

PERMIT #: LMWP-004042
A.P.N.: 433-250-13, 760-241-03
EST #: RWQCB



**COUNTY OF SAN DIEGO
DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
MONITORING WELL PROGRAM**

MONITORING WELL DESTRUCTION PERMIT

SITE NAME: MISSION VALLEY TERMINAL (STADIUM)

SITE ADDRESS: 9449 FRIARS ROAD, SAN DIEGO 92108

PERMIT TO: DESTRUCTION OF MONITORING WELLS (318)

PERMIT APPROVAL DATE: 6/26/2019

PERMIT EXPIRES ON: 10/24/2019

RESPONSIBLE PARTY: KINDER MORGAN ENERGY PARTNERS

PERMIT CONDITIONS:

This permit consists of destroying a total of 318 wells (52 soil vapor wells, 24 warm dry air wells, 26 air sparge wells, 114 groundwater monitoring wells, and 24 groundwater extraction wells)

1. Due to 130 of the wells being constructed with a minimum 20 foot annular seal, your proposal to destroy the wells by pressure grouting is approved. Ensure that sufficient sealing material is placed in the well casing, filter pack, and all other significant voids within the entire well boring. In the drilling report, provide the volume pre-calculations and the actual amount of sealing material used in each well.

For the 11 wells with annular seals less than 20 feet and a total depth of more than 45 feet, you are approved to pressure grout from the well's total depth to 20 feet below ground surface, then over-drill the upper 20 feet of the wells.

For the 52 soil vapor wells, you are approved to use a combination of leaving the tubing in place and injecting grout, or, if grout cannot be injected into the tubing, remove as much tubing as possible.

Regarding the remaining 125 wells: All material within the original borehole, which includes the casing, filterpack and annular seal, must be removed. The borehole must be completely filled with an approved sealing material as specified in Department of Water Resources Bulletin 74-90. **Drill cuttings are not an acceptable fill material. Bentonite slurries are not an acceptable fill material in the unsaturated zone.**



**PERMIT APPLICATION
GROUNDWATER
AND VADOSE MONITORING WELLS
AND EXPLORATORY OR TEST BORINGS**

OFFICE USE ONLY
 PERMIT LMWP# 004042
 SAM CASE Y/N # RWQCB
 DATE RECEIVED: 6/19/2019
 FEE PAID: \$45,566.00
 CHECK # Online

A. RESPONSIBLE PARTY Kinder Morgan Energy Partners E-mail
scott_martin@kindermorgan.com
 (The person, persons, or company responsible for the construction, maintenance, and destruction of the proposed borings and/or wells.)
 Mailing Address 1100 Town and Country Road City Orange State CA Zip 92868
 Contact Person Scott Martin Phone 714-357-7502 Ext. _____

B. SITE ASSESSMENT PROJECT NUMBER – IF APPLICABLE # H21132-001

C. CONSULTING FIRM Arcadis US, Inc
 Mailing Address 9620 Chesapeake Drive Ste 106 City San Diego State CA Zip 92123
 Registered Professional Elias Seikali Phone 858-987-4355 Registration # C85409(RCE)
 E-mail elias.seikali@arcadis.com
 Contact Person Elias Seikali Phone _____ Ext. _____ Email _____

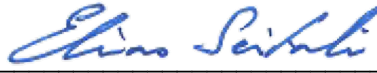
D. DRILLING COMPANY J&H Drilling C57#740854
 Contact Name Troy Robinson E-mail troy@mrdrillco.com
 Mailing Address 7431 Walnut Avenue City Buena Park State CA Zip 90620
 Phone 714-994-0402 Ext. _____

E. CONSTRUCTION INFORMATION																							
TYPE OF WELLS/ BORINGS TO BE CONSTRUCTED	MATERIALS TO BE USED																						
<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="text-align: center;">#</td> </tr> <tr> <td><input checked="" type="checkbox"/> Groundwater</td> <td style="text-align: center;"><u>164</u></td> </tr> <tr> <td><input checked="" type="checkbox"/> Vadose</td> <td style="text-align: center;"><u>78</u></td> </tr> <tr> <td><input type="checkbox"/> Boring</td> <td style="text-align: center;">_____</td> </tr> <tr> <td><input checked="" type="checkbox"/> Soil Vapor</td> <td style="text-align: center;"><u>76</u></td> </tr> <tr> <td><input type="checkbox"/> Other</td> <td style="text-align: center;">_____</td> </tr> </table> <table style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">NUMBER OF WELLS TO BE DESTROYED</td> </tr> <tr> <td><input checked="" type="checkbox"/> Destruction</td> <td style="text-align: center;"><u>318</u></td> </tr> </table>		#	<input checked="" type="checkbox"/> Groundwater	<u>164</u>	<input checked="" type="checkbox"/> Vadose	<u>78</u>	<input type="checkbox"/> Boring	_____	<input checked="" type="checkbox"/> Soil Vapor	<u>76</u>	<input type="checkbox"/> Other	_____	NUMBER OF WELLS TO BE DESTROYED		<input checked="" type="checkbox"/> Destruction	<u>318</u>	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p align="center">CASING</p> <p>Not Applicable <u>N/A</u></p> Type _____ Gauge _____ Diameter _____ Screen Size _____ Filter Pack _____ </td> <td style="width: 50%; vertical-align: top;"> <p align="center">SEAL/BORING BACKFILL</p> <input type="checkbox"/> Neat Cement <input checked="" type="checkbox"/> Cement & Bentonite <input type="checkbox"/> Sand-Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other Borehole diameter _____ </td> </tr> <tr> <td colspan="2" style="text-align: center;">Drilling Method</td> </tr> <tr> <td> <input checked="" type="checkbox"/> Auger <input type="checkbox"/> Direct Push <input type="checkbox"/> Other _____ </td> <td> <input type="checkbox"/> Air Rotary <input type="checkbox"/> Sonic <input type="checkbox"/> Percussion </td> </tr> </table>	<p align="center">CASING</p> <p>Not Applicable <u>N/A</u></p> Type _____ Gauge _____ Diameter _____ Screen Size _____ Filter Pack _____	<p align="center">SEAL/BORING BACKFILL</p> <input type="checkbox"/> Neat Cement <input checked="" type="checkbox"/> Cement & Bentonite <input type="checkbox"/> Sand-Cement <input type="checkbox"/> Bentonite <input type="checkbox"/> Other Borehole diameter _____	Drilling Method		<input checked="" type="checkbox"/> Auger <input type="checkbox"/> Direct Push <input type="checkbox"/> Other _____	<input type="checkbox"/> Air Rotary <input type="checkbox"/> Sonic <input type="checkbox"/> Percussion
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<p>PROPOSED CONSTRUCTION</p> Estimated Groundwater Depth: _____ ft. Estimated Depth of Boring: _____ ft. Concrete Seal: <u>0</u> to <u>3</u> Annular Seal: _____ to _____ Filter Pack: _____ to _____ Perforation: _____ to _____																							
<p>NOTE: Attach a well construction diagram</p>																							

I agree to comply with the requirements of the current Site Assessment and Mitigation Manual, and with all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction.

DRILLER'S SIGNATURE Troy Robinson DATE 06/06/19

Within 60 days of completion, I will furnish the Monitoring Well Permit Desk (858) 505-6688 with a complete well/boring log. I will certify the design and construction or destruction of the well/borings in accordance with the permit application.

PG/RCE/CEG SIGNATURE  DATE 6/5/19

F. SITE INFORMATION - A Property Owner Consent agreement is required for all applications, except for onsite, open LOP/SAM site assessment cases, Caltrans properties and military properties. Submit a separate sheet for additional parcels.

1. ASSESSOR'S PARCEL NUMBER 433-250-13-00

Site Name _____

Site Address 9449 Friars Road City San Diego Zip 92108

PROPERTY OWNER City of San Diego

Phone _____ Ext. _____ Fax _____

Mailing Address 202 C Street City San Diego State CA Zip 92101

NUMBER OF WELLS 245 **TYPE OF WELLS** GW, GWE, SVE, AS, SVM
wells/probes

2. ASSESSOR'S PARCEL NUMBER 760-241-03-00

Site Address 9449 Friars Road City San Diego Zip 92108

PROPERTY OWNER City of San Diego

Phone _____ Ext. _____ Fax _____

Mailing Address 202 C Street City San Diego State CA Zip 92101

NUMBER OF WELLS 73 **TYPE OF WELLS** GW, GWE, SVM

G. QUESTIONNAIRE: Please answer all applicable questions completely and submit any required supportive documentation.

1. What is the purpose of the well/boring investigation?

- a. Part of an ongoing site assessment case in which a government regulator is the lead agency. If yes, indicate which government regulator is the lead agency and the case number.

DEH RWQCB DTSC
#H21132-001

- b. Part of a Phase I investigation for property ownership transfer.
- c. Geotechnical investigation for proposed construction or land stabilization.
- d. Other: _____

2. If wells are to be destroyed, provide a description of method of destruction Overdrilling and pressure grouting - see attached variance request.

3. Are you proposing a variation from current SAM Manual Requirements for the construction or destruction of borings, Vadose and/or Groundwater Monitoring Wells? If yes, specify these variations and include a

well construction diagram and all required supporting documentation. Refer to the [SAM Manual Appendix B](#) for monitoring well guidelines. Yes No

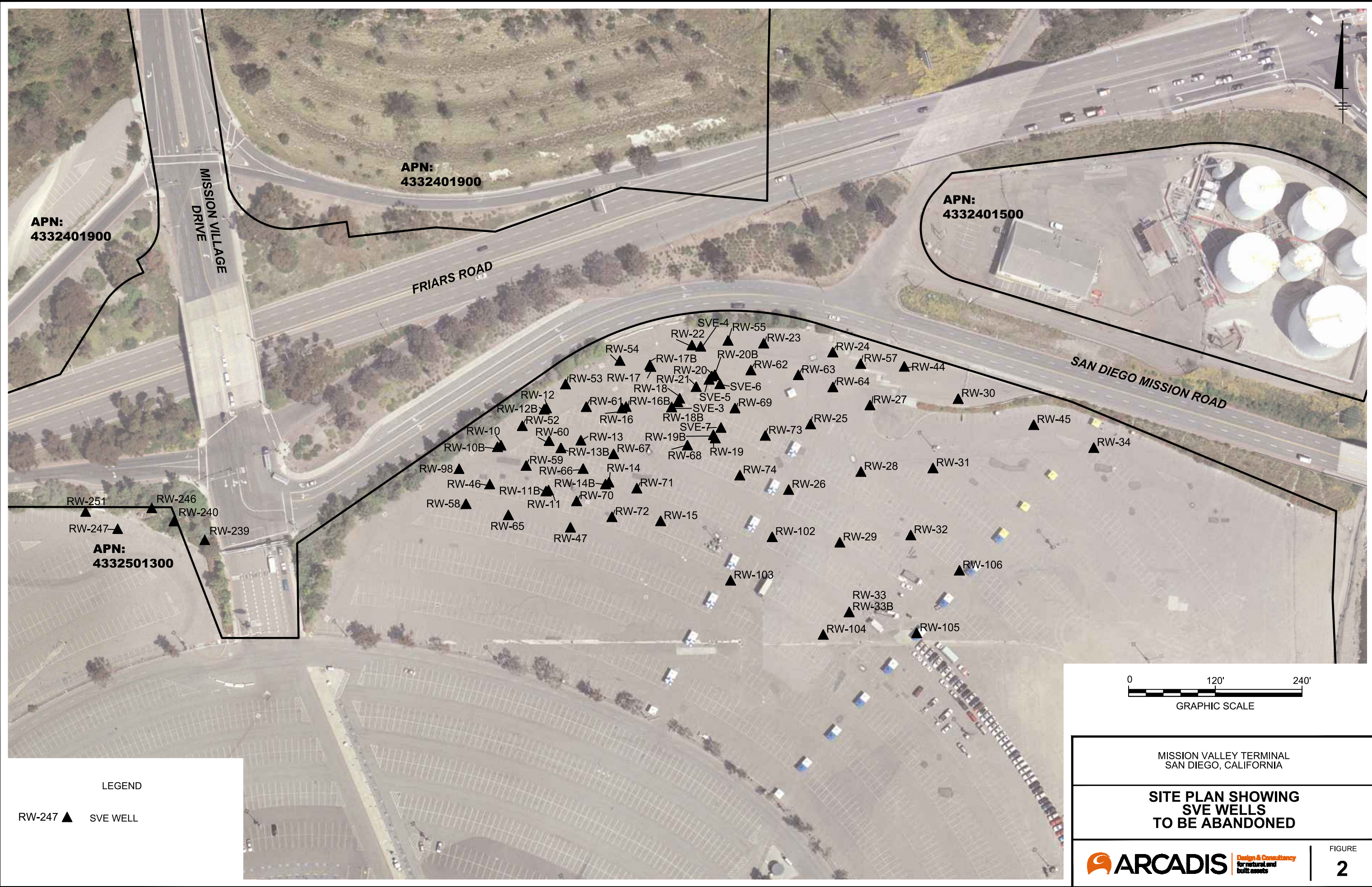
See attached variance request.

