KANE ENVIRONMENTAL INC

TECHNICAL MEMORANDUM

DATE: February 27, 2024

TO: Chris DeBoer, Washington State Department of Ecology (email)

CC: Brent Laws, Pacific Topsoils, Inc., and Luke Thies, Weyerhaeuser Company (email)

FROM: Timothy S. Brown, LHG, Kane Environmental, Inc.

RE: **Former Mill E / Koppers Facility**
2023 Annual Performance and Compliance Monitoring Report

Kane Environmental Inc. (Kane Environmental) performed the 2023 annual performance and compliance monitoring for the Former Mill E/Koppers Facility (Site) in Everett, Washington on October 31, and November 1 and 30, 2023 in accordance with the "Performance and Compliance Monitoring Plan" (PCMP; EMCON, 1998) and the "Performance and Compliance Monitoring Plan Addendum" (PCMP Addendum; Floyd|Snider, 2017).

Based on recommendations in the Former Mill E/Koppers Facility "2020 Annual Performance and Compliance Monitoring Report" dated November 11, 2020 (2020 Annual Monitoring Report; Floyd|Snider, 2020), and communications with Pacific Topsoils, Inc., the annual monitoring was performed in October instead of September to increase the likelihood that monitored piezometers will have measurable water. Additional water level measurements were collected on November 4, 2022, and December 28, 2022. Additional Site background information is provided in the "Final Supplemental Remedial Investigation Report" dated February 8, 2016 (GeoEngineers, 2016) and "2003 Annual Groundwater Compliance Monitoring and Five-Year Data Review Report" dated November 10, 2003 (Shaw, 2003). The most recent annual results are presented in 2022 Annual Performance and Compliance Monitoring Report dated January 17, 2023, prepared by Associated Earth Sciences, Inc. (AESI, 2023).

The Site is located on the east side of Riverside Road and south of 8th Street in Riverside Business Park within Everett, Washington (Figure 1). Figure 2 presents a Site plan showing locations of piezometers and monitoring wells that were part of this monitoring event.

Monitoring activities performed during the 2023 annual performance and compliance monitoring included annual groundwater quality monitoring of well PZ-3A, annual groundwater level monitoring, and annual asphalt and soil cap inspection monitoring. The sections below present the results for this annual monitoring event.

GROUNDWATER LEVEL MONITORING

Kane Environmental performed annual groundwater monitoring at the Site on October 31, 2023. During the October 2023 monitoring event, water levels were measured in the three Upper Sand

Aquifer piezometers inside the barrier wall (PZ-1A, PZ-2A, and PZ-3A), two piezometers outside the barrier wall screened in the Upper Sand Aquifer (PZ-1B and PZ-2B), and two wells/piezometers located outside the barrier wall and screened in the Lower Sand Aquifer (MW-10D and PZ-2D). Water levels were not measured in two piezometers/wells PZ-3B and LLMW-20D during the October 2023 monitoring event because the newly installed wells MW-01S and MW-01D were mistakenly measured instead by field staff. Water level measurements were collected from PZ-3 piezometer pair (PZ-3A and PZ-3B) and associated Lower Sand Aquifer piezometer (LLMW-20D) in November 2023 to assess the hydraulic head differences for these three piezometers/wells. A Site plan showing the approximate well locations, and the approximate timing of the measurements relative to the 24-hour tidal cycle is presented on Figure 2.

The groundwater levels were collected within 2 hours of the daytime low tide, consistent with Section 2.1 of the PCMP Addendum. A summary of groundwater elevation measurements for October and November 2023 are presented in Table 1. Daytime low tide (6.907 feet elevation) was at 1:35 pm on October 31, 2023, based on the National Oceanic and Atmospheric Administration tide chart for Everett, Washington (Station 9447659). In addition, daytime low tide (8.055 feet elevation) was at 13:06 pm on November 30, 2023, based on the National Oceanic and Atmospheric Administration tide chart for Everett, Washington (Station 9447659). Groundwater level measurements were collected within 15 minutes of the daytime low tide.

The piezometers/wells were opened to provide for water levels to equilibrate with atmospheric pressure before obtaining depth-to-water measurements. Water levels were measured relative to the top of casing to an accuracy of 0.01 feet using an electronic water level indicator. The electronic water level indicator was cleaned using an Alconox® wash and potable water rinse prior to each groundwater level measurement.

Elevations for the top of well casing for the six Upper Sand Aquifer piezometers and three Lower Sand Aquifer wells were referenced from the 2020 Annual Monitoring Report (Floyd|Snider, 2020). The 2020 Annual Monitoring Report states the monitoring wells and piezometers were surveyed by ASPI, LLC, with a Washington State Licensed Surveyor.

HYDRAULIC HEAD DIFFERENCE COMPARISON

Groundwater elevations were used to calculate vertical and horizontal hydraulic head differences inside and outside the barrier wall as the primary indicator of the barrier wall's performance to control the hydraulic movement of contaminants. As indicated in the PCMP Addendum, the Site's piezometers are referred to as pairs and triplets (PCMP Addendum; Floyd|Snider, 2017). The piezometer pairs consist of one piezometer inside the barrier wall (PZ-#A) and one piezometer outside the barrier wall (PZ-#B), both in the Upper Sand Aquifer, in the same vicinity. The piezometer triplets consist of one piezometer pair and one well or piezometer outside the barrier wall (MW-#D, LLMW-#D or PZ-#D) representative of the Lower Sand Aquifer for that vicinity.

Horizontal head differences were calculated by taking the Upper Sand Aquifer piezometer groundwater elevation from inside the barrier wall and comparing to the Upper Sand Aquifer piezometer groundwater elevation from outside the barrier wall within the same vicinity. Horizontal head differences for 2023 are presented in Table 2. The groundwater elevation of the Upper Sand Aquifer inside the barrier wall was lower than the groundwater elevation outside the barrier wall for the three piezometer pairs. The lower groundwater elevation inside the barrier wall indicates a positive horizontal head difference with groundwater fluxing inward through the barrier wall.

Vertical head differences were calculated by taking the Upper Sand Aquifer groundwater elevations from both inside and outside of the barrier wall and comparing to the Lower Sand Aquifer groundwater elevations for each piezometer triplet. Vertical head differences for 2023 are presented in Table 3. The vertical head difference inside the barrier wall was lower than the vertical head difference outside the barrier wall at the three piezometer pair locations. The lower vertical head inside the barrier wall indicates the barrier wall and asphalt cap are functioning as intended by limiting the downward flux of groundwater inside the barrier wall through the Upper Silt Aquitard.

Groundwater elevation trends for each piezometer pair are presented on Figures 3 through 5 and show a comparison of historical groundwater elevation data over time obtained for the Site. Review of the data indicates that consistently the groundwater elevations outside of the barrier wall are higher than inside the barrier wall with the exception for piezometer PZ-1A in 2007 and PZ-3B in October and November 2022. The higher water level in piezometer PZ-1A in 2007 was assessed and it was determined to be a result of surface water collecting in the well monument. After this observation, the top of the well monument was raised to prevent surface water from seeping into the monument (AESI; Technical Memorandum dated December 17, 2009). The slightly lower than expected groundwater elevations in piezometer PZ-3B in October and November 2022 may be the result from the atypical dry summer months in 2022 (AESI, 2022).

The groundwater elevation data for the piezometers suggests the barrier wall is performing as intended and isolating groundwater inside the barrier from that outside the barrier.

GROUNDWATER QUALITY MONITORING

The annual groundwater quality monitoring event was performed by Kane Environmental on October 31, 2023. A groundwater sample was collected from piezometer well PZ-3A located inside the barrier wall for chemical analysis. The sampling was performed in general accordance with Environmental Protection Agency (EPA) low-flow sampling protocols. Following stabilization, the groundwater sample was collected from the pump outlet tubing and placed directly into laboratory-prepared glass sample containers and labeled with a unique sample identification. Sample containers were placed in a chilled cooler immediately following sampling, and subsequently transported to the analytical laboratory under standard chain of custody

protocols. The groundwater sample was analyzed for gasoline-range petroleum hydrocarbons (GRPH) using the Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx, diesel- and heavy oil-range petroleum hydrocarbons (DRPH and ORPH) using the NWTPH Method NWTPH-Dx, arsenic using EPA Method 200.8, and pentachlorophenol (PCP) using EPA Method 8270E SIM.

