280		
CONTACT(S)	TITLE	PHONE
Ron Hernandez	Water Operations Foreman 8-22-11	(323) 563-5796
PERSON MAKING CONTACT: Anitra B. Rice, Project Scientist, Weston Solutions, Inc.		DATE: 01/4/11
PERSON MAKING CONTACT: Amanda K.C. Reilly, Project Scientist, Weston Solutions, Inc.		DATE: 06/22/11
SUBJECT: Drinking water well information		
SITE NAME: Seam Master Industries		EPA ID#: CAN000905902
SITE NAME: Jervis B. Webb Co.		EPA ID#: CAD008339467

The City of South Gate water distribution system serves approximately 96,375 customers. The blended system consists of seven active drinking water wells (Wells 14, 19, 24, 25, 26, 27 and 28), four stand-by wells (Wells 14, 19, 22B, and 23), and most recently one destroyed (Well 7). The seven active groundwater wells provide 100 percent of the drinking water. No single well provides more than 40 percent of the total demand at any given time. Wells 14 and 19 provide 30 percent of the demand, Wells 24 and 25 provide 20 percent of the demand, Well 26 provides 20 percent of the demand, Well 27 provides 10 percent of the demand, and Well 28 provides 20 percent of the demand. The City of South Gate does not sell or purchase water to other water systems and/or water users.

In 2002 water quality sampling, tetrachloroethylene (PCE), trichloroethylene (TCE), and hexavalent chromium has been detected. PCE has been detected in Wells 13, 14, 18, and 19. The PCE at these four wells are currently being treated at the wellhead. In standby Well 7, TCE has been found up to 10.5 parts per million (ppm) and hexavalent chromium up to 0.086 ppm. In standby Well 22B, PCE has been found up to 0.0108 ppm. Well 27 has elevated levels of iron and manganese. These wells are currently offline.

CONTACT REPORT 2
(continued)

City of South Gate				
Well Name	**Well Address** CONFIDENTIAL	**Well Depth (feet bgs)**	**First Perforation (feet bgs)**	**Gallons Per Minute (GPM)**
Well 7		883	500	-
Well 13		810	600	1800
Well 14		813	615	3000
Well 18		790	620	1500
Well 19		794	610	2500
Well 22B		578	495	622
Well 23		856	530	-
Well 24		1,266	310	1500
Well 25		1,325	303	500
Well 26		1,206	628	2710
Well 27		1,200	500	1500
Well 28		1,160	610	2500

CONTACT REPORT 3

AGENCY/AFFILIATION: Golden State Water Company		
DEPARTMENT: Central District		
ADDRESS/CITY: 12035 Burke Street, Suite 1, Santa Fe Springs		
COUNTY/STATE/ZIP: Los Angeles, California, 91773		
CONTACT(S)	TITLE	PHONE
Ana Chavez	Sr. Water Resources Analyst	(714) 535-7711 ext. 219
PERSON MAKING CONTACT: Anitra B. Rice		DATE: 03/10/2011
SUBJECT: Drinking water well information		
SITE NAME: Atlantic Avenue South Gate Plume		EPA ID#: CAN000908953

Bell/Bell Gardens System

As of December 2009, the Bell/Bell Gardens System operates 7,521 service connections (multiply by 3.3 persons per service connection equals a population of 24,829 served). The system consists of four active wells (Clara #2, Gage #2, Otis #3, and Watson #1), one active/offline well (Bissell 2), two standby/inactive wells (Gage 1 and Priory 2) and one new well not yet activated (Bissell 3) that supplies 99 percent of the water in the system. Bissell #2 has been offline since July 2010 due to sand issues. Gage 1 and Priory 2 are both standby/inactive, since July 2003 and March 2008, respectively, also due to sand issues. The remaining one percent of the water within the system is provided by Central Basin Municipal Water District (CBMWD) who obtains its imported water from MWD. No individual well supplies more than 40 percent of the total supply. Watson #1 is being treated for TCE and PCE.

GSWC – Bell/Bell Gardens System				
Well Name	**Well Address (CONFIDENTIAL)**	**Screen Depths (feet bgs)**	**Percent contribute to drinking water**	**Gallons Per Minute (GPM)**
Bissell #2		575-1275	0%	0
Bissell #3		595-615, 680-690, 705-730, 805-820, 900-925, 955-970, 1005-1025	0%	0
Otis #3		520-530, 570-590	100%	860
Watson #1		243-249, 330-348, 420-427, 442-456	100%	985
Gage #1		282-301, 312-320, 428-434, 488-514	0%	0
Gage #2		290-320, 434-436, 499-502, 555-564, 569-573	100%	960
Priory #2		368-376, 380-400, 422-426, 561-581, 593-613	0%	0
Clara #2		330-350, 360-390, 420-470, 520-560, 610-640, 770-830, 960-970	100%	1029

CONTACT REPORT 4

AGENCY/AFFILIATION: City of Lynwood		
DEPARTMENT: Public Works		
ADDRESS/CITY: 11330 Bullis Road, Lynwood		
COUNTY/STATE/ZIP: Los Angeles, California, 90262		
CONTACT(S)	TITLE	PHONE
Jose Molina	Utility Services Manager	(310) 603-0220, ext. 800
PERSON MAKING CONTACT: Karen Jurist, Site Assessment Manager, U.S. EPA Region IX		DATE: 05/25/11
SUBJECT: Drinking water well information		
SITE NAME: Atlantic Avenue South Gate Plume		EPA ID#: CAN000908953

The City of Lynwood water distribution system serves approximately 65,965 people. The non-blended system consists of five active drinking water wells (Wells 5, 8, 9, 11 and 19). Currently, all of the water obtains all of its water from ground water. Approximately one to two percent of the water distributed is imported surface water purchased from the Municipal Water District (MWD) on an as needed basis. No one well supplies more than 40 percent to the entire system. PCE has been detected in each active drinking water well at concentrations below the MCL.

City of Lynwood				
Well Name	**Well Address (CONFIDENTIAL)**	**Well Screen Depths (feet bgs)**	**Percent Contributing to System**	**Gallons Per Minute (GPM)**
Well 5		649 – 662; 669 – 709	9.73	550
Well 8		161 – 175; 207 – 216; 241 – 247; 266 – 267; 271 – 277; 284 – 290; 681 – 690; 708 – 719; 738 – 803	19.47	1,100
Well 9		323 – 345; 352 – 367; 576 – 582; 676 – 688; 776 – 787	21.24	1,200
Well 11		310 – 324; 670 – 676; 902 – 911	14.16	800
Well 19		250 – 878	35.4	2,000

CONTACT REPORT 5

AGENCY/AFFILIATION: Maywood Mutual Water Company #3		
DEPARTMENT: Water Department		
ADDRESS/CITY: 6151 Heliotrope Avenue, Maywood		
COUNTY/STATE/ZIP: Los Angeles, California, 90270		
CONTACT(S)	TITLE	PHONE
Bob Rohlf	Director of Operations	(323) 560-3657
PERSON MAKING CONTACT: Anitra B. Rice, Project Scientist, Weston Solutions, Inc.		DATE: 12/2/2010
PERSON MAKING CONTACT: Amanda K.C. Reilly, Project Scientist, Weston Solutions, Inc.		DATE: 8/24/2011
SUBJECT: Drinking water well information		
SITE NAME: Seam Master Industries		EPA ID#: CAN000905902
SITE NAME: Jervis B. Webb Co.		EPA ID#: CAD008339467

The Maywood Mutual Water Company #3 operates a drinking water supply system that contains three active drinking water wells (Prospect #1, District #4, and Warehouse #7) that serve a population of approximately 9,500 people. The Maywood Mutual Water Company #3 currently obtains all of its drinking water from groundwater. However, at times water has been purchased from the Metropolitan Water District. The Prospect #1 well contributes 22.7 percent to the system, the District #4 well contributes 34.9 percent to the system, and the Warehouse #7 well contributes 42.4 percent to the system. The Maywood Mutual Water Company #3 does not sell their water to any other water purveyors. All wells are screened in the Exposition aquifier but there are several smaller aquifiers that water is also drawn from. The Director of Operations did not know names of smaller aquifiers. The water distributed by the Maywood Mutual Water Company #3 is within the safe drinking standards.

Maywood Mutual Water Company #3		
Well Name	**Well Address**	**Gallons Per Minute (GPM)**
Prospect Well #1	CONFIDENTIAL	700
District #4 Well		1300
Warehouse #7 Well		1000

Robert C. Rohlf, Director of Operations
Maywood Mutual Water Co. No. 3

CONTACT REPORT 6

AGENCY/AFFILIATION: Maywood Mutual Water Company #2		
DEPARTMENT: Water Department		
ADDRESS/CITY: 3521 Slauson Avenue, Maywood		
COUNTY/STATE/ZIP: Los Angeles, California, 90270		
CONTACT(S)	TITLE	PHONE
Gustavo Villa	General Manager	(323) 581-5816
PERSON MAKING CONTACT: Anitra B. Rice		DATE: 21 December 2010
SUBJECT: Drinking water well information		
SITE NAME: Univar USA		EPA ID#: CAN000909573

The Maywood Mutual Water Company #2 operates a drinking water supply system that contains two active drinking water wells that serve a population of approximately 6,700 people. In 2010 the Maywood Mutual Water Company #2 obtained 98 percent of its drinking water from groundwater and the remaining 2 percent was surface water purchased from the Metropolitan water district. The 52nd Street Well provides 60 percent of groundwater to the system and is pumped at approximately 1,100 gallons per minute. The Maywood Well provides 40 percent of groundwater and is pumped at approximately 1,000 gallons per minute. Mr. Villa does not know which aquifer the wells are drawn from.

Due to confidentiality of the information provided by the Maywood Mutual Water Company #2, the well location information is included in the Confidential Information Packet of the report.

CONTACT REPORT 7

AGENCY/AFFILIATION: City of Vernon		
DEPARTMENT: Water Department		
ADDRESS/CITY: 4305 Santa Fe Avenue, Vernon		
COUNTY/STATE/ZIP: Los Angeles, California, 90630		
CONTACT(S)	TITLE	PHONE
Scott Rigg	Water Operations Supervisor	(323) 583-8811 x279
PERSON MAKING CONTACT: Anitra B. Rice		DATE: 2 December 2010
SUBJECT: Drinking water well information		
SITE NAME: Univar USA		EPA ID#: CAN000909573

The City of Vernon Water Department operates eight active drinking water wells that serve a population of 45,000. Approximately 11 percent of the water distributed by the City of Vernon comes from surface water sources purchased from the Metropolitan Water Company. The water demand has decreased due to the economy, the City of Vernon is primarily an industrial city and many businesses have closed. The remaining 90 percent distributed comes from groundwater. None of the wells supply more than 40 percent to the system. In September 2008, Well 18 was destroyed. Previous sampling indicated Well 18 had elevated concentrations of perchlorate, 1-2-dichloroethane and trichloroethylene. The wells are screened in the Sunnyside aquifer.

Due to confidentiality of the information provided by the Walnut Park Mutual Water Company, the well location information is included in the Confidential Information Packet of the report.

CONTACT REPORT 8

AGENCY/AFFILIATION: Walnut Park Mutual Water Company		
DEPARTMENT: Water Department		
ADDRESS/CITY: 2460 East Florence Avenue, Huntington Park		
COUNTY/STATE/ZIP: Los Angeles, California, 90255		
CONTACT(S)	TITLE	PHONE
Martin Gonzalez	Water Superintendent	(323) 585-7321
PERSON MAKING CONTACT: Anitra B. Rice, Project Scientist, Weston Solutions, Inc.		DATE: 10/29/10
PERSON MAKING CONTACT: Amanda K.C. Reilly, Project Scientist, Weston Solutions, Inc.		DATE: 6/30/11
SUBJECT: Drinking water well information		
SITE NAME: Seam Master Industries		EPA ID#: CAN000905902
SITE NAME: Jervis B. Webb Co.		EPA ID#: CAD008339467

The Walnut Park Mutual Water Company operates two active drinking water wells (Well 10 and Well 11) that serve a population of 17,000. An additional well, Well 12, is a stand-by well and is currently non-operational and not contributing any water to the system. All of the water distributed is from ground water. Walnut Park Mutual Water Company stopped purchasing surface water from the Metropolitan Water Company in December 2006. Walnut Park Mutual Water Company does not sell or purchase water from any other water purveyors. Water from the two wells is blended evenly prior to distribution. Contamination has not been detected in either well.

Walnut Park Mutual Water Company			
Well Name	Well Address	Screen Depths (feet bgs)	Well Capacity (GPM)
Well 10	CONFIDENTIAL	205	1,500
Well 11		203	1,250

APPENDIX D:
Latitude and Longitude Calculations Worksheet

Latitude and Longitude Calculation Worksheet (7.5' quads)
Using an Engineer's Scale (1/50)

Site Name Univar USA **CERCLIS #** C A N 0 0 0 9 0 9 5 7 3

AKA

Address 5000-5042 Cecelia Avenue & 8332 Wilcox Avenue

City South Gate **State** C A **ZIP** 90280

Site Reference Point Aerial – geometric center of site

USGS Quad Name **Scale**

Township **Range** **Section** 3 3 3

Map Datum 1927 1983 **(Check one)** **Meridian**

Map coordinates at southeast corner of 7.5' quadrangle (attach photocopy)

Latitude E > AN **Longitude** E > AW

Map coordinates at southeast corner of 2.5' grid cell

Latitude E > AN **Longitude** E > AW

Calculations

LATITUDE(x)

A) Number of ruler graduations between 2.5' (150") grid lines **(a)**

B) Number of ruler graduations between south grid line and the site reference point **(b)**

C) Therefore, a/150 = b/x, where **x= Latitude in decimal seconds, north of the south grid line**

Expressed as minutes and seconds (1' = 60") = E > AN

Add to grid cell latitude = E > AN + E > AN

Site latitude = 3 3 ° 5 7 ' 2 6 " N

LONGITUDE(y)

A) Number of ruler graduations between 2.5' (150") grid lines **(a)**

B) Number of ruler graduations between south grid line and the site reference point **(b)**

C) Therefore, a/150 = b/x, where **x= Longitude in decimal seconds, west of the east grid line**

Expressed as minutes and seconds (1" = 60") = E > AW

Add to grid cell longitude = E > AN + E > AN

Site longitude = 1 1 8 ° 1 0 ' 4 4 " W

APPENDIX E:
EPA Quick Reference Fact Sheet

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
Publication 9345.4-03FS
September 1993

EPA

SITE ASSESSMENT:
Evaluating Risks at Superfund Sites

Office of Emergency and Remedial Response
Hazardous Site Evaluation Division 5204G
Quick Reference Fact Sheet

The Challenge of the Superfund Program

A series of headline-grabbing stories in the late 1970s, such as Love Canal, gave Americans a crash course in the perils of ignoring hazardous waste. At that time, there were no Federal regulations to protect the country against the dangers posed by hazardous substances (mainly industrial chemicals, accumulated pesticides, cleaning solvents, and other chemical products) abandoned at sites throughout the nation. And so, in 1980 Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, to address these problems.

The major goal of the Superfund program is to protect human health and the environment by cleaning up areas, known as "sites," where hazardous waste contamination exists. The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Superfund program.

At the time it passed the Superfund law, Congress believed that the problems associated with uncontrolled releases of hazardous waste could be handled in five years with $1.6 billion dollars. However, as more and more sites were identified, it became apparent that the problems were larger than anyone had originally believed. Thus, Congress passed the Superfund Amendments and Reauthorization Act (SARA) in 1986. SARA expanded and strengthened the authorities given to EPA in the original legislation and provided a budget of $8.5 billion over five years. Superfund was extended for another three years in 1991.

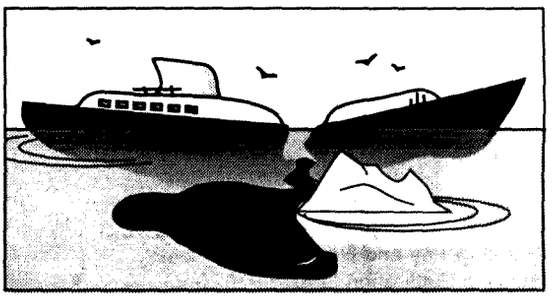
What is EPA's Job at Superfund Sites?

For more than 10 years, EPA has been implementing the Superfund law by:

- Evaluating potential hazardous waste sites to determine if a problem exists;
- Finding the parties who caused the hazardous waste problems and directing them to address these problems under EPA oversight or requiring them to repay EPA for addressing these problems; and
- Reducing immediate risks and tackling complex hazardous waste problems.

The Superfund site assessment process generally begins with the discovery of contamination at a site and ends with the completion of remediation (i.e., cleaning up the waste at a site) activities. This fact sheet explains the early part of the process, called the *site assessment* phase.

The National Response Center



The National Response Center (NRC), staffed by Coast Guard personnel, is the primary agency to contact for reporting all oil, chemical, and biological discharges into the environment anywhere in the U.S. and its territories. It is responsible for:

- Maintaining a telephone hotline 365 days a year, 24 hours a day;
- Providing emergency response support in specific incidents; and
- Notifying other Federal agencies of reports of pollution incidents.

To report a pollution incident, such as an oil spill, a pipeline system failure, or a transportation accident involving hazardous material, call the NRC hotline at **800-424-8802.**

1 Site Discovery

Hazardous waste sites are discovered in various ways. Sometimes concerned residents find drums filled with unknown substances surrounded by dead vegetation and call the NRC, EPA, or the State environmental agency; or an anonymous caller to the NRC or EPA reports suspicious dumping activities. Many sites come to EPA's attention through routine inspections conducted by other Federal, State, or local government officials. Other sites have resulted from a hazardous waste spill or an explosion. EPA enters these sites into a computer system that tracks any future Superfund activities.

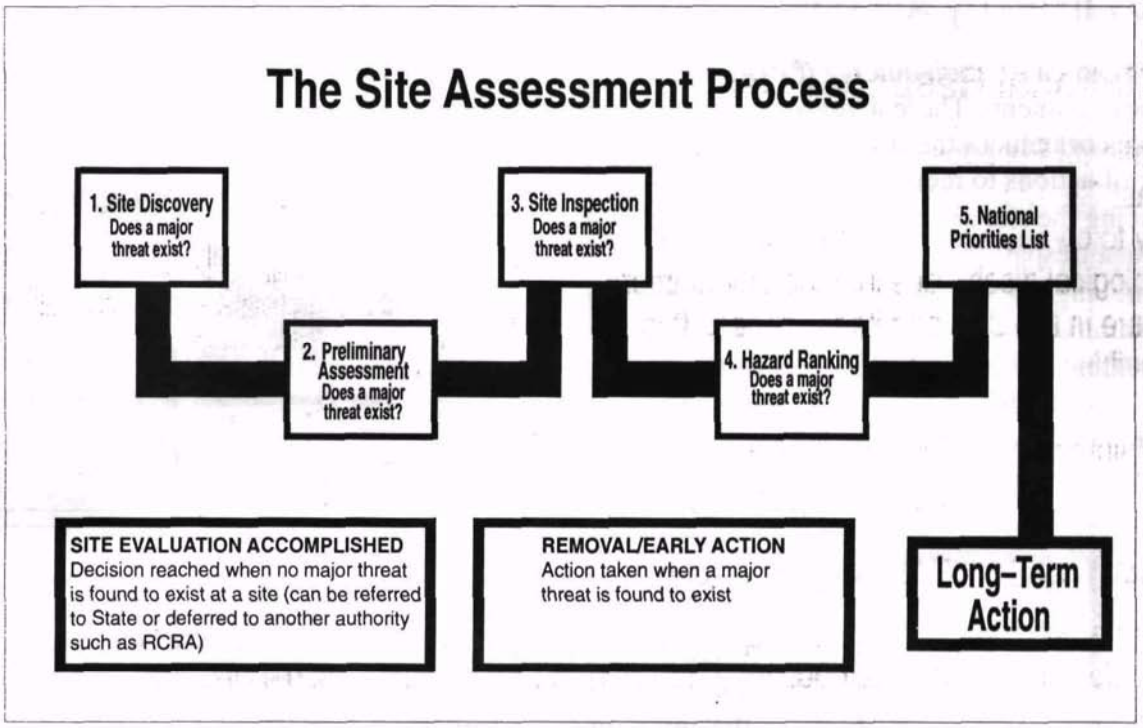
2 Preliminary Assessment

After learning about a site, the next step in the site assessment process is to gather existing information about the site. EPA calls this the *preliminary assessment.* Anyone can request that a preliminary assessment be performed at a site by petitioning EPA, the State environmental agency, local representatives, or health officials.

During the preliminary assessment, EPA or the State environmental agency:

- Reviews available background records;
- Determines the size of the site and the area around it;
- Tries to determine whether hazardous substances are involved;
- Identifies actual or potential pollution victims, such as the nearby population and sensitive environments;
- Makes phone calls or interviews people who may be familiar with the site; and
- Evaluates the need for early action using EPA's removal authority.

By gathering information and possibly visiting the site, EPA or the State environmental agency is able to determine if major threats exist and if cleanup is needed. Many times, the preliminary assessment indicates that no major threats exist.



However, if hazardous substances do pose an immediate threat, EPA quickly acts to address the threat. When a site presents an immediate danger to human health or the environment—for example, there is the potential for a fire or an explosion or the drinking water is contaminated as a result of hazardous substances leaking out of drums—EPA can move quickly to address site contamination. This action is called a *removal* or an *early action.* Additional information on early actions can be found on page 4.

EPA or the State environmental agency then decides if further Federal actions are required. Of the more than 35,000 sites discovered since 1980, only a small percentage have needed further remedial action under the Federal program.

A report is prepared at the completion of the preliminary assessment. The report includes a description of any hazardous substance release, the possible source of the release, whether the contamination could endanger people or the environment, and the pathways of the release. The information outlined in this report is formed into hypotheses that are tested if further investigation takes place. You can request a copy of this report once it becomes final— just send your name and address to your EPA regional Superfund office. See page 8 for further information on these contacts.

Sometimes it is difficult to tell if there is contamination at the site based on the initial information gathering. When this happens, EPA moves on to the next step of the site assessment, called the *site inspection.*

Making Polluters Pay

One of the major goals of the Superfund program is to have the responsible parties pay for or conduct remedial activities at hazardous waste sites. To accomplish this goal, EPA:

- Researches and determines who is responsible for contaminating the site;
- Issues an order requiring the private parties to perform cleanup actions with EPA oversight; and
- Recovers costs that EPA spends on site activities from the private parties.

Removals/Early Actions

EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment. These actions are called *removals* or *early actions* because EPA rapidly eliminates or reduces the risks at the site. EPA can take a number of actions to reduce risks, including:

- Fencing the site and posting warning signs to secure the site against trespassers;
- Removing, containing, or treating the source of the contamination;
- Providing homes and businesses with safe drinking water; and, as a last resort,
- Temporarily relocating residents away from site contamination.

"EPA can take action quickly if hazardous substances pose an immediate threat to human health or the environment."

