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Ms. Katie Daugherty
Oregon Department of Environmental Quality
Northwest Region 28
700 NE Multnomah St, Suite 600
Portland, OR 97232

DATE
17 January 2024

SUBJECT
Quarter 4, 2023, Progress Report
(October through December 2023)
Arkema Inc. Portland Plant

REFERENCE
0682894.103

Dear Ms. Daugherty:

Environmental Resources Management, Inc. (ERM) is submitting this Quarterly Progress Report (QPR) on behalf of Legacy Site Services LLC (LSS) agent for Arkema Inc. (Arkema) to summarize Quarter 4, 2023, activities at the Arkema facility located at 6400 NW Front Avenue in Portland, Oregon.

Paragraph 8(G) of the Order on Consent Requiring Source Control Measures and Feasibility Study between the Oregon Department of Environmental Quality (ODEQ) and LSS, dated 31 October 2008, requires submittal of QPRs. The following progress report summarizes activities for Quarter 4, 2023 (October through December).

Weekly progress summaries for implementation of the stormwater and groundwater source control measures (SCM) have been developed over the duration of the project. The reports for Quarter 4, 2023, are included as Attachment 1 to this QPR for reference, and activities documented in the reports are not duplicated in this letter.

Actions Taken Quarter 4, 2023 (October through December)

- 9 October 2023: The ODEQ provided comments regarding the July 2023 MPR.
- 10 October 2023: ERM, on behalf of LSS, submitted the August 2023 monthly Discharge Monitoring Report (DMR) for National Pollutant Discharge Elimination System (NPDES) permit compliance monitoring of the Groundwater Extraction and Treatment (GWET) system.
- 10 October 2023: ERM, on behalf of LSS, submitted the September 2023 monthly DMR for the performance monitoring of the stormwater SCM, including supplemental Copper Biotic Ligand Model (BLM) and Toxics data.
- 16 October 2023: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted later that day.
- 17 October 2023: ERM, on behalf of LSS, submitted the August 2023 MPR.

- 18 October 2023: ERM, on behalf of LSS, submitted the QPR for Quarter 3, 2023, to the ODEQ.
- 30 October 2023: The ODEQ provided discussion topics for a planned call on 20 November 2023.
- 10 November 2023: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted later that day.
- 14 November 2023: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted later that day.
- 15 November 2023: ERM, on behalf of LSS, submitted the September 2023 MPR.
- 20 November 2023: Representatives from ERM, on behalf of LSS, had a call with the ODEQ to discuss the initial comments on the Feasibility Study.
- 26 November 2023: ERM, on behalf of LSS, submitted the September 2023 monthly DMR for NPDES permit compliance monitoring of the GWET system.
- 26 November 2023: ERM, on behalf of LSS, submitted the October 2023 monthly and quarterly DMR for the performance monitoring of the stormwater SCM, including supplemental Copper BLM data.
- 29 November 2023: ERM, on behalf of LSS, shut down the GWET system due to the Tank T-3 level sensor failing. The ODEQ was notified of the shutdown, and discharge was restarted on 4 December 2023.
- 1 December 2023: ERM, on behalf of LSS, submitted the Quarter 3, 2023, Groundwater Monitoring Report to the ODEQ.
- 8 December 2023: The ODEQ requested a table that includes groundwater wells with screen intervals.
- 10 December 2023: ERM, on behalf of LSS, began the Quarter 4, 2023, groundwater monitoring event. The event was completed on 13 December 2023.
- 11 December 2023: ERM, on behalf of LSS, submitted the October 2023 monthly DMR for NPDES permit compliance monitoring of the GWET system.
- 11 December 2023: ERM, on behalf of LSS, submitted the November 2023 monthly and quarterly DMR for the performance monitoring of the stormwater SCM, including supplemental Copper BLM data.
- 12 December 2023: ERM, on behalf of LSS, shut down the GWET system due to conveyance line maintenance. The ODEQ was notified of the shutdown, and discharge was restarted on 15 December 2023.
- 18 December 2023: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted later that day.
- 18 December 2023: ERM, on behalf of LSS, submitted the October 2023 MPR.
- 22 December 2023: The ODEQ and LSS had a call regarding approach for the Feasibility Study, and request for follow-up meeting.

Actions Scheduled for Quarter 1, 2023 (January through March)

- The QPR for Quarter 4, 2023, will be prepared and submitted.
- LSS will continue to monitor discharges from the stormwater SCM and submit monthly monitoring reports to the ODEQ.
- LSS will continue to monitor discharges from the groundwater SCM and submit monthly DMRs as well as monthly supplemental effluent toxics data to the ODEQ.
- LSS will continue optimization of the GWET system as part of the implementation of the groundwater SCM and in accordance with the GWET System Corrective Action Plan and associated updates.
- LSS will conduct routine maintenance on the stormwater SCM.
- LSS will submit monthly status reports consistent with the Performance Monitoring Plan and per the ODEQ letter DEQ Review "Draft GWET System Effectiveness Evaluation Report" (SEE) received on 31 May 2019.
- LSS will redevelop a selection of extraction wells to evaluate effect on pump performance.
- LSS will conduct groundwater monitoring for Quarter 1, 2024.
- LSS will submit the 2023 GWET SEE Report.
- LSS will submit the Quarter 4, 2023, Groundwater Monitoring Report.

Summary of Validated Data

- Weekly compliance and quarterly characterization sampling of the GWET system data were received and validated. These data were presented in the respective monthly DMRs.
- Quarter 3, 2023, groundwater monitoring data were reviewed and validated during Quarter 4, 2023. These data are included in Attachment 2 and are presented in the Quarterly Monitoring Report for Quarter 3, 2023.
- Quarter 4, 2023, groundwater monitoring event data were collected. These data will be reviewed, validated, and presented in the Quarterly Groundwater Monitoring Report for Quarter 1, 2024.

Problems Experienced During Quarter

Specific problems experienced during the GWET system optimization and operation are documented in the attached weekly progress reports. No other problems were experienced during Quarter 4, 2023.

Closing

If you have questions or comments pertaining to this progress report, please contact us at (503) 488-5282.

Sincerely,



Chase McLaughlin
Partner



Josh Hancock
Project Manager

Attachments

cc: Todd Slater, LSS
Hunter Young, USEPA
Matt Stock, Joyce Ziker Parkinson

Lance Peterson, CDM
Karen Traeger, LSS
David Livermore, Integral



ATTACHMENT 1 QUARTER 4, 2023, WEEKLY
PROGRESS REPORTS



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 29 September 2023 to 5 October 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 100 percent. The average system influent flow rate for the week was 39.8 gpm. Recovery / extraction wells EW-03 through EW-05, EW-08, EW-09, EW-13, EW-14, RW-14, RW-22, RW-23, and RW-25 were in operation during the reporting period. The total influent volume for the week was 362,720 gallons or approximately 36 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 29 September 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Mobilized to well-field to pull pump at Trench 4 (EW-07 and EW-08). Performed camera inspection at Trenches 1, 4, and 6.
- Saturday, 30 September 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 1 October 2023: Operator performed general O&M and cycled the filter press. Cleaned drop tube from sand filter (SF-1) to tank T-5 turbidity monitor. Rearranged plumbing at tank T-12 to go through one bag filter and back to SF-1.
- Monday, 2 October 2023: Operators performed general O&M and cycled the filter press. Cascade Drilling onsite to start redeveloping wells at Trench 1 (EW-01 and EW-02). SA Roofing onsite for site walk of Admin building roof and tree trimming. Operators replaced clean-out cable at Trench 4 with larger gauge cable. Decreased underflow pump timer to 160/300 sec. Mobilized to MCC-1 to replace fuse for transducer PA-06. Lowered and recalibrated transducer at RW-8, LTE = 5.61. Assembled shelving in new Connex box and organized parts. Procured a wash table for cleaning pumps.
- Tuesday, 3 October 2023: Operators performed general O&M and cycled the filter press. Sprayed herbicide in lot 2. Cascade Drilling onsite to continue redevelopment at Trench 1 (EW-01 and EW-02). SA Roofing onsite to start repairs on Admin building roof and tree trimming. Monthly calibration of YSI for conductivity, pH, DO, and ORP. Recalibrated ORP probe at FBR-REC. Operator cleaned ½-hp and 1-hp pumps, observed iron fouling and three broken impellers for pump at EW-11.