Groundwater analytical results are presented in Table 4 and a copy of the analytical laboratory report and chain of custody is included as Appendix A. The results are compared to the Washington State Model Toxics Control Act (MTCA) Method A and Method C cleanup levels that were established for the Site during the 1998 Consent Decree (Washington State Department of Ecology [Ecology], 1998). Concentrations of total petroleum hydrocarbons (TPH) including GRPH, DRPH, and ORPH were below the established MTCA cleanup level criteria of 10,000 micrograms per Liter (µg/L). PCP was not detected at a concentration exceeding the laboratory reporting limit. Total arsenic was detected at a concentration of 708 µg/L, which exceeds the established MTCA cleanup level criteria of 5 µg/L. Groundwater quality concentration trend (time-concentration) graphs over the past several years for TPH, PCP, and arsenic are presented on Figures 6 through 8, respectively.

QUALITY ASSURANCE/QUALITY CONTROL

Laboratory quality assurance/quality control (QA/QC) analyses were performed as part of the laboratory sample analysis for the 2023 groundwater quality monitoring event. Laboratory results were evaluated by Friedman & Bruya, Inc. against analysis of the method blank, matrix spike, matrix spike duplicates, laboratory duplicates, and calibrations as required by the specific analytical methods. The Lab Control Spike percent recovery for both the neutral blank and the samples analyzed are within the QC limits. All other QA/QC results were acceptable for their intended use. The laboratory analytical report is included as Appendix B.

After the data were received from the laboratory, data validation QC procedures were followed to provide an accurate evaluation of the data quality and usability. The analytical holding times were Kane Environmental met, and the method blanks had no detections. The laboratory analytical report indicates that all quality control requirements were acceptable. Detections of DRPH and ORPH were flagged by the laboratory for the sample chromatographic pattern does not resemble the fuel standard used for quantitation. No other qualifiers were added to the analytical laboratory report.

ASPHALT CAP AND SOIL COVER

The asphalt cap and soil cover inspection monitoring were performed on November 1, 2023, by Kane Environmental personnel. Amazon delivery service is currently using the asphalt cap portion of the Site as a parking lot for delivery vehicles. Chain-linked security fencing is in place around the perimeter of the asphalt cap.

Most of the asphalt cap, about 85 to 95 percent, was visible at the time of the Site visit. A copy of the field report from the Site visit is attached as Appendix B. Where observed, the asphalt cap was observed to be in serviceable condition with no obvious signs of major cracking, fissures, or signs of excessive settlement. Small shallow depressions in the cover were observed in some places. Minor cracking was observed on the south portion of the asphalt cap with minor amounts of vegetation growing through the cracks in the drainage ditches. In addition, minor cracks in the asphalt cap were observed near well PZ-1A. Some cracking was repaired on the northern portion of the asphalt cap. Photographs taken at the time of the Site visit are included in Appendix B.

The areas to the south of the asphalt cap are covered with an approximate 1-foot-thick soil cover with grass and some scattered brush. The soil cap appeared intact and was performing as intended.

PERFORMANCE AND COMPLIANCE MONITORING SCHEDULE

Annual groundwater monitoring and cap inspection will continue in October of 2024 and the results will be reported as part of the annual PCMP summary report to Ecology. Ecology will be notified if monitoring and inspection results indicate significant deviations from recent performance and compliance monitoring results observed over the last 10 years.

LIMITATIONS

Kane Environmental has performed this work in general accordance with generally accepted professional practices using the standard of the industry today, for the nature and conditions of the work completed in the same locality and at the same time as the work was performed, and with the terms and conditions as set forth in our proposal.

Kane Environmental shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared. Facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time the work was performed. This report does not include other services not specifically described in the approved scope of work for this project. Conclusions were made within the operative constraints of the scope of work, budget, and schedule for this project.

Our assessment of the Site may change as new data become available, either from persons familiar with the Site or during additional Site studies, exploration, or sampling. This report is intended for the exclusive use by Pacific Topsoils, Inc, and their designated assignees, for specific application to the referenced Site. It is not meant to represent a legal opinion. No other warranty, express or implied, is made.

REFERENCES

Associated Earth Sciences, Inc., 2009, Technical memorandum: Mill E 2009 ground water monitoring summary: Prepared for Pacific Topsoils, Inc.

Associated Earth Sciences, Inc., 2022, Technical memorandum: Former Mill E / Koppers Facility, 2022 annual performance and compliance monitoring report: Prepared for Washington State Department of Ecology, January 17, 2023.

EMCON, 1998, Performance and compliance monitoring plan, Former Mill E/Koppers Facility, Everett, Washington: Prepared for Weyerhaeuser Company, October 8, 1998.

Floyd|Snider, 2017, Former Mill E/Koppers Facility, Performance and compliance monitoring plan addendum: Prepared for The Weyerhaeuser Company, August 2017.

Floyd|Snider, 2020, Former Mill E/Koppers Site 2020 annual performance and compliance monitoring report: Prepared for Washington State Department of Ecology, November 11, 2020.

GeoEngineers, 2016, Final supplemental remedial investigation report: Everett smelter lowland area, Everett, Washington: Prepared for the Washington State Department of Ecology, February 8, 2016.

Shaw Environmental, Inc., 2003, 2003 annual groundwater compliance monitoring and five-year data review report, Weyerhaeuser Everett Former Mill E/Koppers Site, Everett, Washington: Prepared for the Weyerhaeuser Company, November 10, 2003.

Washington State Department of Ecology, 1998, Consent decree: Weyerhaeuser Mill E/Koppers Site, Everett, Washington, October 8, 1998.