H. FEES			
ACTIVITY	FEE SCHEDULE	AMOUNT	
Permit for Well Installations Only <i>(Groundwater Monitoring Wells, Vapor Extraction Wells)</i>	\$351.00 for the first monitoring well	\$351.00	_____
	\$224.00 for each additional well installation	_____ x \$224.00	_____
Permit for Borings Only <i>(CPT's, Hydropunch, Geoprobes, Temporary Well Points, etc.)</i>	\$235.00 for the first boring	\$235.00	_____
	\$62.00 for each additional boring	_____ x \$ 62.00	_____
Permit for Well Destructions Only	\$235.00 for the first destruction	\$235.00	<u>\$235</u>
	\$143.00 for each additional destruction	<u>317</u> x \$143.00	<u>\$45,331</u>
Permit for any Combination of Well Installations, Borings, & Destructions <i>(Except Enhanced Leak Detection & Soil Vapor Survey)</i>	First Activity: \$351.00 (if monitoring wells will be installed)	\$351.00	_____
	OR	OR	
	\$235.00 (for borings and destructions only)	\$235.00	_____
	\$224.00 for each additional well	_____ x \$224.00	_____
	\$ 62.00 for each additional boring	_____ x \$ 62.00	_____
	\$143.00 for each additional well destruction	_____ x \$143.00	_____
Permit for Soil Vapor Survey <i>(Vadose Monitoring Wells)</i>	\$388.00 (flat fee per site)	\$388.00	_____
Permit for Enhanced Leak Detection	\$235.00 for the first boring	\$368.00	_____
	TOTAL COST OF PERMIT		<u>\$\$45,566</u>

FIGURES



CITY: CITY DIV/GROUP: ENV/CAD DB: ENV/CAD
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PLOTSTYLETABLE: TRC.CTB PLOTTED: 12/19/2017 2:10 PM BY: ROBITAILLE, BEVERLY



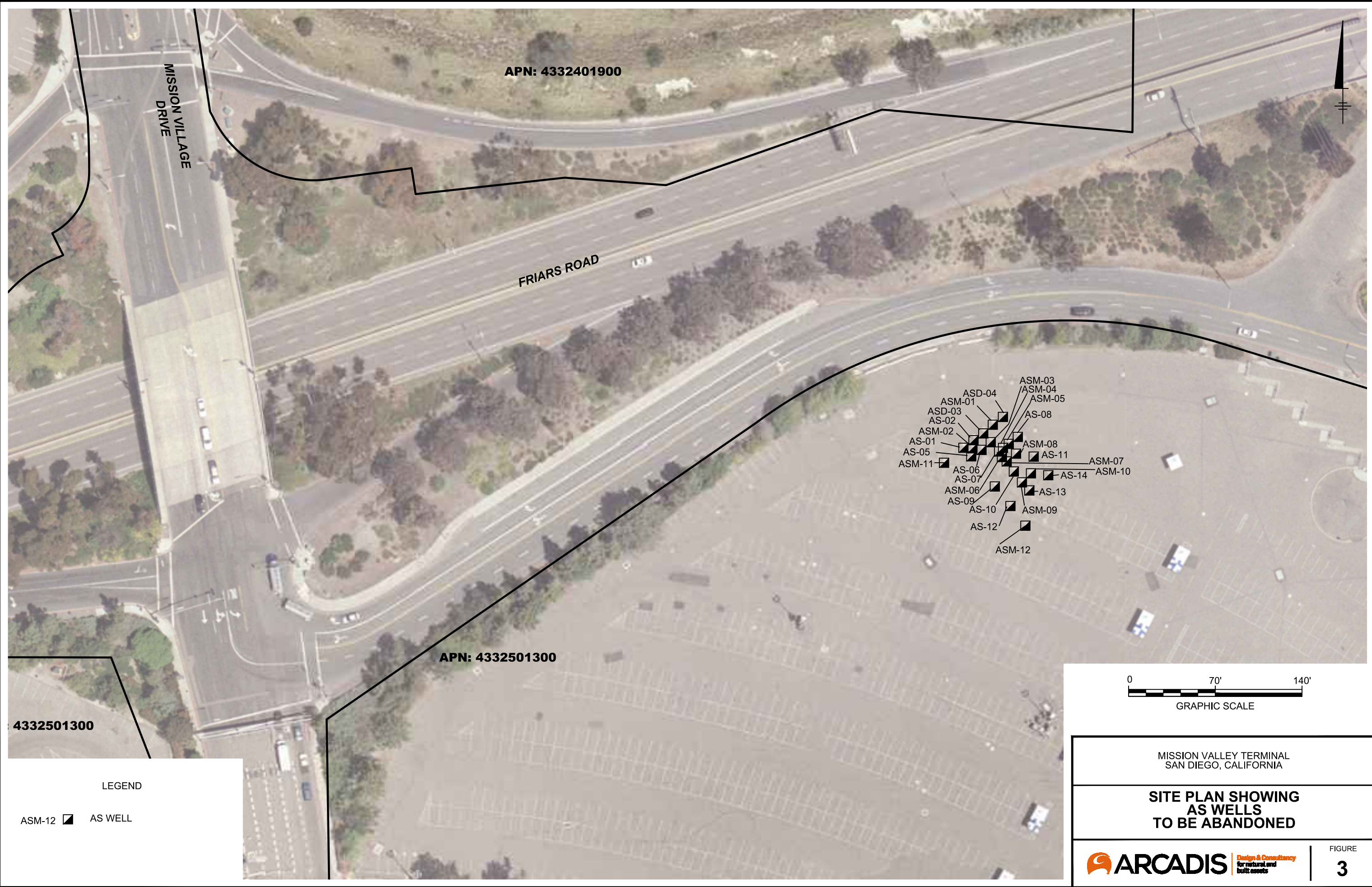
LEGEND
RW-247 ▲ SVE WELL



MISSION VALLEY TERMINAL
SAN DIEGO, CALIFORNIA

**SITE PLAN SHOWING
SVE WELLS
TO BE ABANDONED**

CITY: CITY DIV/GROUP: ENV/CAD DB: ENV/CAD C:\Users\harshad\OneDrive - ARCADIS\BIM 360 Docs\KINDER MORGAN ENERGY PARTNERS, L.P\WVT-OFF-T INFRASTRUCTURE ABANDONMENT PLANNING\2017\CM10143.020501-DWG\CM10143.0205 Wellband\variance.dwg LAYOUT: AS SAVED: 12/19/2017 2:10 PM PAGES: 11X17 PLOTSTYLETABLE: TRC.CTB PLOTTED: 12/19/2017 2:10 PM BY: ROBITAILLE, BEVERLY



4332501300

APN: 4332401900

APN: 4332501300

MISSION VILLAGE DRIVE

FRIARS ROAD



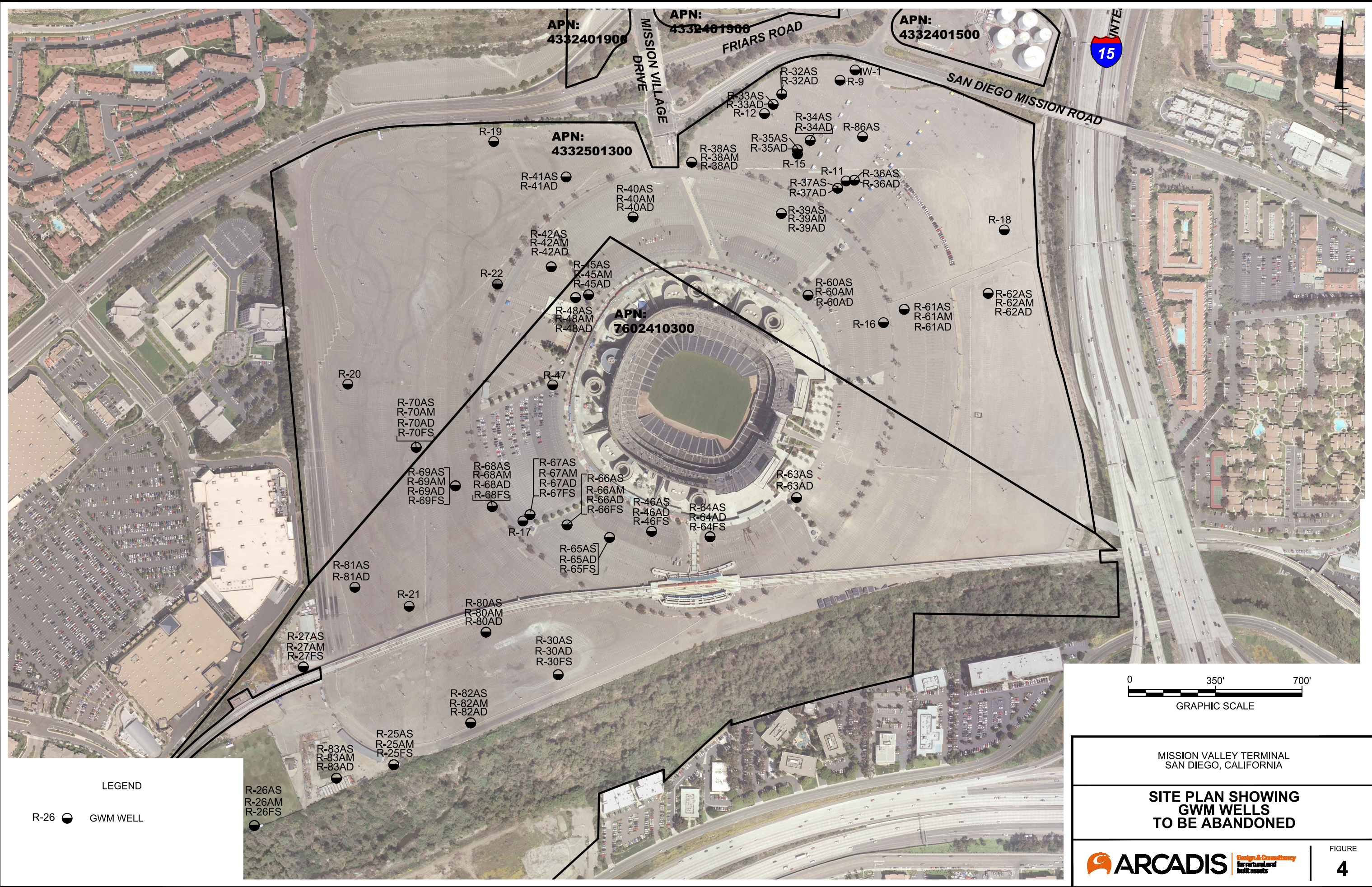
MISSION VALLEY TERMINAL
SAN DIEGO, CALIFORNIA

**SITE PLAN SHOWING
AS WELLS
TO BE ABANDONED**



FIGURE
3

LEGEND
ASM-12 AS WELL



LEGEND
R-26 ● GWM WELL

0 350' 700'
GRAPHIC SCALE

MISSION VALLEY TERMINAL
SAN DIEGO, CALIFORNIA

SITE PLAN SHOWING
GWM WELLS
TO BE ABANDONED

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LEGEND

- RW-3 ● SVE/GWE WELL
- RW-3A ● GWE WELL

MISSION VALLEY TERMINAL
SAN DIEGO, CALIFORNIA

**SITE PLAN SHOWING
GWE WELLS
TO BE ABANDONED**

ARCADIS Design & Consultancy
for natural and
built assets

FIGURE
5

APPENDIX A

Well Abandonments in Parking Lot Portion of Off-Terminal Zone



APPENDIX A
Well Abandonments in Northwest Portion of Off-Terminal Zone
Mission Valley Terminal, San Diego, CA