- Wednesday, 4 October 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Cascade Drilling onsite to continue redevelopment at Trench 1 (EW-01 and EW-02). SA Roofing onsite to continue repairs on Admin building roof and tree trimming.
- Thursday, 5 October 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. FBR-REC turbidity at 40 NTU, lowered acetic acid pump (CFP-8) to 7 percent from 8 percent. Cascade Drilling onsite to start redevelopment at Trench 6 (EW-11 and EW-12). Johnson Controls onsite for site-walk of front gate buzzer. SA Roofing onsite to continue repairs on Admin building roof and tree trimming.

Recovery / Extraction Well Status

- The current influent flow rate is **38 gpm**, with extraction / recovery wells EW-03, EW-04, EW-05, EW-09, EW-13, RW-14, RW-22, RW-23, and RW-25 in operation.
- EW-06, EW-10, and EW-14 are currently designated as backup and out of service.
- EW-01, EW-02, EW-11, and EW-12 were pulled for redevelopment.
- EW-07 and EW-08 pumps were pulled and cleaned.
- EW-11: Off since 8/5, ground fault, operator observed iron fouling on the ½-hp pump and three broken impellers.

Transducer Status

- PA-06: Faulted, signal wire to be changed out.
- PA-11i: Faulted, transducer to be replaced.

Sampling

- LGAC check samples collected on 2 October 2023 and sent to ALS.
- Weekly compliance samples collected on 5 October 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 6 October 2023 to 12 October 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 100 percent. The average system influent flow rate for the week was 36.6 gpm. Recovery / extraction wells EW-03 through EW-05, EW-08, EW-09, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 357,900 gallons or approximately 36 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 6 October 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Cascade Drilling onsite to finish redeveloping wells at Trench 4 (EW-07 and EW-08).
- Saturday, 7 October 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 8 October 2023: Operator performed general O&M and cycled the filter press.
- Monday, 9 October 2023: Operators performed general O&M and cycled the filter press. SA Roofing onsite to continue repairs on Admin building roof and tree trimming. Mobilized to well-field to conduct camera inspections at Trenches 1, 4, and 6. Redeployed ½-hp pumps at EW-02 and EW-08. Observed bare copper wire on yellow phase at EW-11 motor, did not redeploy pump. Placed EW-12 pump downhole but it got stuck ¾ of the way down, need additional staff to pull out.
- Tuesday, 10 October 2023: Operators performed general O&M and cycled the filter press. SA Roofing onsite to continue repairs on Admin building roof and tree trimming. Cleared brush on stairs to beach. Observed soil drum along Front Ave; notified PM and AECOM.
- Wednesday, 11 October 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Tidewater Environmental Services picked up two iron sludge boxes (2 and 4) for transportation to the Roosevelt Landfill Disposal facility.
- Thursday, 12 October 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Lowered transducer at MWA-19i and recalibrated. Operators observed an upset condition at the Plate Separator (PS-1). The underflow pump P-PS-1 failed to run and PS-1

filled with solids. The solids carried over to the bio side with the FBR having high turbidity. Operators partially drained PS-1 into a dewatering box. SA Roofing onsite to finish repairs on Admin building.

Recovery / Extraction Well Status

- The current influent flow rate is **37 gpm**, with extraction / recovery wells EW-02 through EW-05, EW-08, EW-09, EW-13, RW-14, RW-22, and RW-25 in operation.
- EW-06, EW-10, and EW-14 are currently designated as backup and out of service.
- EW-11: Off since 8/5, ground fault, operator observed iron fouling on the ½-hp pump, three broken impellers, and bare wire on yellow phase at the motor. Need new cable leads and pump.

Transducer Status

- PA-06: Faulted, signal wire to be changed out.
- PA-11i: Faulted, transducer to be replaced.
- MWA-19i: Transducer lowered slightly, water level at 29.8 feet bTOC and depth to bottom at 30.1 feet bTOC. Operator recalibrated transducer, LTE=8.35 from 8.88.

Sampling

- LGAC check samples collected on 9 October 2023 and sent to ALS.
- Weekly compliance samples collected on 12 October 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 13 October 2023 to 19 October 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a planned shutdown on Monday, 16 October for 2 hours to clean the plate separator. Uptime for the reporting period was 99 percent. The average system influent flow rate for the week was 35.1 gpm. Recovery / extraction wells EW-02, through EW-05, EW-08, EW-09, EW-12, EW-13, EW-14, RW-14, RW-22, RW-23, and RW-25 were in operation during the reporting period. The total influent volume for the week was 319,490 gallons or approximately 32 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 13 October 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. EW-03 motor overload fault due to pump fouling, pump to be changed out.
- Saturday, 14 October 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 15 October 2023: Operator performed general O&M and cycled the filter press.
- Monday, 16 October 2023: Operators performed general O&M and cycled the filter press. Operators' shut down the wellfield to clean the plate separator PS-1 at 1100 and restarted at 1300. Collected LGAC check samples and sent to ALS. Collected sludge from PS-1 and sent to Eurofins on October 17.
- Tuesday, 17 October 2023: Operators performed general O&M and cycled the filter press. Repaired stuck pump at extraction well EW-12 and started. Swapped out fouled pump at EW-02. Deployed clean pump and piping downhole at EW-01. Lowered transducers at EW-01 and EW-02 below pump intake and recalibrated. Turned on recovery wells RW-14, RW-22, RW-23, and RW-25. NorthStar onsite to batch coagulant mini-bulk.
- Wednesday, 18 October 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. New operator K. Hossom onsite for site orientation.
- Thursday, 19 October 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Tank T-8 2-inch transfer pump P-PS-4 failed, replaced with used 1-inch pump.

Recovery / Extraction Well Status

- The current influent flow rate is **40 gpm**, with extraction / recovery wells EW-02 through EW-05, EW-09, EW-12, EW-14, RW-14, RW-22, RW-23, and RW-25 in operation.
- EW-01, EW-06 and EW-10 are currently designated as backup and out of service.
- EW-11: Off since 8/5, ground fault, operator observed iron fouling on the ½-hp pump, three broken impellers, and bare wire on yellow phase at the motor. Need new cable leads and pump. Odin/Converse to investigate.

Transducer Status

- PA-06: Faulted, signal wire to be changed out.
- PA-11i: Faulted, transducer ordered.

Sampling

- LGAC check samples collected on 16 October 2023 and sent to ALS.
- Weekly compliance samples collected on 19 October 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 20 October 2023 to 26 October 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 100 percent. The average system influent flow rate for the week was 36.1 gpm. Recovery / extraction wells EW-02 through EW-05, EW-08, EW-09, EW-12, EW-13, EW-14, RW-14, RW-22, RW-23, and RW-25 were in operation during the reporting period. The total influent volume for the week was 335,730 gallons or approximately 33 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 20 October 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Performed October water level event. Lowered transducer at PA-05 and recalibrated.
- Saturday, 21 October 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 22 October 2023: Operator performed general O&M.
- Monday, 23 October 2023: Operators performed general O&M and cycled the filter press. Operator observed the mixer AG-1 at the precipitate reactor (PR-1) was off and restarted it. This caused multiple backwashes for the pressure filters. Collected LGAC check samples and sent to ALS. Weekly inspection of safety showers. Cleaned decant line from outside cone bottom tank T-7A to T-8. Odin/Converse onsite to begin replacing the extraction well vault lids.
- Tuesday, 24 October 2023: Operators performed general O&M and cycled the filter press. Odin/Converse onsite to continue replacing the extraction well vault lids. Mobilized to EW-01 and installed the ball check valve and confirmed transducer is operational. Deployed clean ½-hp pump at EW-02 and replaced malfunctioning transducer. Operator observed the mixer AG-1 at PR-1 failed again and would not start in Auto mode. Placed AG-1 in Hand mode and contacted PM and electrician to investigate the HOA switch. Repaired the polymer tubing from chemical feed pump CFP-7.
- Wednesday, 25 October 2023: Operators performed general O&M and cycled the filter press. Odin/Converse onsite to continue replacing the extraction well vault lids. Operator started the auto-sampler for collection of the weekly NPDES compliance samples.

