1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

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

DATE
19 April 2024

SUBJECT
Quarter 1, 2024, Progress Report
(January through March 2024)
Arkema Inc. Portland Plant

REFERENCE
0732436.103

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 1, 2024, 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 1, 2024 (January through March).

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 1, 2024, 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 1, 2024 (January through March)

- 6 January 2024: ERM, on behalf of LSS, shut down the GWET system due to GWET system upgrades. The ODEQ was notified of the shutdown, and discharge was restarted on 29 January 2024.
- 10 January 2024: ERM, on behalf of LSS, submitted the November 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 January 2024: ERM, on behalf of LSS, submitted the December 2023 monthly and quarterly DMR for the performance monitoring of the stormwater SCM, including supplemental Copper Biotic Ligand Model (BLM) and Toxics data.
- 16 January 2024: ERM, on behalf of LSS, submitted the November 2023 Monthly Progress Report (MPR).

- 17 January 2024: ERM, on behalf of LSS, submitted the QPR for Quarter 4, 2023, to the ODEQ.
- 22 January 2024: The ODEQ provided comments regarding the October 2023 MPR.
- 14 February 2024: ERM, on behalf of LSS, submitted the Trespass Determination Memo.
- 16 February 2024: The GWET system was shut down for 10 hours due to a power outage, discharge restarted 17 February 2024.
- 17 February 2024: ERM, on behalf of LSS, submitted the December 2023 monthly DMR for NPDES permit compliance monitoring of the GWET system.
- 17 February 2024: ERM, on behalf of LSS, submitted the January 2024 monthly DMR for the performance monitoring of the stormwater SCM, including supplemental Copper BLM data.
- 19 February 2024: ERM, on behalf of LSS, submitted the December 2023 MPR.
- 22 February 2024: Representatives from ERM, LSS, and the ODEQ met in the ODEQ offices to discuss a revised path forward for the remediation in the uplands portion of the site.
- 26 February 2024: ERM, on behalf of LSS, began the Quarter 4, 2023, groundwater monitoring event. The event was completed on 29 February 2024.
- 1 March 2024: ERM, on behalf of LSS, shut down the GWET system due to plate separator maintenance, and discharge was restarted later that day.
- 4 March 2024: The ODEQ sent letter rejecting the Arkema Upland Feasibility Study, and transitioning to an Interim Remedial Action Measure approach to addressing Hot Spots in the uplands.
- 5 March 2024: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted later that day.
- 11 March 2024: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted later that day.
- 13 March 2024: ERM, on behalf of LSS, sent meeting minutes from the 22 February 2024 meeting to the ODEQ.
- 15 March 2024: ERM, on behalf of LSS, submitted the Quarter 4, 2023, Groundwater Monitoring Report to the ODEQ.
- 15 March 2024: ERM, on behalf of LSS, submitted the January 2024 monthly DMR for NPDES permit compliance monitoring of the GWET system.
- 16 March 2024: ERM, on behalf of LSS, shut down the GWET system due to solids handling maintenance, and discharge was restarted 26 March 2024.
- 18 March 2024: ERM, on behalf of LSS, submitted the January 2024 MPR.

- 20 March 2024: Representatives from ERM and the ODEQ held a meeting to discuss progress on the Interim Remedial Action Measures (IRAM) and Preliminary Design Investigation (PDI) Workplan.
- 29 March 2024: ERM, on behalf of LSS, submitted the February 2024 monthly DMR for the performance monitoring of the stormwater SCM, including supplemental Copper BLM data.
- 29 March 2024: ERM, on behalf of LSS, submitted the 2023 GWET System Effectiveness Evaluation Report to the ODEQ.

Actions Scheduled for Quarter 2, 2024 (April through June)

- The QPR for Quarter 1, 2024, will be prepared and submitted.
- LSS will continue to monitor discharges from the stormwater SCM and submit monthly monitoring reports as well as supplemental effluent toxics data and Copper BLM data to the ODEQ.
- LSS will continue to monitor discharges from the groundwater SCM and submit monthly DMRs 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 performance monitoring wells.
- LSS will submit the Draft PDI Workplan.
- LSS will conduct groundwater monitoring for Quarter 2, 2024.
- LSS will submit the Quarter 1, 2024, 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 4, 2023, groundwater monitoring data were reviewed and validated during Quarter 1, 2024. These data are included in Attachment 2 and are presented in the Quarterly Monitoring Report for Quarter 4, 2023.
- Quarter 1, 2024, 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 1, 2024.