Well Cluster ID	Well ID	Well Type	DEH Permit Number	Lateral Length (ft)	Total Borehole Depth (ft)	Borehole Diameter (inch)	Vapor Probe/ Well Diameter (inch)	Shallowest Annular Seal Interval (ft-bgs)	Shallowest Vapor Probe Depth / Screen Interval (ft)	Deepest Vapor Probe Depth / Screen Interval (ft)	Vapor Probe Length (ft)/ Type of Materials	Proposed Destruction Method
SV-1	SV-1AS/AMS/AMD/AD	SVM	--	NA	13	8	0.25	0 - 2.5	3.5	12	0.5 - SS	Grout/pull tubing
SV-1ADD	SV-1ADD	SVM	LMON103479	NA	22.5	8	0.25	0 - 20	20.5	NA	0.5 - SS	Grout/pull tubing
SV-2	SV-2AS/AMS/AMD/AD	SVM	--	NA	32.5	8	0.25	0 - 3	4	29.5	0.5 - SS	Grout/pull tubing
SV-8	SV-8AS/AMS/AMD/AD	SVM	LMON101717	NA	33	8	0.25	0 - 3	3.5	19.5	0.5 - SS	Grout/pull tubing
SV-8ADD	SV-8ADD	SVM	LMON103479	NA	28.5	8	0.25	0 - 24.5	25	NA	0.5 - SS	Grout/pull tubing
SV-9	SV-9AS/AMS/AMD/AD	SVM	LMON101717	NA	35	8	0.25	0 - 3	3.5	21.5	0.5 - SS	Grout/pull tubing
SV-9ADD	SV-9ADD	SVM	LMON103479	NA	25.5	8	0.25	0 - 24	24.5	NA	0.5 - SS	Grout/pull tubing
SV-10	SV-10AS/AMS/AMD/AD	SVM	LMON101717	NA	35	8	0.25	0 - 3	3.5	22.5	0.5 - SS	Grout/pull tubing
SV-10ADD	SV-10ADD	SVM	LMON103479	NA	28	8	0.25	0 - 27	27.5	NA	0.5 - SS	Grout/pull tubing
SV-11	SV-11AS/AMS/AMD/AD	SVM	LMON101717	NA	30	8	0.25	0 - 3	3.5	15.5	0.5 - SS	Grout/pull tubing
SV-11ADD	SV-11ADD	SVM	LMON103479	NA	20.5	8	0.25	0 - 18	18.5	NA	0.5 - SS	Grout/pull tubing
SV-12	SV-12AS/AMS/AMD/AD	SVM	LMON101717	NA	30	8	0.25	0 - 3	3.5	15.5	0.5 - SS	Grout/pull tubing
SV-12ADD	SV-12ADD	SVM	LMON103479	NA	19.5	8	0.25	0 - 17	17.5	NA	0.5 - SS	Grout/pull tubing
SV-13	SV-13AS/AMS/AMD/AD	SVM	LMON101717	NA	30	8	0.25	0 - 3	3.5	16	0.5 - SS	Grout/pull tubing
SV-13ADD	SV-13ADD	SVM	LMON103479	NA	28	8	0.25	0 - 19	19.5	NA	0.5 - SS	Grout/pull tubing
SV-14	SV-14AS/AMS/AMD/AD	SVM	LMON101717	NA	30	8	0.25	0 - 3	3.5	17.5	0.5 - SS	Grout/pull tubing
SV-14ADD	SV-14ADD	SVM	LMON103479	NA	23	8	0.25	0 - 20	14.5	NA	0.5 - SS	Grout/pull tubing
SV-15	SV-15AS/AM/AD	SVM	LMON101717	NA	30	8	0.25	0 - 3	3.5	12.5	0.5 - SS	Grout/pull tubing
SV-15ADD-R	SV-15ADD-R	SVM	LMON107067	NA	16	2	0.25	0 - 14	14.5	NA	0.5 - SS	Grout/pull tubing
SV-18	SV-18AS/AMS/AMD/AD	SVM	LMON103292	NA	24	8	0.25	0 - 7	7.5	23	0.5 - SS	Grout/pull tubing
SV-19	SV-19AS/AMS/AMD/AD	SVM	LMON103292	NA	18	8	0.25	0 - 4.5	6	17.25	0.5 - SS	Grout/pull tubing
SV-20	SV-20AS/AM/AD	SVM	LMON103292	NA	17	6	0.25	0 - 4.5	5	15.25	0.5 - SS	Grout/pull tubing
SV-24	SV-24AD-M	WDAM	LMON103480	NA	24	3.5	0.75	0 - 23.5	24	NA	NA	Pressure grout at the well/Remove 5 feet
SV-24	SV-24AM-M	WDAM	LMON103480	NA	20	3.5	0.75	0 - 19.5	20	NA	NA	Overdrill to 20 ft
SV-24	SV-24AS-M	WDAM	LMON103480	NA	15	3.5	0.75	0 - 14.5	15	NA	NA	Overdrill to 15 ft
SV-24	SV-24AS-T/AM-T/AD-T	SVM	LMON103480	NA	26.5	8	0.25	0 - 15	15.5	24.5	0.5 - SS	Grout/pull tubing
SV-25	SV-25AD-M	WDAM	LMON103480	NA	24	3.5	0.75	0 - 23.5	24	NA	NA	Pressure grout at the well/Remove 5 feet
SV-25	SV-25AM-M	WDAM	LMON103480	NA	20	3.5	0.75	0 - 19.5	20	NA	NA	Overdrill to 20 ft
SV-25	SV-25AS-M	WDAM	LMON103480	NA	15	3.5	0.75	0 - 14.5	15	NA	NA	Overdrill to 15 ft
SV-25	SV-25AS-T/AM-T/AD-T	SVM	LMON103480	NA	25.5	8	0.25	0 - 15	15.5	24.5	0.5 - SS	Grout/pull tubing
SV-26	SV-26AD-M	WDAM	LMON103480	NA	24	3.5	0.75	0 - 23.5	24	NA	NA	Pressure grout at the well/Remove 5 feet
SV-26	SV-26AM-M	WDAM	LMON103480	NA	20	3.5	0.75	0 - 19.5	20	NA	NA	Overdrill to 20 ft
SV-26	SV-26AS-M	WDAM	LMON103480	NA	15	3.5	0.75	0 - 14.5	15	NA	NA	Overdrill to 15 ft
SV-26	SV-26AS-T/AM-T/AD-T	SVM	LMON103480	NA	25.5	8	0.25	0 - 15	15.5	24.5	0.5 - SS	Grout/pull tubing
SV-27	SV-27AD-M	WDAM	LMON103480	NA	24	3.5	0.75	0 - 23.5	24	NA	NA	Pressure grout at the well/Remove 5 feet
SV-27	SV-27AM-M	WDAM	LMON103480	NA	20	3.5	0.75	0 - 19.5	20	NA	NA	Overdrill to 20 ft
SV-27	SV-27AS-M	WDAM	LMON103480	NA	15	3.5	0.75	0 - 14.5	15	NA	NA	Overdrill to 15 ft
SV-27	SV-27AS-T/AM-T/AD-T	SVM	LMON103480	NA	25.5	8	0.25	0 - 15	15.5	24.5	0.5 - SS	Grout/pull tubing
SV-28	SV-28AD-M	WDAM	LMON103480	NA	24	3.5	0.75	0 - 23.5	24	NA	NA	Pressure grout at the well/Remove 5 feet
SV-28	SV-28AM-M	WDAM	LMON103480	NA	20	3.5	0.75	0 - 19.5	20	NA	NA	Overdrill to 20 ft
SV-28	SV-28AS-M	WDAM	LMON103480	NA	15	3.5	0.75	0 - 14.5	15	NA	NA	Overdrill to 15 ft
SV-28	SV-28AS-T/AM-T/AD-T	SVM	LMON103480	NA	25.5	8	0.25	0 - 15	15.5	24.5	0.5 - SS	Grout/pull tubing
SV-29	SV-29AD-M	WDAM	LMON103480	NA	24	3.5	0.75	0 - 23.5	24	NA	NA	Pressure grout at the well/Remove 5 feet
SV-29	SV-29AM-M	WDAM	LMON103480	NA	20	3.5	0.75	0 - 19.5	20	NA	NA	Overdrill to 20 ft
SV-29	SV-29AS-M	WDAM	LMON103480	NA	15	3.5	0.75	0 - 14.5	15	NA	NA	Overdrill to 15 ft
SV-29	SV-29AS-T/AM-T/AD-T	SVM	LMON103480	NA	25.5	8	0.25	0 - 15	15.5	24.5	0.5 - SS	Grout/pull tubing
SV-30	SV-30AS/AMS/AMD/AD	SVM	LMON103479	NA	28	6	0.25	0 - 9.5	10.5	26.75	0.5 - SS	Grout/pull tubing
SV-31	SV-31AS/AMS/AMD/AD	SVM	LMON103479	NA	27	6	0.25	0 - 8	8.5	25.75	0.5 - SS	Grout/pull tubing
SV-32	SV-32AS/AMS/AMD/AD	SVM	LMON103479	NA	22	6	0.25	0 - 4.5	5.5	19.75	0.5 - SS	Grout/pull tubing

APPENDIX A
Well Abandonments in Northwest Portion of Off-Terminal Zone
Mission Valley Terminal, San Diego, CA



