Seeds, Tena (ECY)

From: Seeds, Tena (ECY)
Sent: Tuesday, May 23, 2023 9:13 AM
To: Kristin Anderson
Cc: Kim Hempel; Lynn Grochala; Mike Ciserella; Douglas Ciserella; Pamela Osterhout
Subject: RE: TOC Bulk Terminal Q2 2023 Groundwater Monitoring Summary

Thanks for providing the data summary for Q2. Ecology concurs with adding contingency well 01MW107 to the Q3 monitoring event and decommissioning 01MW105 and 01MW110 per the GMP. You may also decommission wells 01MW17 and 01MW99 as proposed and retaining 01MW100 to fulfill the monitoring objectives for 01MW17.

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Northwest Region Toxics Cleanup Program
Washington State Department of Ecology
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From: Kristin Anderson <Kristin.Anderson@floydsnider.com>
Sent: Friday, May 19, 2023 11:45 AM
To: Seeds, Tena (ECY) <TSEE461@ECY.WA.GOV>
Cc: Kim Hempel <khempel@pioneerees.com>; Lynn Grochala <Lynn.Grochala@floydsnider.com>; Mike Ciserella <mike@cantera-group.com>; Douglas Ciserella <doug@cantera-group.com>; Pamela Osterhout <Pamela.Osterhout@floydsnider.com>
Subject: TOC Bulk Terminal Q2 2023 Groundwater Monitoring Summary

Hi Tena, attached are a summary table of the pre- and post-remediation groundwater IHS results including the latest Q2 results, and potentiometric maps for the shallow and intermediate WBZs. This email summarizes the preliminary findings, which are generally consistent with the Q1 results, and provides an updated well decommissioning schedule for your review and concurrence.

Bulk Terminal

- Samples were collected from Shallow WBZ wells 01MW19R, 01MW35, 01MW84, and 01MW87 and Intermediate WBZ well 01MW51.
- Water level measurements in the Shallow WBZ are consistent with the Q1 observations of steep gradients between ISS monoliths and mounding within the backfill area (01MW66 and 01MW12), but a primary groundwater flow direction in the north-northwest direction.
- Baseline results were collected at Intermediate WBZ well 01MW51 and shallow WBZ well 01MW87. Baseline concentrations of TPH and benzene at both of these locations were less than CULs.
- TPH and benzene concentrations from Q2 are consistent with concentrations observed during Q1, and generally are decreased significantly compared to pre-remediation conditions in the downgradient wells (01MW19R and 01MW84) and were less than CULs at 01MW35.
- Monitoring will be performed per the program with no changes in Q3

ASKO

- Samples were collected from Shallow WBZ wells 01MW46, 01MW53, and 01MW85.
- Water level measurements in the Shallow WBZ continue to be flat downgradient of the CAA-4 ISS monolith with steeper gradients between the CAA-4 and CAA-2 monoliths.
- TCE and vinyl chloride concentrations continue to decrease relative to pre-remediation conditions in the vicinity of the CAA-4 source area (01MW46).
- cVOC concentrations downgradient of the PlumeStop treatment barrier (01MW53 and 01MW85) continue to be roughly the same or greater than pre-remediation concentrations. 01MW53 purged dry prior to sampling again this quarter, which indicates that groundwater flow through the treatment zone is relatively slow.
- We recommend adding contingency well 01MW107, downgradient of 01MW53 and 01MW85, to the Q3 monitoring event.

East Waterfront

- Samples were collected from Shallow WBZ wells 02MW04R, 02MW07, and 02MW19.
- Water level measurements in the Shallow WBZ were consistent with Q1 observations including a primary flow direction to north with a relatively flat gradient towards the shoreline and steeper gradients in the southern portion of the property.
- TPH, benzene and arsenic results at all locations were less than CULs again this quarter.
- Monitoring will be performed per the program with no changes in Q3.

The Q3 sampling event is tentatively scheduled for June 28 and 29 with the hope of getting this round of sampling done before the construction crew mobilizes to Lot F on July 1. We plan to add contingency location 01MW107 to the Q3 sample list given the concentrations of IHS at 01MW53 and 01MW85.