Closing

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

Sincerely,

Brendan Robinson
Partner

Avery Soplata
Project Manager

Attachments

cc: Todd Slater, LSS
Laura Hanna, USEPA
Matt Stock, Joyce Ziker Parkinson
Lance Peterson, CDM
Karen Traeger, LSS
David Livermore, Integral

ATTACHMENT 1 QUARTER 1, 2024, WEEKLY PROGRESS REPORTS

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 29 December 2023 to 4 January 2024
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 49.7 gpm. Recovery / Extraction Wells EW-01, EW-03, EW-04, EW-05, 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 480,540 gallons or approximately 48 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 29 December 2023: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Univar onsite to batch caustic mini-bulk. Performed jar test at PR-1 effluent and adjusted EA-230 polymer dosage to 1.2 ppm (195 percent) on OIT. Installed maintenance hole cover at stormwater vault near the front gate Conex boxes. COD at FBR-REC was low, increased acetic acid pump CFP-8 to 6.4 spm from 5.3 spm.
- Saturday, 30 December 2023: Operator performed general O&M and cycled the filter press.
- Sunday, 31 December 2023: Operator performed general O&M and cycled the filter press. Observed LCP-3 was off and resulted in CFP-8, CFP-13, ORP sensor, and T-3 level sensor being off. Reset the UPS at LCP-3 and CFPs/sensors returned to normal operation.
- Monday, 1 January 2023: Operators performed general O&M and cycled the filter press.
- Tuesday, 2 January 2023: Operators performed general O&M and cycled the filter press. Replaced 12V UPS battery at LCP-3. Safety meeting with A. Gardner and J. Dauphinais regarding using the winch for pump pulling process. Staff will terminate the use of the winch until hazards have been eliminated and engineering controls in place.
- Wednesday, 3 January 2023: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Calibrated the YSI and ORP sensor at FBR-REC. Swapped out fouled ½-hp pump at Extraction Well EW-02 manually using the truck mounted hoist.

- Thursday, 4 January 2023: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Tidewater Environmental Services picked up two iron sludge boxes (2 and 4) for transportation to the Roosevelt Landfill Disposal facility.

Recovery / Extraction Well Status

- The current influent flow rate is **49 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: Swapped fouled ½ hp pump 3 January 2024.
- EW-13: Operators to change out fouled pump.
- RW-22: Off, ground fault, operators to investigate.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- All transducers are working at this time.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples collected on 4 January 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 5 January 2024 to 11 January 2024
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 6 January for wellfield upgrades. Uptime for the reporting period was 21 percent. The average system influent flow rate for the week was 17.4 gpm. Recovery / Extraction Wells EW-01, EW-03, EW-04, EW-05, EW-08, EW-09, EW-11, EW-13, EW-14, RW-14, and RW-25 were in operation before the shutdown during the reporting period. The total influent volume for the week was 170,910 gallons or approximately 17 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 5 January 2023: Operators performed general O&M and cycled the filter press. Operators performed the January water level event and setup the stormwater autosampler. Tidewater onsite to drop off boxes (2 & 4). A small release of vegetable oil occurred from the hydraulic tank on the tractor (3 gallons). Tidewater spill response team arrived to clean up the impacted area, scrape the gravel into drums, and dispose of it offsite.
- Saturday, 6 January 2023: Operator performed general O&M and cycled the filter press. Shutdown the wellfield and placed bio-side in recirculation between tanks T-3 and T-5 at 1145.
- Sunday, 7 January 2023: Operator performed general O&M.
- Monday, 8 January 2023: Operators performed general O&M. Odin onsite for wellfield upgrades, will be replacing monitoring well lids, sealing vaults, and tying Trenches 5, 6, and 7 into the intermediate line. Cochran onsite for a site walk of the MCC rooms. Operator applied LOTO to MCC-1, MCC-2, and MCC-3 to de-energize the wellfield. Operator restarted the stormwater autosampler due to the displaced weir.
- Tuesday, 9 January 2023: Operators performed general O&M, cycled the filter press, and cleaned downhole pumps. Pumped out the shallow and intermediate conveyance lines. Odin continued with wellfield upgrades, completed monitoring well lid replacement.
- Wednesday, 10 January 2023: Operators performed general O&M. Swapped out fouled pumps at Extraction Wells EW-01, EW-03, and EW-06. Changed out the