Well Cluster ID	Well ID	Well Type	DEH Permit Number	Lateral Length (ft)	Total Borehole Depth (ft)	Borehole Diameter (inch)	Vapor Probe/ Well Diameter (inch)	Shallowest Annular Seal Interval (ft-bgs)	Shallowest Vapor Probe Depth / Screen Interval (ft)	Deepest Vapor Probe Depth / Screen Interval (ft)	Vapor Probe Length (ft)/ Type of Materials	Proposed Destruction Method
SV-33	SV-33AS/AMS/AMD/AD	SVM	LMON103479	NA	20.5	6	0.25	0 - 5	5.5	17.75	0.5 - SS	Grout/pull tubing
SV-34	SV-34AS/AMS/AMD/AD	SVM	LMON103479	NA	20.5	6	0.25	0 - 4.5	5.5	18.75	0.5 - SS	Grout/pull tubing
SV-35	SV-35AS/AM/AD	SVM	LMON103479	NA	18.5	6	0.25	0 - 7	7.5	15.75	0.5 - SS	Grout/pull tubing
SV-36	SV-36AMD/AD	SVM	LMON105335	NA	40	4	0.25	0 - 28.5	29	35.5	0.5 - SS	Grout/pull tubing
SV-36	SV-36 MP	WDAM	LMON105335	NA	35	4	0.75	0 - 33	NA	NA	NA	Pressure grout at the well/Remove 5 feet
SV-37	SV-37AMD/AD	SVM	LMON105335	NA	30	6	0.25	0 - 22	23	26.5	0.5 - SS	Grout/pull tubing
SV-38	SV-38AMD/AD	SVM	LMON105335	NA	35	4	0.25	0 - 25.5	26	31	0.5 - SS	Grout/pull tubing
SV-38	SV-38 MP	WDAM	LMON105335	NA	31	4	0.75	0 - 29	NA	NA	NA	Pressure grout at the well/Remove 5 feet
SV-39	SV-39AMD/AD	SVM	LMON105335	NA	29	3.25	0.25	0 - 20.5	21	26	0.5 - SS	Grout/pull tubing
SV-40-R	SV-40AMD-R/AD-R	SVM	LMON107067	NA	26	2	0.25	0 - 19.5	20	25	0.5 - SS	Grout/pull tubing
SV-41	SV-41AMD/AD	SVM	LMON105335	NA	31	3.25	0.25	0 - 15.5	16	26.5	0.5 - SS	Grout/pull tubing
SV-42	SV-42AMD/AD	SVM	LMON105335	NA	33	3.25	0.25	0 - 12.5	13	27.5	0.5 - SS	Grout/pull tubing
SV-42	SV-42 MP	WDAM	LMON105335	NA	28.5	3.25	0.75	0 - 27.5	NA	NA	NA	Pressure grout at the well/Remove 5 feet
SV-42-R	SV-42AD-R	SVM	LMON107067	NA	26	2	0.25	0 - 24.5	25	NA	0.5 - SS	Grout/pull tubing
SV-43	SV-43AMD/AD	SVM	LMON105335	NA	22	3.25	0.25	0 - 14.5	15	20.5	0.5 - SS	Grout/pull tubing
SV-44	SV-44AMD/AD	SVM	LMON105335	NA	25	6	0.25	0 - 19.5	20	23.5	0.5 - SS	Grout/pull tubing
SV-44	SV-44 MP	WDAM	LMON105335	NA	23.5	3.25	0.75	0 - 22.5	NA	NA	NA	Pressure grout at the well/Remove 5 feet
SV-45	SV-45AMD/AD	SVM	LMON105335	NA	28	3.25	0.25	0 - 17.5	18	25.5	0.5 - SS	Grout/pull tubing
SV-45-R	SV-45AMD-R	SVM	LMON107067	NA	20	2	0.25	0 - 17.5	18	NA	0.5 - SS	Grout/pull tubing
SV-46	SV-46AD	SVM	LMON105335	NA	25	3.25	0.25	0 - 22.5	23	NA	0.5 - SS	Grout/pull tubing
SV-46	SV-46 MP	WDAM	LMON105335	NA	23.5	3.25	0.75	0 - 22.5	NA	NA	NA	Pressure grout at the well/Remove 5 feet
SV-47	SV-47AMD/AD	SVM	LMON105335	NA	28	3.25	0.25	0 - 19.5	20	24.5	0.5 - SS	Grout/pull tubing
SV-47	SV-47 MP	WDAM	LMON105335	NA	28.5	3.25	0.75	0 - 27.5	NA	NA	NA	Pressure grout at the well/Remove 5 feet
SV-48	SV-48AMD/AD	SVM	LMON105335	NA	27	3.25	0.25	0 - 18.5	19.5	24.5	0.5 - SS	Grout/pull tubing
SV-49	SV-49AMD/AD	SVM	LMON105335	NA	25	3.25	0.25	0 - 18.5	19.5	22.5	0.5 - SS	Grout/pull tubing
SV-50-R	SV-50AD-R	SVM	LMON107067	NA	22	2	0.25	0 - 20	21	NA	0.5 - SS	Grout/pull tubing
SV-51	SV-51AMD/AD	SVM	LMON105335	NA	23	3.25	0.25	0 - 16.5	17	20.5	0.5 - SS	Grout/pull tubing
RW-10	RW-10	SVE	W100966	171	19	6	2	0 - 11.5	13 - 18	NA	NA	Overdrill to 19 ft
RW-10B	RW-10B	SVE	--	150	26	8	2	0 - 20	21 - 25	NA	NA	Overdrill to 26 ft
RW-11	RW-11	SVE	W100966	225	18	6	2	0 - 10.5	12 - 17	NA	NA	Overdrill to 18 ft
RW-11B	RW-11B	SVE	--	167	26	8	2	0 - 20	21 - 25	NA	NA	Overdrill to 26 ft
RW-12	RW-12	SVE	W100966	115	20.5	6	2	0 - 11.5	13 - 18	NA	NA	Overdrill to 20.5 ft
RW-12B	RW-12B	SVE	--	82	25	8	2	0 - 21	22 - 24	NA	NA	Overdrill to 25 ft
RW-13	RW-13	SVE	W100966	129	18	6	2	0 - 11	12.5 - 17.5	NA	NA	Overdrill to 18 ft
RW-13B	RW-13B	SVE	--	60	24	8	2	0 - 17	18 - 23	NA	NA	Overdrill to 24 ft
RW-14	RW-14	SVE	W100966	188	17	6	2	0 - 9.5	11 - 16	NA	NA	Overdrill to 17 ft
RW-14B	RW-14B	SVE	--	134	21.5	8	2	0 - 17	18 - 20	NA	NA	Overdrill to 21.5 ft
RW-15	RW-15	SVE	W100966	275	19	6	2	0 - 8	9.5 - 14.5	NA	NA	Overdrill to 19 ft
RW-16	RW-16	SVE	W100966	25	19	6	2	0 - 11	12.5 - 17.5	NA	NA	Overdrill to 19 ft
RW-16B	RW-16B	SVE	--	62	25	8	2	0 - 18	19 - 24	NA	NA	Overdrill to 25 ft
RW-17	RW-17	SVE	W100966	65	20.5	6	2	0 - 8.5	10 - 20	NA	NA	Overdrill to 20.5 ft
RW-17B	RW-17B	SVE	--	157	25	8	2	0 - 20	21 - 24	NA	NA	Overdrill to 25 ft
RW-18	RW-18	SVE	W100966	115	19	6	2	0 - 11	12.5 - 17.5	NA	NA	Overdrill to 19 ft
RW-18B	RW-18B	SVE	--	163	25	8	2	0 - 21	22 - 24	NA	NA	Overdrill to 25 ft
RW-19	RW-19	SVE	W100966	252	19	6	2	0 - 10	11.5 - 16.5	NA	NA	Overdrill to 19 ft
RW-19B	RW-19B	SVE	--	302	25	8	2	0 - 18	19 - 24	NA	NA	Overdrill to 25 ft
RW-20	RW-20	SVE	W100966	163	18	6	2	0 - 11	12.5 - 17.5	NA	NA	Overdrill to 18 ft
RW-20B	RW-20B	SVE	--	264	23	8	2	0 - 16	17 - 22	NA	NA	Overdrill to 23 ft