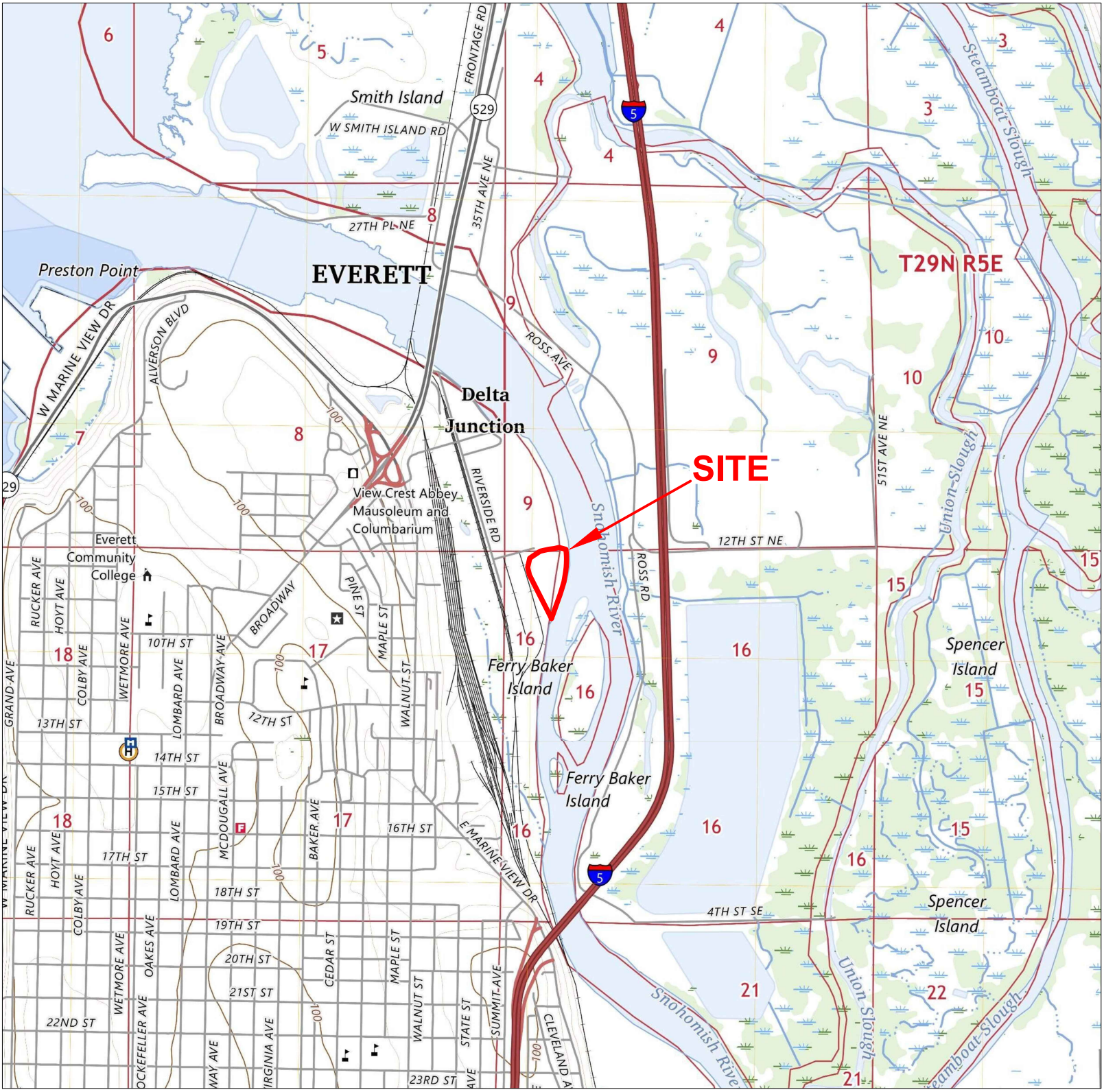
ATTACHMENTS:

Figure 1: Vicinity Map
Figure 2: Site Plan and Groundwater Elevations
Figure 3: Groundwater Elevation Trends, PZ-1A and PZ-1B
Figure 4: Groundwater Elevation Trends, PZ-2A and PZ-2B
Figure 5: Groundwater Elevation Trends, PZ-3A and PZ-3B
Figure 6: Groundwater Quality Trends for PZ-3A, Total Petroleum Hydrocarbon
Figure 7: Groundwater Quality Trends for PZ-3A, Pentachlorophenol
Figure 8: Groundwater Quality Trends for PZ-3A, Total Arsenic
Table 1: Summary of Groundwater Elevations
Table 2: Horizontal Hydraulic Head Difference Comparisons
Table 3: Vertical Hydraulic Head Difference Comparisons

ATTACHMENTS (CONTINUED):

Table 4: Summary of Groundwater Analytical Results
Appendix A: Laboratory Test Certificates and Chain of Custody
Appendix B: Field Report for Cap Inspection Monitoring

FIGURES



LEGEND

Base Maps:
USGS 1:24,000-scale topographic map of the Everett Quadrangle, Snohomish County, Washington
USGS 1:24,000-scale topographic map of the Marysville Quadrangle, Snohomish County, Washington

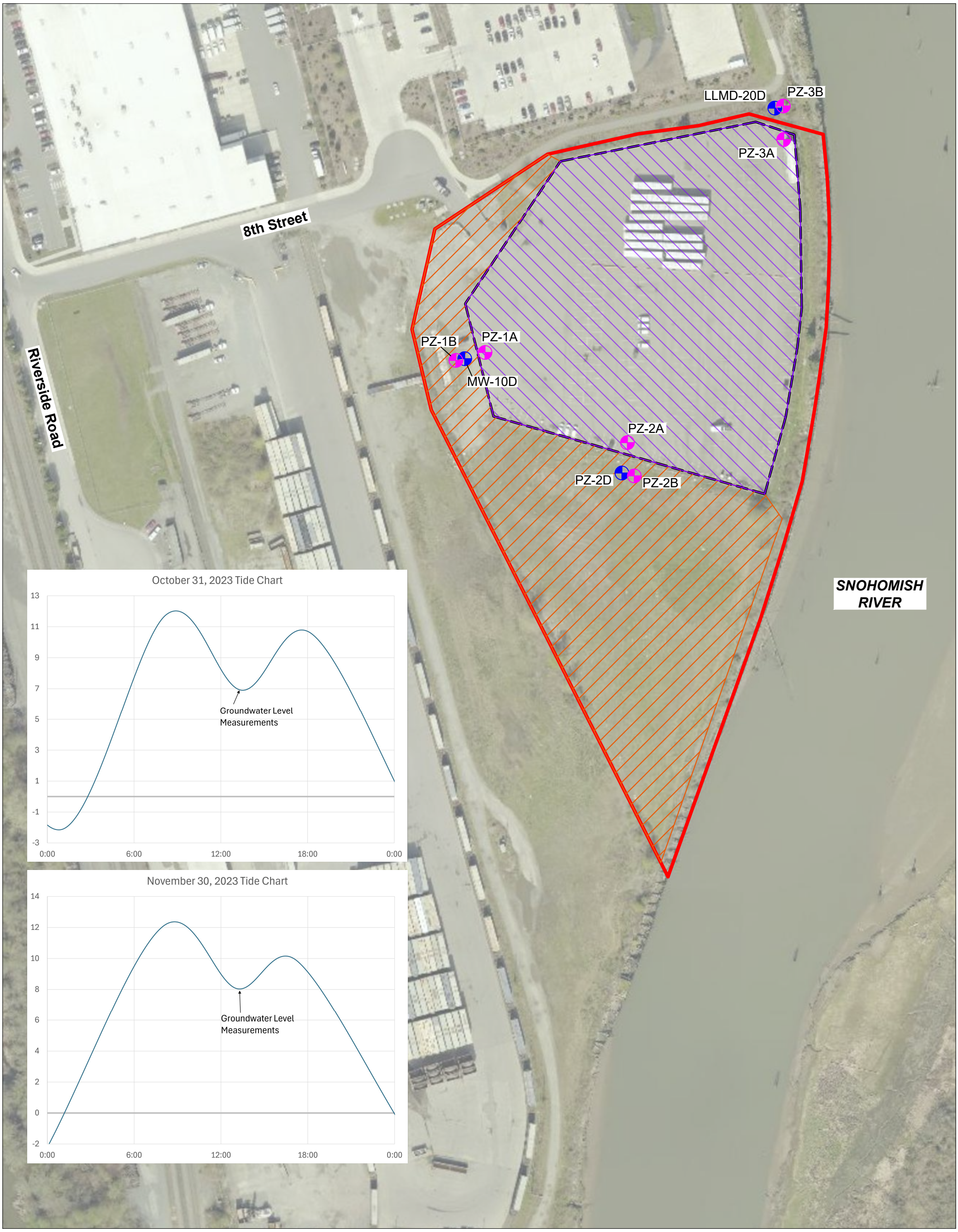
Notes:
Locations and distances shown are approximate. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

KANE ENVIRONMENTAL INC

Project No. 109902-1

Former Mill E / Koppers Facility
Everett, Washington

Figure 1
Vicinity Map



LEGEND

- Site
- Barrier wall
- Asphalt cap area
- Soil cap area
- Upper Sand Aquifer piezometer
- Lower Sand Aquifer piezometer/well

0 120 240
Approximate Scale in Feet

N

Notes:
Locations and distances shown are approximate.
Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Sources/References:
Tide chart data acquired from the National Oceanic and Atmospheric Administration Station ID #9447659, Everett, WA

Aerial Photo Base:
Snohomish County PDS Map Portal, 2022 aerial photograph

KANE ENVIRONMENTAL INC

Project No. 109902-1

Former Mill E / Koppers Facility
Everett, Washington

Figure 2
Site Plan

Figure 3
Groundwater Elevation Trends
PZ-1A and PZ-1B
Former Mill E / Koppers Facility
Everett, Washington