sample tubing at tank T-6. Transferred sludge drum from conveyance line cleaning into Fe sludge dewatering box. Odin continued with wellfield upgrades. Telluric onsite to assist Odin with vac truck.

- Thursday, 11 January 2023: Operators performed general O&M and cleaned downhole pumps. Odin continued with wellfield upgrades. Telluric onsite to assist Odin with vac truck.

Recovery / Extraction Well Status

- The current influent flow rate is **0 gpm**, with no extraction / recovery wells in operation, the plant is shut down for wellfield upgrades.
- EW-06, EW-07, EW-10, and EW-12 are currently designated as backup and out of service.
- EW-02, EW-03, and EW-06: Swapped out fouled pumps.
- RW-22: Off, ground fault, operators to investigate.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- All transducers are functional.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples were not collected this week.

Stormwater

- Weekly ISCO sampler inspection conducted and autosampler started 8 January 2024.
- River samples with RC boat collected on 9 January 2024.
- Stormwater samples collected on 12 January 2023 and sent to Eurofins.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 12 January 2024 to 18 January 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

The GWET system was shut down on 6 January and remained shut down during the reporting period as subcontractors continued to make well-field upgrades. Uptime for the reporting period was 0 percent. The average system influent flow rate for the week was 0 gpm. Recovery / Extraction Wells EW-01, EW-03, EW-04, EW-05, EW-08, EW-09, EW-11, EW-13, EW-14, RW-14, and RW-25 were in operation before the shutdown during the previous reporting period. The total influent volume for the week was 0 gallons or 0 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 12 January 2024: Operators performed general O&M and cycled the filter press. Operators cleaned extraction well pumps and performed general housekeeping around the site. Odin continued with well-field upgrades.
- Saturday, 13 January 2024: Operator performed general O&M and cycled the filter press. Operators cleaned extraction well pumps and performed general housekeeping around the site. Odin continued with well-field upgrades.
- Sunday, 14 January 2024: Operator performed general O&M.
- Monday, 15 January 2024: Operators performed general O&M and cycled the filter press. Operators cleaned extraction well pumps and performed general housekeeping around the site. Odin continued with well-field upgrades.
- Tuesday, 16 January 2024: Operators performed general O&M and cycled the filter press. Operators cleaned extraction well pumps and performed general housekeeping around the site. Odin continued with well-field upgrades. Operators and Odin left the site early due to incoming hazardous weather conditions.
- Wednesday, 17 January 2024: Operator performed general O&M. Odin did not mobilize to the site due to hazardous road conditions from the ice storm.
- Thursday, 18 January 2024: Operators performed general O&M and cleaned downhole pumps. Odin continued with well-field upgrades. Weather is being monitored as another ice storm is expected to start in the afternoon.

Recovery / Extraction Well Status

- The current influent flow rate is **0 gpm**, with no extraction / recovery wells in operation, the plant is shut down for wellfield upgrades.
- EW-06, EW-07, EW-10, and EW-12 are currently designated as backup and out of service.
- EW-02, EW-03, and EW-06: Swapped out fouled pumps.
- RW-22: Off, ground fault, operators to investigate.
- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- All transducers are functional.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples were not collected this week.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 19 January 2024 to 25 January 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