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	RW-21	SVE	W101039	194	22	6	2	0 - 16	20.5 - 21.5	NA	NA	Overdrill to 22 ft
	RW-22	RW-22(A&B)	SVE-Dual	LMON101716	171	40	10	0 - 13	15 - 20	23 - 24	NA	Overdrill to 40 ft
	RW-23	RW-23(A&B)	SVE-Dual	LMON101716	90	31	10	0 - 11	12 - 17	22.5 - 23.5	NA	Overdrill to 31 ft
	RW-24	RW-24(A&B)	SVE-Dual	LMON101716	23	40	10	0 - 9	10 - 15	19 - 20	NA	Overdrill to 40 ft
	RW-25	RW-25(A&B)	SVE-Dual	LMON101716	87	35	10	0 - 10.5	12 - 17	19 - 20	NA	Overdrill to 35 ft
	RW-26	RW-26(A&B)	SVE-Dual	LMON101716	118	35	10	0 - 7	9 - 14	16 - 17	NA	Overdrill to 35 ft
	RW-27	RW-27(A&B)	SVE-Dual	LMON101716	123	35	10	0 - 7	9 - 14	16.5 - 17.5	NA	Overdrill to 35 ft
	RW-28	RW-28(A&B)	SVE-Dual	LMON101716	17	30	10	0 - 9	10 - 15	16.5 - 17.5	NA	Overdrill to 30 ft
	RW-29	RW-29(A&B)	SVE-Dual	LMON101716	144	30	10	0 - 5	7 - 12	15.5 - 16.5	NA	Overdrill to 30 ft
	RW-30	RW-30(A&B)	SVE-Dual	LMON101716	208	30	10	0 - 10	12 - 17	18.5 - 19.5	NA	Overdrill to 30 ft
	RW-31	RW-31	SVE	LMON101716	122	30	8	0 - 9	10 - 15	NA	NA	Overdrill to 30 ft
	RW-32	RW-32	SVE	LMON101716	179	30	8	0 - 7	8.5 - 13.5	NA	NA	Overdrill to 30 ft
	RW-33	RW-33	SVE	LMON101716	192	30	8	0 - 5	6.5 - 11.5	NA	NA	Overdrill to 30 ft
	RW-33B	RW-33B	SVE	--	233	18	8	0 - 12	13 - 17	NA	NA	Overdrill to 18 ft
	RW-34	RW-34(A&B)	SVE-Dual	LMON101716	342	30	10	0 - 5	6 - 11	13 - 14	NA	Overdrill to 30 ft
	RW-44	RW-44(A&B)	SVE-Dual	--	122	23	10	0 - 8	9 - 14	18 - 20	NA	Overdrill to 23 ft
	RW-45	RW-45(A&B)	SVE-Dual	--	242	18	10	0 - 5	6 - 10	14 - 17	NA	Overdrill to 18 ft
	RW-46	RW-46(A&B)	SVE-Dual	--	171	28	10	0 - 12	13 - 18	22 - 25	NA	Overdrill to 28 ft
	RW-47	RW-47(A&B)	SVE-Dual	--	227	25	10	0 - 9	10 - 14.5	20 - 23	NA	Overdrill to 25 ft
	RW-52	RW-52(A&B)	SVE-Dual	LMON105335	32	28.5	10	0 - 10	11 - 16	21.5 - 26	NA	Overdrill to 28.5 ft
	RW-53	RW-53(A&B)	SVE-Dual	LMON105335	96	30	10	0 - 11.5	13 - 18	22.5 - 27	NA	Overdrill to 30 ft
	RW-54	RW-54(A&B)	SVE-Dual	LMON105335	165	30	10	0 - 12	13 - 18	23 - 28	NA	Overdrill to 30 ft
	RW-55	RW-55(A&B)	SVE-Dual	LMON105335	6	27	10	0 - 7	8.5 - 13.5	18.5 - 22.5	NA	Overdrill to 27 ft
	RW-57	RW-57(A&B)	SVE-Dual	LMON105335	62	23	10	0 - 5.5	6.5 - 11	17 - 21	NA	Overdrill to 23 ft
	RW-58	RW-58(A&B)	SVE-Dual	LMON105335	184	29	10	0 - 8	9 - 14	20 - 24	NA	Overdrill to 29 ft
	RW-59	RW-59(A&B)	SVE-Dual	LMON105335	60	28	10	0 - 9	10 - 15	20 - 24.5	NA	Overdrill to 28 ft
	RW-60	RW-60(A&B)	SVE-Dual	LMON105335	25	26.5	10	0 - 7	8 - 13	18 - 23	NA	Overdrill to 26.5 ft
	RW-61	RW-61(A&B)	SVE-Dual	LMON105335	22	27	10	0 - 9	10 - 15	20 - 22.5	NA	Overdrill to 27 ft
	RW-62	RW-62(A&B)	SVE-Dual	LMON105335	91	27.5	10	0 - 5	6 - 11	16 - 23	NA	Overdrill to 27.5 ft
	RW-63	RW-63(A&B)	SVE-Dual	LMON105335	25	25	10	0 - 6	7 - 12	17 - 21	NA	Overdrill to 25 ft
	RW-64	RW-64(A&B)	SVE-Dual	LMON105335	65	25	10	0 - 5	6 - 11	16 - 20	NA	Overdrill to 25 ft
	RW-65	RW-65(A&B)	SVE-Dual	LMON105335	127	27	10	0 - 9	10 - 15	20.5 - 23	NA	Overdrill to 27 ft
	RW-66	RW-66(A&B)	SVE-Dual	LMON105335	120	27	10	0 - 5	6 - 11	16 - 21	NA	Overdrill to 27 ft
	RW-67	RW-67(A&B)	SVE-Dual	LMON105335	85	25.5	10	0 - 6	7 - 12	17 - 23	NA	Overdrill to 25.5 ft
	RW-68	RW-68(A&B)	SVE-Dual	LMON105335	209	28	10	0 - 6	7 - 12	17 - 25	NA	Overdrill to 28 ft
	RW-69	RW-69(A&B)	SVE-Dual	LMON105335	96	28.5	10	0 - 6	7 - 12	17 - 23	NA	Overdrill to 28.5 ft
	RW-70	RW-70(A&B)	SVE-Dual	LMON105335	181	27.5	10	0 - 8	9 - 14	19.5 - 23.5	NA	Overdrill to 27.5 ft
	RW-71	RW-71(A&B)	SVE-Dual	LMON105335	161	24	10	0 - 5	6 - 11	16 - 21	NA	Overdrill to 24 ft
	RW-72	RW-72(A&B)	SVE-Dual	LMON105335	171	24	10	0 - 5	6 - 11	17.5 - 20.5	NA	Overdrill to 24 ft
	RW-73	RW-73(A&B)	SVE-Dual	LMON105335	177	25.5	10	0 - 6	7 - 12	17 - 21	NA	Overdrill to 25.5 ft
	RW-74	RW-74(A&B)	SVE-Dual	LMON105335	189	22	10	0 - 5	6 - 11	16 - 20	NA	Overdrill to 22 ft
	RW-98	RW-98(A&B)	SVE-Dual	LMON105335	143	29.5	10	0 - 9.5	10.5 - 15.5	20 - 23.5	NA	Overdrill to 29.5 ft
	RW-102	RW-102(A&B)	SVE-Dual	LMON106241	102	20	10	0 - 4.5	5 - 10	14 - 17	NA	Overdrill to 20 ft
	RW-103	RW-103(A&B)	SVE-Dual	LMON106241	57	20	10	0 - 5.5	6 - 11	15 - 18	NA	Overdrill to 20 ft
	RW-104	RW-104(A&B)	SVE-Dual	LMON106241	196	20	10	0 - 3.5	4 - 9	13 - 17	NA	Overdrill to 20 ft
	RW-105	RW-105	SVE	LMON106241	312	16	8.5	0 - 7.5	8 - 13	NA	NA	Overdrill to 16 ft
	RW-106	RW-106	SVE	LMON106241	278	17	8.5	0 - 8.5	9 - 14	NA	NA	Overdrill to 17 ft
	RW-239	RW-239	SVE	LMON106879	NA	42	6	0 - 23.5	25 - 35	NA	NA	Pressure grout at the well/Remove 5 feet
	RW-240	RW-240	SVE	LMON106879	NA	40	6	0 - 26.5	28 - 38	NA	NA	Pressure grout at the well/Remove 5 feet

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RW-246	RW-246	SVE	LMON106879	NA	42	6	2	0 - 28.5	30 - 40	NA	NA	Pressure grout at the well/Remove 5 feet
RW-247	RW-247	SVE	LMON106879	NA	35	6	2	0-20.5	21 - 25	NA	NA	Pressure grout at the well/Remove 5 feet
RW-251	RW-251	SVE	LMON106879	NA	35	6	2	0 - 21.5	22 - 32	NA	NA	Pressure grout at the well/Remove 5 feet
SV-3	SV-3	SVE	W101041	NA	16	8	2	0 - 13	13.5 - 14.5	NA	1 - PVC	Overdrill to 16 ft
SV-4	SV-4	SVE	W101041	NA	17	8	2	0 - 13	13.5 - 14.5	NA	1 - PVC	Overdrill to 17 ft
SV-5	SV-5	SVE	W101041	NA	17	8	2	0 - 14.75	15 - 16	NA	1 - PVC	Overdrill to 17 ft
SV-6	SV-6	SVE	W101041	NA	18	8	2	0 - 15.5	15.75 - 16.75	NA	1 - PVC	Overdrill to 18 ft
SV-7	SV-7	SVE	W101041	NA	17	8	2	0 - 15	14.5 - 15.5	NA	1 - PVC	Overdrill to 17 ft
AS-01	AS-01	AS	W101040	NA	31	6	2	0 - 29.5	29.5 - 30.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-02	AS-02	AS	W101040	NA	32	6	2	0 - 28.5	27.5 - 28.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-05	AS-05	AS	W101040	NA	32	6	2	0 - 25	24 - 25	NA	NA	Pressure grout at the well/Remove 5 feet
AS-06	AS-06	AS	W101040	NA	32	6	2	0 - 26.5	26.5 - 27.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-07	AS-07	AS	W101040	NA	30	6	2	0 - 28	28 - 29	NA	NA	Pressure grout at the well/Remove 5 feet
AS-08	AS-08	AS	W101040	NA	31	6	2	0 - 28	28 - 29	NA	NA	Pressure grout at the well/Remove 5 feet
AS-09	AS-09	AS	W101040	NA	32	6	2	0 - 27	27 - 28	NA	NA	Pressure grout at the well/Remove 5 feet
AS-10	AS-10	AS	W101040	NA	32	6	2	0 - 27	27.5 - 28.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-11	AS-11	AS	W101040	NA	31	6	2	0 - 28	28.5 - 29.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-12	AS-12	AS	W101040	NA	32	6	2	0 - 25.5	25.5 - 26.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-13	AS-13	AS	W101040	NA	32	6	2	0 - 23.5	23.5 - 24.5	NA	NA	Pressure grout at the well/Remove 5 feet
AS-14	AS-14	AS	W101040	NA	32	6	2	0 - 26.5	26.5 - 27.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASD-03	ASD-03	AS	--	NA	36	6	2	0 - 32.5	33 - 34	NA	NA	Pressure grout at the well/Remove 5 feet
ASD-04	ASD-04	AS	--	NA	36	6	2	0 - 28.5	28.5 - 29.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-01	ASM-01	AS	W101039	NA	32	6	2	0 - 26.5	26.5 - 27.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-02	ASM-02	AS	W101039	NA	26	6	2	0 - 23.5	23.5 - 24.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-03	ASM-03	AS	W101039	NA	26	6	2	0 - 23.5	24 - 25	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-04	ASM-04	AS	W101039	NA	26	6	2	0 - 20.5	24.5 - 25.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-05	ASM-05	AS	W101039	NA	29	6	2	0 - 24	24.5 - 25.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-06	ASM-06	AS	W101039	NA	26	6	2	0 - 24.5	24.5 - 25.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-07	ASM-07	AS	W101039	NA	26	6	2	0 - 23.5	24 - 25	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-08	ASM-08	AS	W101039	NA	29	6	2	0 - 24.5	24.5 - 25.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-09	ASM-09	AS	W101039	NA	26	6	2	0 - 23.5	24 - 25	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-10	ASM-10	AS	W101039	NA	28	6	2	0 - 22.5	23 - 24	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-11	ASM-11	AS	W101039	NA	26	6	2	0 - 23.5	23.5 - 24.5	NA	NA	Pressure grout at the well/Remove 5 feet
ASM-12	ASM-12	AS	W101039	NA	26	6	2	0-22	22.5 - 23.5	NA	NA	Pressure grout at the well/Remove 5 feet
IW-1	IW-1	GWM	LMON103480	NA	26.5	8	2	0 - 20	20.5 - 24.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-9	R-9	GWM	--	NA	28.5	14	5	0 - 7	8.6 - 28.5	NA	NA	Overdrill to 29 ft
R-11	R-11	GWM	--	NA	29	14	5	0 - 7	9 - 29	NA	NA	Overdrill to 29 ft
R-12	R-12	GWM	--	NA	29	14	5	0 - 7	9 - 29	NA	NA	Overdrill to 29 ft
R-15	R-15	GWM	--	NA	42	10	5	0 - 7	8 - 37	NA	NA	Overdrill to 42 ft
R-16	R-16	GWM	--	NA	30	10	4	0 - 7	10 - 30	NA	NA	Overdrill to 30 ft
R-17	R-17	GWM	--	NA	35	10	4	0 - 12	15 - 35	NA	NA	Overdrill to 35 ft
R-18	R-18	GWM	--	NA	27	10	4	0 - 4	7 - 27	NA	NA	Overdrill to 27 ft
R-19	R-19	GWM	--	NA	53	10	4	0 - 30	32.5 - 52.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-20	R-20	GWM	--	NA	27	10	4	0 - 4	7 - 27	NA	NA	Overdrill to 27 ft
R-21	R-21AS	GWM	LMON103793	NA	25	10	4	0 - 4	5 - 25	NA	NA	Overdrill to 25 ft
R-21	R-21AM	GWM	LMON103793	NA	43	8	2	0 - 35	37 - 42	NA	NA	Pressure grout at the well/Remove 5 feet
R-21	R-21AD	GWM	LMON103793	NA	61	8	2	0 - 53	55 - 60	NA	NA	Pressure grout at the well/Remove 5 feet