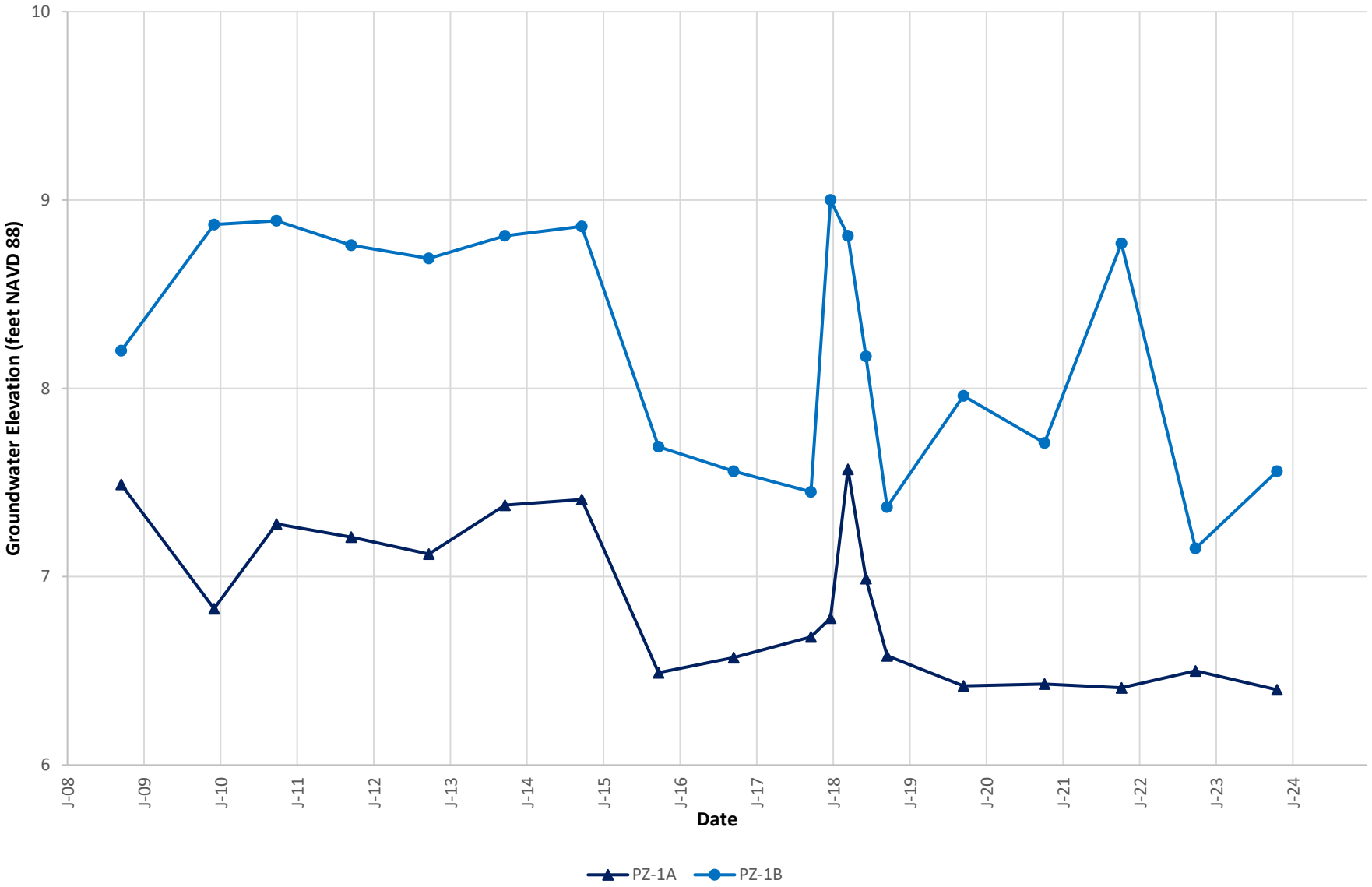


Figure 4
Groundwater Elevation Trends
PZ-2A and PZ-2B
Former Mill E / Koppers Facility
Everett, Washington

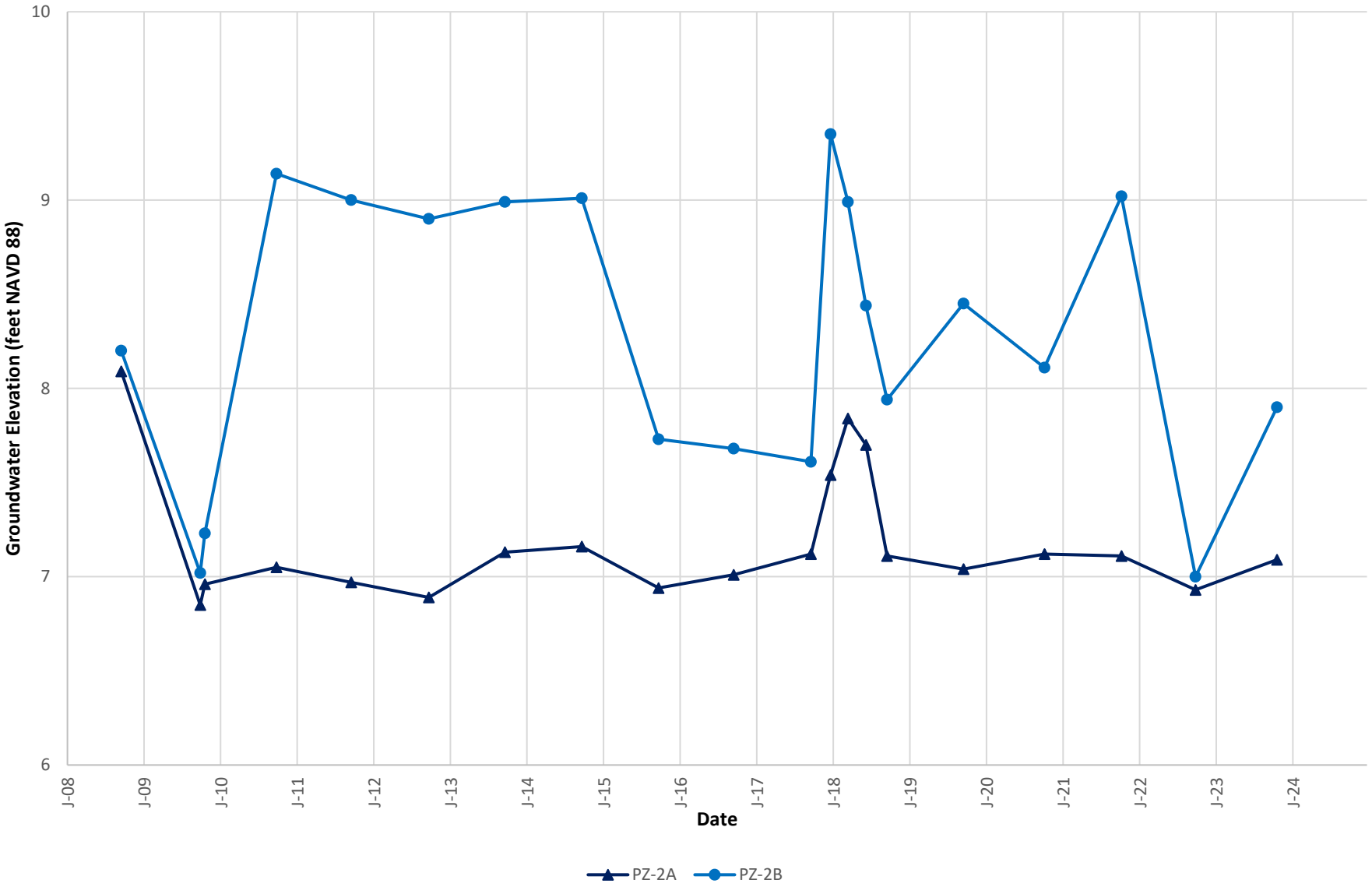


Figure 5
Groundwater Elevation Trends
PZ-3A AND PZ-3B
Former Mill E / Koppers Facility
Everett, Washington

