

HTW BCT Meeting, July 14, 2021

Table 1: Apr-June 2021 – Sites 2/12 GWTP and SVTU Statistics

Monthly Statistics	Volume Treated	Average Flow	Percent of Time Online	COC Mass Removed (pounds)
Apr 2021 GWTP	5,746,032 gal	133 gpm	96.7	0.18
May 2021 GWTP	6,193,238 gal	139 gpm	96.8	0.19
June 2021 GWTP	5,958,120 gal	138 gpm	99.7	0.18
Total since April 1999	2.224 billion gal			494
Apr-June 2021 SVTU	0 scf	0 scfm	0	0.0
Total since September 2015	1.374 billion scf			9.9

Table 2: Apr-June 2021 – Sites 2/12 Treated Water Analytical Results at TS-212-INJ

COC	Discharge Limit (µg/L) ²	Sample Date / Analytical Results
		None
1,1-Dichloroethene (1,1-DCE)	6.0	NS
1,2-Dichloroethane (1,2-DCA)	0.50	NS
1,3-dichloropropene (1,3-DCP) ¹	0.50	NS
Chloroform	2.0	NS
cis-1,2-dichloroethene (cis-1,2-DCE)	6.0	NS
Tetrachloroethene (PCE)	5.0	NS
Trichloroethene (TCE)	5.0	NS
Vinyl Chloride (VC)	0.10	NS

Notes:

¹ The reported value is the sum of both cis- and trans-isomers.

² Discharge limits are the ACLs for injection over the plume.

J: Estimated results below the limit of quantitation (LOQ).

ND: The analyte was not detected at or above the limit of detection (LOD).

gpm: gallon(s) per minute

gal: gallon(s)

COC: chemical of concern

NS: Not sampled

scf: standard cubic foot or feet

scfm: standard cubic feet per minute

µg/L: micrograms per liter

Results in gray are ND

*Preliminary data

April 2021 Key Events

- Apr 20-22: Redeveloped EW-12-08-180U and installed upsized pump (from 7.5 to 10 hp and from 34 to 41 gpm). Investigating other possible limits to flow rate and corrective measures.
- Apr 27: GAC change-out at Sites 2/12 GWTP.

May 2021 Key Events

- May 13: Sites 2/12 GWTP offline for 24 hours for planned maintenance of pipeline at junction between EW-12-08-180U and EW-12-05-180M.
- May 17: Second Quarter 2021 Soil Gas Monitoring Program event completed.

June 2021 Key Events

- Jun 7-11: Second Quarter 2021 Groundwater Monitoring Program event completed. Preliminary data received.
- June 21: Electrical outage shut down the Sites 2/12 GWTP for two hours. No equipment damage observed after restart.

July and Future 2021 Key Events

- Investigate possible GWTS pipeline restrictions preventing increased flow rate from EW-12-08-180U.
- Aug 16-18: Third Quarter 2021 Soil Gas Monitoring Program event.
- Aug 30-Sept 3: Third Quarter 2021 Groundwater Monitoring Program event.
- Sites 2/12 attainment monitoring if all COCs below ACLs in Third Quarter 2021.
- Shea Homes will decommission EW-12-04-180U and EW-12-04-180M (no date set).



Table 3. Sites 2/12 Select Groundwater Extraction/Monitoring Well Data

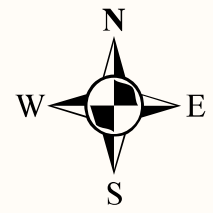
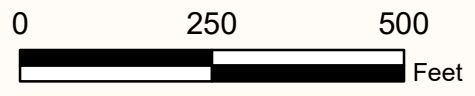
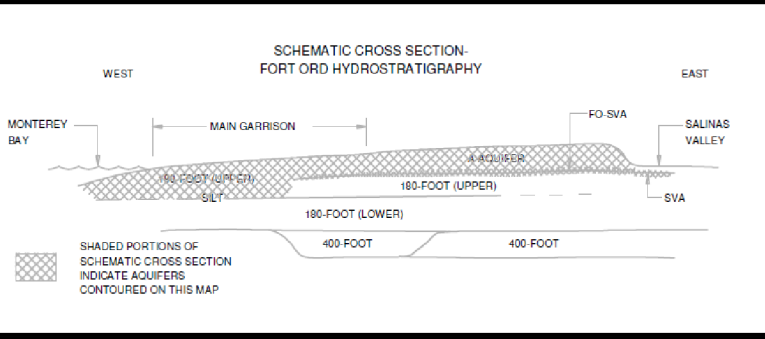
Well Identification ³	Select COC Concentrations (µg/L) ⁴															
	3Q 2019	4Q 2019	1Q 2020	2Q 2020	3Q 2020	4Q 2020	1Q 2021	2Q 2021*	3Q 2019	4Q 2019	1Q 2020	2Q 2020	3Q 2020	4Q 2020	1Q 2021	2Q 2021*
	TCE								PCE							
ACL:	5.0								5.0							
EW-12-03-180M	1.7	1.3	2.1	0.62	2.4	2.3	0.14 J	0.70	ND (0.25)	0.25 J	ND (0.25)	ND (0.25)	0.18 J	0.16 J	ND (0.25)	ND (0.25)
EW-12-05-180M	1.9	2.1	0.60	2.1	1.9	2.4	2.0	2.3	0.71	0.66	0.68	0.95	0.65	0.79	0.71	0.73
EW-12-07-180M	1.1	0.81	0.78	0.63	0.54	0.59	0.56 J+	0.45 J	0.28 J	0.27 J	0.24 J	0.19 J	0.12 J	0.14 J	0.16 J	0.12 J
EW-12-08-180U	0.47 J	0.36 J	0.31 J	0.35 J	0.36 J	0.16 J	0.27 J	0.25 J	14.1	13.5	8.4	13.1	11.6	6.1	5.3 J+	3.4
MW-12-09R-180	1.9	1.7	2.3	1.4	1.2	1.6	1.7	1.4	0.28 J	0.29 J	0.34 J	0.30 J	0.21 J	0.26 J	0.27 J	0.21 J
MW-12-14-180M	2.4	1.5	1.6	1.9	2.1	1.2	1.4 J+	1.4	0.28 J	0.34 J	0.31 J	0.43 J	0.36 J	0.32 J	0.34 J	0.31 J
MW-12-16-180M	1.2	1.5	1.8	1.8	1.7	2.0	2.6	2.1	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	0.089 J	0.11 J	ND (0.25)
MW-12-20-180U	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.066)	ND (0.25)	ND (0.25)	2.7	5.6	0.94	2.0	3.1	0.87	0.81	0.75
MW-12-21-180U	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.066)	ND (0.25)	ND (0.25)	0.28 J	0.38 J	0.35 J	0.23 J	0.41 J	0.38 J	0.38 J	0.36 J
MW-12-24-180U	0.13 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.066)	ND (0.25)	ND (0.25)	1.8	3.1	0.60	0.94	0.33 J	0.36 J	0.68	0.29 J
MW-12-28-180U	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.066)	ND (0.25)	ND (0.25)	0.33 J	0.31 J	0.52	0.42 J	0.39 J	0.36 J	0.29 J	0.32 J
MW-12-32-180U	0.42 J	0.54	0.84	0.57	0.64	0.70	0.55	0.62	0.41 J	0.54	0.71	0.48 J	0.64	0.73	0.50	0.52



Notes:

- ¹ The reported value is the sum of both cis- and trans-isomers.
- ² Discharge limits are the ACLs for injection over the plume.
- ³ Extraction wells not listed have met the QAPP decision rules to no longer operate.
- ⁴ Concentration in **bold** and shaded exceeds the Aquifer Cleanup Level (ACL). Concentrations in gray text are ND.
- J: Estimated results below the limit of quantitation (LOQ)
- ND: The analyte was not detected at or above the limit of detection (LOD)
- COC: chemical of concern
- µg/L: micrograms per liter
- * Preliminary data