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R-21	R-21FS	GWM	LMON103793	NA	84	8	2	0 - 76	78 - 83	NA	NA	Pressure grout at the well/Remove 5 feet
R-22	R-22	GWM	--	NA	34	8	2	0 - 11	14 - 34	NA	NA	Overdrill to 34 ft
R-25	R-25AS	GWM	--	NA	15	8	2	0 - 4	5 - 15	NA	NA	Overdrill to 15 ft
R-25	R-25AM	GWM	--	NA	49	8	2	0 - 42	44 - 49	NA	NA	Pressure grout at the well/Remove 5 feet
R-25	R-25FS	GWM	--	NA	96	8	2	0 - 88.5	90.5 - 95.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-26	R-26AS	GWM	--	NA	20	8	2	0 - 4	5 - 20	NA	NA	Overdrill to 20 ft
R-26	R-26AM	GWM	--	NA	55	8	2	0 - 47.5	49.5 - 54.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-26	R-26FS	GWM	--	NA	97	8	2	0 - 88	90 - 95	NA	NA	Pressure grout at the well/Remove 5 feet
R-27	R-27AS	GWM	--	NA	22	8	2	0 - 4.5	6.5 - 21.5	NA	NA	Overdrill to 22 ft
R-27	R-27AM	GWM	--	NA	50	8	2	0 - 38	40 - 50	NA	NA	Pressure grout at the well/Remove 5 feet
R-27	R-27FS	GWM	--	NA	81	8	2	0 - 68	70 - 80	NA	NA	Pressure grout at the well/Remove 5 feet
R-30	R-30AS	GWM	--	NA	16	8	2	0 - 4	5 - 15	NA	NA	Overdrill to 16 ft
R-30	R-30AD	GWM	--	NA	38	8	2	0 - 30	32 - 37	NA	NA	Pressure grout at the well/Remove 5 feet
R-30	R-30FS	GWM	--	NA	66	8	2	0 - 58	60 - 65	NA	NA	Pressure grout at the well/Remove 5 feet
R-32	R-32AS	GWM	W100536	NA	36	6	2	0 - 17	19.5 - 34.5	NA	NA	Overdrill to 36 ft
R-32	R-32AD	GWM	W100536	NA	67	6	2	0 - 51	54.5 - 59.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-33	R-33AS	GWM	W100536	NA	40	6	2	0 - 16	18 - 32	NA	NA	Overdrill to 40 ft
R-33	R-33AD	GWM	W100536	NA	68	6	2	0 - 54	56.5 - 61.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-34	R-34AS	GWM	W100536	NA	34	6	2	0 - 11	15 - 30	NA	NA	Overdrill to 34 ft
R-34	R-34AD	GWM	W100536	NA	60	6	2	0 - 51	53.5 - 58.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-35	R-35AS	GWM	W100536	NA	39.5	6	2	0 - 12	14.5 - 29.5	NA	NA	Overdrill to 40 ft
R-35	R-35AD	GWM	W100536	NA	57	6	2	0 - 48	50 - 55	NA	NA	Pressure grout at the well/Remove 5 feet
R-36	R-36AS	GWM	W100536	NA	28	6	2	0 - 12	14 - 24	NA	NA	Overdrill to 28 ft
R-36	R-36AD	GWM	W100536	NA	60	6	2	0 - 46	48.5 - 53.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-37	R-37AS	GWM	W100536	NA	29	6	2	0 - 9	11.5 - 26.5	NA	NA	Overdrill to 29 ft
R-37	R-37AD	GWM	W100536	NA	65	6	2	0 - 51	54 - 59	NA	NA	Pressure grout at the well/Remove 5 feet
R-38	R-38AS	GWM	W100536	NA	35	6	2	0 - 14	16.5 - 31.5	NA	NA	Overdrill to 35 ft
R-38	R-38AM	GWM	W100536	NA	48	6	2	0 - 37.5	40 - 45	NA	NA	Pressure grout at the well/Remove 5 feet
R-38	R-38AD	GWM	W100536	NA	65	6	2	0 - 55	57.5 - 62.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-39	R-39AS	GWM	W100536	NA	27	6	2	0 - 12	14.5 - 24.5	NA	NA	Overdrill to 27 ft
R-39	R-39AM	GWM	W100536	NA	46	6	2	0 - 36.5	38.5 - 43.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-39	R-39AD	GWM	W100536	NA	67.5	6	2	0 - 52	54.5 - 59.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-40	R-40AS	GWM	--	NA	44	6	2	0 - 22	25 - 40	NA	NA	Pressure grout at the well/Remove 5 feet
R-40	R-40AM	GWM	--	NA	55.5	6	2	0 - 43.5	46.5 - 51.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-40	R-40AD	GWM	--	NA	71	6	2	0 - 60	63 - 68	NA	NA	Pressure grout at the well/Remove 5 feet
R-41	R-41AS	GWM	--	NA	32.5	6	2	0 - 12	14.5 - 24.5	NA	NA	Overdrill to 33 ft
R-41	R-41AD	GWM	--	NA	41	6	2	0 - 28	30 - 35	NA	NA	Pressure grout at the well/Remove 5 feet
R-42	R-42AS	GWM	LMON103793	NA	35	6	2	0 - 15	17.5 - 32.5	NA	NA	Overdrill to 35 ft
R-42	R-42AM	GWM	LMON103793	NA	58.5	6	2	0 - 41	43.5 - 58.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-42	R-42AD	GWM	LMON103793	NA	68	6	2	0 - 58	61 - 66	NA	NA	Pressure grout at the well/Remove 5 feet
R-45	R-45AS	GWM	W100965	NA	46	6	2	0 - 26	28 - 43	NA	NA	Pressure grout at the well/Remove 5 feet
R-45	R-45AM	GWM	W100965	NA	61	6	2	0 - 52	54 - 59	NA	NA	Pressure grout at the well/Remove 5 feet
R-45	R-45AD	GWM	W100965	NA	79	6	2	0 - 68	71 - 76	NA	NA	Pressure grout at the well/Remove 5 feet
R-46	R-46AS	GWM	W100965	NA	46.5	6	2	0 - 28	30 - 45	NA	NA	Pressure grout at the well/Remove 5 feet
R-46	R-46AD	GWM	W100965	NA	62	6	2	0 - 50	52 - 57	NA	NA	Pressure grout at the well/Remove 5 feet
R-46	R-46FS	GWM	LMON103004	NA	73	10, 6	2	0 - 65	67 - 72	NA	NA	Pressure grout at the well/Remove 5 feet
R-47	R-47AS	GWM	W100965	NA	46	6	2	0 - 27	29 - 44	NA	NA	Pressure grout at the well/Remove 5 feet
R-47	R-47AM	GWM	W100965	NA	61.5	6	2	0 - 53	55 - 60	NA	NA	Pressure grout at the well/Remove 5 feet
R-47	R-47AD	GWM	W100965	NA	81	6	2	0 - 68	71 - 76	NA	NA	Pressure grout at the well/Remove 5 feet

APPENDIX A
Well Abandonments in Northwest Portion of Off-Terminal Zone
Mission Valley Terminal, San Diego, CA



Well Cluster ID	Well ID	Well Type	DEH Permit Number	Lateral Length (ft)	Total Borehole Depth (ft)	Borehole Diameter (inch)	Vapor Probe/ Well Diameter (inch)	Shallowest Annular Seal Interval (ft-bgs)	Shallowest Vapor Probe Depth / Screen Interval (ft)	Deepest Vapor Probe Depth / Screen Interval (ft)	Vapor Probe Length (ft)/ Type of Materials	Proposed Destruction Method
R-48	R-48AS	GWM	W100965	NA	46	6	2	0 - 25	27 - 42	NA	NA	Pressure grout at the well/Remove 5 feet
R-48	R-48AM	GWM	W100965	NA	66	6	2	0 - 51	53 - 58	NA	NA	Pressure grout at the well/Remove 5 feet
R-48	R-48AD	GWM	W100965	NA	86	6	2	0 - 66.5	69.5 - 74.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-60	R-60AS	GWM	LMON103004	NA	43	6	2	0 - 24	27 - 42	NA	NA	Pressure grout at the well/Remove 5 feet
R-60	R-60AM	GWM	LMON103004	NA	55	6	2	0 - 47	49 - 54	NA	NA	Pressure grout at the well/Remove 5 feet
R-60	R-60AD	GWM	LMON103004	NA	73	6	2	0 - 60	62 - 67	NA	NA	Pressure grout at the well/Remove 5 feet
R-61	R-61AS	GWM	LMON103004	NA	27	6	2	0 - 9	11 - 26	NA	NA	Overdrill to 27 ft
R-61	R-61AM	GWM	LMON103004	NA	39	6	2	0 - 31	33 - 38	NA	NA	Pressure grout at the well/Remove 5 feet
R-61	R-61AD	GWM	LMON103004	NA	57	6	2	0 - 44	46 - 51	NA	NA	Pressure grout at the well/Remove 5 feet
R-62	R-62AS	GWM	LMON103004	NA	23	6	2	0 - 5	7 - 22	NA	NA	Overdrill to 23 ft
R-62	R-62AM	GWM	LMON103004	NA	39	6	2	0 - 30	32.5 - 37.5	NA	NA	Pressure grout at the well/Remove 5 feet
R-62	R-62AD	GWM	LMON103004	NA	57	6	2	0 - 46	48 - 53	NA	NA	Pressure grout at the well/Remove 5 feet
R-63	R-63AS	GWM	LMON103004	NA	46	6	2	0 - 28	30 - 45	NA	NA	Pressure grout at the well/Remove 5 feet
R-63	R-63AD	GWM	LMON103004	NA	57	6	2	0 - 44	46 - 51	NA	NA	Pressure grout at the well/Remove 5 feet
R-64	R-64AS	GWM	LMON103004	NA	45	6	2	0 - 27	29 - 44	NA	NA	Pressure grout at the well/Remove 5 feet
R-64	R-64AD	GWM	LMON103004	NA	57	6	2	0 - 49	51 - 56	NA	NA	Pressure grout at the well/Remove 5 feet
R-64	R-64FS	GWM	LMON103004	NA	72.5	10, 6	2	0 - 64	66 - 71	NA	NA	Pressure grout at the well/Remove 5 feet
R-65	R-65AS	GWM	LMON103004	NA	40	6	2	0 - 22	24 - 39	NA	NA	Pressure grout at the well/Remove 5 feet
R-65	R-65AD	GWM	LMON103004	NA	57	6	2	0 - 45	47 - 52	NA	NA	Pressure grout at the well/Remove 5 feet
R-65	R-65FS	GWM	LMON103004	NA	68	10, 6	2	0 - 60	62 - 67	NA	NA	Pressure grout at the well/Remove 5 feet
R-66	R-66AS	GWM	LMON103004	NA	36	6	2	0 - 18	20 - 35	NA	NA	Overdrill to 36 ft
R-66	R-66AM	GWM	LMON103004	NA	53	6	2	0 - 45	47 - 52	NA	NA	Pressure grout at the well/Remove 5 feet
R-66	R-66AD	GWM	LMON103004	NA	72	6	2	0 - 63	65 - 70	NA	NA	Pressure grout at the well/Remove 5 feet
R-66	R-66FS	GWM	LMON103004	NA	87	10, 6	2	0 - 79	81 - 86	NA	NA	Pressure grout at the well/Remove 5 feet
R-67	R-67AS	GWM	LMON103004	NA	31	6	2	0 - 13	15 - 30	NA	NA	Overdrill to 31 ft
R-67	R-67AM	GWM	LMON103004	NA	50	6	2	0 - 42	44 - 49	NA	NA	Pressure grout at the well/Remove 5 feet
R-67	R-67AD	GWM	LMON103004	NA	77	6	2	0 - 61	63 - 68	NA	NA	Pressure grout at the well/Remove 5 feet
R-67	R-67FS	GWM	LMON103004	NA	86.5	10, 6	2	0 - 78	80 - 85	NA	NA	Pressure grout at the well/Remove 5 feet
R-68	R-68AS	GWM	LMON103004	NA	26	6	2	0 - 8	10 - 25	NA	NA	Overdrill to 26 ft
R-68	R-68AM	GWM	LMON103004	NA	45	6	2	0 - 36	38 - 43	NA	NA	Pressure grout at the well/Remove 5 feet
R-68	R-68AD	GWM	LMON103004	NA	67	6	2	0 - 56	58 - 63	NA	NA	Pressure grout at the well/Remove 5 feet
R-68	R-68FS	GWM	LMON103004	NA	83	10, 6	2	0 - 75	77 - 82	NA	NA	Pressure grout at the well/Remove 5 feet
R-69	R-69AS	GWM	LMON103004	NA	23	6	2	0 - 5	7 - 22	NA	NA	Overdrill to 23 ft
R-69	R-69AM	GWM	LMON103004	NA	46	6	2	0 - 38	40 - 45	NA	NA	Pressure grout at the well/Remove 5 feet
R-69	R-69AD	GWM	LMON103004	NA	77	6	2	0 - 60	62 - 67	NA	NA	Pressure grout at the well/Remove 5 feet
R-69	R-69FS	GWM	LMON103004	NA	83	10, 6	2	0 - 75	77 - 82	NA	NA	Pressure grout at the well/Remove 5 feet
R-70	R-70AS	GWM	LMON103004	NA	21	6	2	0 - 4	5 - 20	NA	NA	Overdrill to 21 ft
R-70	R-70AM	GWM	LMON103004	NA	39	6	2	0 - 31	33 - 38	NA	NA	Pressure grout at the well/Remove 5 feet
R-70	R-70AD	GWM	LMON103004	NA	63	6	2	0 - 49	51 - 56	NA	NA	Pressure grout at the well/Remove 5 feet
R-70	R-70FS	GWM	LMON103004	NA	72.5	10, 6	2	0 - 64	66 - 71	NA	NA	Pressure grout at the well/Remove 5 feet
R-80	R-80AS	GWM	LMON105648	NA	22	6	2	0 - 5	6 - 21	NA	NA	Overdrill to 22 ft
R-80	R-80AM	GWM	LMON105648	NA	37	6	2	0 - 28	29 - 34	NA	NA	Pressure grout at the well/Remove 5 feet
R-80	R-80AD	GWM	LMON105648	NA	62	6	2	0 - 41	42 - 47	NA	NA	Pressure grout at the well/Remove 5 feet
R-81	R-81AS	GWM	LMON105648	NA	19	6	2	0 - 4	5 - 18	NA	NA	Overdrill to 19 ft
R-81	R-81AD	GWM	LMON105648	NA	32	6	2	0 - 17	18 - 23	NA	NA	Overdrill to 32 ft
R-82	R-82AS	GWM	LMON105648	NA	22	6	2	0 - 5	6 - 21	NA	NA	Overdrill to 22 ft
R-82	R-82AM	GWM	LMON105648	NA	30	6	2	0 - 23	24 - 29	NA	NA	Pressure grout at the well/Remove 5 feet
R-82	R-82AD	GWM	LMON105648	NA	47	6	2	0 - 32	33 - 38	NA	NA	Pressure grout at the well/Remove 5 feet
R-83	R-83AS	GWM	LMON105648	NA	24	6	2	0 - 7	8 - 23	NA	NA	Overdrill to 24 ft