3 Site Inspection

If the preliminary assessment shows that hazardous substances at the site may threaten residents or the environment, EPA performs a site inspection. During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water. EPA may initiate a concurrent SI/remedial investigation at those sites that are most serious and determined early as requiring long-term action. Sometimes, wells have to be drilled to sample the ground water. Site inspectors may wear protective gear, including coveralls and respirators, to protect themselves against any hazardous substances present at the site. Samples collected during the site inspection are sent to a laboratory for analysis to help EPA answer many questions, such as:

- Are hazardous substances present at the site? If so, what are they, and approximately how much of each substance is at the site?
- Have these hazardous substances been released into the environment? If so, when did the releases occur, and where did they originate?
- Have people been exposed to the hazardous substances? If so, how many people?
- Do these hazardous substances occur naturally in the immediate area of the site? At what concentrations?
- Have conditions at the site gotten worse since the preliminary assessment? If so, is an early action or removal needed? (See box above.)

Often, the site inspection indicates that there is no release of major contamination at the site, or that the hazardous substances are safely contained and have no possibility of being released into the environment. In these situations, EPA decides that no further Federal inspections or remedial actions are needed. This decision is referred to as *site evaluation accomplished.* (See page 5 for more details on the *site evaluation accomplished* decision.)

At the completion of the site inspection, a report is prepared. This report is available to the public–call your EPA regional Superfund office for a copy. See page 8 for the phone numbers of these offices.

"During the site inspection, EPA or the State collects samples of the suspected hazardous substances in nearby soil and water."

At sites with particularly complex conditions, EPA may need to perform a second SI to obtain legally defensible documentation of the releases.

Because EPA has limited resources, a method has been developed to rank the sites and set priorities throughout the nation. That method, known as the *Hazard Ranking System*, is the next step in the site assessment process.

4 Hazard Ranking System

EPA uses the information collected during the preliminary assessment and site inspection to evaluate the conditions at the site and determine the need for long-term remedial actions. When evaluating the seriousness of contamination at a site, EPA asks the following questions:

- Are people or sensitive environments, such as wetlands or endangered species, on or near the site?
- What is the toxic nature and volume of waste at the site?
- What is the possibility that a hazardous substance is in or will escape into ground water, surface water, air, or soil?

Based on answers to these questions, each site is given a score between zero and 100. Sites that score 28.5 or above move to the next step in the process: listing on the *National Priorities List*. Sites that score below 28.5 are referred to the State for further action.

Site Evaluation Accomplished

In many instances, site investigators find that potential sites do not warrant Federal action under the Superfund program. This conclusion can be attributed to one of two reasons:

- The contaminants present at the site do not pose a major threat to the local population or environment; or
- The site should be addressed by another Federal authority, such as EPA's Resource Conservation and Recovery Act (RCRA) hazardous waste management program.

When investigators reach this conclusion, the site evaluation is considered accomplished. A site can reach this point at several places during the site assessment process, namely at the conclusion of the preliminary assessment or the site inspection, or once the site is scored under the Hazard Ranking System.

5 National Priorities List

Sites that are listed on the *National Priorities List* present a potential threat to human health and the environment, and require further study to determine what, if any, remediation is necessary. EPA can pay for and conduct remedial actions at NPL sites if the responsible parties are unable or unwilling to take action themselves. There are three ways a site can be listed on the National Priorities List:

- It scores 28.5 or above on the Hazard Ranking System;
- If the State where the site is located gives it top priority, the site is listed on the National Priorities List regardless of the HRS score; or
- EPA lists the site, regardless of its score, because all of the following are true about the site:
  - The Agency for Toxic Substances and Disease Registry (ATSDR), a group within the U.S. Public Health Service, issues a health advisory recommending that the local population be *dissociated* from the site (i.e., that the people be temporarily relocated or the immediate public health threat be removed);
  - EPA determines that the site poses a significant threat to human health; and
  - Conducting long-term remediation activities will be more effective than addressing site contamination through early actions.

The list of proposed sites is published in the *Federal Register*, a publication of legal notices issued by Federal agencies. The community typically has 60 days to comment on the list. After considering all comments, EPA publishes a list of those sites that are officially on the National Priorities List. When a site is added to the National Priorities List, the site assessment is completed. Long-term actions take place during the next phase. See page 6 for more details on long-term actions.

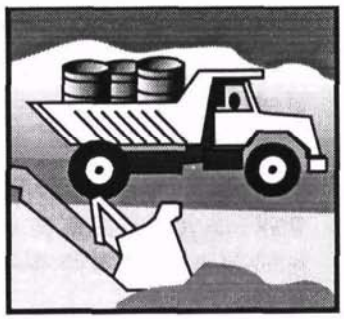
As a Concerned Citizen, How Can I Help ?

- Read this fact sheet.
- Call EPA with any potential sites in your area.
- Provide EPA with site information.
- Comment on proposed listing of sites on the National Priorities List.
- If the site is listed on the NPL, work with your citizens' group to apply for a technical assistance grant.

Addressing Sites in the Long Term

Once a site is placed on the National Priorities List, it enters the long-term or remedial phase. The stages of this phase include:

- ✓ Investigating to fully determine the nature and extent of contamination at the site, which can include a public health assessment done by the ATSDR;
- ✓ Exploring possible technologies to address site contamination;
- ✓ Selecting the appropriate technologies—also called remedies;
- ✓ Documenting the selected remedies in a record of decision (ROD);
- ✓ Designing and constructing the technologies associated with the selected remedies;
- ✓ If necessary, operating and maintaining the technologies for several years (e.g., long-term treatment of ground water) to ensure safety levels are reached; and
- ✓ Deleting the site from the National Priorities List, completing Superfund's process and mission.



Some Commonly Asked Questions

Q: **What exactly is a site?**

A: EPA designates the area in which contamination exists as the "site." Samples are taken to define the area of contamination. At any time during the cleanup process the site may be expanded if contamination is discovered to have spread further.

Q: **How long will it take to find out if a threat exists?**

A: Within one year of discovering the site, EPA must perform a preliminary assessment. The preliminary assessment allows EPA to determine if there is an immediate danger at the site; if so, EPA takes the proper precautions. You will be notified if you are in danger. EPA may also contact you to determine what you know about the site.

Q: **What is the State's role in all these investigations?**

A: The State can take the lead in investigating and addressing contamination. It also provides EPA with background information on (1) immediate threats to the population or environment, and (2) any parties that might be responsible for site contamination. The State shares in the cost of any long-term actions conducted by the Superfund program, comments on the proposal of sites to the National Priorities List, and concurs on the selected remedies and final deletion of sites from the National Priorities List.

Q: **Why are private contractors used to assess sites?**

A: EPA has a limited workforce. By using private contractors, EPA is able to investigate more sites. Also, EPA is able to draw on the expertise of private contracting companies.

Q: **Why are there so many steps in the evaluation process? Why can't you just take away all the contaminated materials right now, just to be safe?**

A: When EPA assesses a site, it first determines if contamination poses any threats to the health of the local population and the integrity of the environment. Dealing with worst sites first is one of Superfund's national goals. By evaluating contamination in a phased approach, EPA can quickly identify sites that pose the greatest threats and move them through the site assessment process. Once EPA understands the conditions present at a site, it searches for the remedy that will best protect public health and the environment. Cost is only one factor in weighing equally protective remedies. Many sites do not warrant actions because no major threat exists. However, if a significant threat does exist, EPA will take action.

about Superfund Sites

Q: **If a site is added to the National Priorities List, how will we know when EPA has completed the cleanup efforts?**

A: EPA notifies the public and requests their comments on the actions proposed to treat site contaminants. In addition, the community is notified when a site will be deleted from the National Priorities List. The entire process can take as long as 7 years; at sites where ground water is contaminated, it can take even longer.

Q: **I live next door to a site and I see EPA and contractor personnel wearing "moon suits." Am I safe?**

A: EPA and contractor personnel wear protective gear because they might actually be handling hazardous materials. Also, these people are regularly exposed to contaminants at different sites and do not always know what contaminants they are handling. EPA takes steps to protect the public from coming in contact with the site contamination. If a dangerous situation arises, you will be notified immediately.

Q: **If a site is added to the National Priorities List, who pays for the activities?**

A: EPA issues legal orders requiring the responsible parties to conduct site cleanup activities under EPA oversight. If the parties do not cooperate, Superfund pays and files suit for reimbursement from responsible parties. The sources of this fund are taxes on the chemical and oil industries; only a small fraction of the fund is generated by income tax dollars.

Q: **How can I get more information on any health-related concerns?**

A: Contact your EPA regional Superfund office for more information. The ATSDR also provides information to the public on the health effects of hazardous substances. Ask your EPA regional Superfund office for the phone number of the ATSDR office in your region.

Q: **How can I verify your findings? What if I disagree with your conclusions?**

A: You can request copies of the results of the site assessment by writing to your EPA regional Superfund office. The public is given the opportunity to comment on the proposal of a site to the National Priorities List and the actions EPA recommends be taken at the site. If a site in your community is listed on the National Priorities List, a local community group may receive grant funds from EPA to hire a technical advisor. Call your EPA regional Superfund office (see page 8) for the location of an information repository and for information on applying for a **technical assistance grant.**

Q: **How can I get further information? How can I get a list of the sites EPA has investigated?**

A: Contact your EPA regional Superfund office (see page 8) for more information and a list of sites in your area.

Important Phone Numbers

For information on the Superfund program or to report a hazardous waste emergency, call the national numbers below.

U.S. EPA Headquarters Hazardous Site Evaluation Division

- Site Assessment Branch
  703-603-8860

Federal Superfund Program Information

- EPA Superfund Hotline
  800-424-9346

Emergency Numbers:

Hazardous Waste Emergencies

- National Response Center
  800-424-8802

ATSDR Emergency Response Assistance

- Emergency Response Line
  404-639-0615

For answers to site-specific questions and information on opportunities for public involvement, contact your region's Superfund community relations office.

EPA Region 1: *Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont*

- Superfund Community Relations Section
  617-565-2713

EPA Region 2: *New Jersey, New York, Puerto Rico, Virgin Islands*

- Superfund Community Relations Branch
  212-264-1407

EPA Region 3: *Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia*

- Superfund Community Relations Branch
  800-438-2474

EPA Region 4: *Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee*

- Superfund Site Assessment Section
  404-347-5065

EPA Region 5: *Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin*

- Office of Superfund
  312-353-9773

EPA Region 6: *Arkansas, Louisiana, New Mexico, Oklahoma, Texas*

- Superfund Management Branch, Information Management Section
  214-655-6718

EPA Region 7: *Iowa, Kansas, Missouri, Nebraska*

- Public Affairs Office
  913-551-7003

EPA Region 8: *Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming*

- Superfund Community Involvement Branch
  303-294-1124

EPA Region 9: *Arizona, California, Hawaii, Nevada, American Samoa, Guam*

- Superfund Office of Community Relations
  800-231-3075

EPA Region 10: *Alaska, Idaho, Oregon, Washington*

- Superfund Community Relations
  206-553-2711

Reference:
Weston, 2016

This document is confidential and is included in the confidential information packet

Reference:
Weston, 2017

Site Inspection Report
Armstrong World Industries
South Gate, Los Angeles County, California

EPA ID No.: CAN000909482
USACE Contract Number: W912P7-16-D-0001
Document Control Number: 20074.063.104.1009

August 2017

Prepared for:
U.S. Environmental Protection Agency
Region 9

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List of Acronyms

amsl	above mean sea level
AOC	analyte of concern
APN	Assessor's Parcel Number
Armstrong	Armstrong World Industries
AST	aboveground storage tank
BBP	butyl benzyl phthalate
bgs	below ground surface
Brenntag	Brenntag Pacific, Inc.
CA MCL	California Maximum Contaminant Level
CA 2nd MCL	California Secondary Maximum Contaminant Level
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CLPAS	Contract Laboratory Program Analytical Services
CPT	Cone Penetration Testing
DCA	dichloroethane
DCE	dichloroethylene
DCM	dichloromethane
DINP	diisononyl phthalate
DP	direct push
DTSC	Department of Toxic Substances Control
ELA	East Los Angeles
EPA	United States Environmental Protection Agency
Fed MCL	Federal Maximum Contaminant Level
ft	foot
GSWC	Golden State Water Company
HHMD	LA County Fire Department, Health Hazardous Materials Division
HRS	Hazard Ranking System
HWSA	hazardous waste storage area
MCL	Maximum Contaminant Level
MDL	method detection limit
MEK	methyl ethyl ketone
mg/kg	milligrams per kilogram
MWC	Mutual Water Company
NE710	North East 710 Study Area
NPL	National Priorities List
PA	Preliminary Assessment
PCB	polychlorinated biphenyl
PCE	tetrachloroethylene
PVC	poly-vinyl chloride
PVF	pipes/valves/fittings
PWC	Park Water Company
QC	Quality Control

List of Acronyms (Continued)

RCRIS	Resource Conservation and Recovery Information System
RSL	Regional Screening Level
RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Plan
SEMS	Superfund Enterprise Management System
SEP	soil exposure pathway
SI	Site Inspection
SQL	sample quantitation limit
SSL	soil screening level
SVOC	semivolatile organic compound
TCA	trichloroethane
TCE	trichloroethylene
TDL	target distance limit
TRI	Toxics Release Inventory
UST	underground storage tank
VCM	vinyl chloride monomer
VOC	volatile organic compound
VC	vinyl chloride
WESTON®	Weston Solutions, Inc.
µg/L	microgram per liter

EXECUTIVE SUMMARY

The Armstrong World Industries (Armstrong) site is located at 5037 Patata St., South Gate, Los Angeles County, California. The 27-acre site is located in a mixed urban industrial and residential area. The site is bordered to the north by approximately 35 residential properties.

Armstrong began operating at the site in approximately 1937 as a manufacturer of resilient flooring. Although the manufacturing plant has expanded several times since its inception, the primary operations have remained relatively consistent in the production, storage, and distribution of vinyl floor tiles. On-site operations are primarily conducted on the western third of the site with the central third primarily being used for storage. The eastern third of the site, which borders the Los Angeles River, is unpaved and primarily undeveloped. In addition to the tile manufacturing and distribution areas of the plant, the facility includes maintenance areas, a hazardous waste storage area (HWSA), a clarifier, and several large dry-chemical silos. Historically, at least two underground storage tanks (USTs) and a hazardous waste treatment unit were also located on site.

Hazardous substances documented as having been used and/or stored on the site include volatile organic compounds (VOCs), specifically 1,1,1-trichloroethane (TCA) and trichloroethylene (TCE); semivolatile organic compounds (SVOCs), specifically diisononyl phthalate (DINP) and butyl benzyl phthalate (BBP); metals, specifically lead, mercury, and zinc; polychlorinated biphenyls (PCBs); and asbestos.

Prior to this Site Inspection (SI), no known soil vapor, soil matrix, or groundwater sampling has been conducted at the site. The U.S. Environmental Protection Agency (EPA) has had no known historical involvement with the site.

With the exception of a leaking UST case, neither the California Department of Toxic Substances Control (DTSC) nor the California Regional Water Quality Control Board (RWQCB) has had any known significant involvement with the site. Between approximately 1983 and 2009, the site has been routinely inspected by the Los Angeles County Fire Department, Health Hazardous Materials Division (HHMD); no significant violations were reported during these inspections.

In November 2015, Weston Solutions, Inc. (WESTON), on behalf of EPA, conducted the SI at the site. During the SI, WESTON collected soil matrix source samples at depths up to 33 feet (ft) below ground surface (bgs) from eight on-site borings, collected groundwater release samples at depths up to 127 ft bgs from seven on-site borings, and collected secondary objective groundwater samples from three on-site borings.

On-site soil samples collected during the SI investigation exhibited concentrations of metals, specifically lead and zinc, that exceeded the site-specific action levels; however, the concentrations only slightly exceeded action levels, were identified in only a limited number of the samples, and were collected from near-surface (i.e., 2 ft bgs) depths. None of the soil samples exhibited elevated concentrations of VOCs.

Groundwater samples collected during the investigation exhibited elevated concentrations of metals and VOCs. Maximum concentrations include arsenic at 22 micrograms per liter (µg/L); 1,1-dichloroethane (DCA) at 130 µg/L; 1,1-dichloroethylene (DCE) at 330 µg/L; TCE at 390 µg/L; and vinyl chloride (VC) at 48 µg/L. The federal Maximum Contaminant Level (MCL) for arsenic is 10 µg/L. The federal MCLs for 1,1-DCE, TCE, and VC are 7.0 µg/L, 5.0 µg/L, and 2.0 µg/L, respectively. The California MCL for 1,1-DCA is 5.0 µg/L.

The results of this SI did not confirm any significant hazardous substance source areas at the site. However, the distribution of contaminants in the aquifers underlying the site suggests that a TCE source area exists near the HWSA and that one or more VOC source areas, specifically of the 1,1-DCA, 1,1-DCE, and VC analytes, exist near the southern maintenance area, but could not be linked analytically to the site.

1.0 INTRODUCTION

1.1 Regulatory Background

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Weston Solutions, Inc. (WESTON®) has been tasked to conduct a Site Inspection (SI) of the Armstrong World Industries (Armstrong) site in South Gate, Los Angeles County, California.

The Armstrong site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Public Access Database on October 1, 2013 (CAN000909482). CERCLIS has since been retired and its data transitioned into the Superfund Enterprise Management System (SEMS). A Preliminary Assessment (PA) was completed for the U.S. Environmental Protection Agency (EPA) by WESTON on September 4, 2014. The purpose of a PA is to review existing information on a site with potential releases of a hazardous substance and its environs to assess the threats, if any, posed to public health, welfare, or the environment and to determine if further investigation under CERCLA is warranted. Prior to the 2014 WESTON PA, EPA completed a Site Screening in June 2013 (DTSC, 2013; EPA, 2017a; Weston, 2014).

After reviewing the 2014 PA, EPA decided that further investigation of the Armstrong site would be necessary to more completely evaluate the site using the EPA Hazard Ranking System (HRS) criteria. The HRS assesses the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on the National Priorities List (NPL). The NPL identifies sites at which EPA may conduct remedial response actions. This report summarizes the results of the SI for the Armstrong site (EPA, 2014).

More information about the Superfund program is available on the EPA website at http://www.epa.gov/superfund.

1.2 Apparent Problem

EPA determined that a Site Inspection (SI) was needed at the Armstrong site because of the following apparent problems:

- The site has been used for the manufacturing of resilient flooring (e.g., vinyl, linoleum, cork) since approximately 1937 (Weston, 2014).

- Hazardous substances documented as having been used and/or stored on the site include, but are not limited to: volatile organic compounds (VOCs) (primarily dichloromethane [DCM], methyl ethyl ketone [MEK], 1,1,1-trichloroethane [TCA], trichloroethylene [TCE], and vinyl acetate), semivolatile organic compounds (SVOCs) [primarily diisononyl phthalate (DINP) and butyl benzyl phthalate (BBP)], metals (primarily lead, mercury, and

zinc), polychlorinated biphenyls (PCBs), and asbestos. Specific hazardous substance storage and disposal practices have not been adequately documented (EPA, 2017c; Weston, 2014).

- The site is located within the North East 710 Study Area (NE710). Drinking water wells in the NE710 have historically been impacted by elevated levels of metals and VOCs. The area is under investigation in order to identify the primary sources of this contamination and facilitate further investigation and remediation at those sources under the auspices of either EPA or the State of California. The site is located approximately 250 feet (ft) south of the Golden State Water Company (GSWC) - Bell/Bell Gardens system's Hoffman Well 02, which was closed in 2000 and historically reported elevated concentrations of chromium, tetrachloroethylene (PCE), and TCE (Google, 2017; RWQCB, 2015; Weston, 2016).

- No known soil gas, soil matrix, or groundwater sampling has been conducted at the site.

2.0 SITE DESCRIPTION

2.1 Location *(See Figure 1)*

The Armstrong site is located at 5037 Patata St., South Gate, California. The geographic coordinates for the site are 33° 57' 20.2" North latitude and 118° 10' 33.8" West longitude (Appendix A). The location of the site is shown in Figure 1.

2.2 Site Description *(See Figure 2)*

The Armstrong site occupies approximately 27 acres in a mixed industrial and residential area at the northeastern portion of the city of South Gate, immediately adjacent to the city of Cudahy. The site is bordered to the north by single- and multi-family residential properties and to the east by the concrete channel of the Los Angeles River. The site is bordered to the south, across the Southern Pacific Railway line, by a freight distribution facility (Damco Distribution) and a metal forging facility (Shultz Steel). The site is bordered to the west by a pipes/valves/fittings (PVF) products distribution warehouse (Val-Fit) and to the northwest by a bulk chemical tank trailer washing and hauling facility (QualaWash - EPA ID No.: CAN000909573). The site is composed of one Los Angeles County Assessor parcel, which is identified by Assessor Parcel Number (APN) 6224-031-003 (Google, 2017; LACA, 2017; Weston, 2017; Appendix B).

As of October 2016, the site was occupied by a large manufacturing complex that encompassed approximately 5.5 acres on the western half of the site. The complex was approximately U-shaped with a central courtyard that opened towards the east. The main entrance to the facility was from the east end of Patata Street. The facility's asphalt-paved employee and visitor parking lot was located at the southwestern portion of the site. The main office was located between the parking lot and the manufacturing complex. A security gate and attached guard post were situated south of the main office at the only access gate to the main complex. The entirety of the site was enclosed behind a chain link fence. Five large silos are located within the southeastern portion of the central courtyard. An underground storage tank (UST) was formerly located east-adjacent of the northeastern portion of the courtyard. In addition, an oil/water separator (i.e., clarifier) was located within the southwestern portion of the central courtyard. A second UST and one or more sumps were also reportedly located at the site; however, the locations of these features are not known. A cooling tower and dust collector are located at the northwest corner of the complex and several additional dust collectors are located within the courtyard. A railroad spur is located along the southern side of the main complex that formerly connected to the south-adjacent Southern Pacific Railway line. A site layout map is presented in Figure 2 (Google, 2017; Weston, 2014; Appendix B).

At the eastern portion of the site, a boiler building with an attached approximately 125-foot tall smokestack was located northeast-adjacent to the manufacturing complex. South-adjacent to the boiler building was an approximately 0.8 acre unpaved area that was bisected by a stormwater drainage channel. This area appeared to have been paved as recently as 1994. Several smaller unpaved areas were also located throughout the paved portion of the site, which were also likely used for stormwater retention and/or diversion purposes. A secured hazardous waste storage area

(HWSA) was located to the west of this area, east-adjacent to the manufacturing complex. The approximately six acres located east-adjacent to the main complex was asphalt-paved with relatively new asphalt. With the exception of two small cellular equipment enclosures and accompanying antenna towers, there were no significant permanent structures in this area. The easternmost approximately seven acres of the site was unpaved with no permanent structures. A drainage channel was located at the southern portion of this area that was likely used to direct stormwater runoff from the eastern half of the site through a subsurface passage and into the adjacent Los Angeles River (Google, 2017; Weston, 2014; Appendix B).

The first manufacturing facility at the site was constructed in approximately 1937. By 1954, the approximately 6.2 acres at the southwestern portion of the site, as well as the boiler and smokestack, had been developed. Between approximately 1954 and 1972, the northwestern portion of the complex had been expanded and by 1994 the facility appeared to resemble its current configuration (LACA, 2017; Weston, 2014).