EXPLANATION

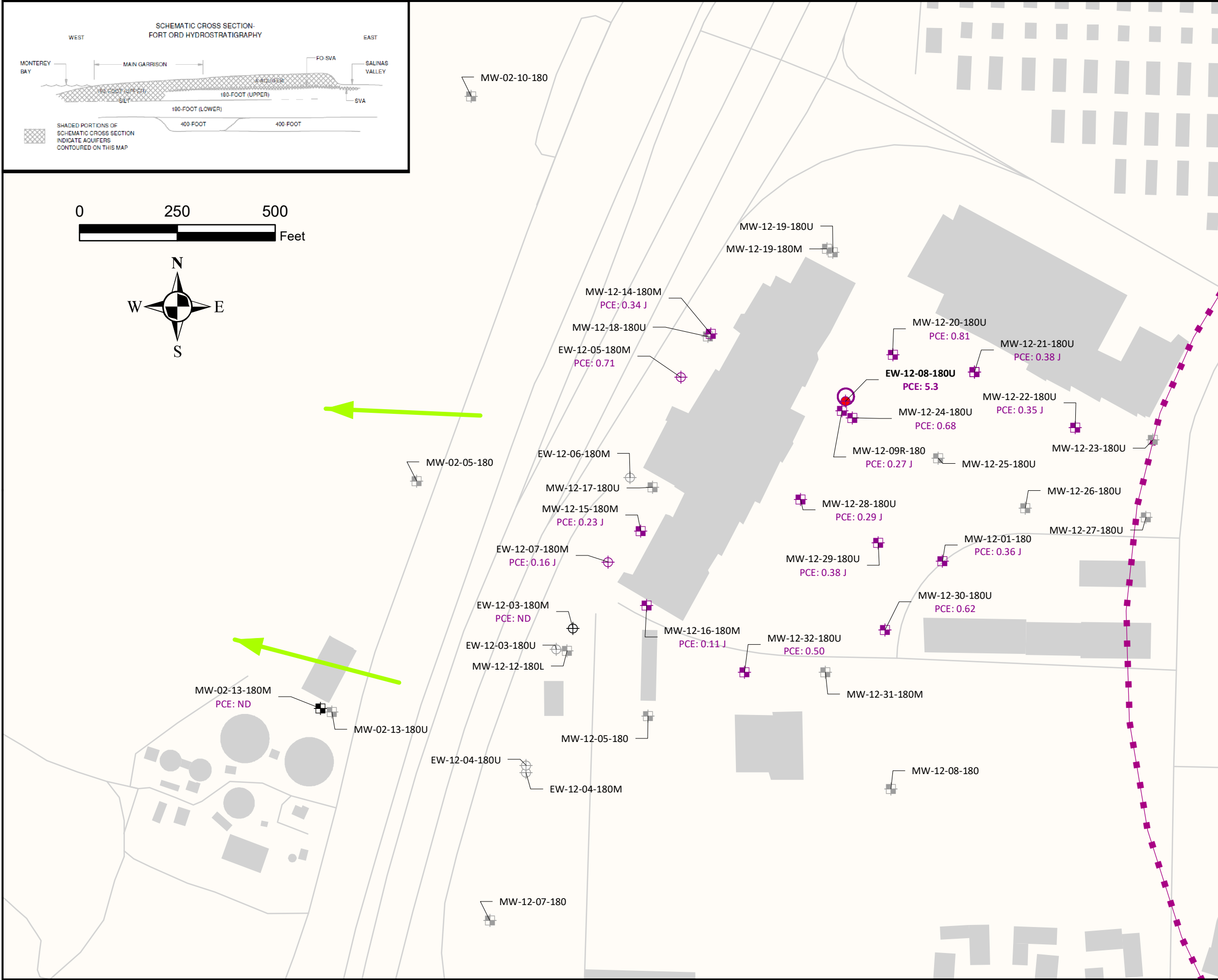
- Approximate location of the Upper 180-Foot Aquifer Groundwater Divide
 - General groundwater flow direction
 - Roads
 - Facilities
- Well type and PCE detection**
- Monitoring well with PCE less than ACL
 - Monitoring well with no PCE detection
 - Extraction well with PCE greater than ACL
 - Extraction well with PCE less than ACL
 - Extraction well with no PCE detection
 - Monitoring well not sampled
 - Extraction well not sampled

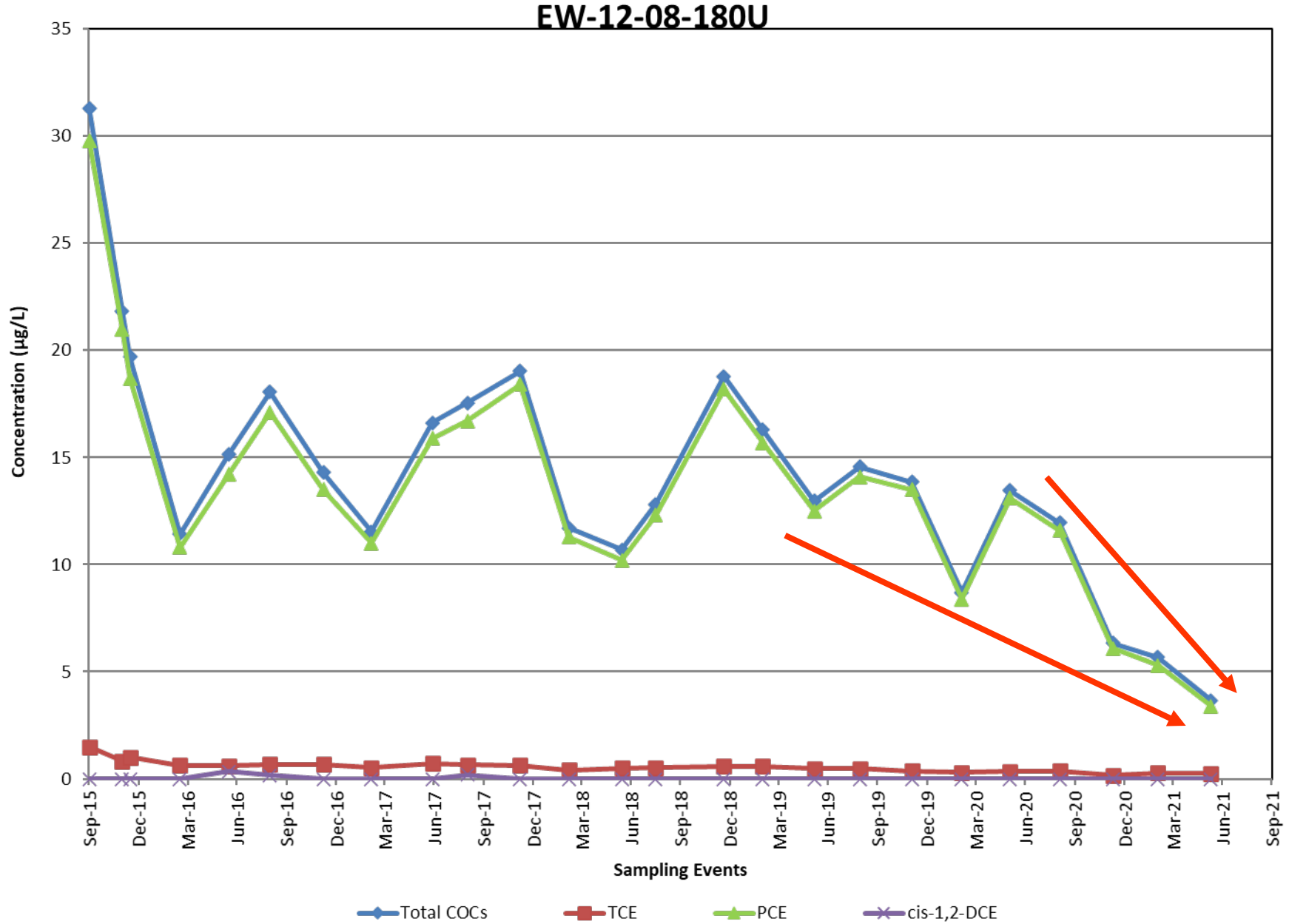
- Chemicals of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L**
- 5 Tetrachloroethene (PCE)
- Well ID - Bold when ACL Exceeded TCE and/or PCE concentration (µg/L) with validation/lab qualifier.