APPENDIX A
Well Abandonments in Northwest Portion of Off-Terminal Zone
Mission Valley Terminal, San Diego, CA



Well Cluster ID	Well ID	Well Type	DEH Permit Number	Lateral Length (ft)	Total Borehole Depth (ft)	Borehole Diameter (inch)	Vapor Probe/Well Diameter (inch)	Shallowest Annular Seal Interval (ft-bgs)	Shallowest Vapor Probe Depth / Screen Interval (ft)	Deepest Vapor Probe Depth / Screen Interval (ft)	Vapor Probe Length (ft)/ Type of Materials	Proposed Destruction Method
R-83	R-83AM	GWM	LMON105648	NA	38	6	2	0 - 31	32 - 37	NA	NA	Pressure grout at the well/Remove 5 feet
R-83	R-83AD	GWM	--	NA	67	6	2	0 - 51	52 - 57	NA	NA	Pressure grout at the well/Remove 5 feet
R-86	R-86AS	GWM	LMWP000784	NA	27.5	8	2	0 - 10	12 - 27.5	NA	NA	Overdrill to 28 ft
RW-3	RW-3	GWE/SVE	--	11	42	10	5	0 - 8	10 - 42	NA	NA	Overdrill to 42 ft
RW-3A	RW-3A	GWE	W100909	NA	72	10	5	0 - 22	24 - 60	NA	NA	Pressure grout at the well/Remove 5 feet
RW-4	RW-4	GWE/SVE	--	4	45	14	5	0 - 10	12 - 41	NA	NA	Overdrill to 45 ft
RW-5A	RW-5A	GWE/SVE	--	4	63	10	6	0 - 8	8 - 58	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-6	RW-6	GWE/SVE	--	4	42	10	6	0 - 8	9 - 42	NA	NA	Overdrill to 42 ft
RW-7A	RW-7A	GWE/SVE	--	4	60	10	6	0 - 8	9 - 54	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-8	RW-8	GWE	W100839	NA	65	16	8	0 - 20	23 - 64	NA	NA	Pressure grout at the well/Remove 5 feet
RW-9	RW-9	GWE	W100839	NA	80	16	8	0 - 34	37 - 78	NA	NA	Pressure grout at the well/Remove 5 feet
RW-48	RW-48	GWE/SVE	--	273	64	10	6	0 - 11	12 - 57	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-49	RW-49	GWE	--	NA	66	10	6	0 - 12	14 - 64	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-50	RW-50	GWE	--	NA	64	10	6	0 - 8.5	10 - 60	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-51	RW-51	GWE	--	NA	66	10	6	0 - 8.5	10 - 60	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-56	RW-56	GWE/SVE	--	16	67	10	6	0 - 15	16 - 66	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-99	RW-99	GWE	--	NA	87	10	6	0 - 25.5	27.5 - 77.5	NA	NA	Pressure grout at the well/Remove 5 feet
RW-100	RW-100	GWE	--	NA	67	10	6	0 - 8	10.5 - 66	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-101	RW-101	GWE	--	NA	57	10	6	0 - 8	9 - 54	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-107	RW-107	GWE	LMON106241	NA	66.5	10	6	0 - 11	12.5 - 62.5	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-108	RW-108	GWE	LMON107151	NA	77	10	6	0 - 18	20 - 75	NA	NA	Pressure grout at the well / Overdrill to 20 feet
RW-109	RW-109	GWE	LMON107620	NA	71	10	6	0 - 45	50 - 70	NA	NA	Pressure grout at the well/Remove 5 feet
RW-110	RW-110	GWE	LMON107620	NA	63	10	6	0 - 35	40 - 60	NA	NA	Pressure grout at the well/Remove 5 feet
RW-111	RW-111	GWE	LMON107620	NA	57.5	10	6	0 - 32	37 - 57	NA	NA	Pressure grout at the well/Remove 5 feet
RW-112	RW-112	GWE	LMON107620	NA	53	10	6	0 - 26	31 - 51	NA	NA	Pressure grout at the well/Remove 5 feet
RW-113	RW-113	GWE	LMON107620	NA	53	10	6	0 - 25	30 - 50	NA	NA	Pressure grout at the well/Remove 5 feet
RW-114	RW-114	GWE	LMON107620	NA	55	10	6	0 - 29	34 - 54	NA	NA	Pressure grout at the well/Remove 5 feet

Notes:

ft = feet
ft-bgs = feet below ground surface
GWM = groundwater monitoring
NA = not applicable
SVE = soil vapor extraction
SVM = soil vapor monitoring

WDAM = warm dry air monitoring
GWE = groundwater extraction
AS = air sparge
-- = not available

APPENDIX C

Property Owner's Consent





County of San Diego

ELISE ROTHCHILD
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
(858)505-6688
www.sdcdeh.org

AMY HARBERT
ASSISTANT DIRECTOR

PROPERTY OWNER CONSENT

Proposed locations for subsurface work:

Property Address:

Assessor's Parcel Number (APN):

9449 Friars Road (Qualcomm Stadium)

433-250-13-00

San Diego, CA 92108

I, City of San Diego, owner of the property/properties listed above, give my permission to Arcadis (consulting company, contractor) to conduct the following work at the locations stated above.

Install N/A monitoring wells

Destroy 245 monitoring wells

Drill N/A soil borings

I understand that Elias Seikali (registered professional) of Arcadis U.S. INC. (consulting company) and an authorized signer for I & H Drilling (drilling company) have submitted a signed application to the Department of Environmental Health in which they have agreed to complete the above-stated work according the requirements of the current SAM Manual, all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction. I have arranged with the Responsible Party, the person who causes to have monitoring wells/borings installed or existing wells destroyed on this property, to ensure proper closure of the monitoring wells/borings.

Property Owner Signature: _____

Date: 4/18/19

Print Name: Cybele L. Thompson

Title: Director

Company: City of San Diego Real Estate Assets

Mailing Address: 1200 Third AVE., STE 1700, S.D. 92101



County of San Diego

ELISE ROTHCHILD
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
LAND AND WATER QUALITY DIVISION
P.O. BOX 129261, SAN DIEGO, CA 92112-9261
(858)505-6688
www.sdcdeh.org

AMY HARBERT
ASSISTANT DIRECTOR

PROPERTY OWNER CONSENT

Proposed locations for subsurface work:

Property Address:

Assessor's Parcel Number (APN):

9449 Friars Road (Qualcomm Stadium)

760-241-03-00

San Diego, CA 92108

I, City of San Diego, owner of the property/properties listed above, give my permission to Arcadis (consulting company, contractor) to conduct the following work at the locations stated above.

Install n/a monitoring wells Destroy 73 monitoring wells Drill n/a soil borings

I understand that Elias Seikali (registered professional) of Arcadis U.S., INC. (consulting company) and an authorized signer for J & H Drilling (drilling company) have submitted a signed application to the Department of Environmental Health in which they have agreed to complete the above-stated work according the requirements of the current SAM Manual, all ordinances and laws of the County of San Diego and the State of California pertaining to well/boring construction and destruction. I have arranged with the Responsible Party, the person who causes to have monitoring wells/borings installed or existing wells destroyed on this property, to ensure proper closure of the monitoring wells/borings.

Property Owner Signature: _____ Date: 4/18/19

Print Name: Cybele L. Thompson Title: Director

Company: City of San Diego Real Estate Assets

Mailing Address: 1200 Third Ave, Ste. 1700, S.D. 92101

County of San Diego Department of Environmental Health
Site Assessment and Mitigation Program
P.O. Box 129261
San Diego, California 92112-9261

Arcadis U.S., Inc.
9620 Chesapeake Drive
Suite 106
San Diego
California 92123
Tel 858 278 2716
Fax 858 278 2771
www.arcadis.com

Subject:
Request for Well Abandonment Variance, SDCCU Stadium,
9449 San Diego Mission Road, San Diego, California 92108

ENVIRONMENT

Dear Monitoring Well Permit Clerk:

Date:
June 7, 2019

Arcadis U.S., Inc. (Arcadis) is requesting a variance to abandon 318 locations, consisting of 52 soil vapor monitoring (SVM) probes, 24 warm dry air monitoring (WDAM) probes, 78 soil vapor extraction (SVE) wells, 26 air sparging (AS) wells, 24 groundwater extraction (GWE) wells, and 114 groundwater monitoring (GWM) wells, installed at the San Diego County Credit Union (SDCCU) Stadium. The plan to abandon the 318 probes and wells is a result of the May 3, 2016 California Regional Water Quality Control Board-San Diego Region (RWQCB) approval letter to close the Off-Terminal Area case of the Kinder Morgan Mission Valley Terminal (RWQCB Case No. #H21132-001). The probes and wells were installed between July 1992 and April 2011. The installation permit numbers and proposed abandonment methods are listed in Appendix A. The locations are shown on Figure 1.