- Thursday, 26 October 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Odin/Converse onsite and completed the replacement of the extraction well vault lids.

Recovery / Extraction Well Status

- The current influent flow rate is **30 gpm**, with extraction / recovery wells EW-02, EW-04, EW-05, EW-08, EW-09, EW-12, EW-14, RW-14, RW-22, RW-23, and RW-25 in operation.
- EW-01, EW-06, and EW-10 are currently designated as backup and out of service.
- EW-11: Off since 8/5, ground fault, operator observed iron fouling on the ½-hp pump, three broken impellers, and bare wire on yellow phase at the motor. Need new cable leads and pump. Odin/Converse to replace motor leads.
- All 14 extraction well vault lids have been replaced with larger 56-inch lids.

Transducer Status

- PA-06: Faulted, signal wire to be changed out.
- PA-11i: Faulted, transducer ordered.
- PA-23d: Faulted, to be investigated.

Sampling

- LGAC check samples collected on 23 October 2023 and sent to ALS.
- Weekly compliance samples collected on 26 October 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 27 October 2023 to 2 November 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 100 percent. The average system influent flow rate for the week was 36.1 gpm. Recovery / extraction wells EW-02 through EW-05, EW-07, EW-08, EW-09, EW-11, EW-12, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 362,720 gallons or approximately 31 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 27 October 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Univar onsite and refilled caustic mini-bulk tank.
- Saturday, 28 October 2023: Operator performed general O&M and cycled the filter press. Operators winterized cone bottom tanks by connecting extension cords to heat trace cable.
- Sunday, 29 October 2023: Operator performed general O&M and cycled the filter press.
- Monday, 30 October 2023: Operators performed general O&M and cycled the filter press. Collected LGAC check samples and sent to ALS. Cleaned ½-hp and 1-hp downhole pumps. Mobilized to the well-field and lowered the transducer at recovery well RW-18 then recalibrated. Mobilized to piezometer PA-23d and repaired the signal wires then recalibrated transducer.
- Tuesday, 31 October 2023: Operators performed general O&M and cycled the filter press. Mobilized to well-field and swapped out fouled pumps at EW-03, EW-7, and EW-08.
- Wednesday, 1 November 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Mobilized to well-field and replaced the motor leads at EW-11. EW-11 pump intake at 42.8 feet, total depth at 46.50 feet, and transducer at 44.5 feet. Performed monthly recalibrations on the YSI and ORP sensor at the FBR-REC. Site truck offsite for maintenance.
- Thursday, 2 November 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. GWET team building meeting.

Recovery / Extraction Well Status

- The current influent flow rate is **30 gpm**, with extraction / recovery wells EW-02, EW-03, EW-04, EW-05, EW-08, EW-09, EW-11, EW-12, RW-14, RW-22, and RW-25 in operation.
- EW-01, EW-06, EW-10, and EW-13 are currently designated as backup and out of service.
- EW-3, EW-07, and EW-08 pumps changed out.
- EW-11: Off since 8/5, ground fault, operator observed iron fouling on the ½-hp pump and three broken impellers. Changed out motor lead cable on 11/1.

Transducer Status

- PA-06: Faulted, signal wire to be changed out.
- PA-11i: Faulted, transducer to be replaced.

Sampling

- LGAC check samples collected on 30 October 2023 and sent to ALS.
- Weekly compliance samples collected on 2 November 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 3 November 2023 to 9 November 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 100 percent. The average system influent flow rate for the week was 37.5 gpm. Recovery / extraction wells EW-02 through EW-05, EW-07, EW-08, EW-09, EW-11, EW-12, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 255,540 gallons or approximately 25 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 3 November 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Tidewater Environmental Services picked up two drums of spent oily rags for transportation to CWM Arlington Disposal facility.
- Saturday, 4 November 2023: Operator performed general O&M and cycled the filter press. Mobilized to piezometer PA-06 and repaired the signal wire.
- Sunday, 5 November 2023: Operator performed general O&M and cycled the filter press. Operator observed flow restricted on the 1-inch backwash water line from tanks T-7A to T-8.
- Monday, 6 November 2023: Operators performed general O&M and cycled the filter press. Collected LGAC check samples and sent to ALS. Collected quarterly process check samples and sent to Eurofins including samples from EW-03 and EW-05. Cleaned ½-hp and 1-hp downhole pumps. Tidewater Environmental Services picked up two iron sludge boxes (2 and 4) for transportation to the Roosevelt Landfill Disposal facility. Cleaned out the 1-inch backwash water line from tanks T-7A to T-8. Dewatered extraction well vaults EW-01 and EW-02. Observed several vaults with water intrusion at concrete joints and wall penetrations.
- Tuesday, 7 November 2023: Operators performed general O&M and cycled the filter press. Dewatered extraction well vaults EW-02 and EW-07. Changed out fouled pumps at extraction wells EW-02 and EW-13 and lowered the pump intakes. Started pilot study at EW-05 with 25-micron hydrophobic bag filter, observed almond like odor and tacky black solids. PID reading for bag filter at 30 ppm.
- Wednesday, 8 November 2023: Operators performed general O&M and cycled the filter press. Recalibrated EW-13 transducer. Operator started the auto-sampler for

collection of the weekly NPDES compliance samples. Continued pilot study at EW-05 with regular 1 micron bag filter, observed slight odor and minimal solids.

- Thursday, 9 November 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Cleaned downhole pumps. Continued pilot study at EW-03 with 25 micron hydrophobic bag filter. Observed a slight odor and substantial solids buildup. PID reading for bag filter was low.

Recovery / Extraction Well Status

- The current influent flow rate is **38 gpm**, with extraction / recovery wells EW-02, EW-03, EW-04, EW-05, EW-07, EW-09, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 in operation.
- EW-01, EW-06, EW-10, EW-12 are currently designated as backup and out of service.
- EW-2 and EW-13 pumps lowered and changed out this week.

Transducer Status

- PA-06: Signal wire repaired, transducer operational.
- PA-11i: Faulted, transducer to be replaced.