NOTES:

- (1) Samples were collected between March 1, 2021 and March 5, 2020.
- (2) Contour is based on one interpretation of the data that was available at the time this report was prepared; other interpretations may be possible.
- (3) Contours based on highest value obtained from multiple bags where applicable.
- (4) Other COC ACL Exceedances detected beyond the extent of the PCE Plume are illustrated when present.

GROUNDWATER PCE CONCENTRATIONS UPPER 180-FOOT AQUIFER, FIRST QUARTER 2021
 Sites 2 and 12, First Quarter 2021
 Groundwater and Soil Gas Monitoring and Treatment System Report, Former Fort Ord, California





EW-12-05-180M

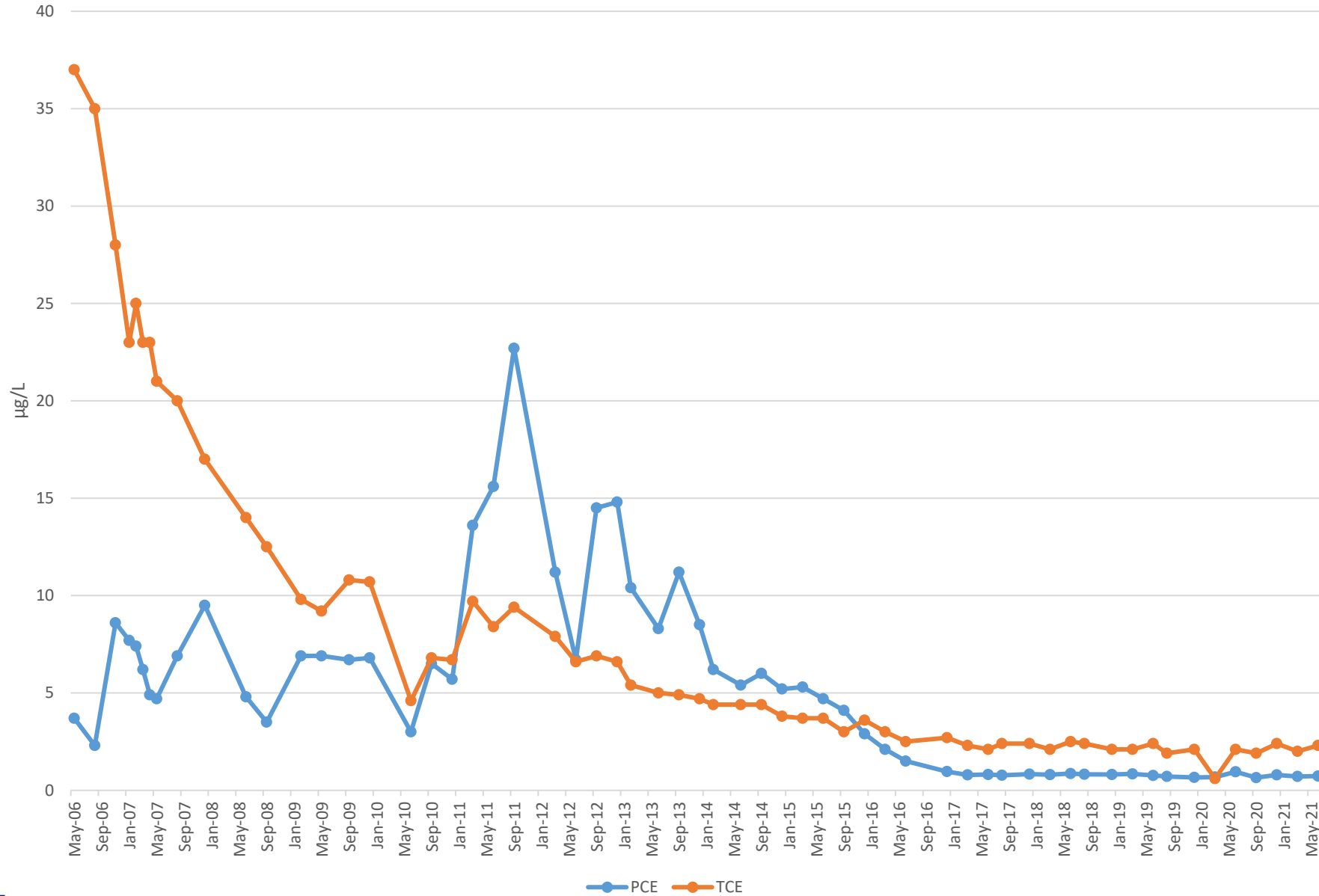


Table 3. Sites 2/12 Soil Gas Monitoring Results

Soil Gas Probe ID	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	Schedule
	PCE						TCE						
SG-12-01-30	230	ND	450	370	270	NS	ND	ND	ND	ND	ND	NS	RB
SG-12-01-58	230	ND	410	ND	NS	NS	ND	ND	ND	ND	NS	NS	RB
SG-12-01-65	210	ND	330	270	220	280	ND	ND	ND	ND	ND	ND	Q ²
SG-12-02-10	790	970	1,200	1,200	540	770	ND	ND	ND	ND	ND	ND	Q ¹
SG-12-02-20	NS	NS	940	NS	NS	NS	NS	NS	ND	NS	NS	NS	A
SG-12-02-30	NS	NS	760	NS	NS	NS	NS	NS	ND	NS	NS	NS	A
SG-12-02-40	NS	NS	830	NS	NS	NS	NS	NS	ND	NS	NS	NS	A
SG-12-02-50	NS	NS	820	NS	NS	NS	NS	NS	ND	NS	NS	NS	A
SG-12-02-57	NS	NS	760	NS	NS	NS	NS	NS	ND	NS	NS	NS	A
SG-12-02-65	NS	NS	600	NS	NS	NS	NS	NS	ND	NS	NS	NS	A
SG-12-04-10	120	ND	100	120	100	150	1,300	ND	360	620	780	1,400	Q ¹
SG-12-04-20	110	ND	100	130	99	150	1,100	52 J	350	510	770	1,300	Q ³
SG-12-04-40	92	ND	83 J	87	89	NS	90	ND	ND	56 J	88	NS	INV
SG-12-04-50	92	52 J	85	110	100	120	630	140	180	230	530	720	INV
SG-12-04-58	110	ND	81 J	120	NS	NS	440	46 J	170	250	NS	NS	RB
SG-12-04-65	97	ND	88	130	100	140	890	150	220	440	560	1,000	Q ²
SG-12-06-10	120	ND	110	180	100	140	ND	ND	ND	ND	ND	ND	Q ¹
SG-12-06-70	160	NS	160	210	180	190	ND	NS	ND	ND	ND	ND	Q ²

Notes:

*Preliminary results

A = Annual

J = estimated result below the limit of quantitation (LOQ)

INV = investigation (adjacent probe above SGCL/SG-SL)

ND = not detected above the limit of detection (LOD)

NS = not sampled

Q = Quarterly

R = Removed

RB = Rebound Study probe

Concentrations in **bold** exceed the SGCL

Concentrations in *italics* exceed the SG-SL

Results reported in micrograms per cubic meter (µg/m³)