During this event, we are also planning to have drillers decommission the following monitoring wells within planned building footprints ahead of redevelopment on Lot F of the Bulk Terminal property:

- 01MW105
- 01MW110

Additionally, we are requesting Ecology's concurrence with a change to the well decommissioning plan to reflect final construction plans. The on-property upgradient well 01MW17, as well as upgradient off-property well 01MW99, will be within a driveway for the new building. **As a BMP and safety consideration for sampling crews, we propose to decommission both 01MW17 and 01MW99. 01MW100 would be retained to fulfill the monitoring objectives at 01MW17 specified in the GWM plan**. 01MW100 was un-impacted prior to the cleanup action and will provide suitable upgradient groundwater elevation and baseline groundwater quality data.

Please let us know if you agree with our proposed program for Q3, and if you have any questions regarding the data.

Thanks!
Kristin

Kristin Anderson, LHG Senior Geologist (she/her)
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Legend

- Groundwater Contour (feet NAVD 88)
- Shallow WBZ Groundwater Flow Direction

Existing Monitoring Well Locations

- Shallow WBZ Monitoring Well

Well Decomissioning Plan

- Damaged—Decomission Required
- Decommission During Redevelopment

Cleanup Action Components

- Excavated to CULs
- Excavated to RELs
- In Situ Stabilization/Solidification
- PlumeStop Injection
- ORC-A Treatment
- Interceptor Trench
- PRB Wall for Trench
- Gravity Well

Other Site Features

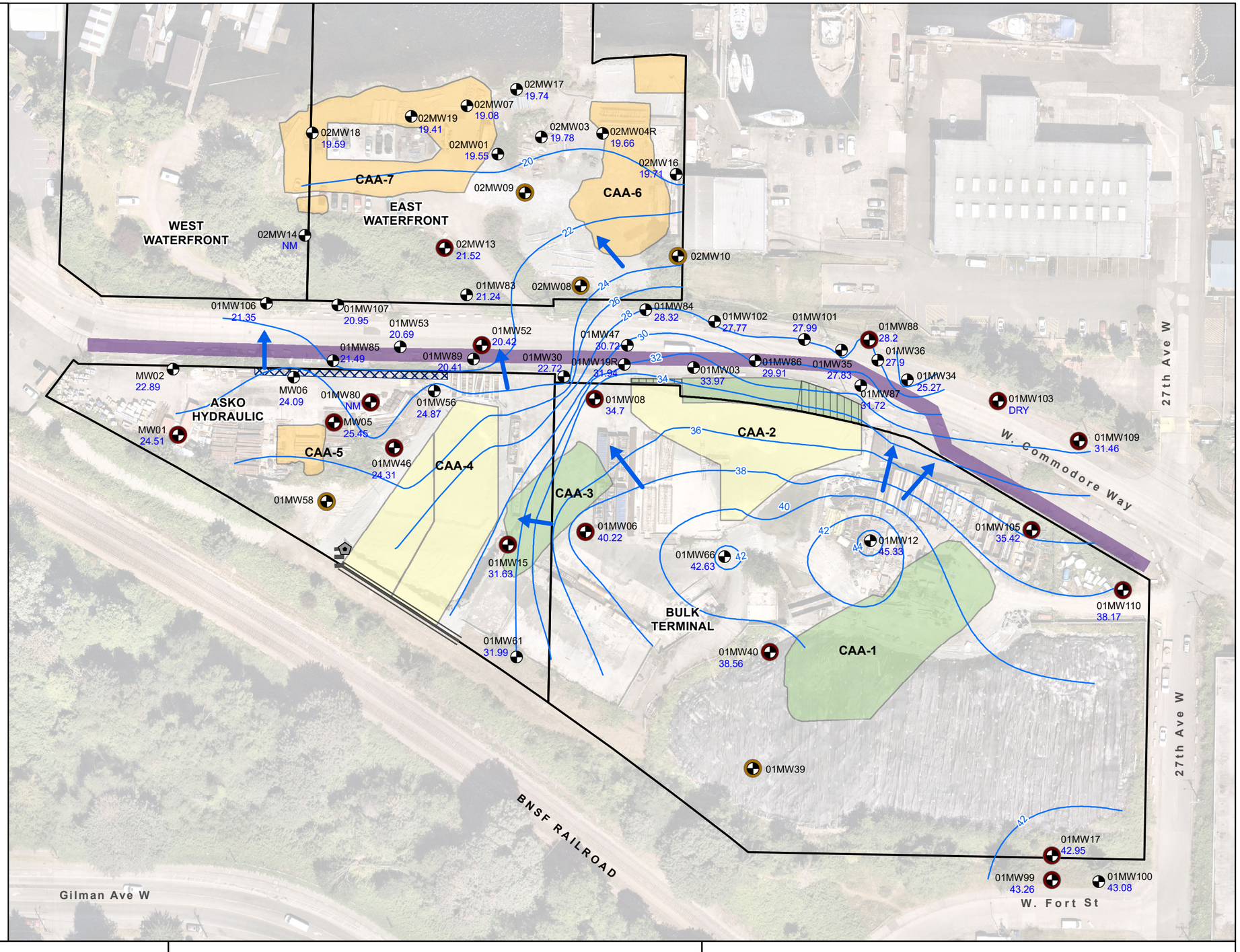
- Property Boundary for the Former TOC Seattle Terminal
- Conditional Point of Compliance