Sampling

- LGAC check samples collected on 6 November 2023 and sent to ALS.
- Quarterly process check samples collected on 6 November 2023 and sent to Eurofins
- Weekly compliance samples collected on 9 November 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 10 November 2023 to 16 November 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a 2-hour shutdown on 14 November to clean the plate separator. Uptime for the reporting period was 99 percent. The average system influent flow rate for the week was 38.1 gpm. Recovery / extraction wells EW-02 through EW-05, EW-07, EW-08, EW-09, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 293,360 gallons or approximately 29 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 10 November 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. S. Lucas updated the PLC and did a program download, wellfield was shut down briefly and restarted. Mixer AG-3 at PS-1 started in reverse, operator switched to forward rotation on the VFD. Swapped out 1-hp fouled pumps at EW-09 and EW-10, lowered pumps and recalibrated transducers. Installed a smaller gauge stainless steel cable in Trench 5.
- Saturday, 11 November 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 12 November 2023: Operator performed general O&M and cycled the filter press.
- Monday, 13 November 2023: Operators performed general O&M and cycled the filter press. Collected LGAC check samples and sent to ALS. Cleaned ½-hp and 1-hp downhole pumps. Installed heat trace on pre-treatment side shower. Continued pilot study at EW-05 with 25 micron hydrophobic bag filter for 6 hours. Pressure increased from 40 to 50 psi with no change in flow rate. Ferguson and ErectAStep onsite for site walk of PS-1 and well vaults.
- Tuesday, 14 November 2023: Operators performed general O&M and cycled the filter press. Univar onsite to fill the caustic mini-bulk. Shutdown well-field for 2 hours to clean the plate separator and investigate the pressure filters for fouling, @ PF-1 the sand was tacky. Continued pilot study at EW-05 with 25 micron hydrophobic bag filter. PID reading for bag filter @ 40 ppm for VOCs and pressure changed from 40 to 60 psi. Cochran onsite to troubleshoot the mixer AG-1 @ PR-1, reset a module inside the AG-1 bucket @ MCC and appears to operate in Auto now.

Cochran replaced a fuse inside pump P-6 VFD bucket, P-6 now operational. Cochran replaced malfunctioning GFIs on receptacles LP2-13 and LP2-21. Cochran confirmed 480 V on the old SVE system. Cochran performed a site walk on the Admin building for light replacement. Swapped out 1/2-hp fouled pump at EW-08, lowered pump and recalibrated transducer.

- Wednesday, 15 November 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Cleaned downhole pumps. Operators performed the November water level event.
- Thursday, 16 November 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Cleaned downhole pumps. Supported Integral to removed soil/water drums from the site for landfilling. Telluric/Alpha onsite for site walk to assess Admin building for lead, mold, and asbestos.

Recovery / Extraction Well Status

- The current influent flow rate is **35 to 40 gpm**, with extraction / recovery wells EW-02, EW-03, EW-04, EW-05, EW-08, EW-09, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 in operation.
- EW-01, EW-06, EW-7, EW-10, EW-12 are currently designated as backup and out of service.
- EW-08 pump lowered and changed out this week.

Transducer Status

- PA-11i: Reading 6 mA when transducer should read 4 mA when not in water; transducer ordered and to be replaced.

Sampling

- LGAC check samples collected on 13 November 2023 and sent to ALS.
- Weekly compliance samples collected on 16 November 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 17 November 2023 to 23 November 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a 3-hour shutdown on 22 November due to electrical arcing at pump P-10 VFD in the MCC room. Uptime for the reporting period was 98 percent. The average system influent flow rate for the week was 35.4 gpm. Recovery / extraction wells EW-02 through EW-06, EW-08 through EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 252,650 gallons or approximately 25 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 17 November 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Pre-treatment side three-way light switch failed. LOTO breaker and replaced two new light switches. Placed rubber mats over one set of railway tracks along north-south road to protect vehicles from potholes.
- Saturday, 18 November 2023: Operator performed general O&M.
- Sunday, 19 November 2023: Operator performed general O&M.
- Monday, 20 November 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Continued pilot study at EW-06 with 25 micron oleophilic bag filter and a 10 micron bag filter. Collected water samples after bag filters for analysis of VOCs.
- Tuesday, 21 November 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Cleaned downhole pumps. Continued pilot study at EW-05 with 25 micron oleophilic bag filter and a 10 micron bag filter. Collected water samples after bag filters for analysis of VOCs and sent to Eurofins. WD Nelson onsite to assess front gate wheels.
- Wednesday, 22 November 2023: Operators performed general O&M and cycled the filter press. Operator observed pump P-10 VFD arced and the MCC main breaker tripped shutting down the wellfield at 0630. On-call electrician from Cochran onsite to investigate and determine issue with P-10 VFD. Wellfield was restarted at 0930 and forward flow resumed. Operators installed front gate wheel, gate now operational.
- Thursday, 23 November 2023: Operators performed general O&M.

Recovery / Extraction Well Status

- The current influent flow rate is **30 to 40 gpm**, with extraction / recovery wells EW-02, EW-03, EW-04, EW-06, EW-08, EW-10, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 in operation.
- EW-01, EW-5, EW-7, EW-09, EW-12 are currently designated as backup and out of service.

Transducer Status

- PA-11i: Reading 6mA when transducer should read 4mA when not in water; transducer ordered and to be replaced.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples collected on 21 November 2023 and sent to Eurofins.
- Trench 3 samples were collected on 21 November 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 24 November 2023 to 30 November 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a 2-day scheduled shutdown on 29 November to allow for Cochran to conduct electrical work. Uptime for the reporting period was 77 percent. The average system influent flow rate for the week was 28.2 gpm. Recovery / extraction wells EW-01, EW-03, EW-04, EW-06, EW-08, EW-10, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 220,020 gallons or approximately 22 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 24 November 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Turned on extraction well EW-01 and stopped EW-02. Moved herbicide pails to outside storage.
- Saturday, 25 November 2023: Operator performed general O&M.
- Sunday, 26 November 2023: Operator performed general O&M.
- Monday, 27 November 2023: Operators performed general O&M, general housekeeping, and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples.
- Tuesday, 28 November 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Operators worked on repairing out of service 2-inch AODD pumps. Tank T-3 level sensor failed causing the wellfield to shutdown at 1200. Replaced transducer in T-3 and restarted the wellfield at 1300. Completed placing rubber mats over one set of railway tracks along site roadway to protect vehicles from potholes.
- Wednesday, 29 November 2023: Operators performed general O&M and cycled the filter press. Long-reach forklift rental arrived onsite and operators began retro-fitting shallow conveyance line cleanouts with 2-inch cam locks.
- Thursday, 30 November 2023: Operators performed general O&M and cycled the filter press. Operators continued retro-fitting shallow conveyance line cleanouts with 2-inch cam locks. Cochran was onsite for torque inspection of wire terminals and cleaned out MCC rooms, transformer, and breaker panels using hand brush and shop vacs. Cochran also tested current draw on the AG-1 motor.

Recovery / Extraction Well Status

- The current influent flow rate is **0 gpm**, with no extraction / recovery wells in operation, the plant is shutdown.
- EW-02, EW-5, EW-7, EW-09, EW-12 are currently designated as backup and out of service.

Transducer Status

- PA-11i: Reading 6 mA when transducer should read 4 mA when not in water, new transducer ordered and to be replaced.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples collected on 28 November 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 1 December 2023 to 7 December 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a scheduled shutdown from 30 November to 4 December to complete retro-fitting the shallow conveyance line cleanouts with cam locks. Uptime for the reporting period was 50%. The average system influent flow rate for the week was 13.3 gpm. Recovery / extraction wells EW-01, EW-04, EW-06, EW-08, EW-10, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 106,790 gallons or approximately 11 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 1 December 2023: Operators performed general O&M. Operators completed retro-fitting shallow conveyance line cleanouts with 2-inch cam locks. Installed a new transducer at tank T-3 and connected it to LCP-3 instead of at the main control panel. Operators edited the PLC logic. Set up the stormwater autosampler.
- Saturday, 2 December 2023: Operator performed general O&M.
- Sunday, 3 December 2023: Operator performed general O&M and cycled the filter press.
- Monday, 4 December 2023: Operators performed general O&M. Performed pressure test on the shallow conveyance line with up to 60 psi. Started the wellfield at 1200 and discharge to the river commenced at 12:30. Backwashed carbon vessel CT-2. Cochran performed a site walk for remaining torque and clean work of the MCC rooms and disconnects. Collected river samples with RC boat. Dewatered well vaults at EW-01, EW-02, and RW-22.
- Tuesday, 5 December 2023: Operators performed general O&M and cycled the filter press. Collected stormwater samples and sent to Eurofins. WD Nelson picked up winch parts for modification.
- Wednesday, 6 December 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Dewatered well vaults at EW-01, EW-02, and RW-25.
- Thursday, 7 December 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Univar onsite to batch the caustic mini-bulk.