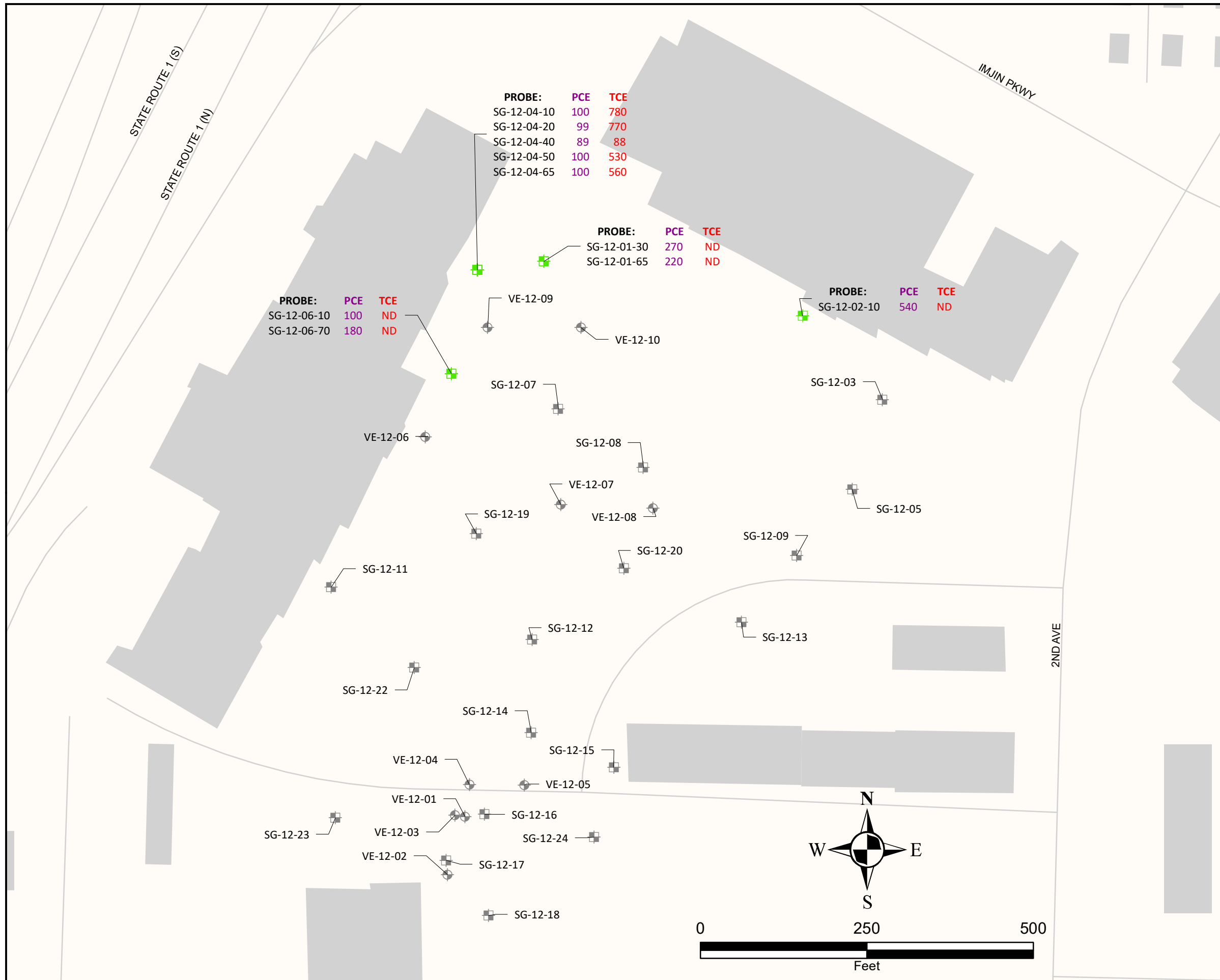
¹ Quarterly probe due to proximity of store front in an area of historic soil gas concentrations above the SGCL.

² Will continue to sample probe quarterly if it is within the vicinity of the current groundwater plume above the ACL (probe adjacent to deepest probe will be sampled in lieu if deepest probe is in saturated zone).

³ Quarterly probe due to concentration above SGCL.

	SGCL (µg/m ³)	SG-SL (µg/m ³)
PCE	1,800	603
TCE	1,000	888





EXPLANATION

- Site 12 Soil Gas Probe: PCE and TCE are below SG-SL
- Site 12 Soil Gas Cluster: Probes are not sampled
- Site 12 Soil Vapor Extraction Well: Extraction well not sampled
- Roads
- Facilities
- Former Fort Ord Boundary

Label Description:

Well ID - Sample Location and Probe Depth
 TCE and PCE concentration (µg/L) with validation/lab qualifier.
 Italics when exceeds the SG-SL
 Bold when exceeds the SG-CL.
 ND Chemical of Concern is non-detect.

NOTES:

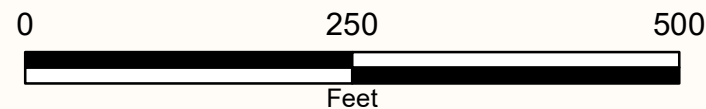
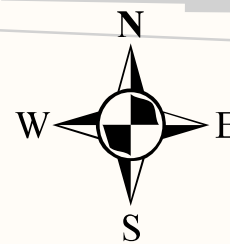
(1) Samples were collected between February 16, 2021 and February 19, 2021.

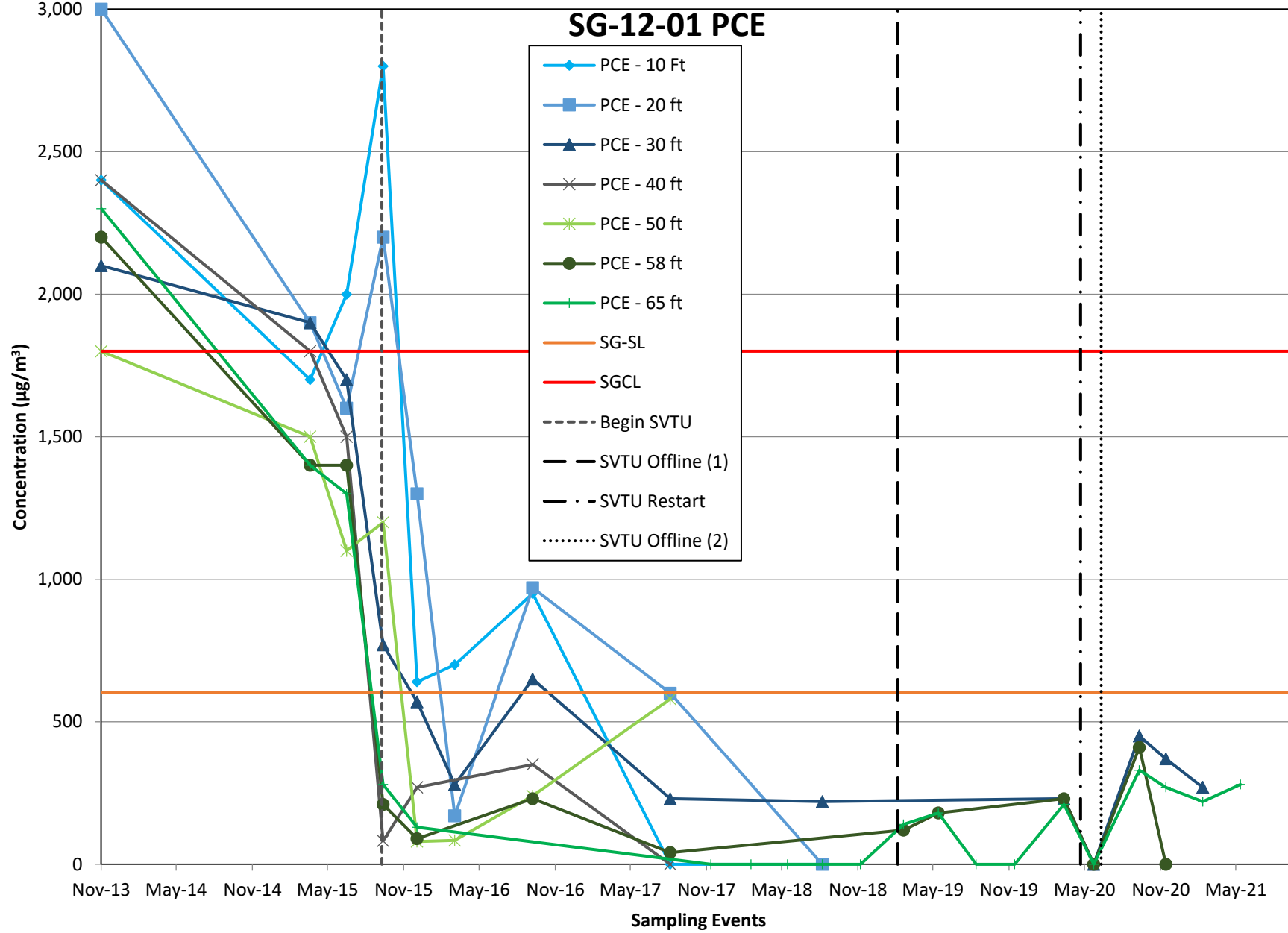
SOIL GAS PCE/TCE CONCENTRATIONS AND SGCL EXCEEDANCES, FIRST QUARTER 2021
 Sites 2 and 12, First Quarter 2021
 Groundwater and Soil Gas Monitoring and Treatment System Report, Former Fort Ord, California