Notes:
- Depth to water measurements not collected at select wells that were inaccessible because they are located within the W. Commodore Way right of way or buried by gravel or vegetation.
- Parcel boundaries obtained from King County Geographic Information Systems Center, 2011. Lot lines are approximate. Not for legal use.
- Orthoimagery obtained from Nearmap, 2018.

Abbreviations:
CUL = Cleanup level
ORC-A = Oxygen Release Compound Advanced
NAVD 88 = North American Vertical Datum of 1988
NM = Not measured
PRB = Permeable reactive barrier
REL = Remediation level
TOC = TOC Holdings Co. and any predecessor entity including Time Oil Company
WBZ = Water-bearing zone

0 45 90 180
Scale in Feet

N



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Groundwater Compliance Monitoring
Time Oil Bulk Terminal
Seattle, Washington

Draft Figure for Discussion
Shallow WBZ Groundwater Elevations—
Q2 2023

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5/9/2023

Preliminary Draft for Discussion Purposes

Legend

- Groundwater Contour (feet NAVD 88)
- Intermediate WBZ Groundwater Flow Direction

Existing Monitoring Well Locations

- Intermediate WBZ Monitoring Well

Well Decomissioning Plan

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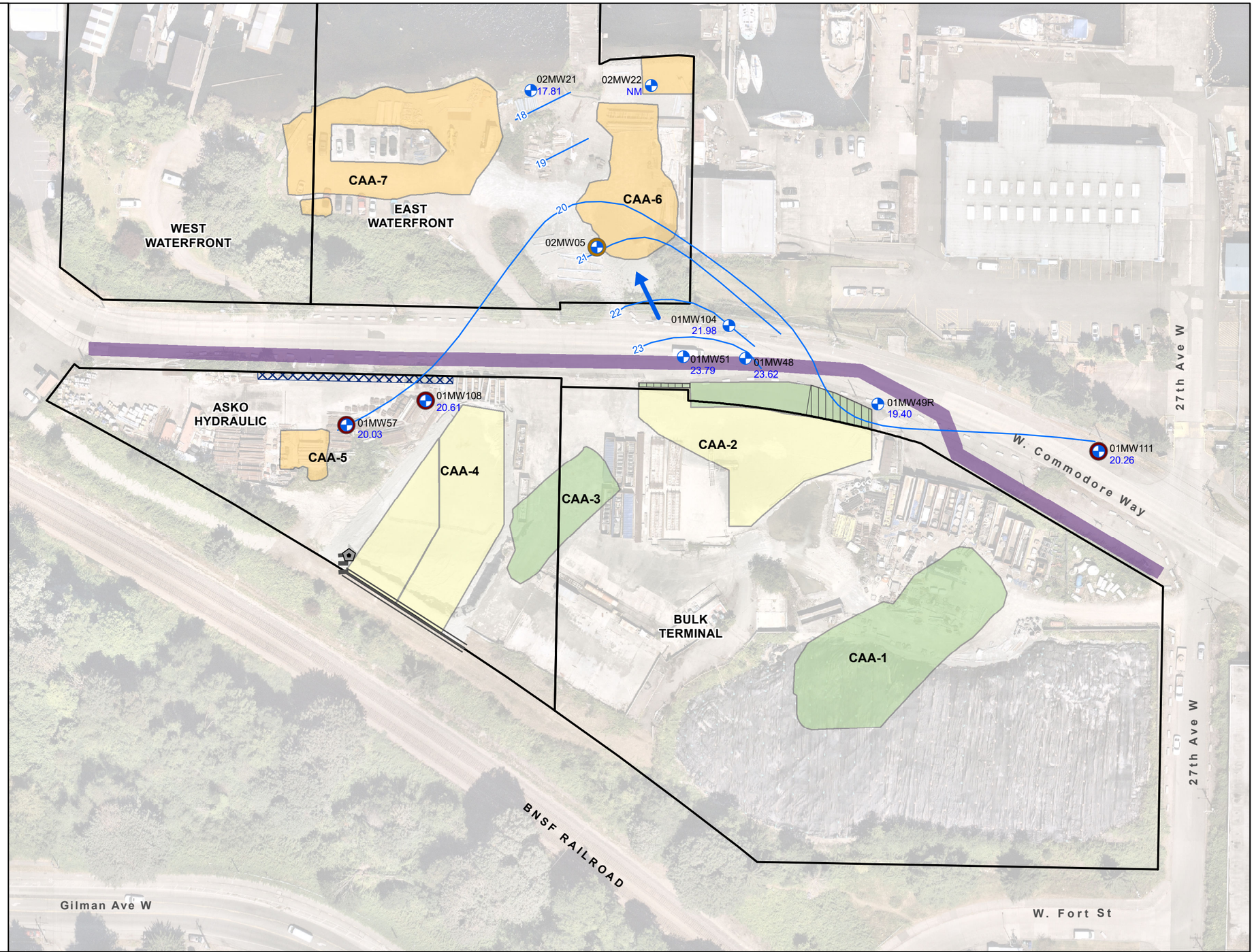