Recovery / Extraction Well Status

- The current influent flow rate is **30 to 40 gpm**, with extraction / recovery wells EW-01, EW-04, EW-06, EW-08, EW-10, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 in operation.
- EW-02, EW-5, EW-7, EW-09, EW-12 are currently designated as backup and out of service.
- EW-03: Faulted, operators to change out fouled pump.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- PA-11i: Reading 6 mA when transducer should read 4 mA when not in water, new transducer ordered and to be replaced.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples collected on 7 December 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.
- Collected river samples with RC boat on 4 December 2023 and stormwater samples on 5 December 2023 and sent to Eurofins.



Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 8 December 2023 to 14 December 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a scheduled shutdown on 12/12 for conveyance line cleaning. Uptime for the reporting period was 64 percent. The average system influent flow rate for the week was 13.3 gpm. Recovery / extraction wells EW-01, EW-04, EW-05, EW-06, EW-08, EW-10, EW-11, EW-13, EW-14, RW-14, RW-22, and RW-25 were in operation during the reporting period. The total influent volume for the week was 195,130 gallons or approximately 19 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 8 December 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Performed monthly water level event. Replaced 2-inch AODD pump with a 1-inch pump at P-PS-4
- Saturday, 9 December 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 10 December 2023: Operator performed general O&M. Began quarterly groundwater sampling event.
- Monday, 11 December 2023: Operators performed general O&M and cycled the filter press. Continued quarterly groundwater sampling event. Operator started the auto-sampler for collection of the quarterly NPDES compliance samples. Dewatered well vaults at EW-01 and EW-02.
- Tuesday, 12 December 2023: Operators performed general O&M and cycled the filter press. Collected quarterly compliance samples and sent to Eurofins. Continued quarterly groundwater sampling event. Shutdown the wellfield and stopped discharging to the river at 1130. Recirculated the bio-side from tanks T-3 to T-5. Drained the conveyance line to prepare for line jetting. Set up Gmail alarm system for alternate alarm source to operators.
- Wednesday, 13 December 2023: Operators performed general O&M and cycled the filter press. Completed quarterly groundwater sampling event. Telluric onsite to begin line jetting the shallow conveyance line in the wellfield at cleanout locations. Operators performed camera inspection of the conveyance line. Replaced transducer at PA-11i and recalibrated, LTE changed from 2.89 to 8.08.
- Thursday, 14 December 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Telluric

continued line jetting the shallow conveyance line in the wellfield at cleanout locations. Operators assembled and tested new winch system to assist in pulling pumps.

Recovery / Extraction Well Status

- The current influent flow rate is **0 gpm**, with no extraction / recovery wells in operation, the plant is shutdown for line jetting of the conveyance line.
- EW-02, EW-7, EW-09, EW-12 are currently designated as backup and out of service.
- EW-03: Faulted, operators to change out fouled pump.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- PA-11i: Transducer replaced and recalibrated.

Sampling

- LGAC check samples were not collected this week.
- Quarterly compliance samples collected on 12 December 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 15 December 2023 to 21 December 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 77 percent due to shutdown during conveyance line cleaning until 12/15 and 2-hour shutdown to clean the plate separator on 12/18. The average system influent flow rate for the week was 35.9 gpm. Recovery / extraction wells EW-01, EW-03, EW-04, EW-05, EW-06, EW-07, EW-09, EW-11, EW-14, RW-14, and RW-25 were in operation during the reporting period. The total influent volume for the week was 348,550 gallons or approximately 35 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 15 December 2023: Operators performed general O&M and cycled the filter press. Telluric completed line jetting the shallow conveyance line in the wellfield at cleanout locations. Cleaned the line from first cleanout to GWET-INF. Telluric offloaded the vac-truck water into a dewatering box. Operators performed camera inspection of the conveyance line and verified conveyance pipe at MCC-2 was not compromised. Started wellfield at 1130 and achieved max flow rate of 86 gpm. Manually measured total depth at select locations using new water level meter.
- Saturday, 16 December 2023: Operator performed general O&M and cycled the filter press. Collected sludge samples from conveyance line cleaning.
- Sunday, 17 December 2023: Operator performed general O&M and cycled the filter press.
- Monday, 18 December 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Collected LGAC check samples and sent to ALS. Shutdown the wellfield for 2 hours to clean the plate separator. Swapped out fouled ½ hp pump at extraction well EW-03.
- Tuesday, 19 December 2023: Operators performed general O&M and cycled the filter press. Recovery well RW-22 received ground fault, operators to investigate. Swapped out fouled 1 hp pump at extraction well EW-14.
- Wednesday, 20 December 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Tidewater Environmental Services picked up two iron sludge boxes (1 and 2) for transportation to the Roosevelt Landfill Disposal facility. Installed old extraction well vault lids over cleanout locations. Testing a streaming current monitor unit between PR-1 and PS-1 for coagulant control.

- Thursday, 21 December 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Operators mobilized to local POTW and picked-up RAS (Return-Activated-Sludge) seed for the FBR. Added 150 gallons of RAS seed to the FBR. Installed EA-230 polymer tote.

Recovery / Extraction Well Status

- The current influent flow rate is **50 gpm**, with extraction / recovery wells EW-01, EW-04, EW-05, EW-07, EW-09, EW-11, EW-14, RW-14, and RW-25 in operation.
- EW-06, EW-10, EW-12 are currently designated as backup and out of service.
- EW-03: Operators changed out fouled pump on 12/18.
- EW-02, EW-08, and EW-13: Operators to change out fouled pump.
- EW-14: Operators changed out fouled pump on 12/19. 1-inch over-land pipe needs to be clean.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- PA-07: Operator to troubleshoot failed transducer.

Sampling

- LGAC check samples collected on 18 December 2023 and sent to ALS.
- Weekly compliance samples collected on 21 December 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



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Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 22 December 2023 to 28 December 2023 Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously. Uptime for the reporting period was 100 percent. The average system influent flow rate for the week was 49.9 gpm. Recovery / extraction wells EW-01, EW-03, EW-04, EW-05, EW-07, EW-08, EW-09, EW-11, EW-14, RW-14, and RW-25 were in operation during the reporting period. The total influent volume for the week was 480,900 gallons or approximately 48 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 22 December 2023: Operators performed general O&M and cycled the filter press. Replaced transducer at piezometer PA-07 and recalibrated, LTE =5.18 to 0.13. Backwashed carbon vessel CT-2.
- Saturday, 23 December 2023: Operator performed general O&M and cycled the filter press. Increased phosphoric acid pump to 60 spm/60 stroke length to 80 spm/80 stroke length.
- Sunday, 24 December 2023: Operator performed general O&M and cycled the filter press.
- Monday, 25 December 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-1.
- Tuesday, 26 December 2023: Operators performed general O&M and cycled the filter press. Performed jar test at PR-1-EFF and determined EA-230 polymer looks good at dosage of 1.2 ppm. Current dose at 1.78 ppm.
- Wednesday, 27 December 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Turned off extraction well EW-07 and started EW-08. Adjusted dosage for polymer pump CFP-3B from 1.78 ppm to 1.46 ppm.
- Thursday, 28 December 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Started extraction well EW-13 and stopped EW-14 to replace fouled overland pipe with temporary 1-inch hose to RW-25 (75 feet). Adjusted dosage for polymer pump CFP-3B from 1.46 ppm to 1.27 ppm.