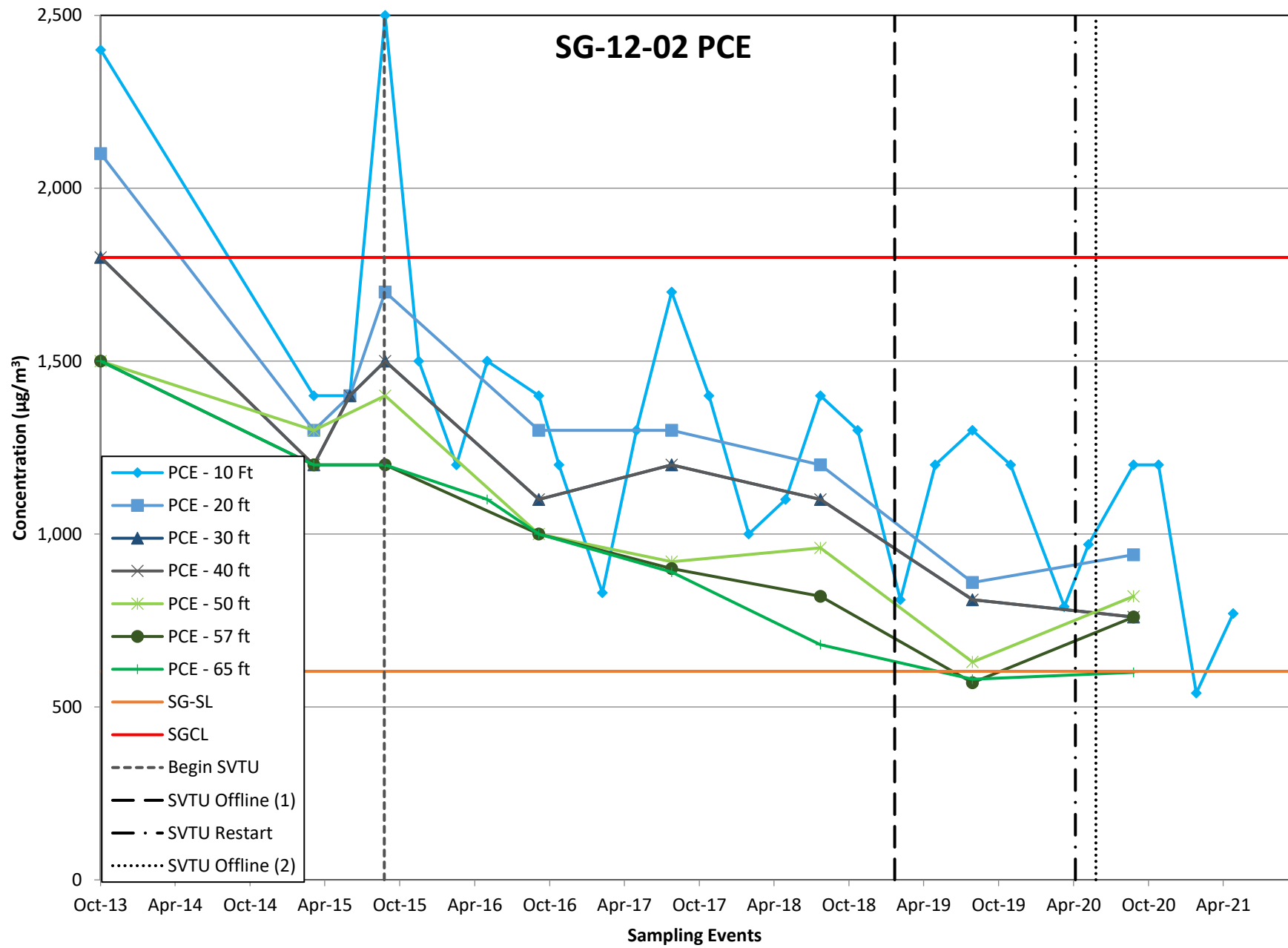


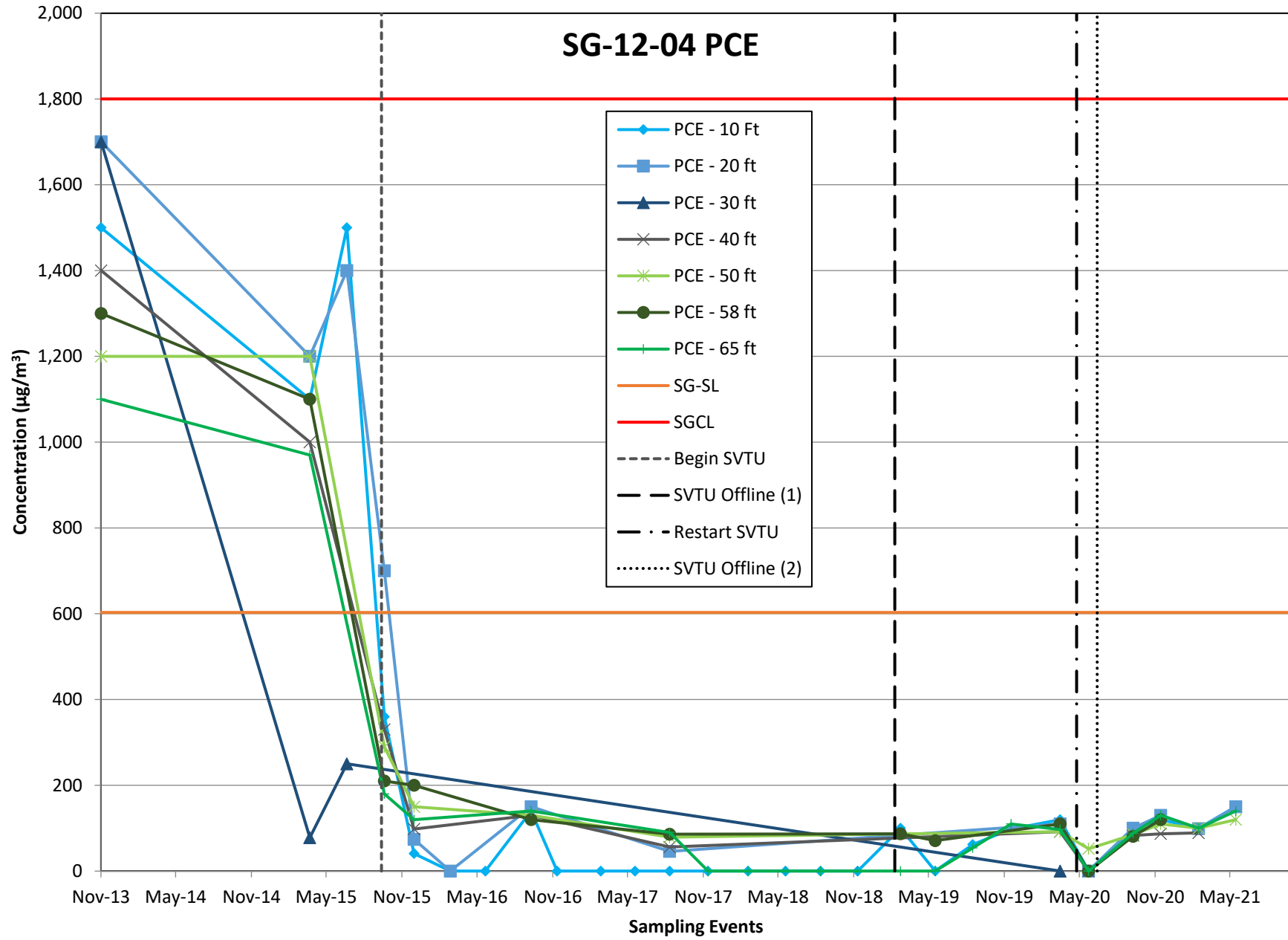
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