2.3 Operational History

The Armstrong site is currently owned by the Armstrong Cork Co. Additional site ownership history is not known. The Armstrong Cork Co. was founded in 1860 in Pittsburgh, Pennsylvania. The company originally produced wine corks and by the 1890s was the world's largest wine-cork manufacturer. The company was incorporated in 1891. The company was producing corkboard and eventually expanded its product line to include fiberboard, ceiling board, tile, and linoleum. The company manufactured numerous asbestos-containing products from the 1930s through the 1970s and was involved in several high-profile asbestos-related personal injury litigations. As a result of these injury claims, the company filed for Chapter 11 bankruptcy in 2000 and emerged from the reorganization in 2006 operating as Armstrong World Industries, Inc. In April 2016, Armstrong spun off its flooring division into Armstrong Flooring, Inc., which included the site property. Prior to the 2016 split, Armstrong operated approximately 32 plants in eight countries with 8,500 employees (Armstrong, 2017; LACA, 2017; Weston, 2014; Appendix C-1).

The site has been reportedly utilized by Armstrong for the manufacturing of resilient flooring (e.g., vinyl, linoleum, cork) since approximately 1937. The facility is designated as the Armstrong Floor Products - North America, South Gate Floor Plant. Although the manufacturing plant has expanded several times since its inception, the primary operations appear to have remained relatively consistently the production, storage, and distribution of vinyl floor tiles. The primary tile manufacturing lines at the facility are located in the western (Bldgs. 3 & 3A) and northern portions (Bldg. 15) of the complex. The remainder of the facility is primarily used for packing and storage of the manufactured products. Areas designated for facility maintenance activities are located at the southern portion of the central courtyard (Bldg. 3F) and the northeastern corner of the facility (Bldg. 2). Distribution activities are primarily conducted within the Warehouse Addition building (Bldg. 14) and administrative activities are primarily conducted within the office buildings (Bldgs. 1 & 1A) at the western side of the facility. Historically, an on-site hazardous waste treatment unit was located at the facility; however, the specific location of this unit is not known. Use of the treatment system was discontinued in 1997 after "coating-line" operations at the facility were terminated (DTSC, 1998; FMG, 2011; Weston, 2014).

Although the specific procedures utilized in the manufacturing activities conducted at the site are not known, vinyl floor tile manufacturing operations typically involve the combination of vinyl resin [i.e., poly vinyl chloride (PVC) resin] with various additives including: plasticizers (oily liquids used to soften the vinyl and provide flexibility to the formula), stabilizers (used to minimize degradation and discoloration from heat and light), pigments (added to give vinyl a range of colors), and fillers (e.g., limestone or clay). The vinyl resin itself is typically manufactured by combining ethylene and chlorine to form vinyl chloride monomer (VCM), which is subsequently compressed and mixed with additives until polymerized. The chlorine used in the manufacturing process can be obtained by the electrolysis of a sodium chloride solution (i.e., brine) or potassium chloride. Brine is reportedly stored within a 5,000-gallon aboveground storage tank (AST) at the southwestern corner of the central courtyard. Limestone is stored within the easternmost of the tall silos in the central courtyard and within five ASTs at the south side of the complex. The two western tall silos are reportedly used to store solid vinyl resin and the two smaller ASTs located north-adjacent to the limestone silo are used to store SVOCs, specifically DINP and BBP. Asbestos is also documented to have been stored at the site as recently as 2005 (FMG, 2011; Weston, 2014).

Based on identified hazardous waste manifests and generator reports for the site, additional hazardous substances used and/or stored on the site include, but are not limited to: asbestos-containing waste; halogenated solvents, including TCE and 1,1,1-TCA; oxygenated solvents; hydrocarbon solvents; non-halogenated solvents, including MEK; PCBs; metals, including mercury and lead; and various hydrocarbon-based waste oils. Specific hazardous substance storage and disposal practices are not known (DTSC, 2017b; HHMD, 2009; EPA, 2017c).

Unaltered petroleum products, as well as any substances that are purposefully added to the indigenous petroleum product during the refining process, are excluded from consideration under CERCLA.

2.4 Regulatory Involvement

2.4.1 U. S. Environmental Protection Agency

The Armstrong site is listed in the Resource Conservation and Recovery Information System (RCRIS) database as *Armstrong Flooring Inc* (Handler ID: CAD088387741), a Large Quantity Generator with an address of 5037 Patata St. (EPA, 2017b).

The site is listed in the Toxics Release Inventory (TRI) database as *Armstrong World Industries Inc* (TRI ID: 90280RMSTR5037P), with an address of 5037 Patata St. The most recent release information provided in the database is from 2015. Listed chemicals include 1,1,1-TCA, acrylic acid, BBP, DCM (i.e., methylene chloride), lead, vinyl acetate, and zinc (EPA, 2017c).

2.4.2 California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)

The site is listed in the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) EnviroStor database as *Armstrong World Industries* (Envirostor ID: 60001786), with an address of 5037 Patata St. The case is listed as an *Evaluation* site that was referred to EPA as of September 2013 (DTSC, 2017a).

DTSC approved the termination of the on-site treatment facility in September 1998. DTSC has had no known additional involvement with the site (DTSC, 1998).

2.4.3 California Environmental Protection Agency, Regional Water Quality Control Board (RWQCB)

The site is listed in the California Environmental Protection Agency, Regional Water Quality Control Board (RWQCB) GeoTracker database as *Armstrong World Industries* (GeoTracker ID: T0603705051; Case No.: R-11516), with an address of 5037 Patata St. The site is listed as a *LUST Cleanup Site* with a cleanup status as *Completed – Case Closed as of 10/7/1996.* The potential contaminants of concern are listed as *aviation* and the potential media of concern is listed as *soil.* RWQCB has had no known additional involvement with the site (RWQCB, 2017).

2.4.4 Los Angeles County Fire Department, Health Hazardous Materials Division (HHMD)

The site has been routinely inspected by the Los Angeles County Fire Department, Health Hazardous Materials Division (HHMD). The most recently known documented inspection was conducted in June 2009 and no significant violations were reported. Seven additional inspections were conducted between 1983 and 2005 with no significant violations reported (HHMD, 2009; Weston, 2014).

3.0 INVESTIGATIVE EFFORTS

3.1 Previous Sampling

Prior to the SI sampling event, no known soil vapor, soil matrix, or groundwater sampling has been conducted at the Armstrong site.

3.2 Site Investigation (SI) Sampling *(See Figures 3 & 4; Tables 1 through 3)*

In November 2015, WESTON, on behalf of EPA, conducted the SI sampling event at the Armstrong site. The event included soil matrix source sampling, groundwater release sampling, and secondary objective groundwater sampling. The primary objective of the investigation was to document information to be used in the HRS characterization process, including additional source areas and levels of contamination in site soils and groundwater. The secondary objective of the investigation was to identify subsurface lithology and levels of contamination within various water-bearing zones, both on and near the site. This information will be utilized in the development of a more comprehensive understanding of the hydrogeologic conditions that exist within the greater NE710 Study Area as well as the subbasin as a whole.

Sampling methodology, locations, analyses, and analytical results are summarized below. The Sampling and Analysis Plan (SAP), which was approved by EPA in September 2015, is provided in Appendix F.

Based on the historical use of the site and the elevated concentrations of contaminants in nearby municipal drinking water wells, analytes of concern (AOCs) at the site were identified as: arsenic; chromium; lead; mercury; zinc; 1,1,1-TCA; 2-butanone (i.e., MEK); methylene chloride (i.e., DCM); PCE; TCE; and vinyl acetate. Based on the results of the SI investigation, additional AOCs were identified, including 1,1-dichloroethane (DCA); 1,1-dichloroethylene (DCE); 1,2-DCA; cis-1,2-DCE; and vinyl chloride (VC).

All samples were submitted under the EPA Contract Laboratory Program to Shealy Environmental Services, Inc. for metal analysis by EPA Contract Laboratory Program Analytical Services (CLPAS) ISM02.2 or Chemtech Consulting Group for VOC analysis by EPA CLPAS SOM02.2. The data were validated by the EPA Region 9 Quality Assurance Office. The complete validated analytical results are presented in Appendix H. The sample locations are shown in Figure 3.

3.2.1 Action Levels

In accordance with the HRS, the action levels to establish an observed release to groundwater, as well as to establish an on-site source of contaminated soil, are “significantly above background” concentrations. “Significantly above background” is defined as three times the background concentration for all media. When a background concentration is not detected at or above the method detection limit (MDL), the assigned background concentration is the sample quantitation limit (SQL); “significantly above background” for this scenario is defined as a concentration at or above the SQL.

Soil matrix samples collected from Boring QWS-DP-9, which is located approximately 350 ft northwest of the site and was advanced during the concurrently-conducted SI investigation at the QualaWash site (EPA ID No. CAN000909573), are designated as background soil samples for HRS purposes. The assigned background concentration for each analyte was determined by amalgamating the concentration data from each of the four discrete-depth soil samples. For any analyte with a reported MDL exceedance in the dataset, the background concentration was conservatively assigned as the arithmetic mean plus three times the standard deviation. For any analyte without an MDL exceedance, the background concentration was conservatively assigned as the maximum SQL value within the dataset. The assigned soil-matrix action levels for select metals are presented in Table 1.

Although the selected background location is situated within current and historical operational areas of the site, the exhibited concentrations were deemed to be generally consistent with published background levels for native soils in the region and appear unlikely to have been significantly impacted by hazardous substances associated with that site. With the exception of acetone, which is a common laboratory contaminant, VOCs were not reported at concentrations above their respective MDLs in any of the four discrete-depth background soil samples. The September 2015 SAP (Appendix F) indicates that soil background samples for the Armstrong SI investigation were to be collected from Boring QWS-CPT-2; however, due to logistical and scheduling constraints, this boring was relocated to directly adjacent of Boring QWS-DP-9 and it was unnecessary to collect soil matrix samples from both locations. Select discrete-depth analytical results for the assigned soil matrix background samples for metals are presented in Table 1. The complete analytical results, including the soil data from Boring QWS-DP-9, are provided in Appendix H.

Since a hazardous substance source area was not identified during the SI investigation, it was deemed unnecessary for HRS purposes to assign a background sample location for any of the sampled aquifers. Furthermore, due to local variations and uncertainties in the groundwater flow direction within the Gaspur aquifer underlying the site, a Gaspur aquifer background (i.e., upgradient) sample location could not be determined. No samples from the perched aquifer were collected during the SI investigation. See section 4.2.1 for a description of the shallow aquifers underlying the site.

3.2.2 Source Sampling *(See Figures 3 & 4; Tables 1 & 2)*

To establish hazardous substance source areas at the site, WESTON collected subsurface soil matrix samples using direct push (DP) technology from eight selectively-biased on-site boring locations, designated as AWI-DP-1 through AWI-DP-8.

Boring AWI-DP-1 was advanced at the southwestern portion of the central courtyard, east-adjacent to the existing clarifier structure. Boring AWI-DP-2 was advanced at the north-central portion of the site, east-adjacent to the north maintenance area. Borings AWI-DP-3 and AWI-DP-4 were advanced at the northwestern portion of the site, west-adjacent to the north tile manufacturing area. Boring AWI-DP-5 was advanced at the northwestern portion of the central courtyard, south-adjacent to the central storage and distribution area. Boring AWI-DP-6 was advanced at the

south-central portion of the central courtyard, north-adjacent to the dry chemical silos. Boring AWI-DP-7 was advanced at the central portion of the site, southeast-adjacent to the hazardous waste storage area. Boring AWI-DP-8 was advanced at the south-central portion of the site within the exterior materials storage area. No samples were collected from the eastern portion of the property. Source sample locations are presented in Figure 3.

At each source sample boring location, with the exception of Boring AWI-DP-1, subsurface lithology was logged to 15 ft below ground surface (bgs) and soil matrix samples were collected from depths of 2, 5, 10, and 15 ft bgs. At Boring AWI-DP-1, subsurface lithology was logged to 40 ft bgs and an additional soil matrix sample was collected from 33 ft bgs. The soil lithologies from each boring were relatively consistent with soils composed primarily of light- to dark-brown sands through clayey sands with interbedded lenses (typically less than 1 ft) of dark-brown sandy silts through clays. Field observations and subsurface soil descriptions are provided in Appendix I.

Metal Results: *(See Figure 4; Tables 1 & 2)*

Metals identified at concentrations at or above their corresponding action level in soil matrix samples collected during the investigation include lead and zinc. The most elevated metal concentrations were generally identified in the samples collected at 2 ft bgs from the borings located adjacent to the northern tile manufacturing and maintenance areas. Action levels were assigned per the methodology described in section 3.2.1.

The assigned lead action level of 19 milligrams per kilogram (mg/kg) was exceeded by 1 of the 33 samples with a concentration of 20 mg/kg. The assigned zinc action level of 197 mg/kg was exceeded by 1 of the 33 samples with a concentration of 305 mg/kg (qualified as estimated). Select analytical results and assigned action levels are presented in Figure 4 and tables 1 and 2.

Volatile Organic Compound (VOC) Results:

No VOCs were identified at concentrations at or above their corresponding action level in soil matrix samples collected during the investigation. Only acetone and methylene chloride were identified in samples at concentrations at or above their MDL; however, these analytes are common laboratory contaminants and the reported detections may not be indicative of actual conditions in the sampled medium. Since no VOC analytes, with the exception of acetone, were identified in the background soil matrix samples at concentrations exceeding their corresponding MDL, the reported SQLs of the background samples were assigned as the VOC action levels (see section 3.2.1).

3.2.3 Release Sampling *(See Figures 3 & 4; Table 3)*

To establish a release of one or more hazardous substances from on-site source areas to groundwater beneath the site, WESTON collected discrete-depth groundwater samples from the Gaspur and Exposition aquifers. See section 4.2.1 for a description of the shallow aquifers underlying the site. As part of the investigation, a total of 11 groundwater samples were collected

from 7 selectively-biased on-site locations using Direct Push (DP) and Cone Penetration Testing (CPT) technology.

For HRS purposes, no action levels are assigned for contaminants identified within the Gaspur or Exposition aquifers beneath the site (see section 3.2.1). For reporting purposes, analyte concentrations are referenced against documented federal and state regulatory benchmarks. Release sample locations are presented in Figure 3.

Five of the 11 release samples were collected from on-site direct push borings, which included borings AWI-DP-1, AWI-DP-2, AWI-DP-4, AWI-DP-6, and AWI-DP-7. All five of these samples were collected from depths consistent with the Gaspur aquifer. Boring AWI-DP-1 was advanced at the southwestern portion of the central courtyard, east-adjacent to the existing clarifier structure. Boring AWI-DP-2 was advanced at the north-central portion of the site, east-adjacent to the north maintenance area. Boring AWI-DP-4 was advanced at the northwestern portion of the site, west-adjacent to the north tile manufacturing area. Boring AWI-DP-6 was advanced at the south-central portion of the central courtyard, north-adjacent to the dry chemical silos. Boring AWI-DP-7 was advanced at the central portion of the site, southeast-adjacent to the hazardous waste storage area.

Six of the 11 release samples were collected from CPT borings, which included borings AWI-CPT-2 and AWI-CPT-3. Two of the six samples were collected from depths consistent with the Gaspur aquifer and four of the six samples were collected from depths consistent with the Exposition aquifer. Boring AWI-CPT-2 was advanced along the southern site boundary, approximately 200 ft downgradient (with respect to the Exposition aquifer) of the existing clarifier. Boring AWI-CPT-3 was advanced at the southwestern corner of the site, approximately 400 ft downgradient (with respect to the Exposition aquifer) of the southern tile manufacturing area.

Metal Results: *(See Figure 4; Table 3)*

Metals identified at concentrations at or above their corresponding SQL in groundwater release samples collected during the investigation include antimony, arsenic, barium, chromium, cobalt, copper, lead, manganese, nickel, vanadium, and zinc. Additional metal analytes identified at concentrations below their SQL but above their MDL include cadmium and selenium.

Metals identified in the samples with exceedances of documented federal and state regulatory benchmarks include arsenic and manganese. The most elevated metal concentrations were generally identified in the samples collected from the Gaspur aquifer but were relatively consistent across the site.

The arsenic federal Maximum Contaminant Level (MCL) of 10 micrograms per liter (µg/L) was exceeded by 6 of the 11 samples with a maximum concentration of 22 µg/L. The manganese California Secondary MCL (CA 2nd MCL) of 50 µg/L was exceeded by all 11 of the samples with a maximum concentration of 710 µg/L. Select analytical results and benchmarks are presented in Figure 4 and Table 3.

Volatile Organic Compound (VOC) Results: *(See Figure 4; Table 3)*

VOCs identified at concentrations at or above their corresponding SQL in groundwater release samples collected during the investigation include 1,1,2-TCA; 1,1-DCA; 1,1-DCA; 1,2-DCA; benzene; chloroethane; cis-1,2-DCE; cyclohexane; methylcyclohexane; trans-1,2-DCE; TCE; and VC. Additional VOC analytes identified at concentrations below their SQL but above their MDL include acetone, carbon disulfide, PCE, and toluene. Because of the high concentration of one or more VOC analytes in some samples, it was necessary for the laboratory to dilute these samples to stay within equipment calibration limits. Consequently, the SQLs for the diluted samples were also increased, in some cases to levels that exceed regulatory benchmarks.

VOCs identified in the samples with exceedances of documented federal and state regulatory benchmarks include 1,1-DCA; 1,1-DCE; 1,2-DCA; cis-1,2-DCE; TCE; and VC. The most elevated VOC concentrations, with the exception of TCE, were generally identified in the Gaspur aquifer samples collected from the south-central portion of the site. The most elevated TCE concentrations were identified in the Gaspur aquifer sample collected from adjacent to the HWSA.

The 1,1-DCA California MCL (CA MCL) of 5.0 µg/L was exceeded by 5 of the 11 samples with a maximum concentration of 130 µg/L. The 1,1-DCE federal MCL (Fed MCL) of 7.0 µg/L was exceeded by 5 of the 11 samples with a maximum concentration of 330 µg/L. The 1,2-DCA Fed MCL of 5.0 µg/L was exceeded by 1 of the 11 samples with a concentration of 31 µg/L. The cis-1,2-DCE Fed MCL of 70 µg/L was exceeded by 1 of the 11 samples with a concentration of 190 µg/L (qualified as estimated – biased high). The TCE Fed MCL of 5.0 µg/L was exceeded by 4 of the 11 samples with a maximum concentration of 390 µg/L (qualified as estimated). The VC Fed MCL of 2.0 µg/L was exceeded by 4 of the 11 samples with a maximum concentration of 48 µg/L. Select analytical results and benchmarks are presented in Figure 4 and Table 3.

3.2.4 Secondary Objective Groundwater Sampling and Lithological Profiling
(See Figures 3 & 4; Table 3)

In accordance with the SI's secondary objective (see section 3.2), WESTON collected lithological profiling data and discrete-depth groundwater samples from three on-site locations using CPT technology. During the investigation, three secondary objective samples were collected from the Gaspur aquifer and six secondary objective samples were collected from the Exposition aquifer. Boring AWI-CPT-1 was advanced along the southern site boundary at the south-central portion of the site. Boring AWI-CPT-4 was advanced along the northern site boundary at the northwestern portion of the site. Boring AWI-CPT-5 was advanced along the northern site boundary at the north-central portion of the site. For reporting purposes, analyte concentrations are referenced against documented federal and state regulatory benchmarks. Secondary objective sample locations are presented in Figure 3.

Metal Results: *(See Figure 4; Table 3)*

Metals identified at concentrations at or above their corresponding SQL in secondary objective groundwater samples collected during the investigation include antimony, arsenic, barium,

chromium, cobalt, copper, lead, manganese, nickel, vanadium, and zinc. Additional metal analytes identified at concentrations below their SQL but above their MDL include cadmium and selenium.

Metals identified in the samples with exceedances of documented federal and state regulatory benchmarks include arsenic and manganese. The arsenic Fed MCL of 10 µg/L was exceeded by 4 of the 9 samples with a maximum concentration of 29 µg/L. The manganese CA 2nd MCL of 50 µg/L was exceeded by all 9 of the samples with a maximum concentration of 1,070 µg/L. Select analytical results and benchmarks are presented in Figure 4 and Table 3.

Volatile Organic Compound (VOC) Results: *(See Figure 4; Table 3)*

VOCs identified at concentrations at or above their corresponding SQL in secondary objective groundwater samples collected during the investigation include 1,1-DCA; 1,1-DCA; cis-1,2-DCE; TCE; and VC. Additional VOC analytes identified at concentrations below their SQL but above their MDL include 1,2-DCA, acetone, carbon disulfide, and cyclohexane.

VOCs identified in the samples with exceedances of documented federal and state regulatory benchmarks include 1,1-DCA and 1,1-DCE. The 1,1-DCA CA MCL of 5.0 µg/L was exceeded by 2 of the 9 samples with a maximum concentration of 23 µg/L. The 1,1-DCE Fed MCL of 7.0 µg/L was exceeded by 1 of the 9 samples with a concentration of 13 µg/L (qualified as estimated – biased high). Select analytical results and benchmarks are presented in Figure 4 and Table 3.

3.2.5 Deviations from the SAP

Deviations from the September 2015 Armstrong SAP (Appendix F) occurred during the field work. The significant deviations approved in the field by the EPA Site Assessment Manager include:

- Only five of the proposed six CPT borings were advanced. Proposed boring AWI-CPT-6 was not advanced due to scheduling constraints.

- A groundwater release sample from the perched aquifer was not collected at direct push borings AWI-DP-1, AWI-DP-4, and AWI-DP-7 because a water-bearing unit was not identified within the proposed sampling interval.

- A groundwater release sample from the perched aquifer was not collected at direct push borings AWI-DP-2 and AWI-DP-6 because insufficient water was available within the set screening interval for sampling.

- An additional soil matrix sample was collected from 33 ft bgs at Boring AWI-DP-1 to evaluate potential impacts to deeper soils that may have previously been in contact with perched aquifer groundwater.

- The proposed background soil matrix samples were not collected from Boring QWS-CPT-2 during the concurrently-conducted SI investigation at the QualaWash site

(EPA ID No. CAN000909573) due to logistical constraints. Soil matrix samples collected from Boring QWS-DP-9, which was also advanced during the QualaWash SI investigation and was located approximately 80 ft southwest of the proposed QWS-CPT-2 location, were designated as the background samples for soil matrix samples collected during the Armstrong SI investigation.

- CPT Borings AWI-CPT-4 and AWI-CPT-5 were designated in the SAP as Exposition aquifer background (i.e., upgradient) locations. However, since an on-site hazardous substance source was not identified during the investigation, it was deemed unnecessary for HRS purposes to assign aquifer background samples. The samples collected from these locations were redesignated as secondary objective samples.

- "Special Designation" samples (e.g., Laboratory Quality Control [QC], duplicates, blanks) were reassigned in the field based on actual number and location of collected samples. Final designations are presented in the Sample Nos. – CLP Nos. Correlation Tables (Appendix G).

4.0 HAZARD RANKING SYSTEM FACTORS

4.1 Sources of Contamination *(See Figure 4; Tables 1 & 2)*

For HRS purposes, a source is defined as an area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance.