Contact:
Elias Seikali

Phone:
858.987.4355

Email:
Elias.Seikali@arcadis.com

Our ref:
CM010143.0205

Proposed Well Abandonment Methodology

SVM Probes and WDAM Wells

SVM Probes

Arcadis proposes to abandon the 52 SVM probes using a combination of leaving the tubing in place and injecting grout, or, if grout cannot be injected into the tubing, pulling the tubing from the borehole. A table showing well construction details and proposed well abandonment methods is included in Appendix A. The original SVM installations are documented in permits #LMON101717, #LMON103292, #LMON103479, #LMON103480, #LMON105335, and #LMON107067(Appendix A). The probes, consisting of ¼-inch Teflon tubing attached to a basal 2-inch-long screen, were placed within each borehole. Arcadis proposes a variance to destroy the probes using a 10 percent (%) solid

bentonite slurry-mix injected into the tubing at each probe installation, and then slowly pull the tubing from the borehole. As the tubing is removed, the seal materials will collapse and seal off the resulting ¼-inch-diameter hole. The length of tubing recovered at each SVM probe will be recorded. The surface at each SVM probe location will then be restored to match the existing nearby ground surface condition. The following probes will be abandoned:

SV-1	SV-1ADD	SV-2	SV-8
SV-8ADD	SV-9	SV-9ADD	SV-10
SV-10ADD	SV-11	SV-11ADD	SV-12
SV-12ADD	SV-13	SV-13ADD	SV-14
SV-14ADD	SV-15	SV-15ADD-R	SV-18
SV-19	SV-20	SV-24	SV-25
SV-26	SV-27	SV-28	SV-29
SV-30	SV-31	SV-32	SV-33
SV-34	SV-35	SV-36	SV-37
SV-38	SV-39	SV-40-R	SV-41
SV-42	SV-42-R	SV-43	SV-44
SV-45	SV-45-R	SV-46	SV-47
SV-48	SV-49	SV-50-R	SV-51

WDAM Wells

The original installations of the 24 WDAM wells are documented in permits #LMON103480 and #LMON105335. The wells were drilled to total depths of approximately 15 to 24 feet below ground surface (ft bgs) (Appendix A). Based on conversations with County of San Diego Department of Environmental Health staff, Arcadis understands that pressure grouting is an acceptable well abandonment method for wells with annular seals that extend beyond 20 ft bgs. Twelve of the 24 WDAM wells have annular seals that extend beyond 20 ft bgs. The remaining 12 WDAM wells have annular seals that were completed to less than 20 ft bgs. A table showing well construction details and proposed well abandonment methods is included in Appendix A.

Arcadis is requesting a variance to abandon the 12 wells with annular seals that extend beyond 20 ft bgs by pressure grouting and removing the top 5 feet of well casing. These wells are shown in the following table:

SV-24AD-M	SV-25AD-M	SV-26AD-M	SV-24AD-M
SV-27AD-M	SV-28AD-M	SV-29AD-M	SV-27AD-M
SV-36 MP	SV-38 MP	SV-42 MP	SV-36 MP
SV-44 MP	SV-46 MP	SV-47 MP	SV-44 MP

For the remaining 12 wells, Arcadis is requesting to abandon the wells by overdrilling to their respective total depths. These wells are as follows:

SV-24AM-M	SV-24AS-M	SV-25AM-M	SV-24AM-M
SV-25AS-M	SV-26AM-M	SV-26AS-M	SV-25AS-M
SV-27AM-M	SV-27AS-M	SV-28AM-M	SV-27AM-M
SV-28AS-M	SV-29AM-M	SV-29AS-M	SV-28AS-M

SVE Wells

The original installations of the 78 SVE wells are documented in permits #LMON101716, #LMON105335, #LMON106241, #LMON106879, #W100966, #W101039, and #W101041. Arcadis is requesting to abandon 73 of the 78 SVE wells by overdrilling to their respective total depths. These wells are as follows

RW-10	RW-10B	RW-11	RW-11B
RW-12	RW-12B	RW-13	RW-13B
RW-14	RW-14B	RW-15	RW-16
RW-16B	RW-17	RW-17B	RW-18
RW-18B	RW-19	RW-19B	RW-20
RW-20B	RW-21	RW-22	RW-23
RW-24	RW-25	RW-26	RW-27
RW-28	RW-29	RW-30	RW-31
RW-32	RW-33	RW-33B	RW-34
RW-44	RW-45	RW-46	RW-47
RW-52	RW-53	RW-54	RW-55
RW-57	RW-58	RW-59	RW-60
RW-61	RW-62	RW-63	RW-64

RW-65	RW-66	RW-67	RW-68
RW-69	RW-70	RW-71	RW-72
RW-73	RW-74	RW-98	RW-102
RW-103	RW-104	RW-105	RW-106
SV-3	SV-4	SV-5	SV-6
SV-7			

The remaining five SVE wells (RW-239, RW-240, RW-246, RW-247, and RW-251) meet the 20-foot annular seal requirement, and therefore Arcadis is requesting a variance to abandon these wells by pressure grouting and removing the top 5 feet of well casing.

AS Wells

The original installations of the 26 AS wells are documented in permits #W101039 and #W101040. Arcadis proposes to abandon the AS wells using pressure grouting and removing the top 5 feet because the wells have annular seals that extend beyond 20 ft bgs.

AS-01	AS-02	AS-05	AS-06
AS-07	AS-08	AS-09	AS-10
AS-11	AS-12	AS-13	AS-14
ASD-03	ASD-04	ASM-01	ASM-02
ASM-03	ASM-04	ASM-05	ASM-06
ASM-07	ASM-08	ASM-09	ASM-10
ASM-11	AMS-12		

GWM Wells

The original installations of the 114 GWM wells are documented in permits #LMON103004, #LMON103480, #LMON103793, #LMON105648, #LMWP000784, #W100536, and #W100965. Arcadis proposes to abandon the GWM wells by pressure grouting, or overdrilling to total depth based on the length of the annular seal. Seventy-seven of the 114 GWM wells have annular seals that extend beyond 20 ft bgs. Thirty-seven of the 114 GWM wells have annular seals that were completed to less than 20 ft bgs. A table showing well construction details and proposed well abandonment methods is included in Appendix A.

Arcadis is requesting a variance to abandon the 77 wells with annular seals that extend beyond 20 ft bgs by pressure grouting and removing the top 5 feet of well casing. These wells are shown in the following table:

IW-1	R-19	R-21AM	R-21AD
R-21FS	R-25AM	R-25FS	R-26AM
R-26FS	R-27AM	R-27FS	R-30AD
R-30FS	R-32AD	R-33AD	R-34AD
R-35AD	R-36AD	R-37AD	R-38AM
R-38AD	R-39AM	R-39AD	R-40AS
R-40AM	R-40AD	R-41AD	R-42AM
R-42AD	R-45AS	R-45AM	R-45AD
R-46AS	R-46AD	R-46FS	R-47AS
R-47AM	R-47AD	R-48AS	R-48AM
R-48AD	R-60AS	R-60AM	R-60AD
R-61AM	R-61AD	R-62AM	R-62AD
R-63AS	R-63AD	R-64AS	R-64AD
R-64FS	R-65AS	R-65AD	R-65FS
R-66AM	R-66AD	R-66FS	R-67AM
R-67AD	R-67FS	R-68AM	R-68AD
R-68FS	R-69AM	R-69AD	R-69FS
R-70AM	R-70AD	R-70FS	R-80AM
R-80AD	R-82AM	R-82AD	R-83AM
R-83AD			

For the remaining 37 wells, Arcadis is requesting to abandon the wells by overdrilling to their respective total depths. These wells are as follows:

R-9	R-11	R-12	R-15
R-16	R-17	R-18	R-20
R-21AS	R-22	R-25AS	R-26AS
R-27AS	R-30AS	R-32AS	R-33AS
R-34AS	R-35AS	R-36AS	R-37AS
R-38AS	R-39AS	R-41AS	R-42AS
R-61AS	R-62AS	R-66AS	R-67AS
R-68AS	R-69AS	R-70AS	R-80AS
R-81AS	R-81AD	R-82AS	R-83AS
R-86AS			

GWE Wells

The original installations of the 24 GWE wells are documented in permits #LMON106241, #LMON107151, #LMON107620, #W100839, and #W100909. Arcadis proposes to abandon the GWE wells using pressure grouting and removing the top 5 feet of well casing, pressure grouting with overdrilling to 20 ft bgs, or overdrilling to total depth based on the length of the annular seal and total borehole depth.

Arcadis is requesting a variance to abandon the 10 wells with annular seals that extend beyond 20 ft bgs by pressure grouting and removing the top 5 feet of well casing. These wells are shown in the following table:

RW-3A	RW-8	RW-9	RW-99
RW-109	RW-110	RW-111	RW-112
RW-113	RW-114		

For wells with annular seals less than 20 ft bgs and total depth more than 45 ft bgs, Arcadis is requesting to abandon these wells by pressure grouting and then overdrilling to a depth of 20 feet. These wells include:

RW-5A	RW-7A	RW-48	RW-49
RW-50	RW-51	RW-56	RW-100
RW-101	RW-107	RW-108	

The remaining three wells (RW-3, RW-4, and RW-6) have annular seals less than 20 ft bgs and a total depth of 45 ft bgs and less. For cost-effective reasons, Arcadis requests to abandon these wells by overdrilling to total depth.

Pressure Grout Procedures

The pressure-grouting procedure includes adding bentonite grout mix into the well casing. Once filled with a bentonite grout, the well head will be sealed and slowly pressurized to approximately 20 pounds per square inch (psi). This pressure will be maintained for a minimum of 10 minutes to allow the grout to set. Following pressurization, additional grout will be added as needed until the well no longer accepts material. After pressure grouting, the top 5 feet of the well casing will be removed, and the void will be backfilled with a 20% high solids bentonite grout mix with 10% Portland cement added. The well box will be removed, and the surface will be restored to match existing ground conditions.

The pressure-grouting procedure from the manifold includes adding bentonite grout mix into the conveyance piping for each well between the well and manifold, filling the conveyance piping, well casing, well screen, and well filter pack. The volume of grout necessary to fill the conveyance piping, well casing, well screen, and well filter pack will be estimated for each well and the volume actually used will be recorded. Once filled with bentonite grout, each well will be sealed and slowly pressurized to approximately 20 psi. This pressure will be maintained for a minimum of 10 minutes to allow the grout to enter the filter pack around the screen. Following pressurization, additional grout will be added as needed until the well no longer accepts material. After pressure grouting, the piping will be capped from the manifold.

The well destruction permit application package, including the well boring and construction logs (Appendix B) and property owner's consent (Appendix C) are attached.

If you have questions regarding this submittal, please contact me at 858.987.4355.

Sincerely,

Arcadis U.S., Inc.



Elias Seikali, RCE
Project Engineer

Enclosures:

Figures

- 1 Site Plan Showing SVM/WDAM Wells to be Abandoned
- 2 Site Plan Showing SVE Wells to be Abandoned
- 3 Site Plan Showing AS Wells to be Abandoned
- 4 Site Plan Showing GWM Wells to be Abandoned

5 Site Plan Showing GWE Wells to be Abandoned

Appendices

- A Well Abandonments in Parking Lot Portion of Off-Terminal Zone
- B Well Boring and Construction Logs
- C Property Owner's Consent