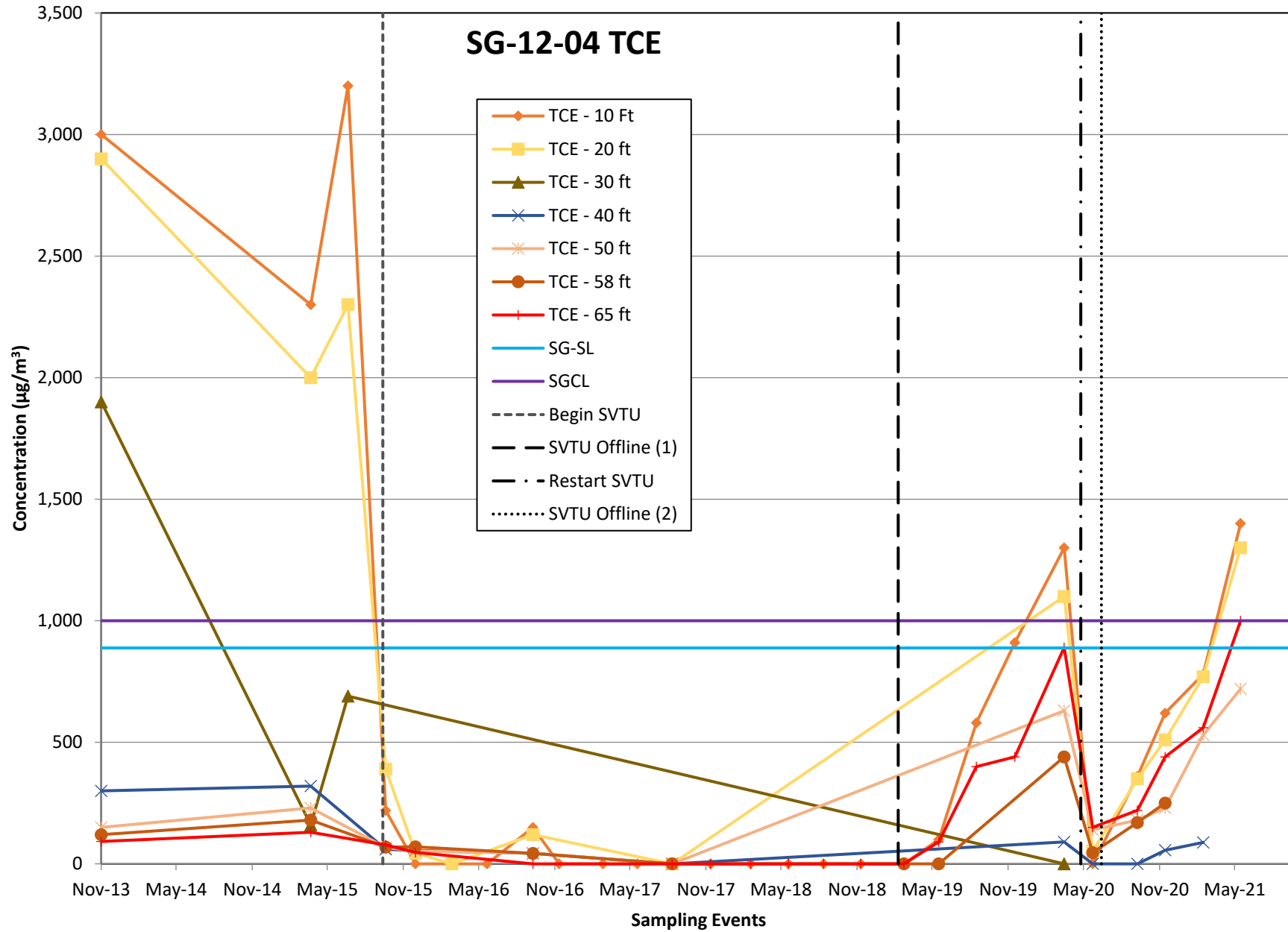
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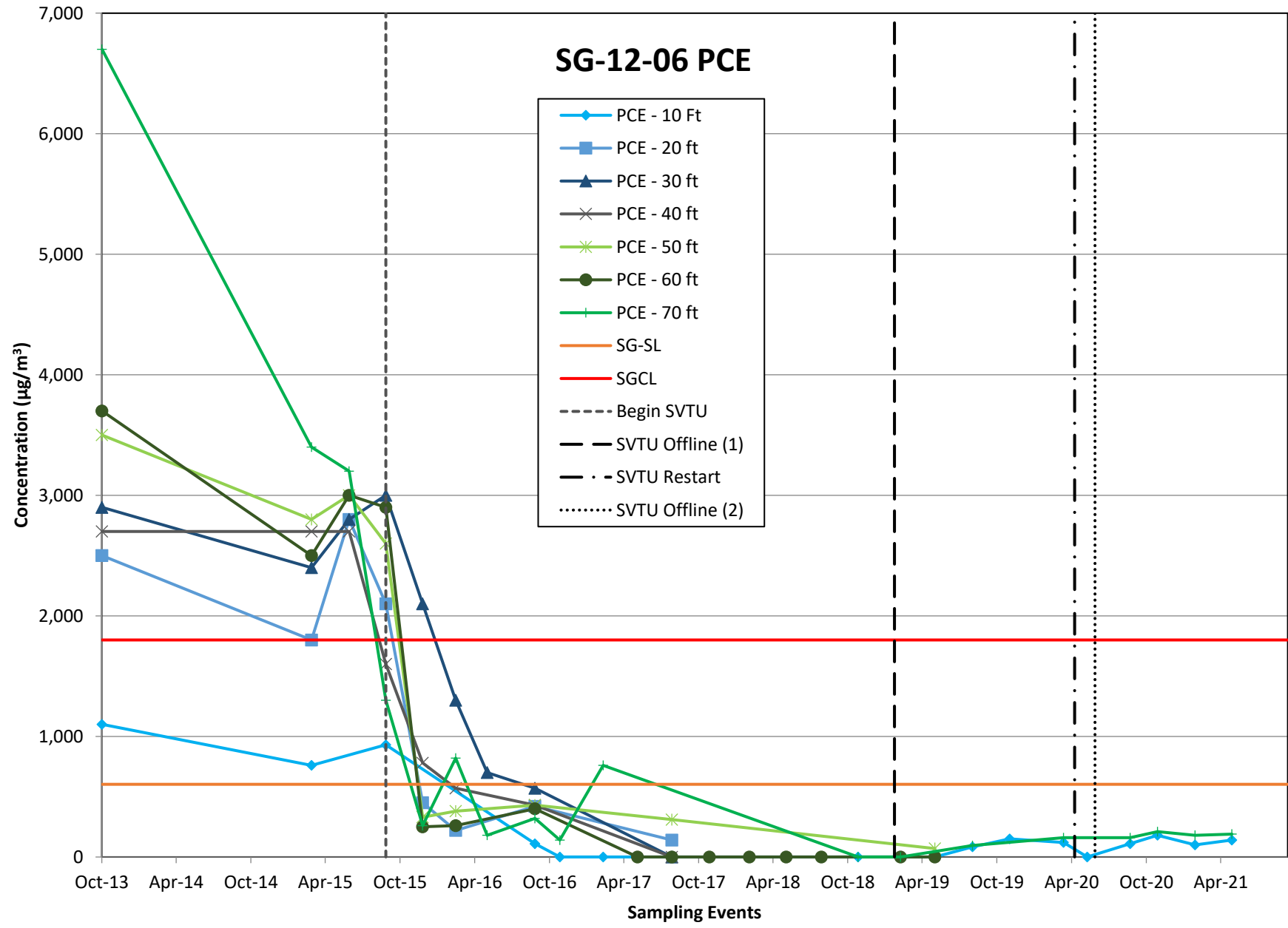