Based on the results of the 2015 SI investigation, no significant hazardous substances sources were identified at the Armstrong site. Although a slightly elevated concentration of lead was identified in the sample collected at 2 ft bgs from adjacent to the north maintenance area and a slightly elevated concentration of zinc was identified in the sample collected at 2 ft bgs from adjacent to the north tile manufacturing area, these results are not considered to represent a significant source area.

4.2 Groundwater Pathway

In determining a score for the groundwater migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to groundwater; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on the number of people who regularly obtain their drinking water from wells that are located within 4 miles of the site. The HRS emphasizes drinking water usage over other uses of groundwater (e.g., food crop irrigation and livestock watering), because, as a screening tool, it is designed to give the greatest weight to the most direct and extensively studied exposure routes.

4.2.1 Hydrogeological Setting *(See Table 4)*

The site lies within the Central Subbasin in the Coastal Plain of the Los Angeles Groundwater Basin. The Central Subbasin is generally bound to the north by the folded, uplifted, and eroded Tertiary basement rocks of the La Brea High surface divide; to the northeast and east by the less permeable Tertiary rocks of the Elysian, Repetto, Merced, and Puente Hills; to the southeast by the Coyote Creek flood control channel (approximate Los Angeles County/Orange County boundary); and to the southwest by the Newport Inglewood Uplift, a regional anticline associated with the Newport Inglewood fault system. Geologic units typically found beneath the subbasin include Holocene-age alluvium, the upper Pleistocene Lakewood Formation, and the lower Pleistocene San Pedro Formation. The Los Angeles and San Gabriel rivers pass across the surface of the subbasin, primarily by way of engineered concrete channels, on their way to the Pacific Ocean. The average net annual precipitation in the subbasin is approximately 12 inches (DWR, 1961; DWR, 2004).

The Central Subbasin has historically been divided into four areas: the Los Angeles Forebay at the northwest, the Montebello Forebay at the north, the Whittier Area at the northeast, and the Central Basin Pressure Area at the central and southwest. However, these areal distinctions are appropriate

for geographical purposes only and do not accurately represent hydrogeologic conditions within the areas. The hydrogeologic forebays, which are generally characterized by unconfined and relatively interconnected aquifer systems, are limited to small regions within the greater Forebay areas. The Montebello Forebay, as well as the Los Angeles Forebay to a lesser degree, serve as the primary groundwater recharge areas for both shallow and deep aquifers across the entirety of the subbasin. The Central Basin Pressure Area is generally characterized by confined aquifer systems separated by relatively impermeable clay layers, although semipermeable zones within these layers allow aquifers to be interconnected in some areas. These semipermeable zones gradually decrease in frequency and magnitude with increasing distance from the forebays (DWR, 1961; DWR, 2004).

The site is located within the northern portion of the Central Basin Pressure Area geographical area, with the Los Angeles Forebay to the northwest and the Montebello Forebay to the northeast. Groundwater beneath the site is typically found within the coarser-grained sediments of the Holocene alluvium (Gaspur aquifer), the upper Pleistocene Lakewood Formation (Exposition and Gage aquifers), and the lower Pleistocene San Pedro Formation (Hollydale, Jefferson, Lynwood, Silverado, and Sunnyside aquifers). The estimated elevations and depths of the aquifers underlying the site are presented in Table 4. Irregular patches of a perched, or semiperched, aquifer are also present within the Holocene alluvium throughout much of the subbasin. Although significant amounts of water can be found within these perched water-bearing zones, they are often discontinuous over relatively short distances and have historically had only minimal economic benefit. Thus, the perched aquifer does not meet the criteria of an “aquifer” for HRS purposes. These perched zones are typically found between approximately 25 and 45 ft bgs (i.e., between the surface and the top of the Gaspur aquifer) (DWR, 1961; DWR, 2004).

For the purposes of this SI, the Gaspur aquifer beneath the site is defined as being between 55 and 75 ft bgs. Water-bearing units identified at shallower depths are defined as being associated with one or more perched (or semiperched) aquifers. The Exposition aquifer is defined as being between 75 and 170 ft bgs; however, the base of this aquifer is considered approximate because no information was found regarding site-specific lithology below approximately 135 ft bgs. These designations were assigned primarily based on CPT lithological profile reports that were developed both during and prior to the completion of the SI investigation. A more comprehensive study of the lithological sediments in the 75 to 100 ft bgs zone beneath the site would be required to ascertain whether the water-bearing zones in this range are most appropriately associated with the hydrogeologic conditions of the Gaspur or Exposition aquifers. The CPT Lithological Profile Reports developed during the Armstrong SI investigation are presented in Appendix E.

Throughout much of the subbasin, the Pleistocene-age aquifers are under confined conditions due to the presence of fine-grained, low-permeability interbedded sediments. Although these fine-grained sediments, or aquicludes, generally restrict the downward migration of groundwater from overlying aquifers, semipermeable zones within the aquicludes allow aquifers to be interconnected in some areas. In addition, hydrogeologic modeling of multi-aquifer systems similar to those found in the Central Basin Pressure Area, indicates that groundwater wells screened across multiple aquifers (or wells with improperly constructed annular seals that cross multiple aquifers) can act as a direct pathway for the migration of significant volumes of shallow

groundwater into deep confined aquifers when vertical hydraulic head variations create a downward hydraulic gradient. The process of this downward migration is increased in areas where the deeper aquifers have periods of high-volume pumping such as seasonal demand. Furthermore, additional studies have shown that liquids that are denser than water (i.e., dense non-aqueous phase liquids such as TCE and PCE) can migrate downward through a multi-aquifer well even when vertical hydraulic head variations create an upward hydraulic gradient. As of the end of the 2012-2013 fiscal year, there were 537 known extraction wells (306 active and 231 inactive) within the subbasin (AwwaRF, 2006; DWR, 1961; DWR, 2013; Johnson et al., 2011).

The State of California, Department of Water Resources' Bulletin No. 104 (*Planned Utilization of the Ground Water Basins of the Coastal Plain of Los Angeles County*) – Appendix A presents "idealized" geologic cross-sections transecting the Central Subbasin. These cross-sections indicate apparent areas of merged aquifers near the site, including approximately 0.7 mile southeast (Gaspur-Exposition), approximately 0.25 mile west (Exposition-Gage), and approximately 0.24 mile east (Lynwood-Silverado). Aquifer interconnection within 2 miles of the site has been documented between the Gaspur through Gage and between the Lynwood through Silverado. Aquifer interconnections within 2 miles of the site have been established neither between the Gage through Jefferson, the Jefferson and Lynwood, nor the Silverado and Sunnyside (DWR, 1961).

The regional groundwater flow direction within the subbasin, which was calculated using data from wells screened within the upper San Pedro Formation (Lynwood and Silverado aquifers), is generally to the southwest with local and temporal variations from approximately west-southwest to southeast. Based upon data collected between 2007 and 2016, flow within these deeper aquifers near the site trended towards the west-southwest with temporal variations from west to south-southwest (WRD, 2017).

The groundwater flow direction within the perched aquifer at the site is not known. Because of the highly irregular and discontinuous nature of these perched water-bearing zones, the flow direction is estimated to be highly variable and the calculation of a meaningful flow direction would likely require a separate and specialized investigation.

The groundwater flow direction within the Gaspur aquifer at the site is also not known. Monitoring wells screened within the Gaspur aquifer at the Brenntag Pacific, Inc. (Brenntag) facility, which is located approximately 0.5 mile west of the Armstrong site, were measured during semiannual sampling events conducted between approximately 2010 and 2016. Calculations based on these measurements were generally inconsistent and often resulted in conflicting flow directions. Based on this information, the flow directions within the Gaspur aquifer at the Armstrong site are expected to be similarly variable and flow directions calculated on nearby properties should not be extrapolated to the site (ARCADIS, 2017).

The groundwater flow direction within the Exposition aquifer at the site is estimated to be towards the southwest. This estimated flow direction is based on monitoring well depth-to-water measurements collected from wells screened within the Exposition aquifer at the Brenntag facility between approximately 2010 and 2016 (ARCADIS, 2017).

During the SI investigation, the subsurface geology at the site was logged to a depth of 40 ft bgs, the base of continuous coring. Subsurface materials primarily consisted of light- to dark-brown sands through clayey sands with interbedded lenses (typically less than 1 ft) of dark-brown sandy silts through clays. The lithological identifications are described in the sample log book (Appendix I). Additionally, during the SI investigation, CPT technology was used to estimate the subsurface lithology to a total depth of approximately 135 ft bgs. The interpreted Soil Behavior Type generated from the CPT generally indicated sand units from 29 to 38 ft bgs, 56 to 68 ft bgs, 77 to 87 ft bgs, and 107 to 126 ft bgs. Between these sand units, the soils were generally composed of silts and clays with thin (i.e., less than 2 ft) interbedded lens of coarser-grained materials. The CPT Lithological Profile Reports are presented in Appendix E.

4.2.2 Groundwater Targets

The nearest HRS-eligible drinking water well to the site is Well 03. This well is operated by the Tract 349 Mutual Water Company (MWC) and is located approximately 0.53 mile to the northwest of the site. Routine water quality sampling of this well has not reported elevated concentrations of AOCs, including TCE, PCE, arsenic, or chromium. Well 03 is a multi-aquifer well with six distinct screening intervals that correlate to the estimated depths of the Silverado and Sunnyside aquifers (BBD, 1948; DWR, 1961; RWQCB, 2015; Weston, 2016).

The GSWC - Bell/Bell Gardens system's Hoffman Well 02 was a public supply well located approximately 250 ft north of the western portion of the site, which was removed from service in approximately 2000 and subsequently destroyed in approximately 2007 due primarily to elevated concentrations of chromium. The maximum reported chromium concentration of 333 µg/L was identified in November 2000. This well had consistently exhibited detectable, but relatively low, concentrations of PCE since at least 1985 and had exhibited elevated TCE concentrations since at least 1985. PCE concentrations gradually began increasing in approximately 1990. The maximum reported PCE concentration of 5.7 µg/L was identified in November 2000. The maximum reported TCE concentration of 15.3 µg/L was identified in November 1996. Hoffman Well 02 was a single-aquifer well with three distinct screening intervals (437 to 444, 454 to 476, and 477 to 494 ft bgs) that correlated to the estimated depths of the Lynwood aquifer (DWR, 1961; RWQCB, 2015; Weston, 2016; Appendix C-2).

The City of South Gate's Well 7 was a public supply well located approximately 0.20 mile southwest of the site, which was removed from service in approximately 2002 and destroyed in approximately 2011 due primarily to elevated concentrations of arsenic, chromium (including hexavalent chromium), and TCE. The maximum reported arsenic concentration of 15.1 µg/L was identified in December 1997. The maximum reported chromium concentration (primarily of the hexavalent species) of 86 µg/L was identified in August 2000. This well had exhibited elevated PCE and TCE concentrations since at least 1985. The maximum reported PCE concentration of 3.8 µg/L and TCE concentration of 14 µg/L were both identified during the most recent recorded sampling in October 2001. Well 7 was a single-aquifer well with a sole screening interval that correlated to the estimated depths of the Lynwood aquifer (DWR, 1948; DWR, 1961; RWQCB, 2015; Weston, 2016; Appendix C-3).

The Fed MCL for arsenic is 10 µg/L, for chromium is 100 µg/L, for PCE is 5.0 µg/L, and for TCE is 5.0 µg/L.

There are 86 known active drinking water wells, 4 known maintained-standby wells, and 30 known inactive (i.e., inactive, destroyed, or abandoned) wells located within the target distance limit (TDL) (i.e., 4 miles of established on-site sources). Water purveyors known to operate wells within the TDL include Tract 349 MWC, City of South Gate, GSWC – Bell/Bell Gardens, City of Huntington Park, Tract 180 MWC, City of Downey, Rancho Los Amigos Hospital, Maywood MWC No. 3, City of Bell Gardens, Maywood MWC No. 1, City of Lynwood, GSWC – Hollydale, Maywood MWC No. 2, City of Commerce, City of Vernon, CalWater Service – East Los Angeles (ELA), Walnut Park MWC, City of Compton, GSWC – Florence/Graham, Lynwood Park MWC, Park Water Company (Liberty) – Bellflower/Norwalk, and GSWC – Willowbrook. Additional service information for these purveyors is presented in Table 5 (Weston, 2016).

4.2.3 Groundwater Pathway Conclusion *(See Figures 3 & 4; Tables 3 through 5)*

A release of hazardous substances from the site to groundwater has not been established. For HRS purposes, a release to groundwater is established when a hazardous substance is detected in a hydraulically downgradient well at a concentration significantly above background levels, and some portion of the release is attributable to the site. A hazardous substance is considered to be present at a concentration significantly above background levels when one of the following two criteria is met: (1) the hazardous substance is detected in the contaminated (i.e., release) sample, when not detected in the background samples or (2) the hazardous substance is detected in the release sample at a concentration equal to or greater than three times the maximum background level, when detected in the background samples.

Release samples collected during the Armstrong 2015 SI sampling event from within the Gaspur aquifer exhibited concentrations of arsenic; manganese; 1,1-DCA; 1,1-DCE; cis-1,2-DCE; TCE; and VC that exceeded documented federal and state regulatory benchmarks (i.e., Fed MCL, CA MCL, or CA 2nd MCL). However, since an on-site hazardous substance source has not been documented, and since the hydraulic gradient of the Gaspur aquifer beneath the site has not been adequately defined, appropriate background concentrations for these analytes could not be assigned and a release to the Gaspur aquifer cannot be established.

Release samples collected during the Armstrong 2015 SI sampling event from within the Exposition aquifer exhibited concentrations of arsenic; 1,1-DCA; 1,1-DCE; 1,2-DCA; and VC that exceeded documented federal and state regulatory benchmarks (i.e., Fed MCL or CA MCL). However, since an on-site hazardous substance source has not been documented, and since it was deemed unnecessary for HRS purposes to assign an Exposition aquifer background sample location (see section 3.2.1), a release to the Exposition aquifer cannot be established.

Although a release from the site to groundwater cannot be established for HRS purposes, the elevated cis-1,2-DCE and TCE concentrations identified in the Gaspur aquifer samples collected from adjacent to the HWSA, suggest that one or more hazardous substance source areas may exist near this portion of the site, which were not identified during the SI sampling event. Furthermore, the elevated 1,1-DCA; 1,1-DCE; and VC concentrations identified in both the Gaspur aquifer and Exposition aquifer samples collected from adjacent to the southern maintenance area, suggest that one or more hazardous substance source areas may exist near this portion of the site, which were also not identified during the investigation. Select analytical results are presented in Figure 6 and Table 4.

The geologic materials between the ground surface at the site and the top of the deepest identified aquifer, the Sunnyside, are generally characterized by confined aquifer systems, which are composed of relatively permeable sands through gravels and are separated by relatively impermeable clay through silt layers; although semipermeable zones within these layers allow one or more aquifers to be interconnected in some areas. The estimated elevations and depths of the aquifers underlying the site are presented in Table 5. There are 86 known active drinking water wells within 4 miles of the site. These wells, which are operated by 22 distinct water purveyors, serve an apportioned population of approximately 595,000 (CTE, 2011; CWS, 2016; DWR, 1961; KJC, 2016a; KJC, 2016b; MWM, 2016; RMP, 2011; SAA, 2011; SEI, 2012; SWRCB, 2017; Weston, 2016).

4.3 Surface Water Pathway

To determine the score for the surface water pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to surface water (e.g., streams, rivers, lakes, and oceans); 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, persistence, bioaccumulation potential, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on drinking water intakes, fisheries, and sensitive environments associated with surface water bodies within 15 miles downstream of the site.

Surface water runoff from the Armstrong site is expected to flow from the paved surfaces at the site to adjacent public roadways (i.e., Patata Street), into unpaved on-site stormwater swales, or through directed drainages into the adjacent Los Angeles River. The nearest surface water body to the site is the Los Angeles River, which is located immediately east of the site. The Los Angeles River is highly modified, having been lined with concrete along most of its length by the U.S. Army Corps of Engineers in the 1950s. Flows in the river are dominated by urban runoff and tertiary-treated effluent from several municipal wastewater treatment plants. The river empties into the Pacific Ocean at San Pedro Bay approximately 13.5 miles downstream of the site. There are no surface water intakes, fisheries, or sensitive environments associated with the Los Angeles River downstream of the site; however, there is a potential for fisheries and/or recreational areas to exist within San Pedro Bay (Google, 2017; RWQCB, 1994).

4.4 Soil Exposure and Air Migration Pathways

In determining the score for the soil exposure pathway, the HRS evaluates: 1) the likelihood that there is surficial contamination associated with the site (e.g., contaminated soil that is not covered by pavement or at least 2 feet of clean soil); 2) the characteristics of the hazardous substances in the surficial contamination (i.e., toxicity and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, exposed to the contamination. For the targets component of the evaluation, the HRS focuses on populations that are regularly and currently present on or within 200 feet of surficial contamination. The four populations that receive the most weight are residents, students, daycare attendees, and terrestrial sensitive environments.

In determining the score for the air migration pathway, the HRS evaluates: 1) the likelihood that sources at a site actually have released, or potentially could release, hazardous substances to ambient outdoor air; 2) the characteristics of the hazardous substances that are available for a release (i.e., toxicity, mobility, and quantity); and 3) the people or sensitive environments (targets) who actually have been, or potentially could be, impacted by the release. For the targets component of the evaluation, the HRS focuses on regularly occupied residences, schools, and workplaces within 4 miles of the site. Transient populations, such as customers and travelers passing through the area, are not counted.

There are no known residences, schools, daycare facilities, or sensitive environments on site. The site is fenced and maintains on-site security personnel. The surface of the western approximately two-thirds of the site is covered with pavement or buildings and the surface of the eastern approximately one-third is covered by vegetation and exposed soil. The site is bordered to the north by approximately 35 single- and multi-family residential properties. There are regularly occupied workplaces on site; however, the total current number of employees is not known. A 1999 inspection report indicated that the facility operated 24-hours per day with 140 total employees (Google, 2017; HHMD, 2009; Appendix B).

4.5 Hazard Ranking System Summary *(See Figures 3 & 4; Tables 3 through 5)*

On-site soil-matrix samples collected during the 2015 SI investigation exhibited concentrations of metals, specifically lead and zinc, that exceeded assigned site-specific action levels. However, since these elevated concentrations were limited to two near-surface samples (i.e., 2 ft bgs), since the exhibited concentrations only slightly exceeded action levels, and since neither lead nor zinc were identified at elevated concentrations in on-site groundwater samples, these results are not considered to represent a significant metal source area. None of the soil-matrix samples exhibited concentrations of VOCs that exceeded assigned action levels. For HRS purposes, no on-site hazardous substance sources are considered adequately documented.

Groundwater release samples collected from both the Gaspur and Exposition aquifers during the investigation exhibited concentrations of metals and VOCs that exceeded documented federal and/or state regulatory benchmarks. However, groundwater action levels were not assigned for HRS purposes in either aquifer since an on-site source was not documented (see Section 3.2.1).

The following primary HRS factors are associated with the site:

- Hazardous substance sources at the site have not been documented based on the results of the 2015 SI investigation. Consequently, a release of hazardous substances from the site to groundwater cannot be established.

- Aquifer interconnection within 2 miles of the site has not been adequately documented between the Exposition through Silverado aquifers.

- The geologic materials between the site surface and the top of the Silverado aquifer are generally characterized by approximately 550 feet of relatively permeable sands and gravels and approximately 500 feet of less permeable clays and silts.

- The nearest drinking water well is located between one-half and one mile from the site.

- Drinking water wells within 4 miles of the site serve an apportioned population of approximately 595,000.

The following secondary HRS factors are associated with the site:

- No drinking water intakes are associated with surface water within 15 miles downstream of the site. However, there is the potential for fisheries and/or sensitive environments associated with the Pacific Ocean to exist within this target distance limit.

- There are no known residences, schools, daycare centers, or sensitive environments on site. The site is bordered to the north by approximately 35 residential properties.

- There are regularly occupied workplaces on site. In 1999, the facility employed 140 individuals.

- The site is fenced, maintains on-site security, and is generally inaccessible to the public.

- The surface of the operational portion of the site is covered with pavement or buildings.

5.0 REMOVAL EVALUATION CONSIDERATIONS

The National Contingency Plan [40 CFR 300.415 (b) (2)] authorizes EPA to consider emergency response actions at those sites that pose an imminent threat to human health or the environment. For the following reasons, a referral to Region 9's Emergency Response Office does not appear to be necessary (Google, 2017; Appendix B):

- The site is fenced and generally inaccessible to the public.

- The surface of the operational portion of the site is covered with pavement or buildings.

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Tables

Table 1: Northern Site Source Sampling Results for Select Metals

Sample Location	Sample Depth (ft bgs)	Arsenic	Barium	Cadmium	Chromium	Lead	Manganese	Nickel	Selenium	Vanadium	Zinc
Benchmarks and Action Levels											
Residential RSL		0.68	15,000	71	--	400	1,800	1,500	390	390	23,000
MCL-based SSL		0.29	82	--	180,000	14	--	--	0.26	--	--
HRS SEP Benchmark		0.77	10,000	30	200	--	10,000	1,000	300	394	20,000
Action Level (1)		**7.6**	**461**	**1.1**	**62**	**19**	**1,461**	**50**	**2.5**	**139**	**197**
Background Samples											
QWS-DP-9 (2)	2	1.7	111	0.47 U	13	2.9	279	12	2.4 U	29	44 J
	5	1.3	79	0.44 U	8.3	2.0	204	6.9	2.2 U	23	33 J
	10	2.0	113	0.12 J	14	4.4	299	11	2.5 U	33	48 J
	15	1.5	113	0.21 J	14 J	3.5	366 J	11 J	2.5 U	36 J	49 J
Source Samples											
AWI-DP-2	2	2.0	116	0.58 U	19	**20**	352	20	2.9 U	33	82 J
	5	0.89	52	0.37 U	6.7	1.7	174	4.7	1.9 U	18	26 J
	10	2.3	122	0.53 U	16	5.6	320	12	2.6 U	37	51 J
	15	1.7	127	0.52 U	15	3.7	350	11	2.6 U	36	50 J
AWI-DP-3	2	3.1	79	0.52 U	14	12	249	27	2.6 U	26	**305 J**
	5 (3)	1.2	109	0.99 U	14	2.9 J	313 J	11	2.5 UJ	37	39 J
	10	1.9	107	0.11 J	15	4.5 J	385 J	13	2.4 UJ	36	39 J
	15	1.8	138	0.10 J	19	5.0 J	502 J	15	3.0 UJ	46	52 J
AWI-DP-4	2	0.49 J	90	0.08 J	11	4.3 J	201 J	9.3	2.7 UJ	26	42 J
	5	0.45 J	52	0.51 U	3.6 J+	1.4 J	97 J	3.2	2.6 UJ	11	18 J
	10	1.6	158	0.08 J	20	5.1 J	396 J	16	2.5 UJ	41	52 J
	15	1.5	115	1.0 U	15	3.6 J	315 J	11	2.6 UJ	36	43 J
AWI-DP-7	2	1.8	142	0.53 U	19	5.0	414	14	2.7 U	42	61 J
	5 (3)	1.4	98	0.07 J	12	2.5 J	281 J	8.7	2.4 U	29	36 J
	10	1.8	116	0.46 U	16	4.3	317	11	2.3 U	37	47 J
	15	1.6	121	0.47 U	15	3.7	378	11	2.3 U	36	51 J

Notes: Values in Bold exceed Action Level
Values in Shaded cells exceed ten times Action Level
All results reported in milligrams per kilogram (mg/kg)
Samples collected in November, 2015
1 = Per the HRS, the action level to establish an on-site source of contaminated soil is "significantly above background," which is defined as three times the background concentration (See section 3.2.1)
2 = Sample collected as part of QualaWash Site Inspection (SI) investigation (Weston, 2017)
3 = Duplicate Sample collected; greater result is presented

Definitions:
MCL = Federal Maximum Contaminant Level
RSL = Regional Screening Level
HRS = Hazard Ranking System
SEP = Soil Exposure Pathway
SSL = Soil Screening level
ft bgs = feet below ground surface

Data Qualifier Definitions:
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J- = The result is an estimated quantity, but the result may be biased low.
R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
U = The analyte was analyzed for, but was not detected above the level of the reported Sample Quantitation Limit (SQL).
UJ = The analyte was analyzed for, but was not detected. The reported SQL is approximate and may be inaccurate or imprecise.