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0 45 90 180
Scale in Feet

N

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Groundwater Compliance Monitoring
Time Oil Bulk Terminal
Seattle, Washington

Draft Figure for Discussion
Intermediate WBZ Groundwater Elevations—
Q2 2023

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5/9/2023

Preliminary Draft for Discussion Purposes

Preliminary Draft

Pre- and Post-Remediation Groundwater Results for Indicator Hazardous Substances

			Analyte Class	Total Metals	TPH		VOCs	cVOCs			SVOCs
			Analyte	Arsenic	GRO	Total DRO + ORO	Benzene	TCE	cis-1,2-DCE	Vinyl Chloride	Penta
			Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
			Cleanup Level	5.0	800	500	0.44	0.50		0.20	0.20
Parcel	Location	Sample Date									
Bulk Terminal	**01MW12**										
	Pre-remediation	4/30/2019			100 U	**590** (1)	**3.0**				
	Post-remediation	1/31/2023			100 U	**1,000** (1)	0.35 U				
	01MW19/01MW19R										
	Pre-remediation	4/30/2019			**10,000**	**1,900** (1)	**2,600**	*1.0 U*	1.0 U	0.20 U	
	Post-remediation	1/31/2023			**990**	**910** (1)	**5.2**				
		4/7/2023			**1,100**	**700** (1)	**4.4**				
	01MW35										
	Pre-remediation	5/1/2019			100 U	**550** (1)	0.35 UJ				
	Post-remediation	1/31/2023			100 U	110 (1)	0.35 U				
		4/7/2023			100 U	120 (1)	0.35 U				
	01MW40										
	Pre-remediation	4/30/2019				**1,100** (1)	0.35 UJ				
	Post-remediation	1/31/2023			100 U	**5,300** (1)	**0.73**				
	01MW49/01MW49R										
	Pre-remediation	5/1/2019			100 U	**850** (1)	0.35 UJ				
	Post-remediation	1/31/2023			100 U	260 (1)	0.35 U				
	01MW51										
	Pre-remediation	5/26/2016			370	**1,760** (1)	*1.0 U*				
	Post-remediation	4/7/2023			100 U	250 U	0.35 U				
	01MW66										
	Pre-remediation	4/30/2019			100 U	250	0.35 UJ				**3.6**
	Post-remediation	1/31/2023									**1.9**
	01MW84										
	Pre-remediation	5/1/2019			**8,400**	**2,800** (1)	*5.0 U*				
	Post-remediation	1/31/2023			**2,300**	**810** (1)	0.35 U				
					2,200	**830** (1)	0.35 U				
		4/7/2023			**5,500**	**1,500** (1)	0.35 U				
	01MW87										
	Pre-remediation	5/26/2019			100 U		*1.0 U*				
		5/1/2019				110					
	Post-remediation	4/7/2023			100 U	250 U	0.35 U				
ASKO	**01MW15**										
	Pre-remediation	5/2/2019			100 U	220 (1)	0.41	0.50 U	1.7	**7.2**	
	Post-remediation	2/1/2023						0.50 U	6.4	**36**	
	01MW46										
	Pre-remediation	5/2/2019				280 (1)	**14**	**880**	220	**11**	
	Post-remediation	2/1/2023					**3.8**	**240**	140	**17**	
		4/7/2023					*3.5 U*	**140**	110	**9.3**	
	01MW53										
	Pre-remediation	5/2/2019				94 (1)	0.35 U	0.50 U	4.4	**0.26**	
	Post-remediation	2/1/2023						**2.9**	5.4	**0.57**	
		4/7/2023						**2.1**	3.2	**0.36**	
	01MW56										
	Pre-remediation	5/2/2019				**1,000** (1)	0.35 U	0.50 U	1.0 U	**0.61**	
	Post-remediation	2/1/2023						**0.81**	1.0 U	**0.99**	
	01MW85										
	Pre-remediation	5/3/2019				450 (1)		0.50 U	2.4	**7.9**	
	Post-remediation	1/31/2023						**5.7**	1,200	**13**	
		4/7/2023						**6.2**	1,200	**17**	
	01MW108										
	Pre-remediation	5/3/2019						0.50 U	1.0 U	**0.33**	
	Post-remediation	2/1/2023						0.50 U	1.0 U	**0.27**	
	MW05										
	Pre-remediation	5/3/2019			140	310 (1)	**1.0**	**240**	120	**27**	
	Post-remediation	2/1/2023					**1.4**	**140**	360	**6.8**	
	MW06										
	Pre-remediation	5/3/2019				370 (1)	**2.6**	**330**	31	**2.8**	
	Post-remediation	2/1/2023					0.35 U	0.50 U	1.0 U	**2.6**	