Recovery / Extraction Well Status

- The current influent flow rate is **47 gpm**, with extraction / recovery wells EW-01, EW-03, EW-04, EW-05, EW-08, EW-09, EW-11, EW-13, EW-14, RW-14, and RW-25 in operation.
- EW-06, EW-07, EW-10, and EW-12 are currently designated as backup and out of service.
- EW-02 and EW-13: Operators to change out fouled pump.
- EW-14: Off, replaced fouled overland pipe with temporary 1-inch hose to RW-25 (75 feet). Restart 12/29.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- PA-07: Operator changed out transducer and recalibrated.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples collected on 28 December 2023 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.



ATTACHMENT 2 QUARTER 3, 2023, GROUNDWATER
MONITORING DATA

**Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon**

Analyte Unit					1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethane	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene
FSWP SHSC (shaded values indicate results above the value shown)					µg/L NE	µg/L 11	µg/L 0.4	µg/L 1.6	µg/L 47	µg/L 710	µg/L NE	µg/L NE	µg/L NE	µg/L 0.076
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	< 0.22 U	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	0.15 j	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	0.26	0.28	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 0.038 U	0.25	< 0.056 U	< 0.070 U	0.36	1.1	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	0.060 j	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	0.30	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	0.15 j	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	0.075 j	0.24	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	0.27	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	0.39 j	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 1.8 U	< 3.9 U	< 5.2 U	< 2.4 U	< 2.2 U	< 2.8 U	< 2.9 U	< 4.3 UJ	< 4.1 U	< 3.3 UJ
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 0.90 U	< 2.0 U	< 2.6 U	< 1.2 U	< 1.1 U	< 1.4 U	< 1.5 U	< 2.2 UJ	< 2.1 U	< 1.7 UJ
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	< 0.22 U	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 9.0 U	< 20 U	< 26 U	< 12 U	< 11 U	< 14 U	< 15 U	< 22 UJ	< 21 U	< 17 UJ
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	3.3	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	3.3	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 90 U	< 200 U	< 260 U	< 120 U	< 110 U	< 140 U	< 150 U	< 220 UJ	< 210 U	< 170 UJ
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	< 0.22 U	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	< 0.22 U	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	< 0.22 U	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 0.038 U	< 0.025 U	< 0.056 U	< 0.070 U	< 0.025 U	< 0.035 U	< 0.084 U	< 0.15 U	< 0.050 U	< 0.17 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 0.18 U	< 0.39 U	< 0.52 U	< 0.24 U	0.30 j	< 0.28 U	< 0.29 U	< 0.43 UJ	< 0.41 U	< 0.33 UJ
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 9.0 U	< 20 U	< 26 U	< 12 U	< 11 U	< 14 U	< 15 U	< 22 UJ	< 21 U	< 17 UJ

Notes:
 Bolded values indicate concentrations above the Method Detection Limit.
 Shaded values indicate concentrations above the FSWP SHSC.
 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
 FD = Field Duplicate Sample
 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
 N = Normal Environmental Sample
 NE = Not Established
 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

Qualifiers - Organic:
 j = The analyte was positively identified below the RDL; associated numerical value is the approximate concentration of the analyte in the sample.
 U = Analyte was analyzed for, but not detected above, the limit displayed.
 UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

**Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon**

Analyte Unit					1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane
FSWP SHSC (shaded values indicate results above the value shown)					µg/L NE	µg/L NE	µg/L 14	µg/L 3.7	µg/L 1.5	µg/L NE	µg/L 10	µg/L NE	µg/L 15	µg/L NE
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 0.61 U	< 0.57 U	< 0.46 U	< 0.42 U	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 0.20 U	< 0.17 U	0.060 j	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 0.20 U	< 0.17 U	0.20 j	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	0.052 j	< 0.060 U
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 0.20 U	< 0.17 U	0.15 j	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	< 0.61 U	< 0.57 U	< 0.46 U	< 0.42 U	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 6.1 U	< 5.7 U	< 4.6 U	< 4.2 U	< 1.8 U	< 5.5 U	< 4.8 U	< 3.5 U	< 4.6 U	< 3.2 U
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 3.1 U	< 2.9 U	< 2.3 U	< 2.1 U	< 0.90 U	< 2.8 U	< 2.4 U	< 1.8 U	< 2.3 U	< 1.6 U
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 0.61 U	< 0.57 U	< 0.46 U	< 0.42 U	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 31 U	< 29 U	< 23 U	< 21 U	< 9.0 U	< 28 U	< 24 U	< 18 U	< 23 U	< 16 U
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 0.61 U	< 0.57 U	< 0.46 U	0.59 j	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 0.61 U	< 0.57 U	< 0.46 U	0.50 j	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 310 U	< 290 U	< 230 U	< 210 U	< 90 U	< 280 U	< 240 U	< 180 U	< 230 U	< 160 U
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 0.61 U	< 0.57 U	< 0.46 U	< 0.42 U	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 0.61 U	< 0.57 U	< 0.46 U	< 0.42 U	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 0.61 U	< 0.57 U	< 0.46 U	2.4	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 0.20 U	< 0.17 U	< 0.038 U	< 0.043 U	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 0.20 U	< 0.17 U	< 0.038 U	0.39	< 0.060 U	< 0.15 U	< 0.050 U	< 0.025 U	< 0.050 U	< 0.060 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 0.61 U	< 0.57 U	< 0.46 U	< 0.42 U	< 0.18 U	< 0.55 U	< 0.48 U	< 0.35 U	< 0.46 U	< 0.32 U
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 31 U	< 29 U	< 23 U	< 21 U	< 9.0 U	< 28 U	< 24 U	< 18 U	< 23 U	< 16 U

Notes:
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 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
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 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
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 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

Qualifiers - Organic:
 j = The analyte was positively identified below the RDL; associated numerical value is the approximate concentration of the analyte in the sample.
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 UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

**Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
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Portland, Oregon**

Analyte Unit					2-Butanone (Methyl ethyl ketone)	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane
FSWP SHSC (shaded values indicate results above the value shown)					µg/L 14,000	µg/L NE	µg/L NE	µg/L NE	µg/L 1,500	µg/L 1.4	µg/L NE	µg/L 1.7	µg/L 14	µg/L 150
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	< 0.24 U	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	0.083 j	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	0.037 j	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	0.095 j	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	0.096 j	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	< 0.24 U	< 0.43 U	0.41 j	< 0.51 U	< 0.21 U
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 4.7 U	< 3.8 U	< 2.8 U	< 25 U	51 j	< 2.4 U	< 4.3 U	< 2.9 U	< 5.1 U	< 2.1 U
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 24 U	< 1.9 U	< 1.4 U	< 13 U	26 j	< 1.2 U	< 2.2 U	< 1.5 U	< 2.6 U	< 1.1 U
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 15 UJ	< 0.24 U	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 240 U	< 19 U	< 14 U	< 130 U	240 j	34 j	< 22 U	< 15 U	< 26 U	< 11 U
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	4.0	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	4.2	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 2,400 U	< 190 U	< 140 U	< 1,300 U	2,600 j	< 120 U	< 220 U	< 150 U	< 260 U	< 110 U
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	< 0.24 U	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 15 U	< 0.24 U	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	< 0.24 U	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 2.5 U	< 0.12 U	< 0.15 U	< 1.7 U	< 3.1 U	< 0.030 U	< 0.038 U	< 0.060 U	< 0.16 U	< 0.13 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 4.7 U	< 0.38 U	< 0.28 U	< 2.5 U	< 3.2 U	< 0.24 U	< 0.43 U	< 0.29 U	< 0.51 U	< 0.21 U
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 240 U	< 19 U	< 14 U	< 130 U	230 j	19 j	< 22 U	< 15 U	< 26 U	< 11 U

Notes:
 Bolded values indicate concentrations above the Method Detection Limit.
 Shaded values indicate concentrations above the FSWP SHSC.
 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
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 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
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 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