Complete analytical results are presented in Appendix H

Table 2: Southern Site Source Sampling Results for Select Metals

Sample Location	Sample Depth (ft bgs)	Arsenic	Barium	Cadmium	Chromium	Lead	Manganese	Nickel	Selenium	Vanadium	Zinc
Benchmarks and Action Levels											
Residential RSL		0.68	15,000	71	--	400	1,800	1,500	390	390	23,000
MCL-based SSL		0.29	82	--	180,000	14	--	--	0.26	--	--
HRS SEP Benchmark		0.77	10,000	30	200	--	10,000	1,000	300	394	20,000
Action Level (1)		**7.6**	**461**	**1.1**	**62**	**19**	**1,461**	**50**	**2.5**	**139**	**197**
Background Samples											
QWS-DP-9 (2)	2	1.7	111	0.47 U	13	2.9	279	12	2.4 U	29	44 J
	5	1.3	79	0.44 U	8.3	2.0	204	6.9	2.2 U	23	33 J
	10	2.0	113	0.12 J	14	4.4	299	11	2.5 U	33	48 J
	15	1.5	113	0.21 J	14 J	3.5	366 J	11 J	2.5 U	36 J	49 J
Source Samples											
AWI-DP-1	2	0.84	78	0.07 J	16	3.7 J	213 J	8.2	1.9 UJ	27	34 J
	5	1.5	163	0.18 J	21	3.7 J	359 J	15	2.0 UJ	41	45 J
	10 (3)	2.3	180	0.19 J	30	6.7 J	520 J	20	2.4 UJ	57	65 J
	15	1.5	127	0.96 U	15	3.7 J	346 J	12	2.4 UJ	39	43 J
	33	1.8	161	0.11 J	20 J	6.2 J	372 J	15 J	1.1 J-	43 J	48 J
AWI-DP-5	2	1.5	120	0.47 U	16	4.0	358	12	2.4 U	35	51 J
	5	1.4	109	0.51 U	13	3.0	309	9.8	2.5 U	33	46 J
	10	2.7	114	0.47 U	17	4.9	418	11	2.4 U	38	51 J
	15	1.9	137	0.43 U	18	5.1	489	12	2.2 U	42	55 J
AWI-DP-6	2	1.9	103	0.76	16	17	309	17	2.6 U	30	67 J
	5 (3)	0.8	57	0.49 U	7.0	2.2	197	5.2	2.5 U	20	29 J
	10	1.3	98	0.41 U	14	3.7	282	9.3	2.0 U	29	45 J
	15	1.5	131	0.48 U	16	3.9	336	11	2.4 U	39	51 J
AWI-DP-8	2	1.6	143	0.14 J	19	4.6 J	442 J	15	2.7 UJ	45	48 J
	5	1.1	99	0.98 U	13	2.3 J	250 J	8.7	2.5 UJ	33	35 J
	10	1.7	126	0.14 J	20	5.0 J	360 J	14	2.4 UJ	42	45 J
	15	1.3	113	0.96 U	14	3.2 J	325 J	11	2.4 UJ	38	41 J

Notes: Values in Bold exceed Action Level
Values in Shaded cells exceed ten times Action Level
All results reported in milligrams per kilogram (mg/kg)
Samples collected in November, 2015
1 = Per the HRS, the action level to establish an on-site source of contaminated soil is "significantly above background," which is defined as three times the background concentration (See section 3.2.1).
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U = The analyte was analyzed for, but was not detected above the level of the reported Sample Quantitation Limit (SQL).
UJ = The analyte was analyzed for, but was not detected. The reported SQL is approximate and may be inaccurate or imprecise.

Complete analytical results are presented in Appendix H

Table 3: Groundwater Sampling Results for Select Metal and VOC Analytes

Sample Location	Sample Depth (ft bgs)	Arsenic	Lead	Manganese	Zinc	1,1-Dichloroethane	1,1-Dichloroethylene	1,2-Dichloroethane	cis-1,2- Dichloroethylene	Trichloroethylene	Vinyl Chloride
		As	Pb	Mn	Zn	1,1-DCA	1,1-DCE	1,2-DCA	c-1,2-DCE	TCE	VC
Benchmark:		**10**	**15**	**50 (1)**	**5,000**	**5.0**	**7.0**	**5.0**	**70**	**5.0**	**2.0**
Benchmark Source:		Fed MCL	Fed MCL	CA 2nd MCL	CA 2nd MCL	CA MCL	Fed MCL	Fed MCL	Fed MCL	Fed MCL	Fed MCL
Release Sample Locations – Direct Push											
AWI-DP-1	62 (2)	7.3	1.0 U	414	3.9	**130**	**330**	0.65	1.6 J+	**8.2**	**6.4**
AWI-DP-2	65	**15**	2.5	**710**	14 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
AWI-DP-4	63	**14**	1.6	317	8.0	0.50 U	2.7	0.50 U	69	**16**	0.50 U
AWI-DP-6	67 (2)	**20**	1.0 U	**574**	2.3 J+	**43**	**140 J+**	1.6	4.7 J+	3.5	**4.1**
AWI-DP-7	66	7.8	1.0 U	**610**	2.0 U	**21 J**	**26 J+**	0.33 J	**190 J+**	**390 J**	1.5
Release Sample Locations – Cone Penetration Testing											
AWI-CPT-2	64 (2)	**22**	1.0 U	475	7.5 J+	**8.3**	**230**	0.50 U	1.2 J+	3.8	**48**
	86	**12**	1.0 U	396	5.2 J+	**12**	**55 J+**	0.43 J	0.23 J+	0.50 U	**2.4**
	124	5.2	1.2	210	12 J+	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
AWI-CPT-3	65	**16**	1.2	**698**	7.7 J+	0.50 U	1.1	0.50 U	60	**24**	1.9
	86	7.4	1.0 U	470	4.2 J+	0.50 U	0.50 UJ	**31**	0.50 UJ	0.50 U	0.50 U
	127	2.4	1.0 U	175	2.3 J+	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Secondary Objective Sample Locations											
AWI-CPT-1	68	**29**	1.2	355	12	**23**	**13 J+**	0.40 J	1.6 J+	0.50 U	1.1
	88	2.3	1.0 U	**855**	5.0	**6.3**	0.50 U	0.50 U	0.41 J	0.50 U	0.47 J
	125	1.3	1.0 U	282	3.2	0.50 U	0.50 U	0.50 U	0.50 U	0.15 J	0.50 U
AWI-CPT-4	65	**15**	1.2	374	6.7	0.50 U	2.9	0.50 U	0.16 J	0.50 U	0.50 U
	86	**19**	1.0 U	**504**	2.0 U	0.50 U	0.50 U	0.50 U	0.50 U	0.18 J	0.50 U
	119	3.2	1.1	167	6.2	0.50 U	0.50 U	0.50 U	3.0	0.50 U	0.50 U
AWI-CPT-5	62	9.1	1.0 U	**1,070**	2.5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
	84	**11**	1.0 U	**660**	2.9	0.50 U	0.50 U	0.50 U	0.22 J	0.11 J-	0.50 U
	118	2.6	1.0 U	**680**	3.0	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U

Notes: Values in Bold exceed Benchmark
Values in Shaded cells exceed ten times Benchmark
All results reported in micrograms per liter (µg/L)
Samples collected in November, 2015
1 = Manganese exceedances are presented as 10 times reference benchmark
2 = Duplicate Sample collected; greater result is presented

Definitions:
CA MCL = California Maximum Contaminant Level
CA 2nd MCL = California Secondary Maximum Contaminant Level
Fed MCL = Federal Maximum Contaminant Level
ft bgs = feet below ground surface

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Complete analytical results are presented in Appendix H

Table 4: Bulletin 104 Aquifer Elevations near Site

Aquifer	Estimated Elevation (ft amsl)		Estimated Depth (ft bgs)	
	Top	Base	Top	Base
Gaspur	75	50	30	55
Exposition	25	-65	80	170
Gage	-80	-140	185	245
Hollydale	-200	-245	305	350
Jefferson	-290	-350	395	455
Lynwood	-380	-460	485	565
Silverado	-490	-695	595	800
Sunnyside	-970	-1225	1075	1330

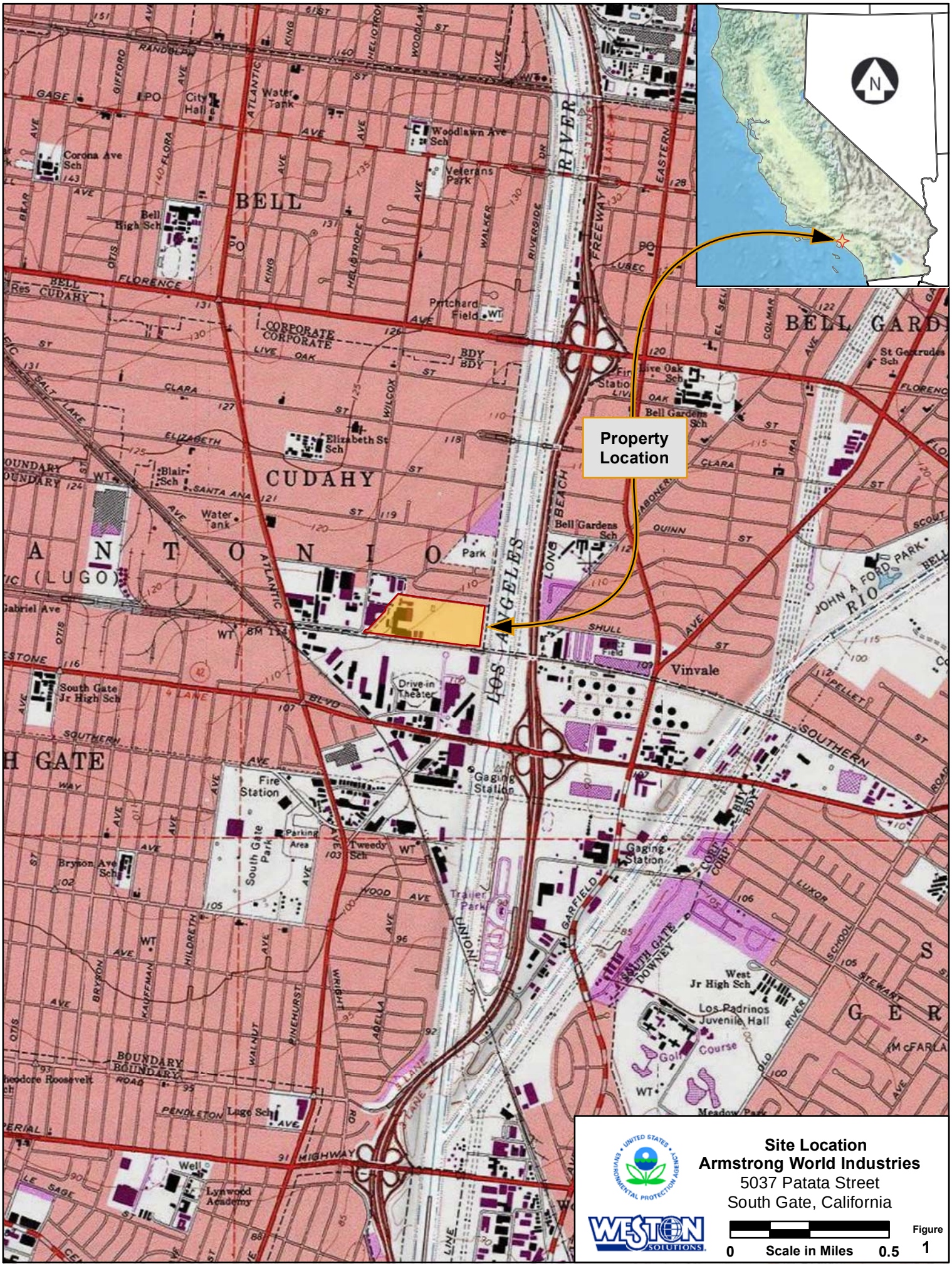
Definitions:
amsl = above mean sea level
bgs = below ground surface
ft = feet
References:
DWR, 1961

Table 5: Water Purveyors Operating Active Wells Within the Target Distance Limit

Water Company Name	No. of Wells in System (1)	Total Population Served	Percent Groundwater	No. of Wells Within 4 Miles (1)	Direction from site (approx.)
Tract 349 MWC	2	7,500	99%	2	NW
City of South Gate	7	96,057	99%	7	W-SW-S
GSWC - Bell, Bell Gardens	5	58,048	97%	5	NW-N-NE
City of Huntington Park	5	17,246	72%	5	NW
Tract 180 MWC	2	14,000	100%	2	NW
City of Downey	20	112,585	100%	19	NNE-E-SE
Rancho Los Amigos Hospital	3	8,800	100%	3	SSE
Maywood MWC #3	2	9,500	92%	2	N
City of Bell Gardens	1	11,879	100%	1	NE
Maywood MWC #1	2	3,619	95%	2	NW
City of Lynwood	5	65,965	98%	2	SW
GSWC – Hollydale	2	7,666	100%	2	S-SSE
Maywood MWC #2	2	6,700	80%	2	NNW
City of Commerce	2	3,828	100%	2	NE
City of Vernon	7	45,000	84%	5	NW
CalWater Service – ELA	9	150,729	63%	7	N-NNE-NE
Walnut Park MWC	3	16,180	73%	3	WNW
City of Compton	7	81,965	71%	3	SW
GSWC – Florence/Graham	7	65,182	82%	3	WNW
Lynwood Park MWC	3	2,300	100%	2	SW
PWC - Bellflower/Norwalk	8	71,745	15%	1	SE
GSWC – Willowbrook	2	10,682	> 60%	2	SW

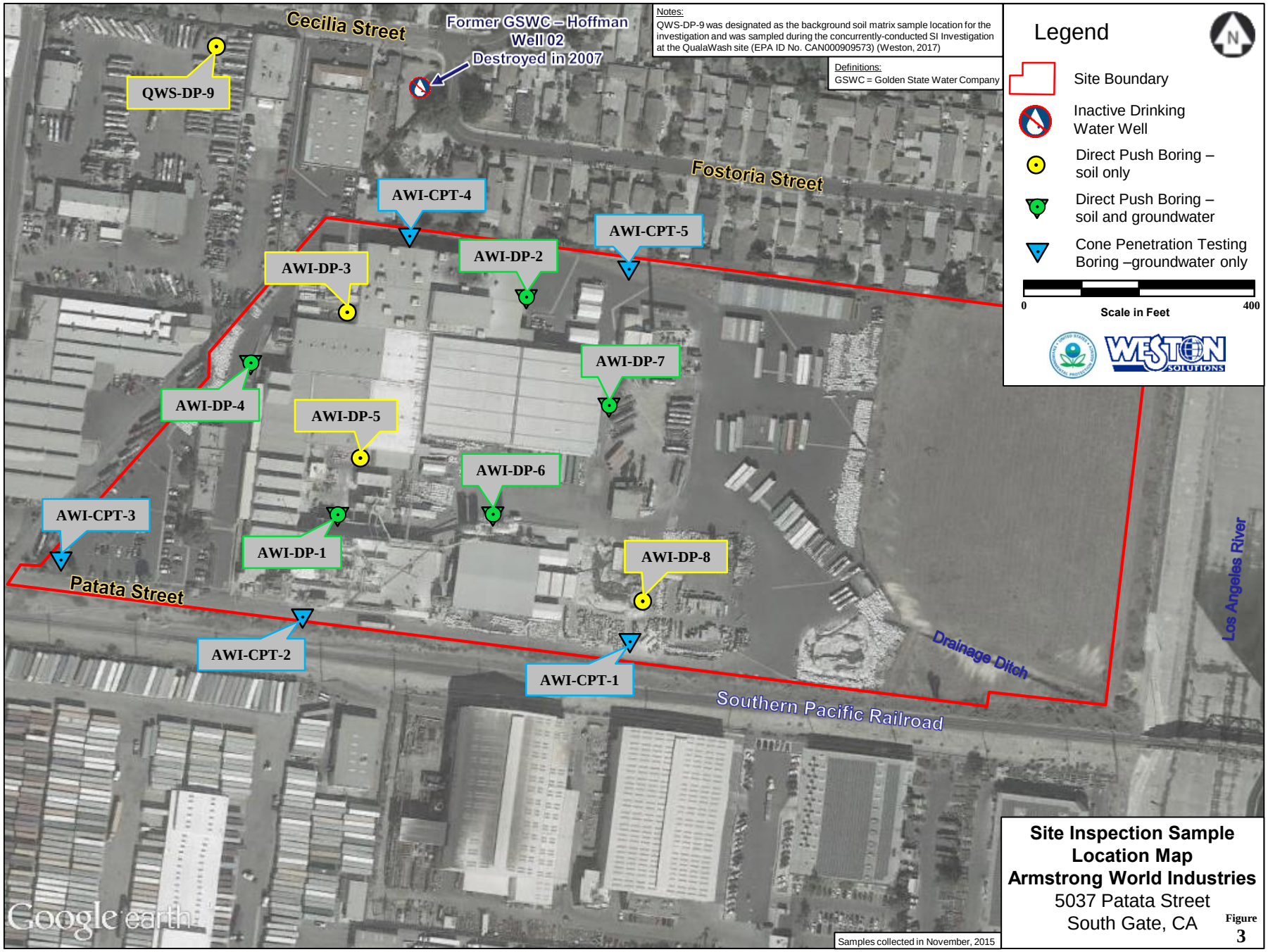
Footnotes:
1 = Does not include standby wells unless otherwise noted
References:
CTE, 2011; CWS, 2016; KJC, 2016a; KJC, 2016b; SEI, 2012; SWRCB, 2017; Weston, 2016

Figures


Property Location
N
BELL
CUDAHY
ANTONIO
(LUGO)
BELL GARDENS
Vinvale
SOUTH GATE
LOS ANGELES
RIVER
LONG BEACH
FREEWAY
ATLANTIC
FLORENCE
SOUTHERN
SHULL
GARFIELD
UNION
WOOD
PENDLETON
91 HIGHWAY
Corona Ave Sch
Bell High Sch
Woodlawn Ave Sch
Veterans Park
Pritchard Field
Elizabeth St Sch
Blair Sch
Water Tank
City Hall
Bell Gardens Sch
St Gertrudes Sch
Live Oak Sch
Park
Drive-in Theater
South Gate Jr High Sch
Fire Station
Gaging Station
South Gate Park
Parking Area
Tweedy Sch
Bryson Ave Sch
Trailer Park
West Jr High Sch
Los Padrinos Juvenile Hall
Golf Course
Meadow Park
Lugo Sch
Lynwood Academy
Well
Theodore Roosevelt
JOHN A FORD PARK
Site Location
Armstrong World Industries
5037 Patata Street
South Gate, California
WESTON SOLUTIONS
0 Scale in Miles 0.5
Figure 1

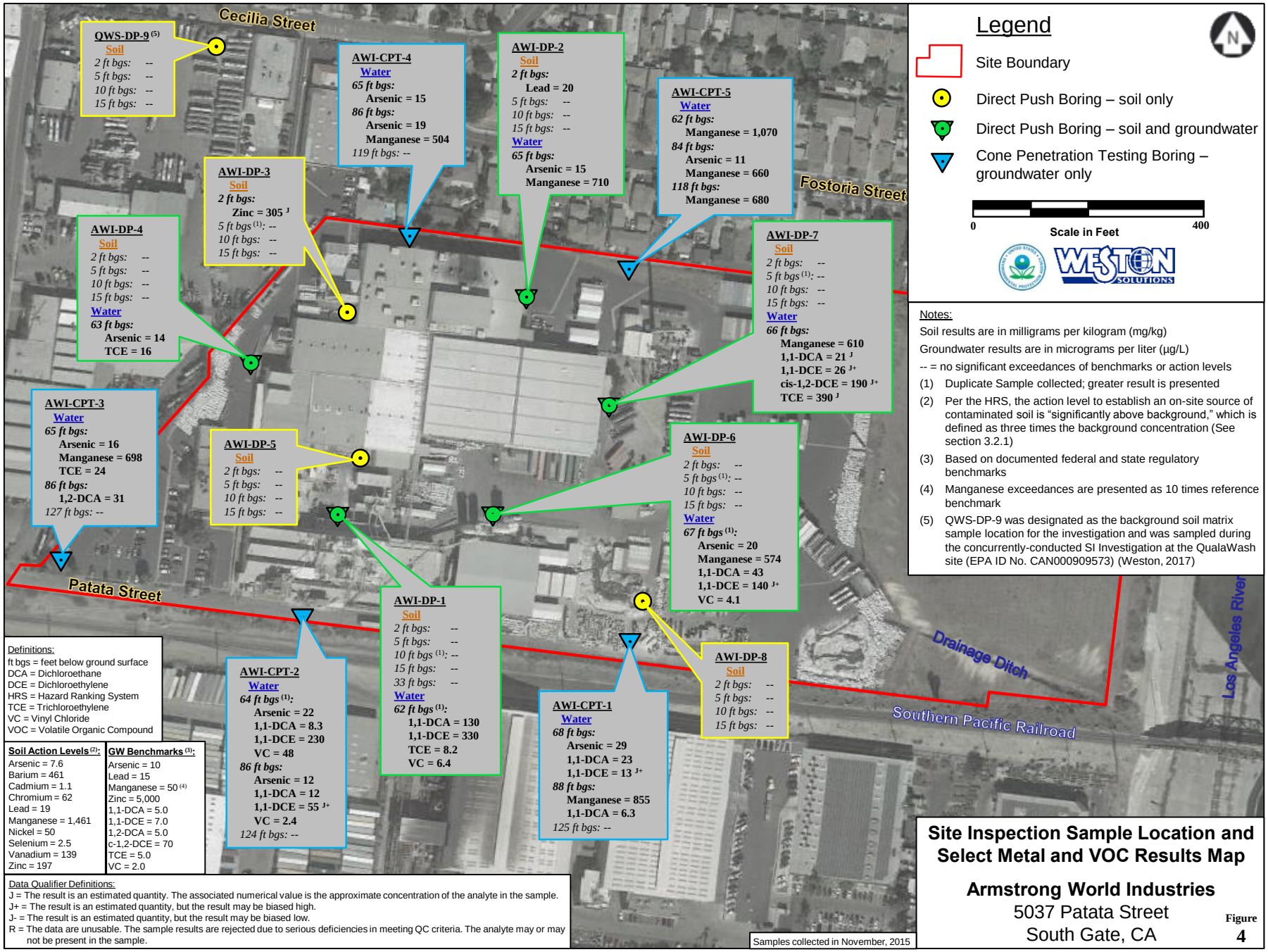
Site Layout Map
Armstrong World Industries
5037 Patata Street
South Gate, CA