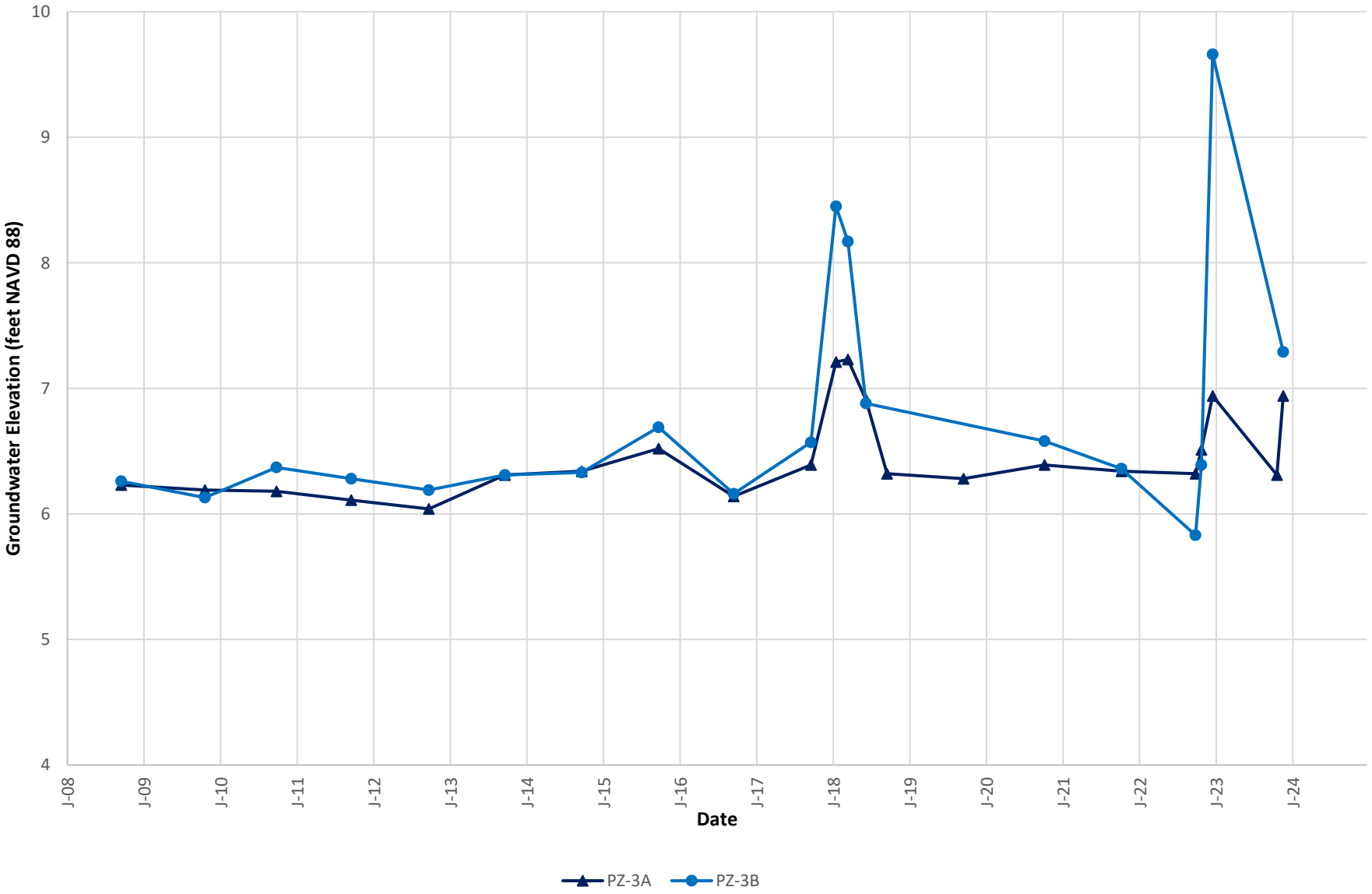


Figure 6
Groundwater Quality Trends for PZ-3A
Total Petroleum Hydrocarbons
Former Mill E/Koppers Facility
Everett, Washington

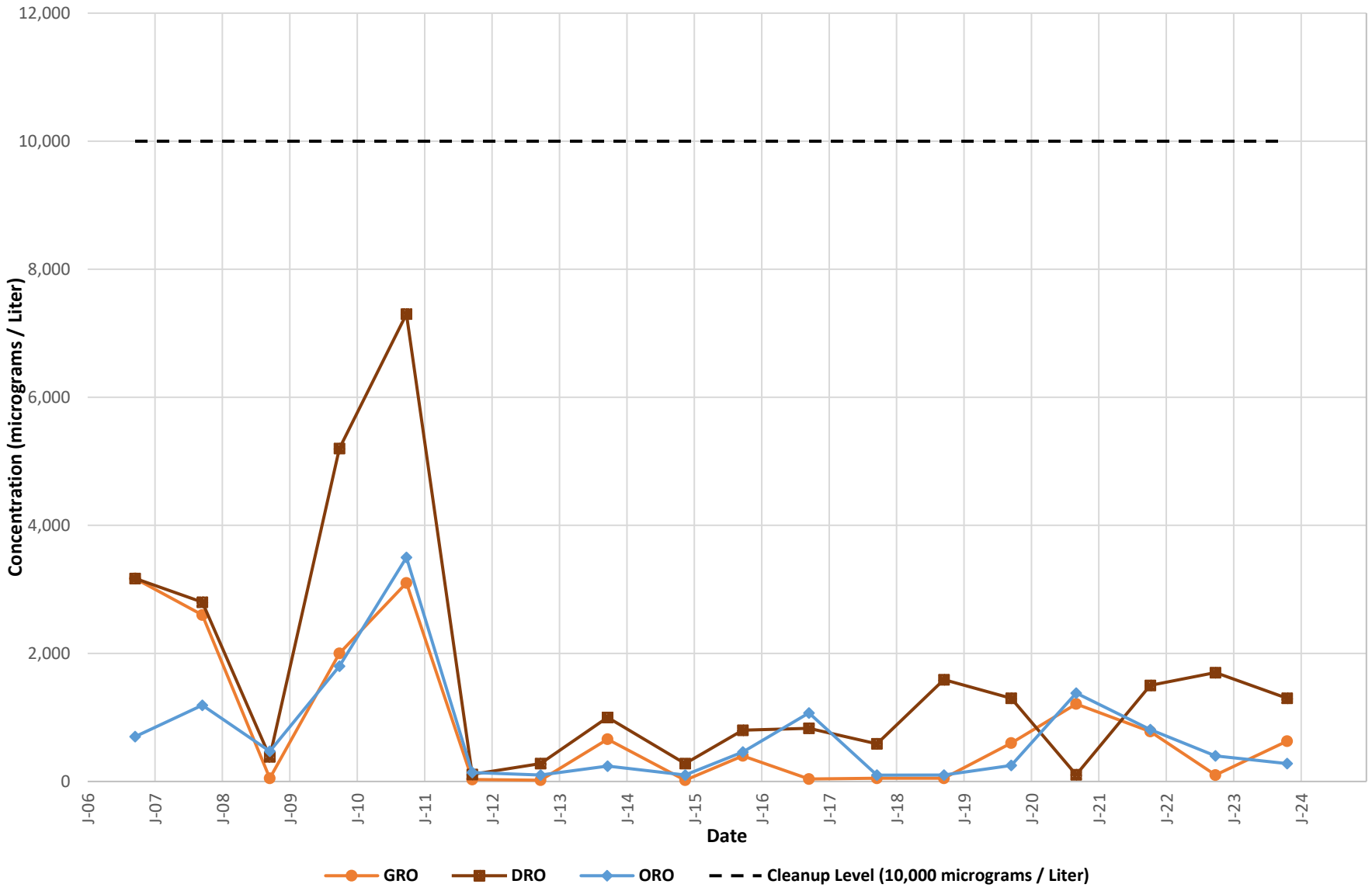


Figure 7
Groundwater Quality Trends for PZ-3A
Pentachlorophenol
Former Mill E/Koppers Facility
Everett, Washington