Preliminary Draft

Pre- and Post-Remediation Groundwater Results for Indicator Hazardous Substances

		Analyte Class	Total Metals	TPH		VOCs	cVOCs			SVOCs
		Analyte	Arsenic	GRO	Total DRO + ORO	Benzene	TCE	cis-1,2-DCE	Vinyl Chloride	Penta
		Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		Cleanup Level	5.0	800	500	0.44	0.50		0.20	0.20
Parcel	Location	Sample Date								
East Waterfront	**02MW04/02MW04R**									
	Pre-remediation	5/18/2016		**3,100**	**2,000** (1)	**19**				
		5/3/2019				**3.7**				
	Post-remediation	2/1/2023		100 U	69 (1)	0.35 U				
		4/7/2023		100 U	250 U	0.35 U				
	02MW07									
	Pre-remediation	5/19/2016		100 U	160 (1)	*1.0 U*				
		5/3/2019			**670** (1)					
		7/25/2019	3.9							
	Post-remediation	2/1/2023	1.0 U	100 U	86 (1)	0.35 U				
		4/7/2023	1.0 U	100 U	250 U	0.35 U				
	02MW19									
	Pre-remediation	5/6/2019		100 U	380 (1)					
		7/25/2019	**14**							
	Post-remediation	2/1/2023	3.3	100 U	150 (1)	0.35 U				
		4/7/2023	4.65	100 U	76 (1)	0.35 U				
			4.83	100 U	84 (1)	0.35 U				

Notes:

Blanks are intentional. Data not collected for specific analyte.

BOLD Detected exceedance of cleanup level.

Italic Reporting limit exceeds cleanup level.

1 Laboratory noted that the sample chromatographic pattern does not resemble the fuel standard used for quantitation for one or more of the detected concentrations in the sum.

Abbreviations:

cVOC Chlorinated volatile organic compound
DCE Dichloroethene
DRO Diesel-range organics
GRO Gasoline-range organics
µg/L Micrograms per liter
ORO Oil-range organics
Penta Pentachlorophenol
SVOC Semivolatile organic compound
TCE Trichloroethene
TPH Total petroleum hydrocarbon
VOC Volatile organic compound

Qualifiers:

U Analyte was not detected at the given reporting limit.
UJ Analyte was not detected at the given reporting limit, which is considered estimated.