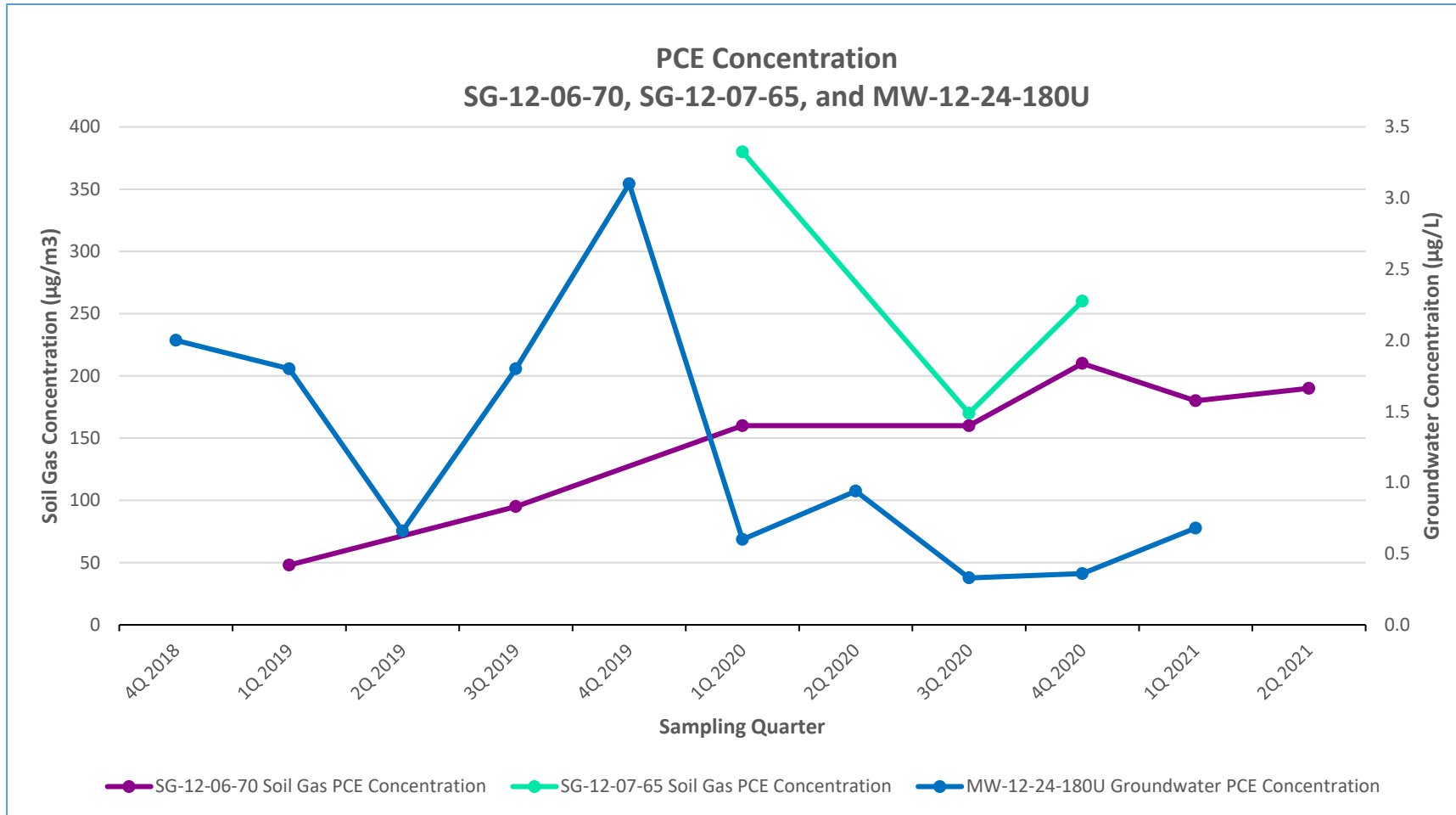


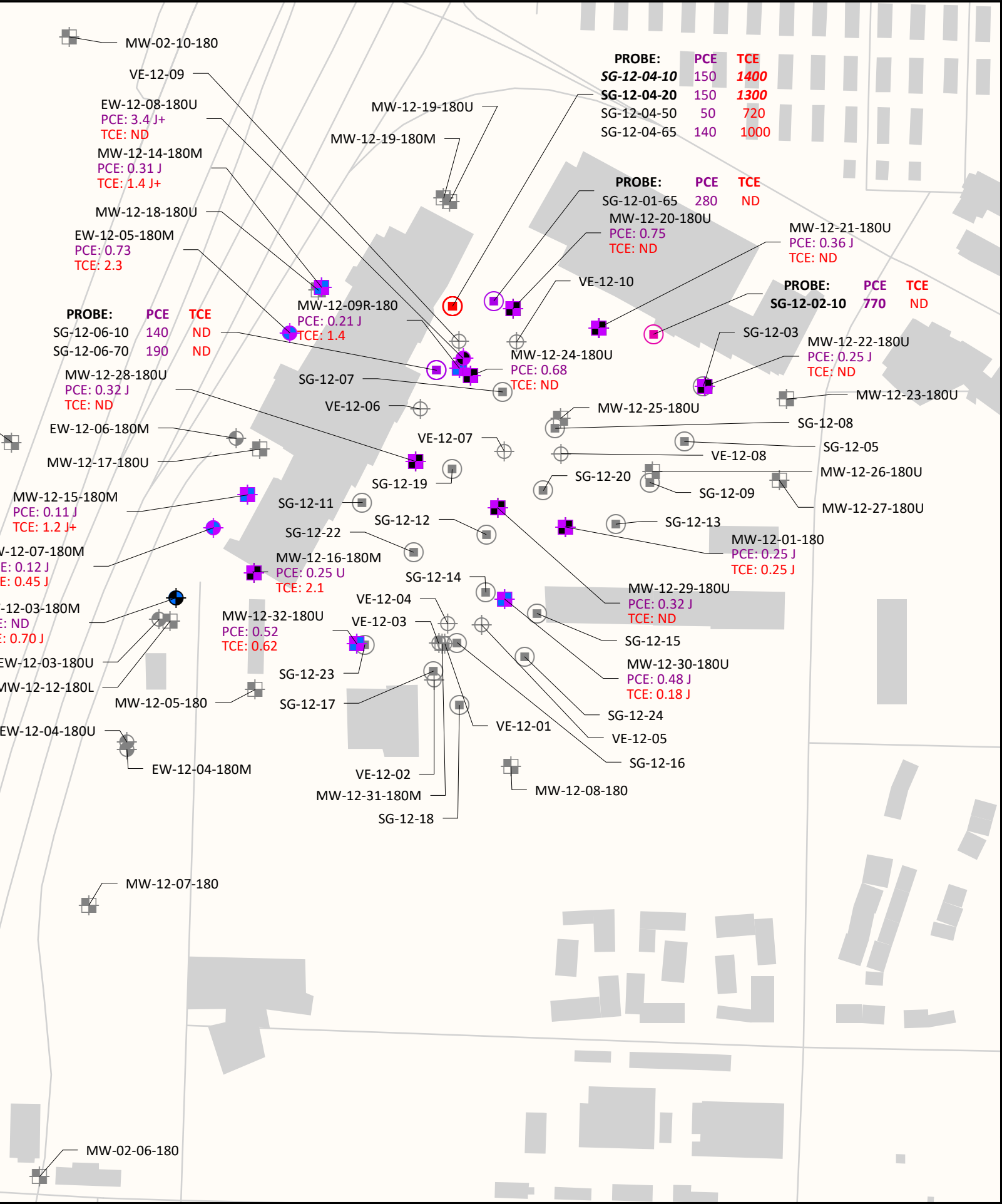
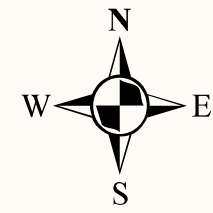
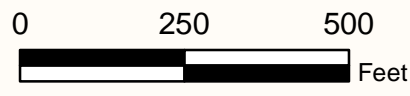
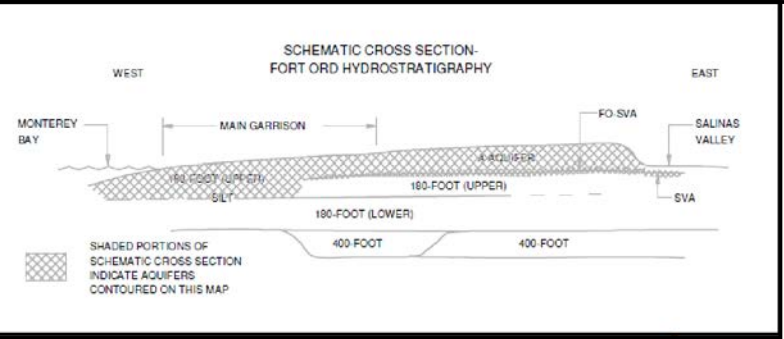