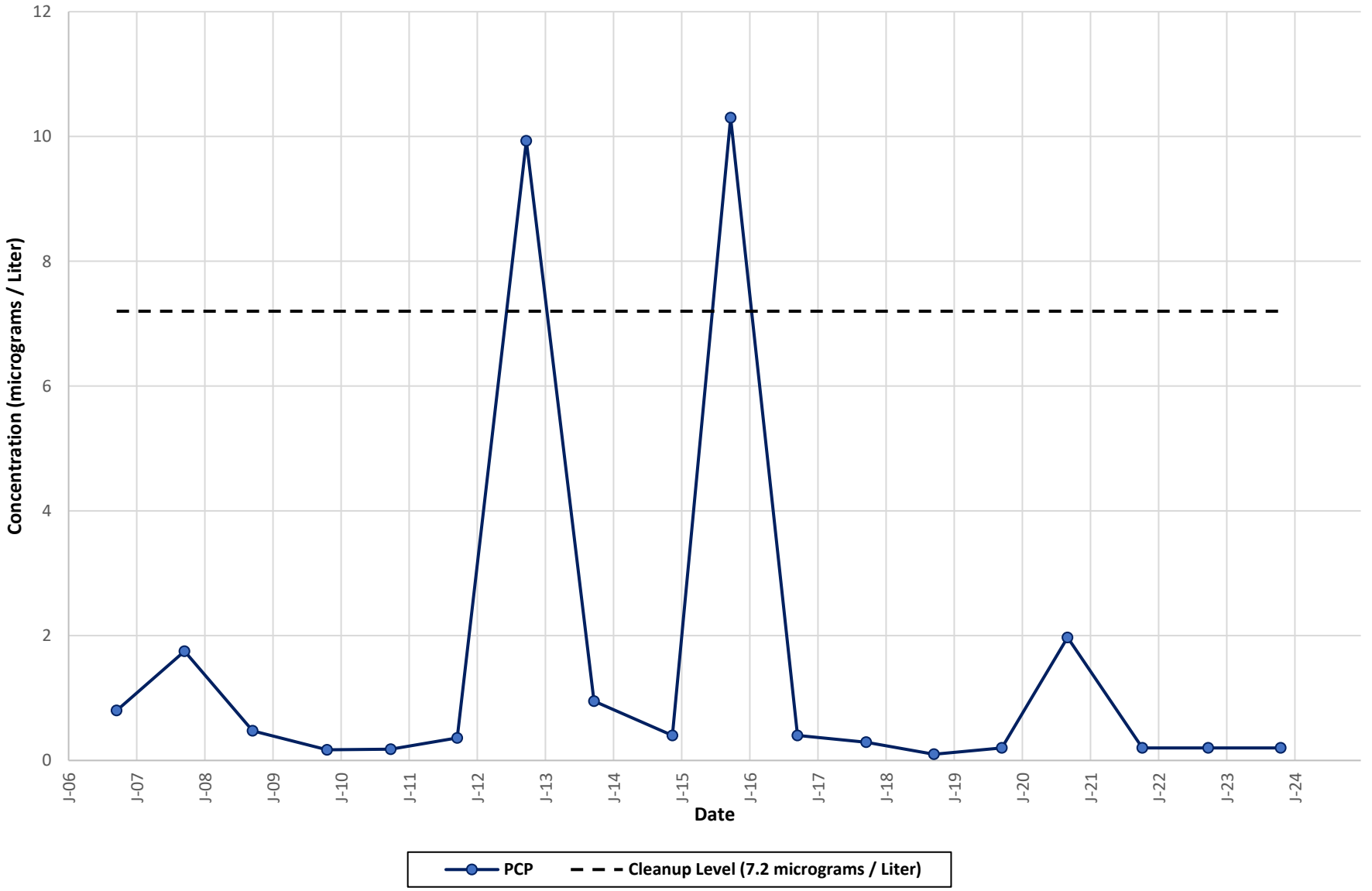
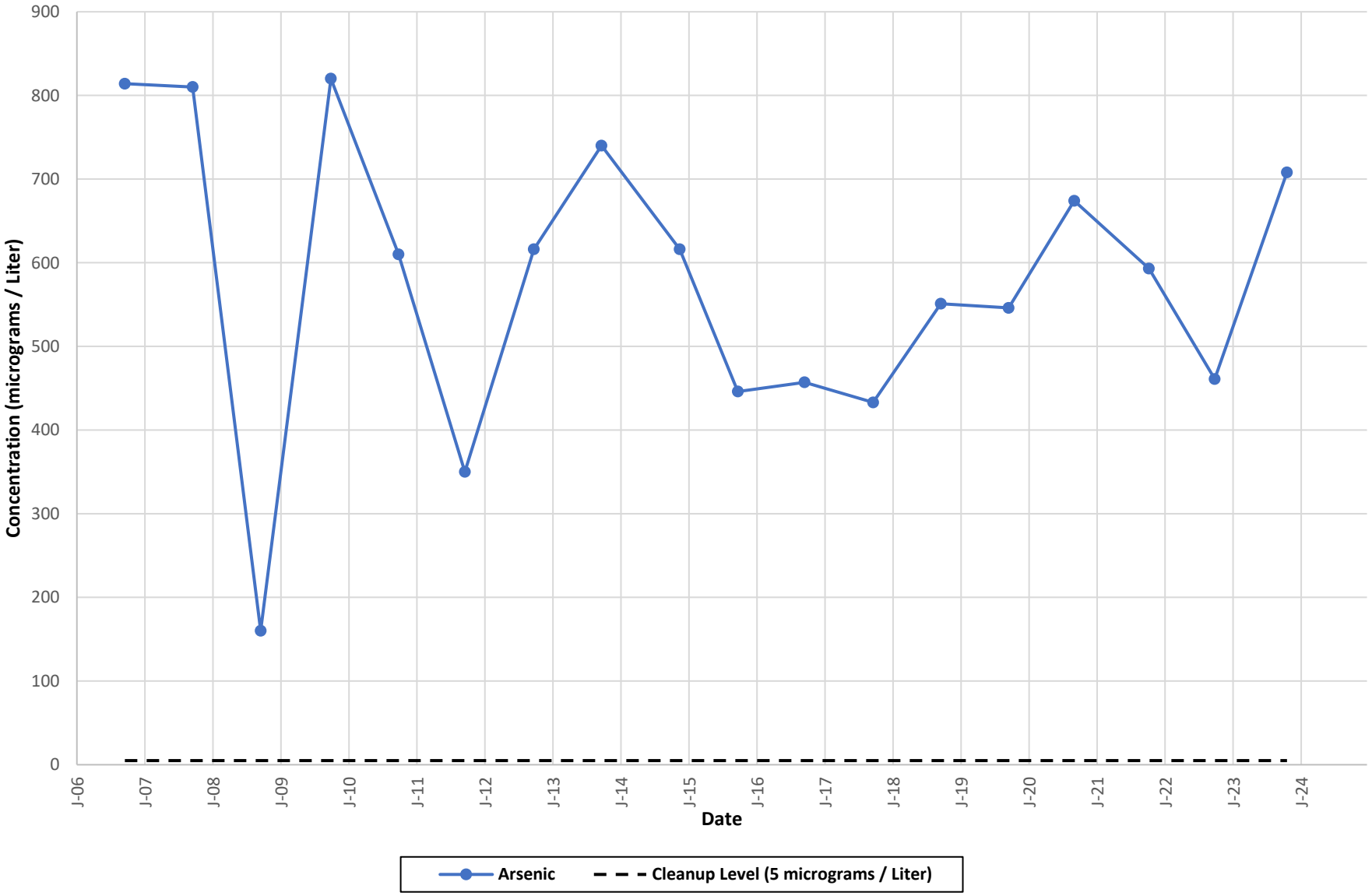