Figure
2



Site Inspection Sample Location Map
Armstrong World Industries
5037 Patata Street
South Gate, CA

Figure 3

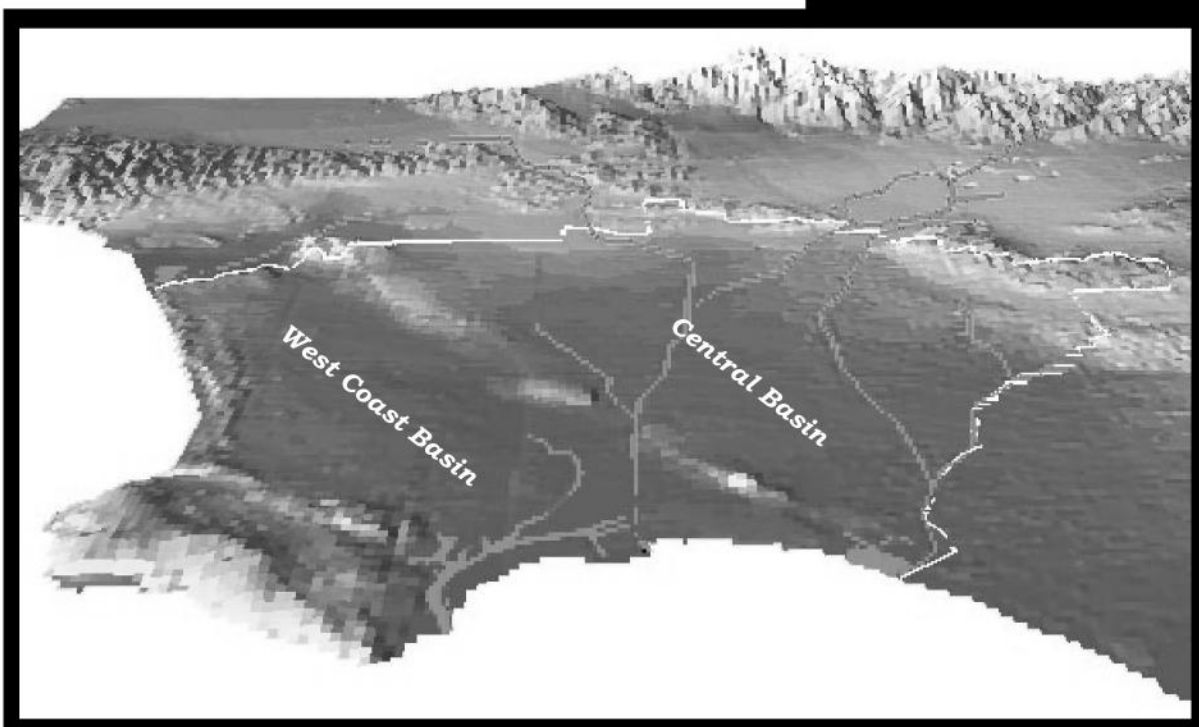


Site Inspection Sample Location and Select Metal and VOC Results Map

Armstrong World Industries
5037 Patata Street
South Gate, CA

Figure
4

Reference:
WRD, 2017



Engineering Survey and Report

2017

WRD

WATER REPLENISHMENT DISTRICT
OF SOUTHERN CALIFORNIA

March 2, 2017

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CHAPTER 3 - GROUNDWATER CONDITIONS

Introduction

The California Water Code Section 60300 requires WRD to determine annually in the Engineering Survey and Report ("ESR") the following items related to groundwater conditions in the Central Basin and West Coast Basin ("CBWCB"):

1) Total groundwater production for the previous water year ("WY") and estimates for the current and ensuing WYs;

2) The Annual Overdraft for the previous WY and estimates for the current and ensuing WYs;

3) The Accumulated Overdraft for previous WY and an estimate for the current WY;

4) Changes in groundwater levels (pressure levels or piezometric heights) within the District and the effects these changes have on groundwater supplies within the District; and

5) An estimate of the quantity, source, and cost of water available for replenishment during the ensuing WY;

To meet these requirements, WRD's hydrogeologists and engineers closely monitor and collect data to manage the groundwater resources of the District throughout the year. They track groundwater levels from WRD's network of specialized monitoring wells and from groundwater producers' production wells. They utilize computer models developed by the United States Geological Survey ("USGS") and others to provide parameters for data analysis and to simulate groundwater conditions and predict future conditions. They use their geographic information system ("GIS") and database management system to store, analyze, map, and report on the information required for the ESR. They work closely with the Los Angeles County Department of Public Works ("LACDPW") on spreading grounds and seawater barrier wells to determine current and future operational impacts to groundwater supplies. They work closely with the Metropolitan Water District of Southern California ("MWD" or "Met"), the local MWD member agencies, and the Sanitation Districts of Los Angeles County ("SDLAC") on the current and future availability of replenishment water. They also work with regulators on replenishment criteria for water quality and recycled water use, and with the groundwater pumpers, the pumpers' Technical Advisory Committee ("TAC"), the Budget Advisory Committee ("BAC"), and other stakeholders to discuss the current and future groundwater conditions and beneficial projects and programs within the District and neighboring basins.

The information on Annual Overdraft, Accumulated Overdraft, water levels, and change in storage are discussed in the remainder of this chapter. Groundwater production was previously discussed in Chapter 2. The estimated quantity, source, and cost of replenishment water will be discussed in Chapter 4. Projects and programs are discussed in Chapter 5.

Annual Overdraft

Section 60022 of the Water Replenishment District Act defines Annual Overdraft as "*...the amount...by which the quantity of groundwater removed by any natural or artificial means from the groundwater supplies within such replenishment district during the water year exceeds the quantity of non-saline water replaced therein by the replenishment of such groundwater supplies in such water year by any natural or artificial means other than replenishment under the provisions of Part 6 of this act or by any other governmental agency or entity.*" (Part 6 of the Act pertains to water that WRD purchases for replenishment). Therefore, the Annual Overdraft equals the natural inflows to basins

(not including WRD purchased water) minus all of the outflows (mostly pumping). There is an Annual Overdraft almost every year for the simple fact that the groundwater extractions typically exceed the natural inflows into the groundwater basins. It has been one of the District's main responsibilities since its formation in 1959 to help make up this Annual Overdraft by purchasing artificial replenishment water to recharge the aquifers and supplement natural recharge.

To determine the Annual Overdraft for the previous WY, WRD determines the inflows and outflows of the CBWCB. In the previous WY 2015/16, natural inflows (storm water capture, areal recharge, and net groundwater underflow) totaled 104,316 AF and WRD added 110,051 AF of supplemental recharge water (imported and recycled) at the seawater barrier wells and spreading grounds. Total natural and artificial inflows, therefore, equaled 214,367 AF. Total pumping in the basins was 214,867 AF. The Annual Overdraft is the natural inflows minus total outflows, or 110,551 AF (rounded to 110,600 AF).

For the current and ensuing WY estimates for Annual Overdraft, the concept of "Average Annual Groundwater Deficiency" is utilized. The Average Annual Groundwater Deficiency is the long-term average of natural inflows minus total outflows and represents the long term average deficit in the basins. The development of the USGS/WRD computer model derived these long term average inflow and outflow terms. **Table 4** presents this information, which concluded that the Average Annual Groundwater Deficiency is 105,385 AFY. Values for the Average Annual Groundwater Deficiency are based on the 30-year average inflows and outflows as calculated by the computer model which ran from October 1970 through September 2000. Long-term average inflows are influenced by the amount of precipitation falling on the District as well as for storm water capture at the spreading grounds. **Table 5** and **Figure A** show the historical precipitation amounts in the District. Current measurements are utilized from LACDPW Precipitation Station #383 (Imperial Yard) located in unincorporated County land near the cities of South Gate, Downey, and Lynwood.

The calculation of the Average Annual Groundwater Deficiency represents that, in general, WRD needs to replenish about 105,385 AFY assuming long-term average conditions over that 30 year period for the water balance to reach equilibrium, the overall change in storage to equal zero, and groundwater levels to remain relatively constant. To estimate the current and ensuing year Annual Overdraft, adjustments are made to the Average Annual Groundwater Deficiency for any expected deviations in the current and ensuing water years. **Table 6** presents these adjustments and the calculation of the Annual Overdraft. For the current year, the Annual Overdraft is estimated at 61,500 AF (lower than usual because of the wet year and reduced pumping) and for the ensuing year 82,800 AF.

Accumulated Overdraft

Section 60023 of the Water Replenishment District Act defines *"Accumulated Overdraft"* as "*...the aggregate amount...by which the quantity of ground water removed by any natural or artificial means from the groundwater supplies...during all preceding water years shall have exceeded the quantity of non-saline water replaced therein by the replenishment of such ground water supplies in such water years by any natural or artificial means...*"

In connection with the preparation of Bulletin No. 104-Appendix A (1961), the DWR estimated that the historically utilized storage (Accumulated Overdraft) between the high WY of 1904 and 1957[1] was 1,080,000 AF (780,000 in CB, 300,000 in WCB). Much of this storage removal was from the forebay areas (Montebello Forebay and Los Angeles Forebay), where aquifers are merged, unconfined and serve as the "headwaters" to the confined pressure aquifers. Storage loss from the confined and completely full, deeper aquifers was minimal in comparison or was replaced by seawater intrusion,

[1] DWR Bulletin 104-A did not refer to the ending year for the storage determination. WRD has assumed it to be the year 1957, as this is the end year for their detailed storage analysis presented in Bulletin 104-B – Safe Yield Determination.

which cannot be accounted for under the language of the Water Code since it is considered saline water.

The goal of groundwater basin management by WRD is to ensure a sufficient supply of safe and reliable groundwater in the basins for annual use by the pumpers, to keep a sufficient supply in storage for times of drought when imported water supplies may be curtailed for several consecutive years as well as to keep suitable room available in the basins to receive natural water replenishment in very wet years.

To compute the Accumulated Overdraft since this initial amount of 1,080,000 AF, WRD takes each consecutive year's Annual Overdraft and replenishment activities and determines the change in storage. It adds to or subtracts from the corresponding value from the Accumulated Overdraft. Since the base level, the aggregate excess of extractions over recharge has been reduced due to the artificial replenishment activities by LACDPW and WRD at the spreading grounds and seawater barrier wells and the reduction of pumping established by the adjudications and by WRD's In-Lieu Program. The Accumulated Overdraft at the end of the previous WY was determined to be 832,822 AF. For the current year, the Accumulated Overdraft is forecast to improve to 761,700 AF due to the above normal precipitation, the reduction in pumping, and the purchase of extra imported water for spreading (makeup water from previous years when it was not available). This could change if hydrology or pumping patterns or planned artificial replenishment activities vary considerably in the near future.

Table 7 presents information for the previous and current Accumulated Overdraft estimate. The annual changes in storage are presented on **Table 8**.

Groundwater Levels

A groundwater elevation contour map representing water levels within the District in fall 2016 (end of the WY) was prepared for this report and is presented as **Plate 2**. The data for the map were collected from wells that are screened in the deeper basin aquifers where the majority of groundwater pumping occurs. These deeper aquifers include the Upper San Pedro Formation aquifers, including the Lynwood, Silverado, and Sunnyside. Water level data was obtained from WRD's network of monitoring wells and from groundwater production wells that are screened in the deeper aquifers.

As can be seen on **Plate 2**, groundwater elevations range from a high of about 150 feet above mean sea level (msl) in the northeast portion of the basin above the spreading grounds in the Whittier Narrows to a low of about 105 feet below mean sea level (msl) in the Long Beach area. With the exception of the Montebello Forebay and along the West Coast Basin Barrier Project, the majority of groundwater levels in the District remain below sea level (red colored contour lines on **Plate 2**), which is why continued injection at the seawater barriers is needed to prevent saltwater intrusion.

Plate 2 also shows the location of the key wells used for long-term water level data. These long-term hydrographs have been presented in the ESR for years, and provide a consistent basis from which to compare changing water levels. A discussion of water levels observed in the key wells is presented below.

Los Angeles Forebay

The Los Angeles Forebay occupies the westerly portion of the Central Basin Non-Pressure Area. Historically a recharge area for the Los Angeles River, this forebay's natural recharge capability has been substantially reduced since the river channel was lined and open areas paved over. Recharge is now limited to deep percolation of precipitation in limited areas, In-Lieu replenishment when available, subsurface inflow from the Montebello Forebay, the northern portion of the Central Basin outside of WRD's boundary, and the San Fernando Valley through the Los Angeles Narrows.

Key well #2778 (2S/13W-10A01) represents the water level conditions of the Los Angeles Forebay (see **Figure B**). The water level high was observed in 1938 at an elevation of approximately 70 feet above msl and by 1962 water levels had fallen nearly 180 feet to an elevation of 109 ft below msl due to basin over-pumping and lack of sufficient natural recharge. Since then, basin adjudication and managed aquifer recharge by WRD and others have improved water levels in this area. At the end of WY 2015/16, groundwater levels were at an elevation of 22.6 feet below msl and were 0.6 feet lower than the previous year. The average water level change throughout the entire Los Angeles Forebay based on WRD's GIS analysis was a drop of 2.6 feet.

Montebello Forebay

The Montebello Forebay lies in the northeastern portion of the Central Basin and connects with the San Gabriel Basin to the north through the Whittier Narrows. The Rio Hondo and San Gabriel River Coastal Spreading Grounds (often called the "Montebello Forebay Spreading Grounds") provide a substantial amount of recharge water to the CBWCB since the aquifers there are unconfined and allow easy infiltration of surface water impounded at the spreading grounds to the deeper groundwater.

Three key wells help describe the groundwater level conditions in the Montebello Forebay, a northern well, a middle well, and a southeastern well (**Plate 2**). The historic water levels in these three key wells are discussed below:

- Well Pico1_4 (2S/11W-18C07) is in the northern part of the Montebello Forebay. The upper chart on **Figure C** shows the water levels for this well. Historic water levels at this well or its predecessors have ranged from a high elevation of 164.7 feet above mean sea level in April 1944 to a low of 42.8 feet above msl in December 1957. At the end of WY 2015/16, groundwater levels in this well were at an elevation of 86.6 feet above msl and were 7.6 feet higher than the previous year.

- Well 1601T (2S/12W-24M08) is centrally located between the Rio Hondo and San Gabriel spreading grounds. This well is monitored weekly to assess water levels in the middle of the forebay. The center chart on **Figure C** shows the water levels for this well. The historic water level high was observed in 1942 at an elevation of 137.8 feet above mean sea level, but by 1957 it had fallen 117 feet to an all-time low elevation of 20.9 feet above msl due to basin over-pumping and insufficient natural recharge. As described above for the Los Angeles Forebay, adjudication of pumping rights and managed aquifer recharge helped restore water levels in the Montebello Forebay. At the end of WY 2015/16, groundwater levels in this well were at an elevation of 61.7 feet above msl and were 5.8 feet higher than the previous year. So far in the current WY, water levels have risen nearly 40 feet due to above normal precipitation and imported water purchased by WRD for spreading.

- Well 1615P (3S/12W-01A06) is located downgradient and southeast of the spreading grounds near the southern end of the Montebello Forebay. Water level responses in this well are typically less pronounced than the other two wells because it is further from the spreading grounds and the recharge that occurs there. The lower chart on **Figure C** shows the water level history for this well. The historic water level high was observed in 1947 at an elevation of 113.6 feet above mean sea level but by 1957 had dropped 102 feet to an all-time low elevation of 11.4 feet above msl. Since then, water levels have recovered. At the end of WY 2015/16, groundwater levels were at an elevation of 40.1 feet above msl and were 1.4 feet lower than the previous year.

The average water level change throughout the entire Montebello Forebay during the previous WY was a rise of 0.6 feet.

Central Basin Pressure Area

The District monitors long term key wells 906D (4S/13W-12K01) and 460K (4S/12W-28H09) which represent the conditions of the pressurized groundwater levels in the Central Basin Pressure Area. The hydrographs for these two wells are shown on **Figure D**.

Groundwater highs were observed in these wells in 1935 when they began to continually drop over 110 feet until their lows in 1961 due to the over-pumping and insufficient natural recharge. Groundwater levels recovered substantially during the early 1960s as a result of replenishment operations and reduced pumping. Between 1995 and 2007 there were 100-foot swings in water levels each year between winter and summer caused by pumping pattern changes by some of the Central Basin producers who operate with more groundwater in the summer months and less groundwater in the winter months, and took advantage of the MWD and WRD In-Lieu programs. From May 2007 to March 2011 the In-Lieu water was not available, so pumping remained more constant throughout those years and water levels remain low. Since then, In-Lieu with the City of Long Beach has occurred on several occasions, with resulting water levels rising as the pumps go off, and falling when the pumps come on.

At the end of WY 2015/16, groundwater levels in well 906D were at an elevation of 59.1ft below msl and were 4.9 feet higher than the previous year. Water levels in well 460K were at an elevation of 90.9 ft below msl and were 5.7 feet higher than the previous year. The average water levels change throughout the entire Central Basin Pressure Area during the previous WY was a drop of 0.6 feet.

West Coast Basin

The West Coast Basin is adjacent to the Central Basin along the Newport-Inglewood Uplift, which is a series of discontinuous, sub-parallel hills and faults that act as a partial barrier to groundwater flow. Groundwater moves across the uplift based on water levels on both sides and the "tightness" (hydraulic conductivity) of the uplift along its various reaches, both horizontally and vertically. Like the Central Basin Pressure Area, most of the aquifers used for water supply are confined aquifers and therefore do not respond rapidly to precipitation events, but instead to changes in pumping patters or seawater barrier well injection rates.

Figure E shows the hydrographs of key well Wilmington1_3 and well Lawndale1_4. These two wells represent the general conditions of the water levels in the West Coast Basin. In 1955, the control of groundwater extractions in the West Coast Basin resulted in stabilizing and reversal of the declining water levels in the center of the basin whereas at the eastern end near the Dominguez Gap Barrier water levels continued to decline until about 1971, when a recovery began due mostly to the startup of the Dominguez Gap Barrier Project.

At the end of the previous WY 2015/16, water levels in well Lawndale1_4 were at an elevation of 4.2 ft below msl and were 4.0 feet higher than the previous year. Water levels in well Wilmington1_3 were at an elevation of 43.4 ft below msl and were 2.4 feet lower than the previous year. Over the entire West Coast Basin during the previous WY, the average water level change was a rise of 1 foot.

Whittier Area

The Whittier Area is in the northeastern-most portion of the Central Basin and historically has not been used for significant water supplies due to poor natural water quality conditions (high total dissolved solids) and low production rates. Some minor pumping does occur towards the western end. Because of this, WRD does not maintain long term hydrographs for this area, but does track current groundwater levels. Over the past WY, the groundwater levels fell on average 2.2 feet in the Whittier Area.

Plate 3 shows the water level changes over the entire WRD Service area for the previous WY.

Because of the fifth year of drought and below normal precipitation, WY 2015/16 saw a net loss of groundwater storage of 500 AF. However, this is a small amount and the basins were nearly balanced due to the reduction of pumping from the State-mandated water use restrictions and conservation measures, and the aggressive replenishment of recycled water and imported water by WRD to help make-up for the lack of natural replenishment. Groundwater levels in the WRD service area fell on average only 1.2 foot during the previous WY, which resulted in only the small storage loss.

In the current WY 2016/17, through February the District has received over 15 inches of precipitation, which exceeds its normal full year amount of 13.9 inches causing groundwater levels to rise significantly. In addition, WRD has been purchasing imported water and recycled water for additional recharge. As a result, water levels in the Montebello Forebay have risen nearly 40 feet and are within 20 feet of the pre-drought levels last seen in May 2011. With the rainy season expected to continue in March, April, and May of 2017, additional recharge and rising groundwater levels are anticipated. Because the current groundwater levels in the CBWCB are within historic ranges and the anticipated replenishment activities by WRD will continue as planned, the District anticipates that there will continue to be sufficient supplies of safe and reliable groundwater to meet the demands of the pumpers in our service area in the current and ensuing years.

Change in Storage

The District determines the annual change in groundwater storage by comparing water levels from one year to the next, and factoring in the storage coefficients of the major aquifer layers. Rising groundwater means there is an increase in the amount of groundwater in storage whereas a drop in groundwater levels means there is a decrease in storage. Using groundwater elevation data collected from WRD's monitoring well network and selected production wells, the District constructs a groundwater level change map showing water level differences from one year to the next (**Plate 3**). The data from this map are converted to grids in the District's Geographic Information System (GIS) and multiplied by the storage coefficient value grids for the aquifer layers as obtained from the USGS calibrated Modflow computer model of the District. This calculation produces the change in storage value for the previous WY.

As discussed above, in WY 2015/16 there was a slight decrease in water levels in the District (1.2 feet), although rises occurred in some areas and drops in others. The result was a net decrease in groundwater storage of 500 AF, which is nearly a balanced basin. **Table 8** provides the historical groundwater storage changes in the CBWCB. Based on the groundwater recharge occurring in the current WY due to above normal precipitation and the imported and recycled water being purchased by WRD, it is expected that the groundwater basins will gain storage in the current WY.

Optimum and Minimum Groundwater Quantity

In response to a 2002 State audit of the District's activities, the Board of Directors adopted an Optimum and Minimum Quantity for groundwater amounts in the CBWCB. The Optimum Quantity is based on the Accumulated Overdraft (AOD) concept described in the Water Code and this ESR. The historic maximum groundwater drawdown due to over pumping reported in the CBWCB between 1904 and 1957 was 1,080,000 AF. This is defined as the historic maximum AOD. As pumping eased and artificial replenishment occurred, more water was put back into the basins and the AOD was reduced resulting in rising water levels.

After considerable analysis and discussion, the Board of Directors on June 18, 2003 adopted an Optimum Quantity of groundwater in the WRD service area at an AOD of 400,000 AF and a Minimum Quantity of an AOD of 900,000 AF. Several years later, additional reviews were conducted to update the Optimum Quantity to recognize the need for groundwater storage space within the District. On

April 19, 2006 the WRD Board of Directors revised the Optimum Quantity to an AOD of 612,000 AF. This value was based on an extensive review of over 70 years of water level fluctuations in the District and recognizing that in WY 1999/00 groundwater amounts were at an acceptable quantity to sustain the adjudicated pumping rights in the basins. The AOD at that time was 611,900 AF (rounded to 612,000 AF), and therefore was set by the Board of Directors as the Optimum Quantity. The Minimum Quantity was not modified and therefore remains at an AOD of 900,000 AF.