Soil Gas Remedy Status

- SVETS offline since February 2019 except during 2Q 2020 when SVTU and VE-12-09 were operated temporarily.
- Soil Gas Rebound Study Technical Memorandum in progress:
 - Rebound of TCE in soil gas is occurring, primarily at shallow depths in the area of SG-12-04.
 - Evidence of COC partitioning between soil gas and groundwater, but not at concentrations greater than ACLs or SGCLs.
- COC concentrations at EW-12-08-180U continue to decline with SVETS offline.





EXPLANATION

Well Type and PCE/TCE Detection

- Groundwater Extraction Well: PCE is below ACL and TCE is non detect
- Groundwater Extraction Well: PCE is non detect and TCE is below ACL
- Groundwater Extraction Well: PCE and TCE are below ACL
- Groundwater Monitoring Well: PCE is below ACL and TCE is non-detect
- Groundwater Monitoring Well: PCE and TCE are below ACL
- Soil Gas Monitoring Well: PCE is below SG-SL and TCE is above SGCL
- Soil Gas Monitoring Well: PCE is above SG-SL and TCE is non-detect
- Soil Gas Monitoring Well: PCE is below SG-SL and TCE is non-detect
- Groundwater Extraction Well: Not sampled
- Groundwater Monitoring Well: Not sampled
- Soil Gas Extraction Well: Not sampled
- Soil Gas Monitoring Well: Not sampled

No groundwater concentrations in the 2Q2021 sampling event were above the Aquifer Cleanup Level (ACL) Exceedance level (5 µg/L).

Well ID - Bold when ACL or SG-SL is Exceeded; Bold and Italics when SGCL is Exceeded. TCE and/or PCE concentration (µg/L) with validation/lab qualifier.

NOTES:

- (1) Groundwater samples were collected between June 7, 2021 and June 11, 2021.
- (2) Soil Gas samples were collected between May 17, 2021 and May 18, 2021.
- (3) COC Isoline is based on one interpretation of the data that was available at the time this report was prepared; other interpretations may be possible.
- (4) Other COC ACL Exceedances detected beyond the extent of the PCE Plume are illustrated when present.

GROUNDWATER AND SOIL GAS
PCE AND TCE CONCENTRATIONS
UNVALIDATED DATA
Second Quarter 2021
Sites 2 and 12 Rebound Study
Former Fort Ord, California

RI Sites ROD (AR# RI-025):

Remediate the Upper 180-Foot Aquifer to MCLs, and for some constituents more stringent levels, for the detected VOCs.

ESD No. 1 (AR# BW-2794):

Return groundwater to a condition that will allow beneficial uses to occur and remediation of soil gas to reduce concentrations of VOCs to levels that will not result in concentrations of VOCs in groundwater that continue to exceed ACLs and thereby prolong the period of unacceptable human health risk due to contamination in groundwater.

Groundwater QAPP Revision 8 (AR# BW-2785L):

- Groundwater Plume Remediation – An extraction well will be shut off if COCs are less than the ACL for two consecutive quarters, and if operation of the extraction well is no longer necessary for hydraulic containment of the plume – **could be TRUE as of 3Q 2021 GWMP event.**
- Remediation Monitoring Phase – If concentrations of COCs in a well are less than or equal to their respective ACLs four consecutive quarters, the remediation monitoring phase is complete – **TRUE for all wells currently monitored except EW-12-08-180U.**
- Attainment Monitoring Phase – If concentrations of COCs in a well are less than or equal to their respective ACLs, and it can be demonstrated COC concentrations will continue to be less than or equal to ACLs in the future, then the attainment monitoring phase is complete – **to be evaluated.**

Analytic Approaches for Plume Remediation (from Soil Gas QAPP Revision 6, AR# BW-2792N)

Soil Gas Plume Remediation

The analytic approach for determining the operational status of SVE wells with respect to soil gas plume remediation is:

- An SVE well will continue to operate if any COC detected in the SVE well is greater than the SGCL – **no SVE wells in this category.**
- An SVE well will continue to operate if any COC detected in a soil gas probe within the ROI of the SVE well and within 20 feet of the groundwater interface has a concentration greater than the corresponding SGCL – **no SVE wells in this category.**
- An SVE well will continue to operate if its ROI and analytical data from nearby SVE wells and/or soil gas probes indicate operation of the SVE well is necessary for completion of the groundwater restoration remedial action – **no SVE wells in this category.**
- An SVE well will be shut off if COCs detected in the SVE well are less than or equal to the SGCL for two consecutive quarterly monitoring events, and if its ROI and analytical data from nearby SVE wells and/or soil gas probes indicate operation of the SVE well is no longer necessary for completion of the groundwater restoration remedial action – **TRUE for all existing SVE wells.**

Site closure depends on decision criteria for completion of the groundwater restoration remedial action per the Groundwater QAPP; the analytic approach for soil gas plume remediation is subordinate to the analytic approach for groundwater plume remediation.

Analytic Approaches for Plume Remediation

(from Soil Gas QAPP Revision 6, AR# BW-2792N)

Groundwater Plume Remediation

Soil gas remediation is to prevent COCs in soil gas from partitioning into groundwater at concentrations exceeding ACLs; therefore, groundwater data are also used to evaluate operational status of individual SVE wells. An SVE well will be:

- Operated if in an area where any groundwater COC concentration is greater than its ACL – no SVE wells in this category.
- Operated if the SVE well ROI and analytical data from nearby groundwater wells indicate the SVE well may supplement groundwater plume remediation – no SVE wells in this category.
- Shut off if the SVE well ROI and analytical data from nearby groundwater wells indicate the SVE well is no longer necessary for groundwater plume remediation – TRUE for all existing SVE wells.

Exit Strategy for Sites 2/12 Groundwater Remedy

1. SVETS remains offline.
2. Continue operation of GWTS until all COC concentrations in EW-12-08-180U are less than or equal to ACLs for two consecutive quarters – **could be TRUE as of 3Q 2021 GWMP event.**
3. Continue quarterly GWMP and SGMP per the QAPPs until all COC concentrations in EW-12-08-180U are less than or equal to ACLs for four consecutive quarters (i.e., the remediation monitoring phase is complete) – **could be TRUE as of 1Q 2022 GWMP event.**
4. When Step 3 is TRUE, confirm completion of the Attainment Monitoring Phase for groundwater wells still being monitored per the Groundwater QAPP:
 - If all COCs in the well are ND, or a combination of ND and concentrations below ACLs for eight consecutive sampling events, then perform a non-statistical or visual review of the COC data, OR
 - If all COCs in the well are less than or equal to ACLs for eight consecutive sampling events, then perform a statistical analysis (i.e., trend analysis) to demonstrate COCs will remain less than or equal to ACLs in the future (the trend line has a statistically significant zero [steady state] or negative [decreasing] slope, and the 95% UCL value is less than or equal to the ACL).
5. If it is determined the Attainment Monitoring Phase is complete per Step 2, then:
 - a. Discontinue Sites 2/12 GWMP.
 - b. Discontinue Sites 2/12 SGMP.
 - c. Propose Sites 2/12 for closure in a remedial action completion report.

Ahtna