Figure 8
Groundwater Quality Trends for PZ-3A
Arsenic
Former Mill E/Koppers Facility
Everett, Washington



TABLES

Table 1
Summary of Groundwater Elevations
Former Mill E/Koppers Facility
Everett, Washington

Piezometer / Well Location [1]	Date	Time Measured [2]	Top of Casing Elevation (Feet) [3]	Depth to Water (Feet btoc)	Groundwater Elevation (Feet) [3]
PZ-1A	10/31/2023	13:11	13.18	6.78	6.40
PZ-1B	10/31/2023	12:57	13.10	5.54	7.56
MW-10D[4]	10/31/2023	12:55	13.44	7.17	6.27
PZ-2A	10/31/2023	13:18	12.90	5.81	7.09
PZ-2B	10/31/2023	12:59	11.93	4.03	7.90
PZ-2D	10/31/2023	13:03	12.60	6.50	6.10
PZ-3A	10/31/2023	13:42	14.06	7.75	6.31
	11/30/2023	13:46	14.06	7.12	6.94
PZ-3B	10/31/2023	Not Measured[5]			
	11/30/2023	13:35	14.44	7.15	7.29
LLMW-20D	10/31/2023	Not Measured[5]			
	11/30/2023	13:37	14.86	8.02	6.84

NOTES:

(1) "A" wells are located inside the barrier wall in the Upper Sand Aquifer; "B" wells are located outside the barrier wall in the Upper Sand; Aquifer; "D" wells are located outside the barrier wall in the Lower Sand Aquifer.

(2) Time measued is in the 24 hour format.

(3) Top of well casing and groundwater elevations are presented in feet NAVD88. Wells and piezometers were surveyed on 9/10/2020 by ASPI, LLC.

(4) MW-10D replaces LLMW-19D as the Deep Sand Aquifer paired with PZ1-A and PZ-1B.

(5) Not measured. Field staff measured other nearby wells in error on 10/31/2023.

btoc = below top of casing

NAVD 88 = North American Vertical Datum of 1988

Table 2
Horizontal Hydraulic Head Difference Comparisons
Former Mill E/Koppers Facility
Everett, Washington

Piezometer / Well Pair [1]	Date	"B" Piezometer Upper Sand Aquifer Groundwater Elevation (Feet)[2]	"A" Piezometer Upper Sand Aquifer Groundwater Elevation (Feet)[2]	Horizontal Head Difference (Feet)[3]
PZ-1A and PZ-1B	10/31/2023	7.56	6.40	1.16
PZ-2A and PZ-2B	10/31/2023	7.90	7.09	0.81
PZ-3A and PZ-3B	11/30/2023	7.29	6.94	0.35

NOTES:

(1) "A" wells are located inside the barrier wall in the Upper Sand Aquifer; "B" wells are located outside the barrier wall in the Upper Sand Aquifer.

(2) Groundwater elevations are presented in feet NAVD88. Wells and piezometers were surveyed on 9/10/2020 by ASPI, LLC.

(3) Horizontal head difference equals "B" well minus "A" well.

NAVD 88 = North American Vertical Datum of 1988

Table 3
Vertical Hydraulic Head Difference Comparisons
Former Mill E/Koppers Facility
Everett, Washington

Piezometer / Well Pair [1]	Date	Location Relative to Barrier Wall	Upper Sand Aquifer Groundwater Elevation (Feet)[2]	Lower Sand Aquifer Groundwater Elevation (Feet)[2]	Vertical Head Difference (Feet)[3]
PZ-1A and MW-10D	10/31/2023	Inside	6.40	6.27	0.13
PZ-1B and MW-10D	10/31/2023	Outside	7.56	6.27	1.29
PZ-2A and PZ-2D	10/31/2023	Inside	7.09	6.10	0.99
PZ-2B and PZ-2D	10/31/2023	Outside	7.90	6.10	1.80
PZ-3A and LLMW-20D	11/30/2023	Inside	6.94	6.84	0.10
PZ-3B and LLMW-20D	11/30/2023	Outside	7.29	6.84	0.45

NOTES:

(1) "A" wells are located inside the barrier wall in the Upper Sand Aquifer; "B" wells are located outside the barrier wall in the Upper Sand Aquifer; "D" wells are located outside the barrier wall in the Lower Sand Aquifer.

(2) Groundwater elevations are presented in feet NAVD88. Wells and piezometers were surveyed on 9/10/2020 by ASPI, LLC.

(3) Vertical head difference equals Upper Sand Aquifer Well "A" or "B" minus Lower Sand Aquifer Well "D".

NAVD 88 = North American Vertical Datum of 1988

Table 4
Summary of Groundwater Anlaytical Results
Total Petroleum Hydrocarbons, SVOCs, and Metals
Former Mill E/Koppers Facility
Everett, Washington

Piezometer	Sample ID	Sample Date	Analytical Results [1] (micrograms per Liter)				
			Total Petroleum Hydrocarbons			SVOCs	Metals
			Gasoline Range Hydrocarbons [2]	Diesel Range Hydrocarbons [3]	Heavy Oil Range Hydrocarbons [3]	PCP [4]	Total Arsenic [5]
PZ-3A	PZ-3A-20221031	10/31/2023	630	1,300 x	280 x	< 0.2	**708**
Criteria [6]			10,000	10,000	10,000	7.29	5

NOTES:

(1) Samples were analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

(2) Sample analyzed by NWTPH Method NWTPH-Gx

(3) Sample analyzed by NWTPH Method NWTPH-Dx

(4) Sample analyzed by EPA Method 8270D SIM

(5) Sample analyzed by EPA Method 200.8

(6) Criteria are from the cleanup levels established in the 1998 Consent Decree based on MTCA Method A and C.

x = the sample chromatographic pattern does not resemble the fuel standard used for quantitation.

< = not detected at concentration exceeding the laboratory reporting limit.

Red = concentration exceeds Criteria. EPA = Environmental Protection Agency

MTCA = Washingston State Model Toxics Control Act

NWTPH = Northwest Total Petroleum Hydrocarbon

SVOCs = Semivolatile organic compounds

PCP = pentachlorophenol

APPENDIX A
LABORATORY TEST CERTIFICATES AND CHAIN OF CUSTODY

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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www.friedmanandbruya.com

February 23, 2024

Tim Brown, Project Manager
Kane Environmental
4015 13th Ave W
Seattle, WA 98119

Dear Mr Brown:

Included is the amended report from the testing of material submitted on November 1, 2023 from the Mill-E, F&BI 311028 project. The metals poly bottle was not field filtered, therefore the report header was changed from dissolved to total metals.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
KNE1108R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Vineta Mills, M.S.
Eric Young, B.S.

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www.friedmanandbruya.com

November 8, 2023

Tim Brown, Project Manager
Kane Environmental
4015 13th Ave W
Seattle, WA 98119

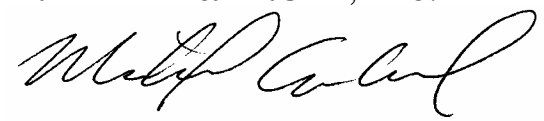
Dear Mr Brown:

Included are the results from the testing of material submitted on November 1, 2023 from the Mill-E, F&BI 311028 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
KNE1108R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on November 1, 2023 by Friedman & Bruya, Inc. from the Kane Environmental Mill-E, F&BI 311028 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Kane Environmental
311028 -01	PZ-3A-20231031

All quality control requirements were acceptable.