The Board of Directors on April 19, 2006 also adopted a policy to make up the Optimum Quantity should it fall too low. The policy is as follows:

> *An Accumulated Overdraft greater than the Optimum Quantity is a deficit. WRD will make up the deficit within a 20 year period as decided by the Board on an annual basis. If the deficit is within 5 percent of the Optimum Quantity, then no action needs to be taken to allow for natural replenishment to makeup the deficit.*

The Accumulated Overdraft at the end of WY 2015/16 was 832,822 AF, or 220,800 AF below the Optimum Quantity. Based on the groundwater recharge occurring in the current WY due to above normal precipitation and the imported and recycled water being purchased by WRD, it is expected that the AOD will be reduced and be closer to the Optimum Quantity by the end of the WY.

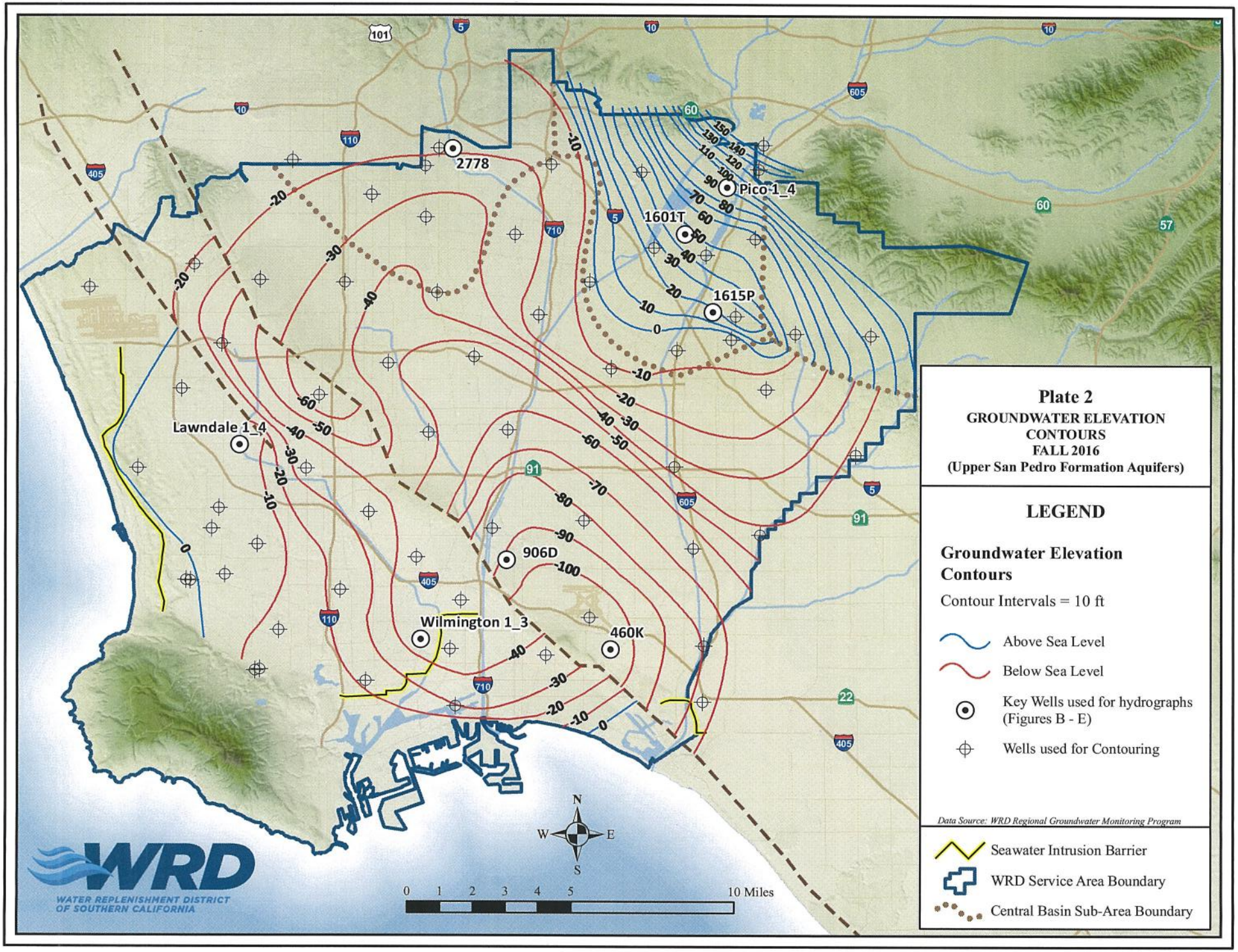
Plate 2
GROUNDWATER ELEVATION CONTOURS
FALL 2016
(Upper San Pedro Formation Aquifers)
LEGEND
Groundwater Elevation Contours
Contour Intervals = 10 ft
Above Sea Level
Below Sea Level
Key Wells used for hydrographs (Figures B - E)
Wells used for Contouring
Data Source: WRD Regional Groundwater Monitoring Program
Seawater Intrusion Barrier
WRD Service Area Boundary
Central Basin Sub-Area Boundary
2778
Pico 1_4
1601T
1615P
Lawndale 1_4
906D
Wilmington 1_3
460K
N
W
E
S
0 1 2 3 4 5 10 Miles
WRD
WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

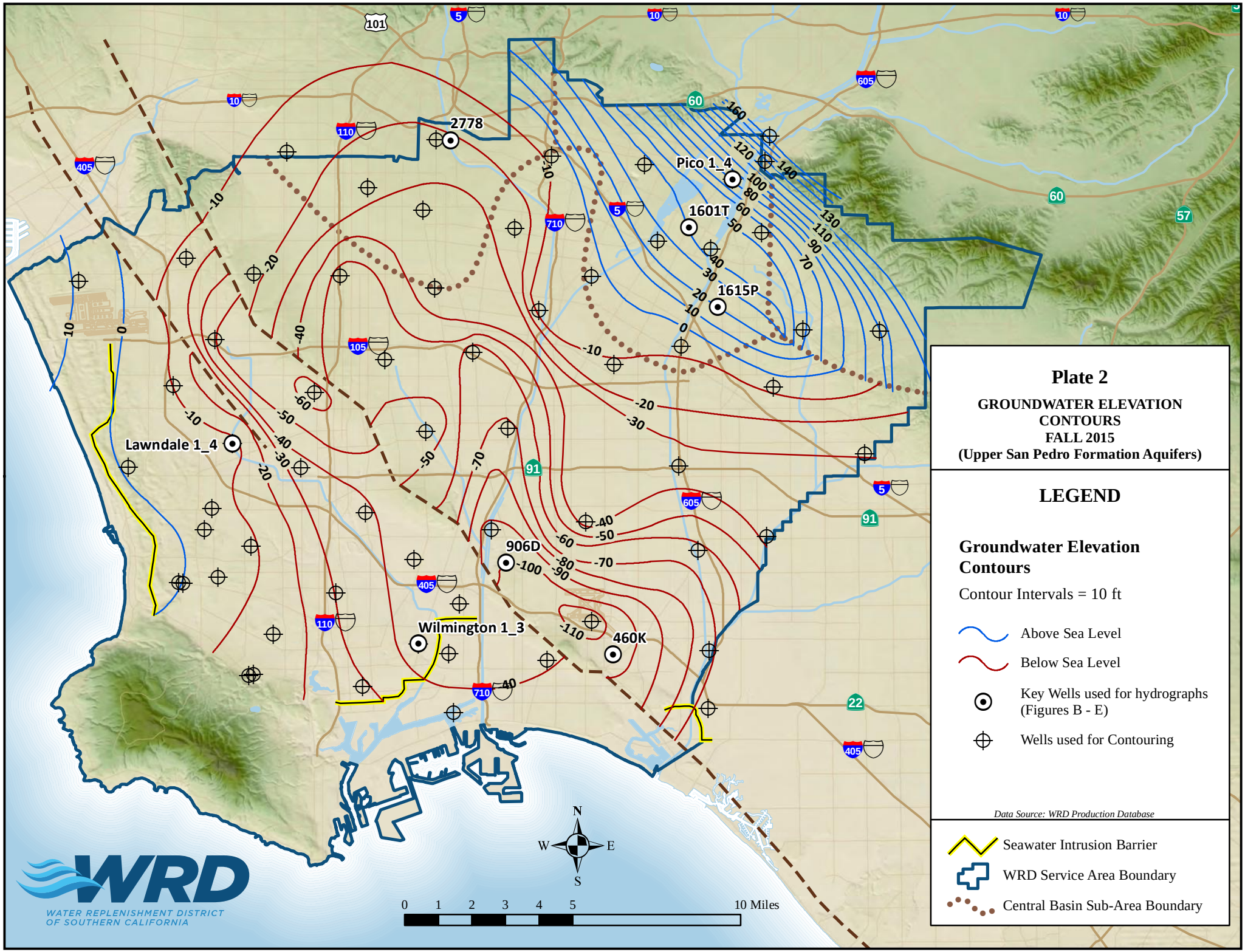
Plate 2
GROUNDWATER ELEVATION CONTOURS
FALL 2015
(Upper San Pedro Formation Aquifers)
LEGEND
Groundwater Elevation Contours
Contour Intervals = 10 ft
Above Sea Level
Below Sea Level
Key Wells used for hydrographs (Figures B - E)
Wells used for Contouring
Data Source: WRD Production Database
Seawater Intrusion Barrier
WRD Service Area Boundary
Central Basin Sub-Area Boundary
2778
Pico 1_4
1601T
1615P
Lawndale 1_4
906D
Wilmington 1_3
460K
N
W
E
S
0 1 2 3 4 5 10 Miles
WRD
WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

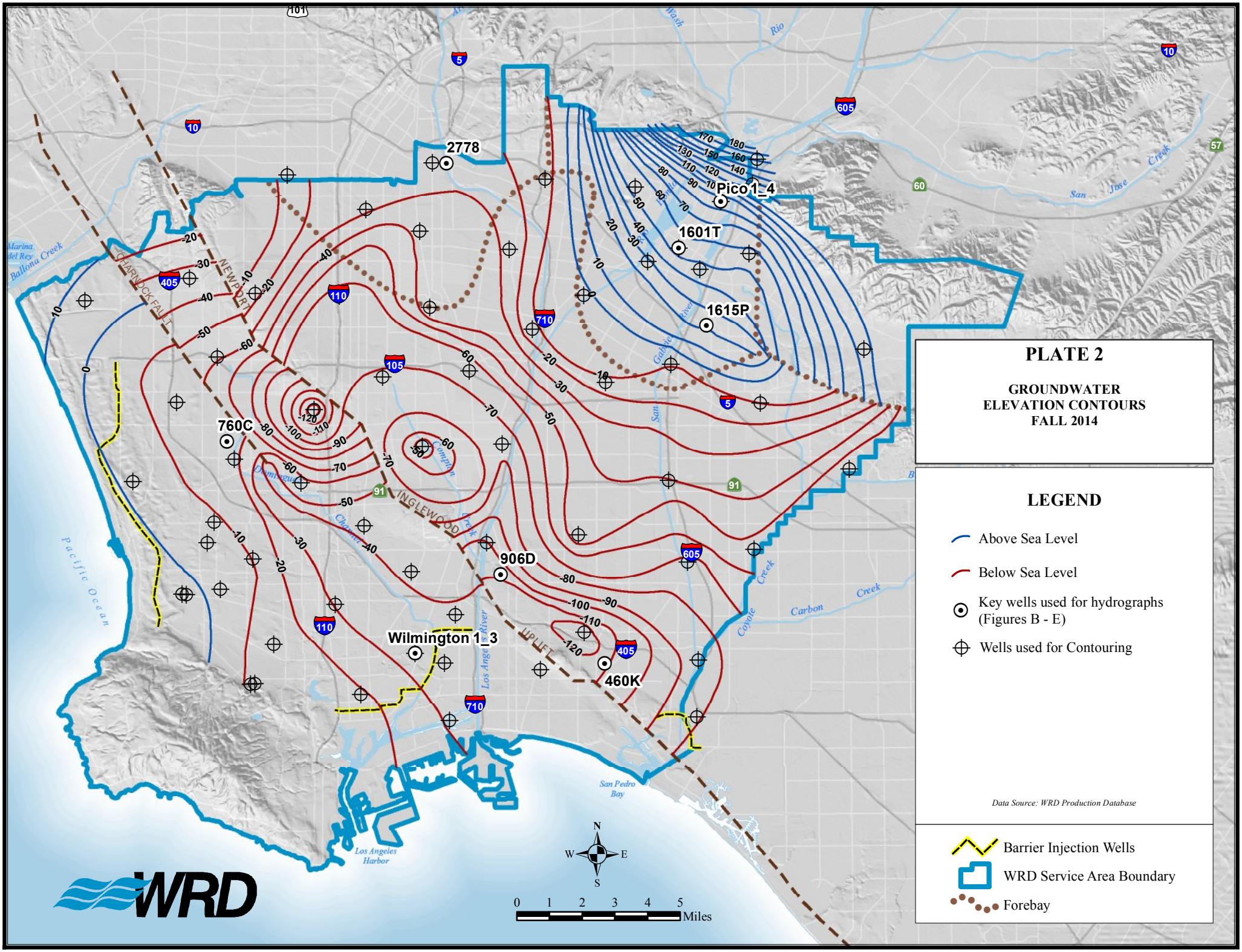
PLATE 2
GROUNDWATER
ELEVATION CONTOURS
FALL 2014
LEGEND
Above Sea Level
Below Sea Level
Key wells used for hydrographs (Figures B - E)
Wells used for Contouring
Data Source: WRD Production Database
Barrier Injection Wells
WRD Service Area Boundary
Forebay
2778
Pico 1_4
1601T
1615P
760C
906D
Wilmington 1_3
460K
CHARNOCK FAULT
NEWPORT
INGLEWOOD
UPLIFT
Pacific Ocean
Los Angeles Harbor
San Pedro Bay
Los Angeles River
Compton Creek
Dominguez Channel
Coyote Creek
Carbon Creek
San Jose Creek
Rio Hondo
Marina del Rey
Ballona Creek
N
S
E
W
0 1 2 3 4 5 Miles
WRD

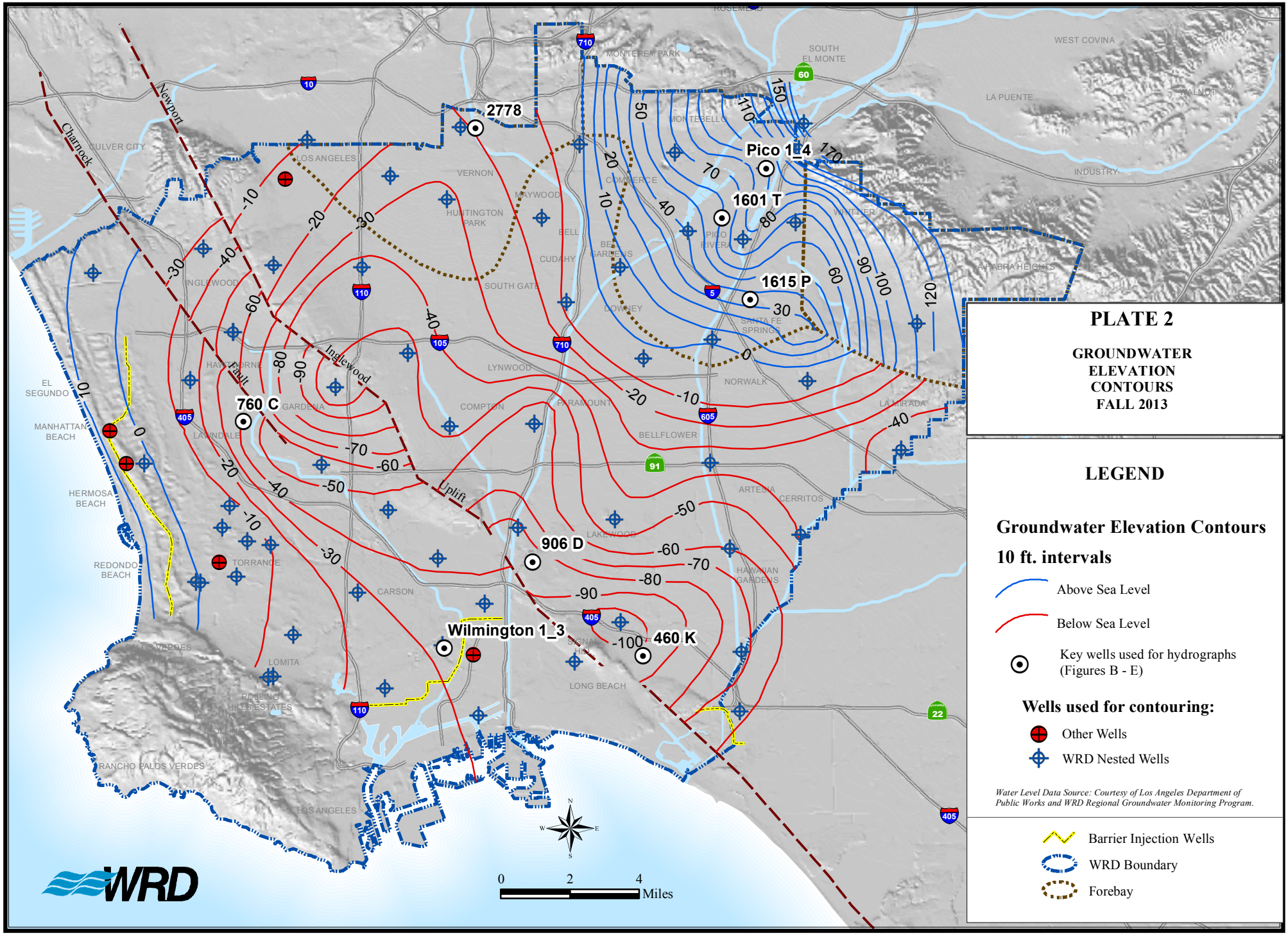
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2013
LEGEND
Groundwater Elevation Contours
10 ft. intervals
Above Sea Level
Below Sea Level
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
Other Wells
WRD Nested Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2778
Pico 1_4
1601 T
1615 P
760 C
906 D
Wilmington 1_3
460 K
Charnock
Newport
Inglewood
Fault
Uplift
0 2 4 Miles
WRD

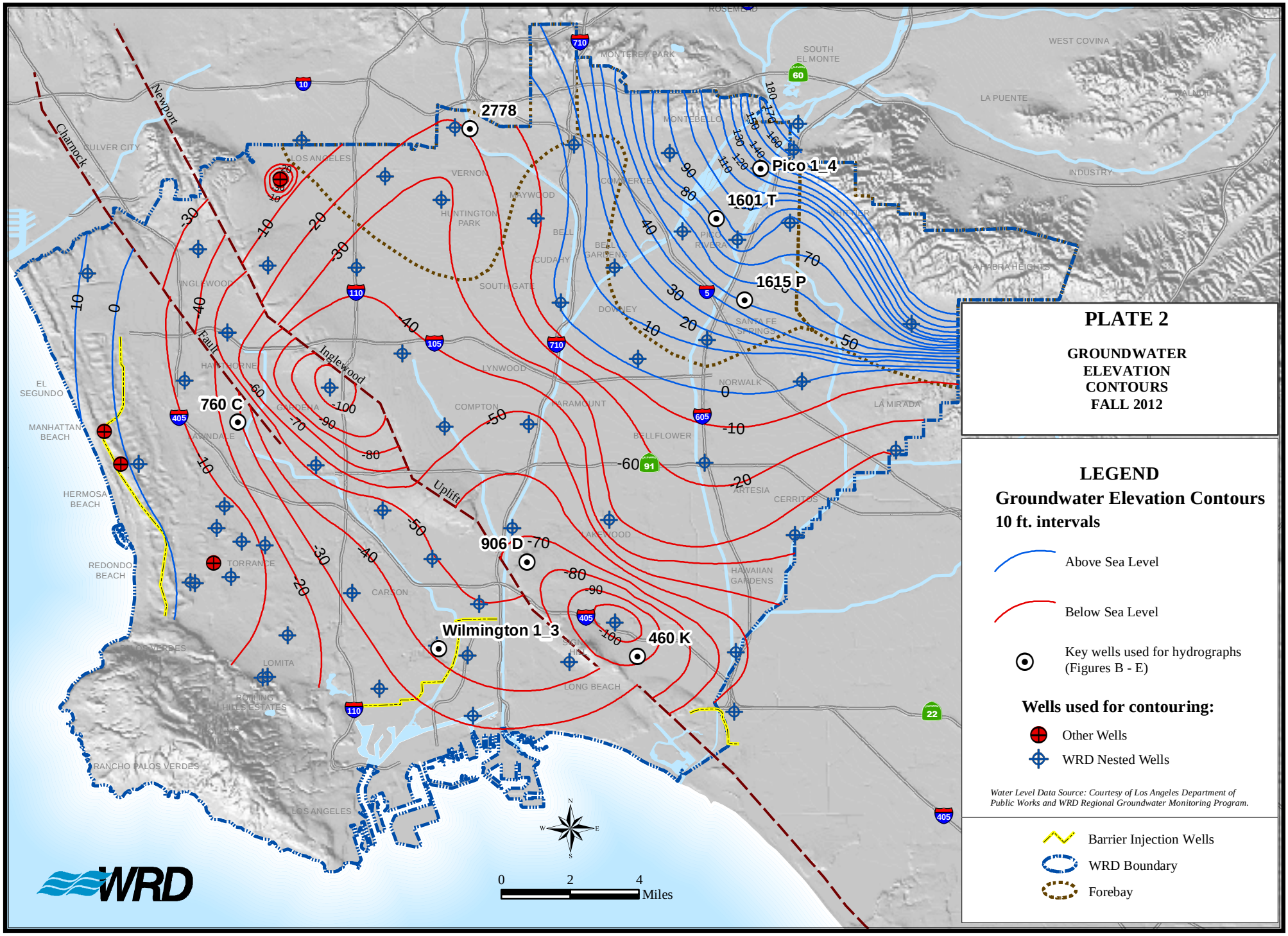
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2012
LEGEND
Groundwater Elevation Contours
10 ft. intervals
Above Sea Level
Below Sea Level
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
Other Wells
WRD Nested Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2778
Pico 1_4
1601 T
1615 P
760 C
906 D
Wilmington 1_3
460 K
Charnock
Newport
Inglewood
Fault
Uplift
0 2 4 Miles
WRD