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Arkema Quarter 3, 2023, Groundwater Monitoring Report
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Analyte Unit					Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorobromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane
FSWP SHSC (shaded values indicate results above the value shown)					µg/L 0.92	µg/L 0.16	µg/L 64	µg/L NE	µg/L NE	µg/L 28	µg/L NE	µg/L 590	µg/L NE	µg/L 1.3
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 0.53 U	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	84	< 0.28 U	2.5	< 0.42 U	< 0.43 U
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	1.6	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	0.083 j	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	0.082 j	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	0.11 j	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 0.083 U	< 0.025 U	0.67	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	0.20	< 0.090 U	< 0.055 U
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	0.088 j	< 0.090 U	< 0.055 U
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	0.091 j	< 0.090 U	< 0.055 U
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	0.12 j	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	0.48	< 0.025 U	0.065 j	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	0.10 j	< 0.090 U	< 0.055 U
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 0.083 U	< 0.025 U	0.13 j	< 0.050 U	0.31 j	< 0.030 U	< 0.14 U	0.061 j	< 0.090 U	< 0.055 U
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	0.25	< 0.090 U	< 0.055 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	0.54 j	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	76	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 5.3 U	< 3.0 U	< 4.4 U	< 2.9 U	< 3.5 U	150	< 2.8 U	< 3.5 U	< 4.2 U	< 4.3 U
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 2.7 U	< 1.5 U	< 2.2 U	< 1.5 U	< 1.8 U	160	< 1.4 U	< 1.8 U	< 2.1 U	< 2.2 U
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 0.53 U	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	< 0.26 U	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 27 U	< 15 U	6,600	< 15 U	< 18 U	< 13 U	< 14 U	24 j	< 21 U	< 22 U
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 0.53 U	< 0.30 U	20	< 0.29 U	< 0.35 U	< 0.26 U	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 0.53 U	< 0.30 U	22	< 0.29 U	< 0.35 U	< 0.26 U	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 270 U	< 150 U	26,000	< 150 U	< 180 U	< 130 U	< 140 U	< 180 U	< 210 U	< 220 U
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 0.53 U	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	10	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 0.53 U	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	< 0.26 U	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 0.53 U	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	< 0.26 U	< 0.28 U	< 0.35 U	< 0.42 U	< 0.43 U
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 0.083 U	< 0.025 U	< 0.060 U	< 0.050 U	< 0.096 U	< 0.030 U	< 0.14 U	< 0.055 U	< 0.090 U	< 0.055 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 0.53 U	< 0.30 U	< 0.44 U	< 0.29 U	< 0.35 U	0.30 j	< 0.28 U	0.49 j	< 0.42 U	< 0.43 U
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 27 U	< 15 U	20,000	< 15 U	< 18 U	< 13 U	< 14 U	< 18 U	< 21 U	< 22 U

Notes:
 Bolded values indicate concentrations above the Method Detection Limit.
 Shaded values indicate concentrations above the FSWP SHSC.
 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
 FD = Field Duplicate Sample
 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
 N = Normal Environmental Sample
 NE = Not Established
 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

Qualifiers - Organic:
 j = The analyte was positively identified below the RDL; associated numerical value is the approximate concentration of the analyte in the sample.
 U = Analyte was analyzed for, but not detected above, the limit displayed.
 UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

**Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon**

Analyte Unit					Dibromomethane	Dichlorodifluoromethane (Freon 12)	Ethylbenzene	Ethylene dibromide	Hexachlorobutadiene	Isopropylbenzene (Cumene)	m,p-Xylenes	Methyl tert-butyl ether	Methylene chloride	Naphthalene
FSWP SHSC (shaded values indicate results above the value shown)					µg/L NE	µg/L NE	µg/L 7.3	µg/L NE	µg/L 0.01	µg/L NE	µg/L 1.8	µg/L NE	µg/L 59	µg/L 12
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 3.4 U	< 5.3 U	< 5.0 U	< 4.0 U	< 7.9 UJ	< 4.4 U	< 5.3 U	< 4.4 U	< 14 U	< 9.3 UJ
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 1.7 U	< 2.7 U	< 2.5 U	< 2.0 U	< 4.0 UJ	< 2.2 U	< 2.7 U	< 2.2 U	< 7.2 U	< 4.7 UJ
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 17 U	< 27 U	< 25 U	< 20 U	< 40 UJ	< 22 U	< 27 U	< 22 U	< 72 U	< 47 UJ
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 170 U	< 270 U	< 250 U	< 200 U	< 400 UJ	< 220 U	< 270 U	< 220 U	< 720 U	< 470 UJ
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 0.062 U	< 0.13 U	< 0.030 U	< 0.025 U	< 0.067 U	< 0.19 U	< 0.12 U	< 0.070 U	< 1.2 U	< 0.22 UJ
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 0.34 U	< 0.53 U	< 0.50 U	< 0.40 U	< 0.79 UJ	< 0.44 U	< 0.53 U	< 0.44 U	< 1.4 U	< 0.93 UJ
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 17 U	< 27 U	< 25 U	< 20 U	< 40 UJ	< 22 U	< 27 U	< 22 U	< 72 U	< 47 UJ

Notes:
 Bolded values indicate concentrations above the Method Detection Limit.
 Shaded values indicate concentrations above the FSWP SHSC.
 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
 FD = Field Duplicate Sample
 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
 N = Normal Environmental Sample
 NE = Not Established
 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

Qualifiers - Organic:
 j = The analyte was positively identified below the RDL; associated numerical value is the approximate concentration of the analyte in the sample.
 U = Analyte was analyzed for, but not detected above, the limit displayed.
 UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

**Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon**

Analyte Unit					n-Butylbenzene	n-Propylbenzene	o-Chlorotoluene (2-chlorotoluene)	o-Xylene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene
FSWP SHSC (shaded values indicate results above the value shown)					µg/L NE	µg/L NE	µg/L NE	µg/L 13	µg/L NE	µg/L NE	µg/L NE	µg/L 0.33	µg/L 9.8	µg/L 1,000
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	13	< 0.39 U	< 0.39 U
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	0.38	< 0.050 U	< 0.033 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	0.12 j	< 0.033 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	0.16 j	< 0.050 U	< 0.033 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	0.29	< 0.050 U	< 0.033 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	0.22 j	< 0.050 U	< 0.033 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	0.050 j	< 0.033 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 4.4 U	< 5.0 U	< 5.1 U	< 3.9 U	< 4.9 U	< 5.3 U	< 5.8 U	< 4.1 U	< 3.9 U	< 3.9 U
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 2.2 U	< 2.5 U	< 2.6 U	< 2.0 U	< 2.5 U	< 2.7 U	< 2.9 U	< 2.1 U	< 2.0 U	< 2.0 U
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 22 U	< 25 U	< 26 U	< 20 U	< 25 U	< 27 U	< 29 U	< 21 U	< 20 U	< 20 U
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 220 U	< 250 U	< 260 U	< 200 U	< 250 U	< 270 U	< 290 U	< 210 U	< 200 U	< 200 U
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	2.7	< 0.39 U
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 0.23 U	< 0.091 U	< 0.12 U	< 0.15 U	< 0.17 U	< 0.19 U	< 0.26 U	< 0.084 U	< 0.050 U	< 0.033 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 0.44 U	< 0.50 U	< 0.51 U	< 0.39 U	< 0.49 U	< 0.53 U	< 0.58 U	< 0.41 U	< 0.39 U	< 0.39 U
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 22 U	< 25 U	< 26 U	< 20 U	< 25 U	< 27 U	< 29 U	< 21 U	< 20 U	< 20 U

Notes:
 Bolded values indicate concentrations above the Method Detection Limit.
 Shaded values indicate concentrations above the FSWP SHSC.
 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
 FD = Field Duplicate Sample
 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
 N = Normal Environmental Sample
 NE = Not Established
 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

Qualifiers - Organic:
 j = The analyte was positively identified below the RDL; associated numerical value is the approximate concentration of the analyte in the sample.
 U = Analyte was analyzed for, but not detected above, the limit displayed.
 UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

**Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon**

Analyte Unit					trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane (Freon 11)	Vinyl chloride
FSWP SHSC (shaded values indicate results above the value shown)					µg/L	µg/L	µg/L	µg/L
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID	NE	3	NE	0.24
MWA-41	8/21/2023	N	Shallow	MWA-41-082123	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323	< 0.41 U	2.9	< 0.36 U	< 0.22 U
MWA-82	8/21/2023	N	Shallow	MWA-82-082123	< 0.092 U	0.13 j	< 0.12 U	< 0.040 U
PA-03	8/22/2023	N	Shallow	PA-03-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-04	8/22/2023	N	Shallow	PA-04-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-08	8/21/2023	N	Shallow	PA-08-082123	< 0.092 U	0.092 j	< 0.12 U	< 0.040 U
PA-09	8/21/2023	N	Shallow	PA-09-082123	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-31	8/24/2023	N	Shallow	PA-31-082423	< 0.092 U	0.089 j	0.14 j	< 0.040 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81i-082123	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-10i	8/22/2023	N	Intermediate	PA-10i-082223	< 0.092 U	< 0.066 U	< 0.12 U	0.18
PA-15i	8/21/2023	N	Intermediate	PA-15i-082123	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-16i	8/22/2023	N	Intermediate	PA-16i-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-17iR	8/22/2023	N	Intermediate	PA-17iR-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-32i	8/24/2023	N	Intermediate	PA-32i-082423	< 0.092 U	< 0.066 U	< 0.12 U	0.055 j
PA-44i	8/22/2023	N	Intermediate	PA-44i-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11i(D)-082323	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31i(D)-082323	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323	< 4.1 U	< 2.6 U	< 3.6 U	< 2.2 U
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323	< 2.1 U	< 1.3 U	< 1.8 U	< 1.1 U
PA-18d	8/21/2023	N	Deep	PA-18D-082123	< 0.41 U	< 0.26 U	< 0.36 U	0.28 j
PA-19d	8/24/2023	N	Deep	PA-19D-082423	< 21 U	< 13 U	< 18 U	< 11 U
PA-20d	8/23/2023	N	Deep	PA-20D-082323	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
PA-20d	8/23/2023	FD	Deep	DUP-02-082323	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
PA-21d	8/23/2023	N	Deep	PA-21D-082323	< 210 U	< 130 U	< 180 U	< 110 U
PA-22d	8/23/2023	N	Deep	PA-22D-082323	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
PA-23d	8/22/2023	N	Deep	PA-23D-082223	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
PA-24d	8/22/2023	N	Deep	PA-24D-082223	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
PA-25d	8/22/2023	N	Deep	PA-25D-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223	< 0.092 U	< 0.066 U	< 0.12 U	< 0.040 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223	< 0.41 U	< 0.26 U	< 0.36 U	< 0.22 U
PA-30d	8/24/2023	N	Deep	PA-30D-082423	< 21 U	< 13 U	< 18 U	< 11 U

Notes:
 Bolded values indicate concentrations above the Method Detection Limit.
 Shaded values indicate concentrations above the FSWP SHSC.
 < = Compound not detected. Method Detection Limit shown.
 µg/L = micrograms per liter
 FD = Field Duplicate Sample
 FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria
 N = Normal Environmental Sample
 NE = Not Established
 SW8260C analyses performed by TestAmerica - Seattle, WA of Seattle.

Qualifiers - Organic:
 j = The analyte was positively identified below the RDL; associated numerical value is the approximate concentration of the analyte in the sample.
 U = Analyte was analyzed for, but not detected above, the limit displayed.
 UJ = Analyte was analyzed for, but not detected. The detection limit is a quantitative estimate.

**Table 2-2
Additional Compounds Results
Arkema Quarter 3, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon**

					Analyte Unit	Chloride mg/L	Perchlorate µg/L
FSWP SHSC (shaded values indicate results above the value shown)						230	1,800
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID			
MWA-41	8/21/2023	N	Shallow	MWA-41-082123		7.1	< 2.0 U
MWA-63	8/23/2023	N	Shallow	MWA-63-082323		17	< 2.0 U
MWA-82	8/21/2023	N	Shallow	MWA-82-082123		9.7	210
PA-03	8/22/2023	N	Shallow	PA-03-082223		4.5	< 2.0 U
PA-04	8/22/2023	N	Shallow	PA-04-082223		5.9	< 10 U
PA-08	8/21/2023	N	Shallow	PA-08-082123		53	17
PA-09	8/21/2023	N	Shallow	PA-09-082123		5.7	< 2.0 U
PA-31	8/24/2023	N	Shallow	PA-31-082423		4.6	< 4.0 U
MWA-81i	8/21/2023	N	Intermediate	MWA-81I-082123		19	< 2.0 U
PA-10i	8/22/2023	N	Intermediate	PA-10I-082223		53	< 4.0 U
PA-15i	8/21/2023	N	Intermediate	PA-15I-082123		41	< 10 U
PA-16i	8/22/2023	N	Intermediate	PA-16I-082223		35	< 4.0 U
PA-17iR	8/22/2023	N	Intermediate	PA-17IR-082223		8.8 J	< 2.0 U
PA-17iR	8/22/2023	FD	Intermediate	DUP-01-082223		32 J	< 10 U
PA-32i	8/24/2023	N	Intermediate	PA-32I-082423		71	< 20 U
PA-44i	8/22/2023	N	Intermediate	PA-44I-082223		370	< 10 U
MWA-11i(d)	8/23/2023	N	Deep	MWA-11I(D)-082323		830	< 10 U
MWA-31i(d)	8/23/2023	N	Deep	MWA-31I(D)-082323		27,000	98,000
MWA-56d	8/23/2023	N	Deep	MWA-56D-082323		14,000	14,000
MWA-58d	8/23/2023	N	Deep	MWA-58D-082323		20,000	50,000
PA-18d	8/21/2023	N	Deep	PA-18D-082123		80	< 10 U
PA-19d	8/24/2023	N	Deep	PA-19D-082423		320	< 20 U
PA-20d	8/23/2023	N	Deep	PA-20D-082323		840	< 10 U
PA-20d	8/23/2023	FD	Deep	DUP-02-082323		840	< 10 U
PA-21d	8/23/2023	N	Deep	PA-21D-082323		330	< 100 U
PA-22d	8/23/2023	N	Deep	PA-22D-082323		4,800	13,000
PA-23d	8/22/2023	N	Deep	PA-23D-082223		29,000	< 400 U
PA-24d	8/22/2023	N	Deep	PA-24D-082223		31,000	< 400 U
PA-25d	8/22/2023	N	Deep	PA-25D-082223		24	< 2.0 U
PA-26d	8/22/2023	N	Deep	PA-26D-082223		74	< 2.0 U
PA-27d	8/22/2023	N	Deep	PA-27D-082223		660	< 10 U
PA-30d	8/24/2023	N	Deep	PA-30D-082423		320	< 20 U

Notes:

Bolded values indicate concentrations above the Method Detection Limit.

Shaded values indicate concentrations above the FSWP SHSC.

< = Compound not detected. Method Detection Limit shown.

µg/L = micrograms per liter

mg/L = milligrams per liter

FD = Field Duplicate Sample

FSWP SHSC = Feasibility Study Work Plan Indirect Exposure Pathway Selected Hot Spot Criteria

N = Normal Environmental Sample

E300 analyses performed by TestAmerica - Seattle, WA of Seattle.

E314.0 analyses performed by TestAmerica - Sacramento, CA of West Sacramento.

Qualifiers - Organic:

J = The concentrations of the sample pair are outside of the duplicate criteria limits and associated results are qualified as estimates.

U = Analyte was analyzed for, but not detected above, the limit displayed.