Date of Report: 11/08/23
Date Received: 11/01/23
Project: Mill E, F&BI 311028
Date Extracted: 11/02/23
Date Analyzed: 11/03/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE USING METHOD NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Gasoline Range	Surrogate (% Recovery) (Limit 50-150)
PZ-3A-20231031 311028-01	630	98
Method Blank 03-2489 MB	<100	106

Date of Report: 11/08/23
Date Received: 11/01/23
Project: Mill E, F&BI 311028
Date Extracted: 11/02/23
Date Analyzed: 11/02/23

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 50-150)
PZ-3A-20231031 311028-01	1,300 x	280 x	105
Method Blank 03-2610 MB	<50	<250	102

Analysis For Total Metals By EPA Method 200.8

Client ID:	PZ-3A-20231031	Client:	Kane Environmental
Date Received:	11/01/23	Project:	Mill-E, F&BI 311028
Date Extracted:	11/02/23	Lab ID:	311028-01
Date Analyzed:	11/02/23	Data File:	311028-01.121
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	708

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Kane Environmental
Date Received:	NA	Project:	Mill-E, F&BI 311028
Date Extracted:	11/03/23	Lab ID:	I3-872 mb
Date Analyzed:	11/03/23	Data File:	I3-872 mb.134
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1

Analysis for Semivolatile Phenols By EPA Method 8270E SIM

Client Sample ID:	PZ-3A-20231031	Client:	Kane Environmental
Date Received:	11/01/23	Project:	Mill-E, F&BI 311028
Date Extracted:	11/06/23	Lab ID:	311028-01
Date Analyzed:	11/06/23	Data File:	110623.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2,4,6-Tribromophenol	141	50	150

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<0.2

Analysis for Semivolatile Phenols By EPA Method 8270E SIM

Client Sample ID:	Method Blank	Client:	Kane Environmental
Date Received:	Not Applicable	Project:	Mill-E, F&BI 311028
Date Extracted:	11/06/23	Lab ID:	03-2685 mb
Date Analyzed:	11/06/23	Data File:	110622.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2,4,6-Tribromophenol	78	50	150

Compounds:	Concentration ug/L (ppb)
Pentachlorophenol	<0.2

Date of Report: 11/08/23
Date Received: 11/01/23
Project: Mill E, F&BI 311028

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TPH AS GASOLINE USING METHOD NWTPH-Gx

Laboratory Code: 310561-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	91,000	89,000	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	110	69-134

Date of Report: 11/08/23
Date Received: 11/01/23
Project: Mill E, F&BI 311028

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	96	100	72-139	4

Date of Report: 11/08/23
Date Received: 11/01/23
Project: Mill E, F&BI 311028

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL METALS USING EPA METHOD 200.8

Laboratory Code: 311028-01 x20 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	602	43 b	2 b	70-130	182 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	94	85-115

Date of Report: 11/08/23
Date Received: 11/01/23
Project: Mill E, F&BI 311028

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR SEMIVOLATILE PHENOLS BY EPA METHOD 8270E SIM

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 30)
Pentachlorophenol	ug/L (ppb)	2.5	96	108	70-130	12

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the standard reporting limit. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

311028

SAMPLE CHAIN OF CUSTODY

11-01-23 VW1/K1/F2

Page # 1 of 1

Report To Tim Brown
Company Kane Environmental Inc.
Address 4015 13th Ave. W
City, State, ZIP Seattle, WA 98119
Phone 206-691-0476 x5 Email tbrown@KaneEnvironmental.com

SAMPLERS (*signature*) T. Brown

PROJECT NAME: Mill E
PO #: Mill-E

REMARKS
Project specific RLs? - Yes / No

INVOICE TO

TURNAROUND TIME
☒ Standard turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Archive samples
☐ Other
Default: Dispose after 30 days

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	EPA Method 200.8 (arsenic) PCPLs EPA Method 8270E SIM			Notes
PZ-3A-2023/031	01 A-G	10/31/23	1445	W	7	X	X						X	X		Total per TB ~~Dissolved~~ As 11/02/23
																11/1 QM
			TSB													

11/1/23

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: Tim Brown	Tim Brown	Kane Environmental	11/1/23	1654
Received by:	JOE MOHAMMED	FBI	11/01/23	1654
Relinquished by:	Samples received at 4 °C			
Received by:				

Friedman & Bruya, Inc.
Ph. (206) 285-8282

APPENDIX B
FIELD REPORT FOR CAP INSPECTION MONITORING

Field Report

Client / Site Name:		Project Number:		Date:
Pacific Topsoils, Inc. / Former Mill E/Koppers Facility		109902-1		11/1/23
Site Address:		**Purpose of Visit/Task #:**		**Field Report Prepared by:**
Riverside Business Park, Everett, WA		Asphalt Cap and Soil Cover Monitoring		Tim Brown
Temp/Weather:	**Permit Required to Work:**	**Time of Arrival/Departure**		**Personnel Onsite:**
~53°F/ Overcast	Not Applicable	2:00 PM onsite	to 2:30 PM offsite	Tim Brown

An inspection monitoring event of the Asphalt Cap and Soil Cover was performed as part of the Performance and Compliance Monitoring Plan (EMCON 1998). Tim Brown with Kane Environmental, Inc. was on site to perform visual site observations.

The property is occupied by Amazon service small delivery vehicles and truck and trailers, many of which were parked at the time of the site visit. There was white paint marked parking spaces observed throughout the site.

Most of the asphalt cap, about 85 to 95 percent, was visible at the time of the site visit. The asphalt cap was observed to be in serviceable condition. The northeast portion of the cap was observed to have repair work done on the cracks (Photograph 1) from the previous year. Minor cracks were observed on the southern portion of the cap (Photograph 2).

No obvious signs of major cracking, fissures, or surface pumping were observed. There are areas where shallow depressions were observed, which were less than 2-inches in depth from recent rainfall. These shallow depressions were less than 10 feet in diameter, like the previous year.

Drainage ditches had more accumulated sediment than previous year; however, accumulated appeared to be less than 1-inch. Minor cracks with vegetation growing through were observed along the southern drainage ditch (Photograph 3). In addition, vegetation was growing from the adjoining soil cap area. A landscape crew was removing overgrown vegetation along the fence line surrounding the asphalt cap area at the time of the site visit.

A raised asphalt patch was observed surrounding well PZ-1A, on the west portion of the asphalt cap (Photograph 4). Minor cracks in the asphalt cap were observed near well PZ-1A. Additional observations of asphalt cap with minor ponding on asphalt surface are shown in Photographs 5 and 6.

Kane Environmental recommends removing any remaining visible vegetation from the minor cracks and sediment in the drainage ditches, and subsequently sealing the cracks in the ditches and the minor cracks observed in the southern and western portions of the asphalt cap. These minor asphalt cap repairs will help to maintain the asphalt cap in a serviceable condition and meet the performance objectives to prevent potential direct contact with contaminated soil and infiltration at the site.

The soil cap to the south of the asphalt cap appeared intact and is performing as intended. No major ponding or erosion was observed. Photographs of general observations are provided below.

Timothy S. Brown

Principal / PM Signature

Photograph 1 – Looking west at the northern portion of the asphalt cap. Multiple cracks are observed to be repaired with a crack joint sealant.

Photograph 2 – Looking north-northeast at the southeastern portion of the asphalt cap with thin cracks on surface.

Photograph 3 – Looking west at southeastern portion of the asphalt cap. Photograph shows landscaping crew removing vegetation from the south drainage ditch. Vegetation was observed to be growing through minor cracks and adjoining soil cap area.

Photograph 4 – Looking south at central western portion of the asphalt cap with observed minor cracking on the surface.

Photograph 5 – Looking east at central western portion of the asphalt cap. Minor ponding observed on the asphalt surface after a rainfall event.

Photograph 6 – Looking east at center portion of the asphalt cap. Minor ponding observed on the asphalt surface after a rainfall event.