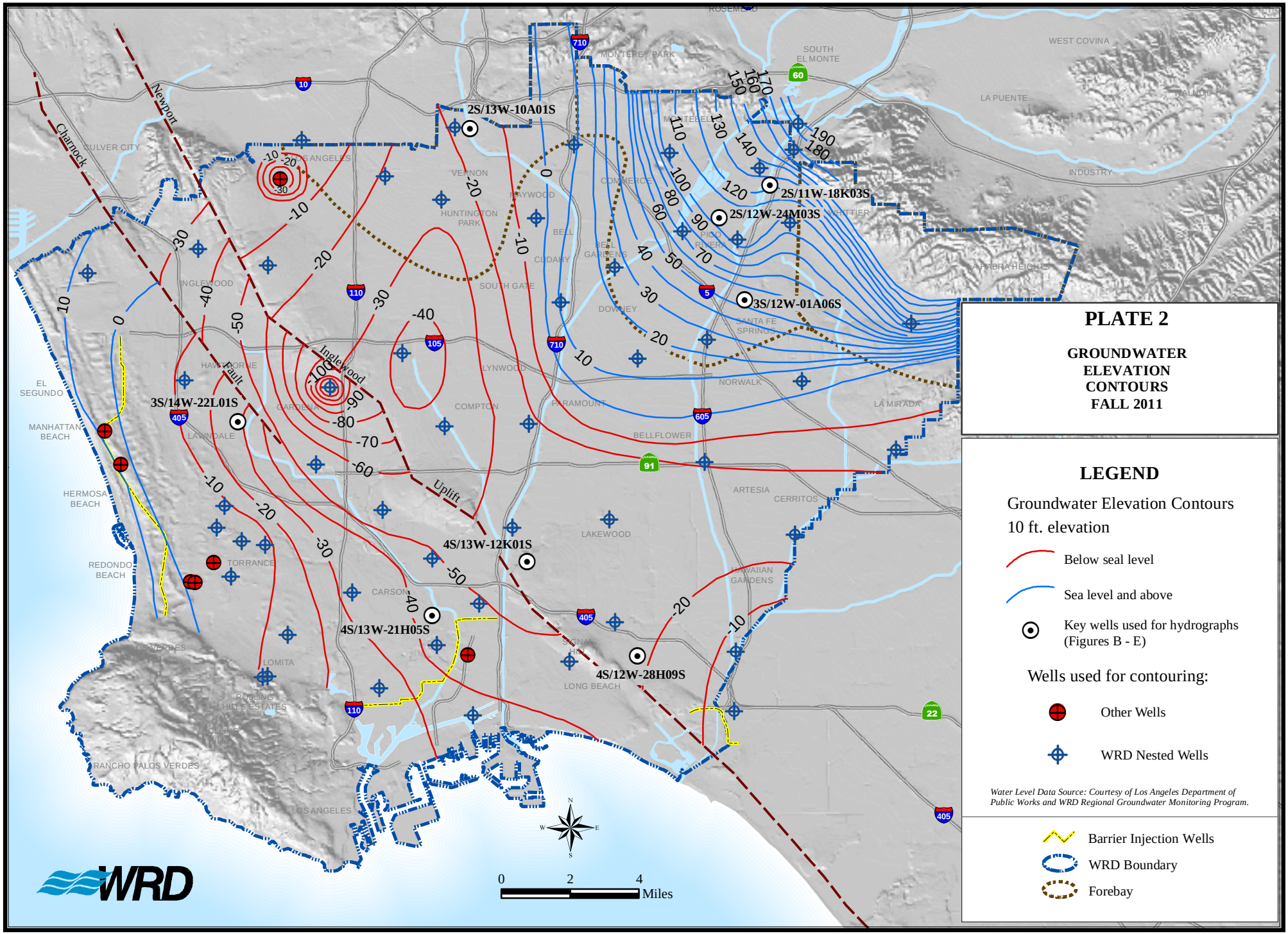
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2011
LEGEND
Groundwater Elevation Contours
10 ft. elevation
Below seal level
Sea level and above
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
Other Wells
WRD Nested Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2S/13W-10A01S
2S/11W-18K03S
2S/12W-24M03S
3S/12W-01A06S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-21H05S
4S/12W-28H09S
Charnock
Newport
Inglewood
Fault
Uplift
0 2 4 Miles
WRD

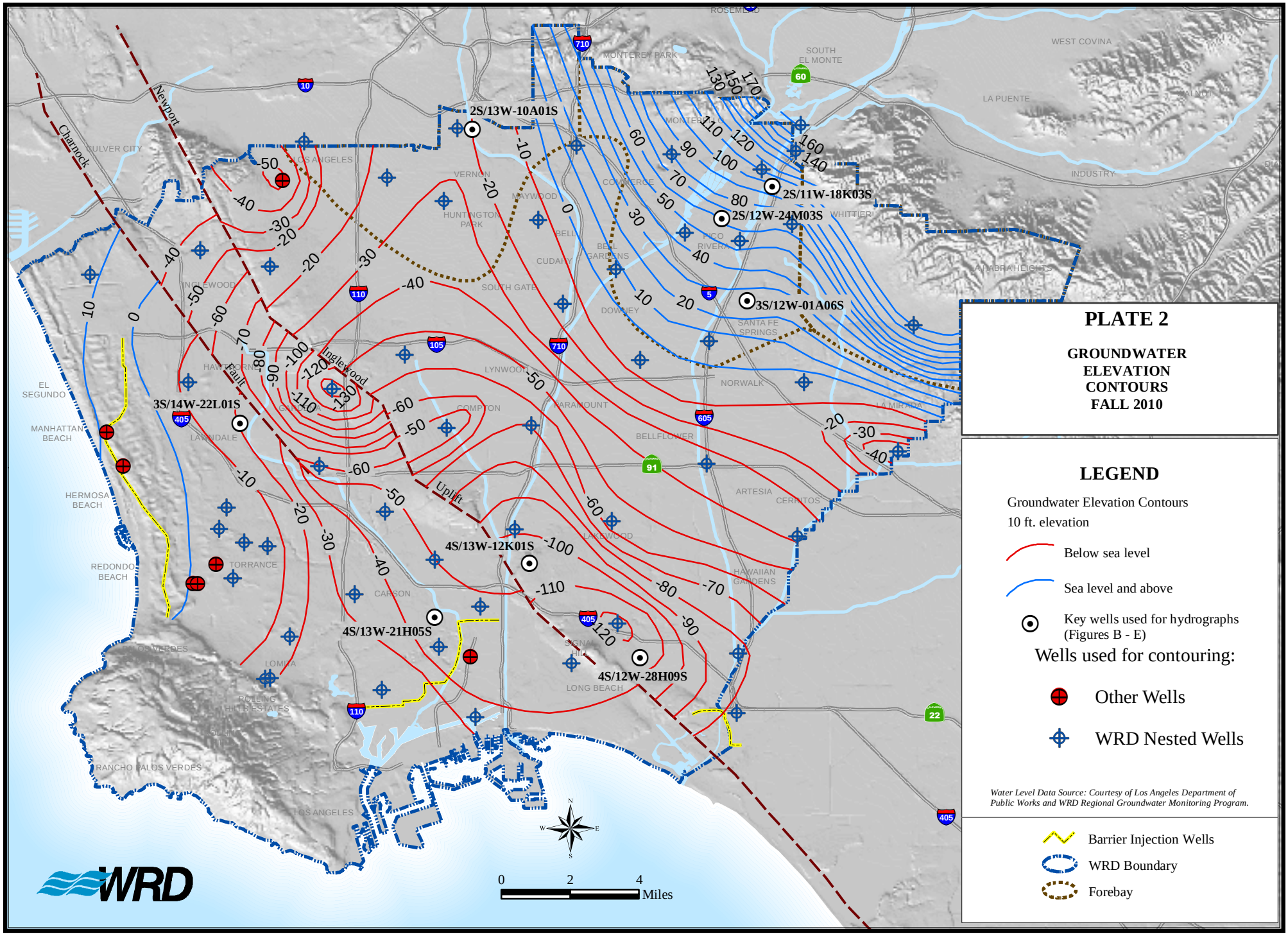
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2010
LEGEND
Groundwater Elevation Contours
10 ft. elevation
Below sea level
Sea level and above
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
Other Wells
WRD Nested Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2S/13W-10A01S
2S/11W-18K03S
2S/12W-24M03S
3S/12W-01A06S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-21H05S
4S/12W-28H09S
Charnock
Newport
Inglewood
Fault
Uplift
0 2 4 Miles
WRD

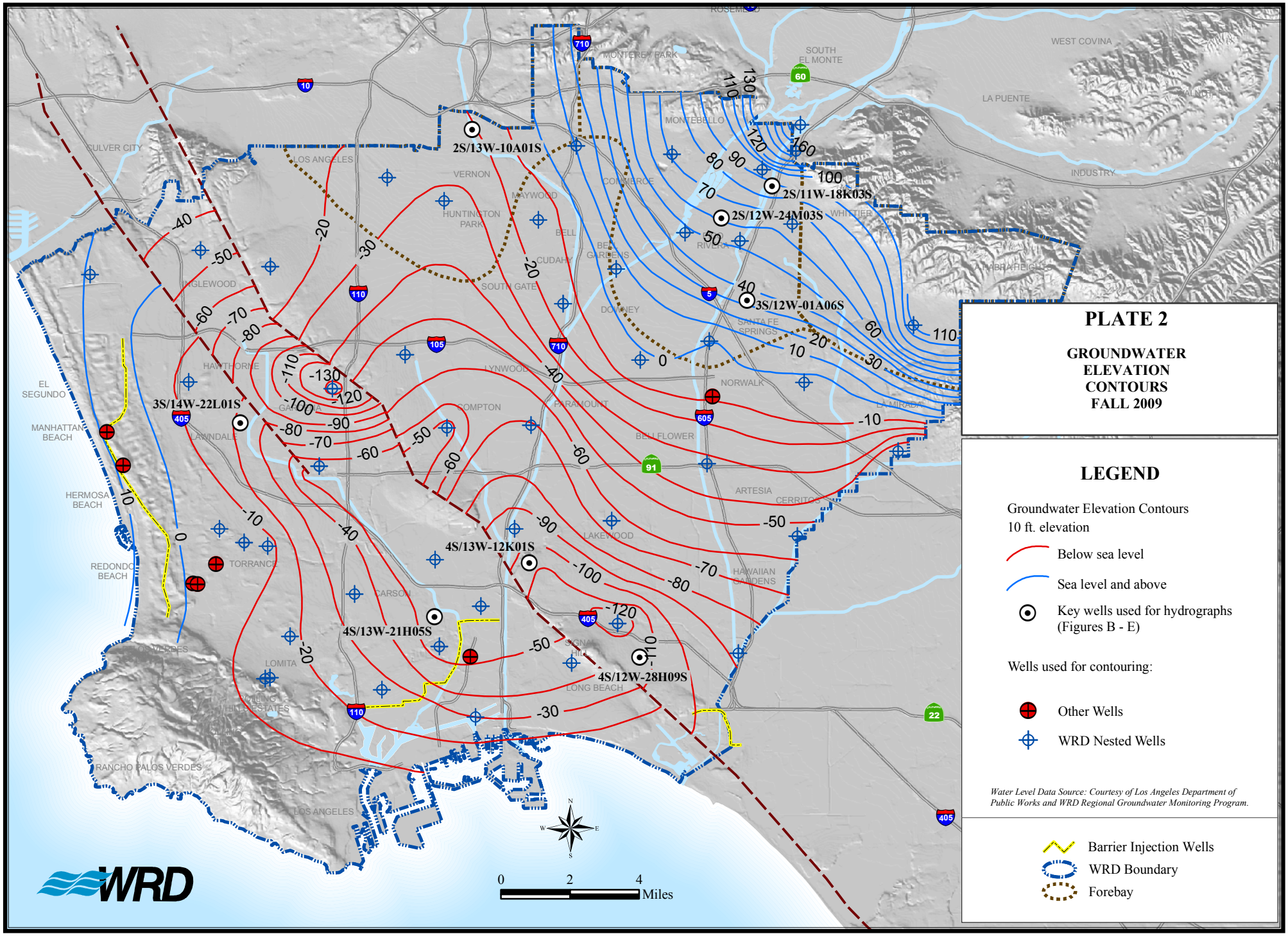
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2009
LEGEND
Groundwater Elevation Contours
10 ft. elevation
Below sea level
Sea level and above
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
Other Wells
WRD Nested Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2S/13W-10A01S
2S/11W-18K03S
2S/12W-24M03S
3S/12W-01A06S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-21H05S
4S/12W-28H09S
0 2 4 Miles
WRD

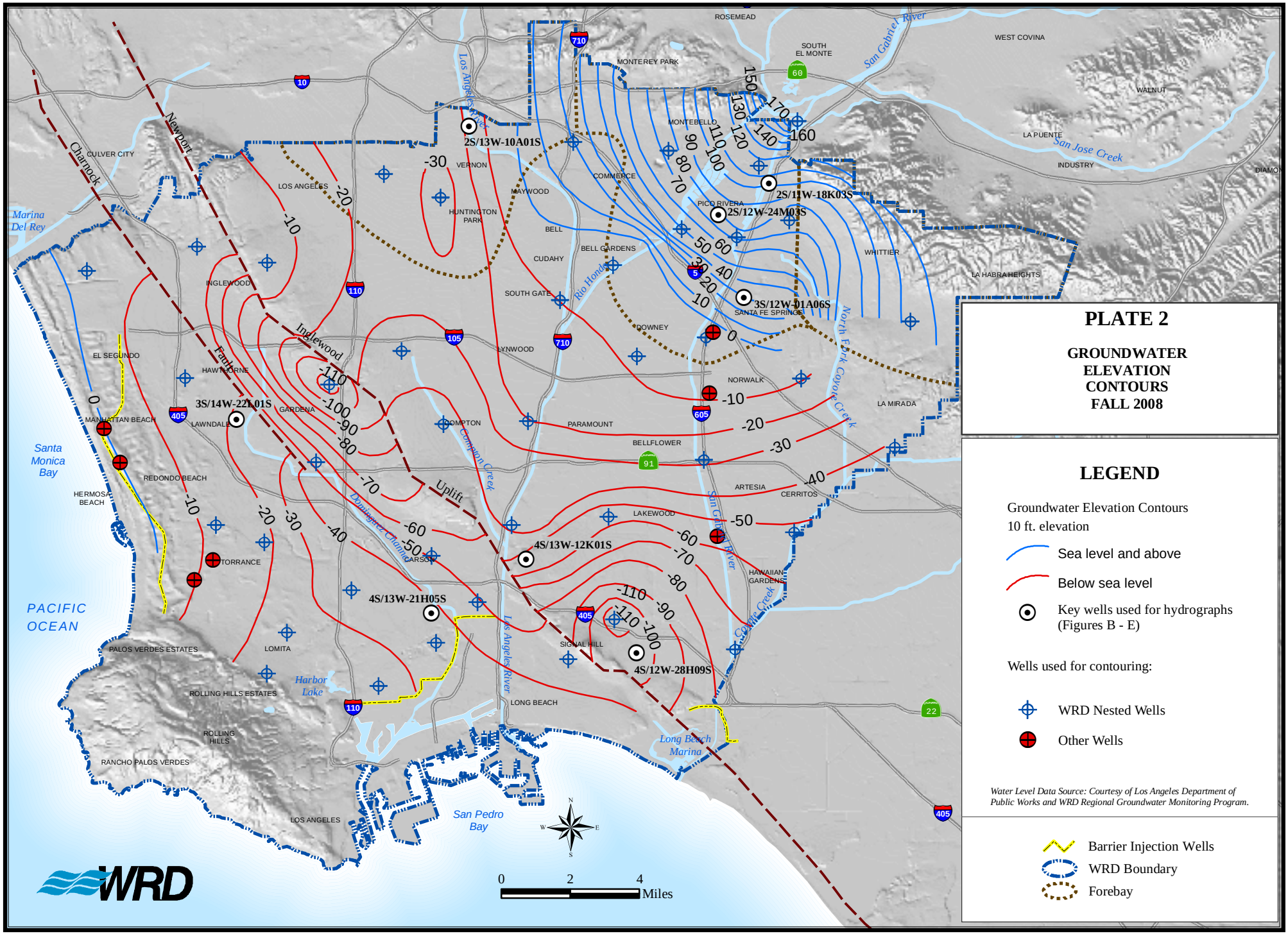
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2008
LEGEND
Groundwater Elevation Contours
10 ft. elevation
Sea level and above
Below sea level
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
WRD Nested Wells
Other Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2S/13W-10A01S
2S/11W-18K03S
2S/12W-24M03S
3S/12W-01A06S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-21H05S
4S/12W-28H09S
Inglewood
Uplift
Newport
Charnock
Fanthorne
PACIFIC OCEAN
Santa Monica Bay
San Pedro Bay
Marina Del Rey
Harbor Lake
Long Beach Marina
Los Angeles River
San Gabriel River
San Jose Creek
Rio Hondo
Compton Creek
Dominguez Channel
North Fork Coyote Creek
Coyote Creek
ROSEMEAD
SOUTH EL MONTE
WEST COVINA
WALNUT
LA PUENTE
INDUSTRY
MONTEREY PARK
MONTEBELLO
COMMERCE
PICO RIVERA
WHITTIER
LA HABRA HEIGHTS
VERNON
MAYWOOD
HUNTINGTON PARK
BELL
BELL GARDENS
CUDAHY
SOUTH GATE
DOWNEY
SANTA FE SPRINGS
NORWALK
LA MIRADA
LYNWOOD
PARAMOUNT
BELLFLOWER
ARTESIA
CERRITOS
LAKEWOOD
HAWAIIAN GARDENS
SIGNAL HILL
LONG BEACH
CARSON
COMPTON
LOS ANGELES
CULVER CITY
INGLEWOOD
EL SEGUNDO
HAWTHORNE
GARDENA
LAWNDALE
MANHATTAN BEACH
REDONDO BEACH
HERMOSA BEACH
TORRANCE
LOMITA
PALOS VERDES ESTATES
ROLLING HILLS ESTATES
ROLLING HILLS
RANCHO PALOS VERDES
0 2 4 Miles
WRD

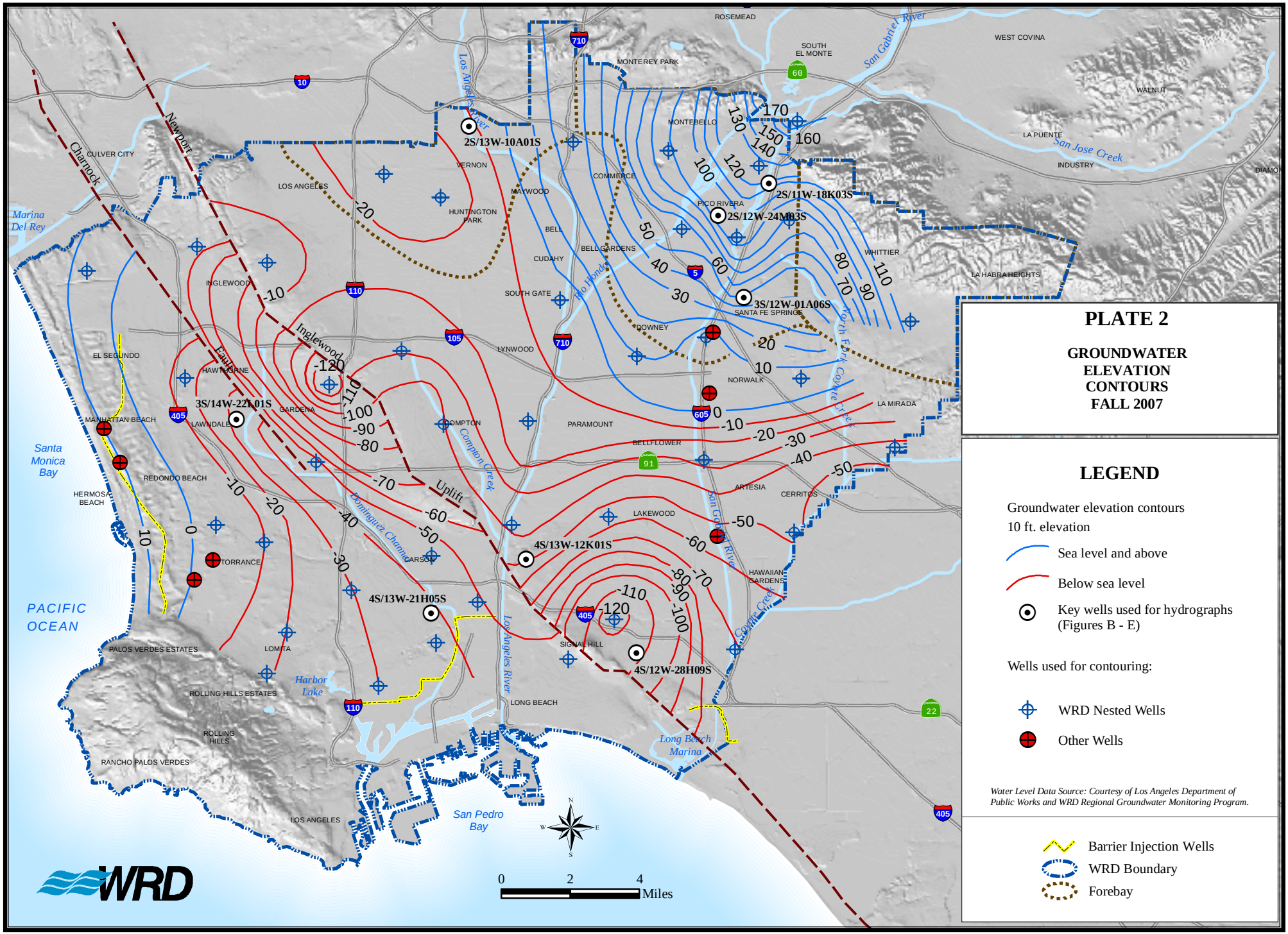
PLATE 2
GROUNDWATER ELEVATION CONTOURS FALL 2007
LEGEND
Groundwater elevation contours
10 ft. elevation
Sea level and above
Below sea level
Key wells used for hydrographs (Figures B - E)
Wells used for contouring:
WRD Nested Wells
Other Wells
Water Level Data Source: Courtesy of Los Angeles Department of Public Works and WRD Regional Groundwater Monitoring Program.
Barrier Injection Wells
WRD Boundary
Forebay
2S/13W-10A01S
2S/11W-18K03S
2S/12W-24M03S
3S/12W-01A06S
3S/14W-22L01S
4S/13W-12K01S
4S/13W-21H05S
4S/12W-28H09S
Uplift
Newport
Charnock
Inglewood
Fault
Los Angeles River
San Gabriel River
San Jose Creek
Rio Hondo
North Fork Coyote Creek
Compton Creek
Dominguez Channel
Coyote Creek
Marina Del Rey
Santa Monica Bay
PACIFIC OCEAN
Harbor Lake
San Pedro Bay
Long Beach Marina
ROSEMEAD
SOUTH EL MONTE
WEST COVINA
WALNUT
LA PUENTE
INDUSTRY
MONTEREY PARK
MONTEBELLO
PICO RIVERA
WHITTIER
LA HABRA HEIGHTS
SANTA FE SPRINGS
NORWALK
LA MIRADA
DOWNEY
PARAMOUNT
BELLFLOWER
ARTESIA
CERRITOS
LAKEWOOD
HAWAIIAN GARDENS
SIGNAL HILL
LONG BEACH
COMMERCE
VERNON
MAYWOOD
BELL
BELL GARDENS
CUDAHY
SOUTH GATE
LYNWOOD
COMPTON
CARSON
LOS ANGELES
HUNTINGTON PARK
CULVER CITY
INGLEWOOD
EL SEGUNDO
HAWTHORNE
GARDENA
LAWNDALE
MANHATTAN BEACH
REDONDO BEACH
HERMOSA BEACH
TORRANCE
PALOS VERDES ESTATES
LOMITA
ROLLING HILLS ESTATES
ROLLING HILLS
RANCHO PALOS VERDES
LOS ANGELES
0 2 4 Miles
WRD