The GWET system was shut down on 6 January and remained shut down during the reporting period as subcontractors continued to make well-field upgrades. Uptime for the reporting period was 0 percent. The average system influent flow rate for the week was 0 gpm. Recovery / extraction wells were off for the shutdown. The total influent volume for the week was 0 gallons or 0 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 19 January 2024: Operators performed general O&M and housekeeping. Odin continued with well-field upgrades.
- Saturday, 20 January 2024: Operator performed general O&M. Odin continued with well-field upgrades.
- Sunday, 21 January 2024: Operator performed general O&M and observed flooding in the Admin building basement.
- Monday, 22 January 2024: Operators performed general O&M. Replaced PID UV shield and calibrated. Operators began replacing the fabric on the filter press plates (10 plates total). Odin continued with well-field upgrades.
- Tuesday, 23 January 2024: Operators performed general O&M and completed replacing fabric on filter press plates. Odin continued with well-field upgrades.
- Wednesday, 24 January 2024: Operators performed general O&M and general housekeeping around the site. Odin continued with well-field upgrades.
- Thursday, 25 January 2024: Operators performed general O&M and general housekeeping around the site. Odin continued with well-field upgrades. Cochran and JCI onsite for site walk of water damage to Admin building. FBR-REC turbidity high, transferred water from tanks T-1 to T-3.

Recovery / Extraction Well Status

- The current influent flow rate is **0 gpm**, with no extraction / recovery wells in operation, the plant is shut down for wellfield upgrades.
- Anticipated startup 1/29.
- RW-22: Off, ground fault, operators to investigate.

- RW-23: Off, not recharging and needs redevelopment.

Transducer Status

- All transducers are functional.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples were not collected this week.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 26 January 2024 to 1 February 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously upon startup 29 January 2024 at 1430. Uptime for the reporting period was 49 percent. The average system influent flow rate for the week was 20.2 gpm. Recovery / Extraction Wells EW-02, EW-04, EW-05, EW-06, EW-08, EW-10, EW-11, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 195,200 gallons or 19 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 26 January 2024: Operators performed general O&M. Odin continued with wellfield upgrades and pressure tested the shallow/intermediate conveyance lines. Cleaned the plate separator (PS-1). Installed plates with new fabric in the filter press. Pre-treatment side sump pump not functioning, used AODD pump to dewater the sump.
- Saturday, 27 January 2024: Operator performed general O&M. Odin completed wellfield upgrades and demobilized.
- Sunday, 28 January 2024: Operator performed general O&M.
- Monday, 29 January 2024: Operators performed general O&M and general housekeeping. Removed LOTO for MCC-1, 2, and 3. MCC-3 lost communication, operator reset breaker and communication restored. Backwashed carbon vessel CT-2. JCI onsite for site walk at Admin building to assess water damage and new location of security control panel. Started the wellfield at 0918 but GWET-INF flow meter was not registering a flow rate, stopped the wellfield and cleaned the flow meter sensor. Restarted the wellfield at 1430 and discharged to the river at 1620. Started Extraction Wells EW-02, EW-05, and EW-06. Changed out 1-hp pumps at EW-07 and EW-09. Observed cracks in piping at EW-01, EW-03, and EW-07 due to freezing temperatures earlier in the month. Delivery of glycolic acid (7 drums).
- Tuesday, 30 January 2024: Operators performed general O&M. Operators LOTO the 208V breaker for the malfunctioning sump pump on the pre-treatments side and performed repairs. Operators mobilized to the wellfield to assess piping and open valves in the vaults. Started EW-04, EW-08, EW-10, EW-11, EW-12, and EW-14. Transferred glycolic acid from drums to a tote.

- Wednesday, 31 January 2024: Operators performed general O&M. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Turned on the breaker for Extraction Well EW-13 totalizer and started well.
- Thursday, 1 February 2024: Operators performed general O&M. Collected weekly compliance samples and sent them to Eurofins. Repair plumbing at EW-03 and EW-04.

Recovery / Extraction Well Status

- The current influent flow rate is **75 gpm**, with Extraction / Recovery Wells EW-02, EW-04, EW-05, EW-06, EW-08, EW-10, EW-11, EW-12, EW-13, and EW-14 in operation.
- EW-03 and EW-04: Operators repaired plumbing (2/1/2024).
- EW-01 and EW-07: Operators to repair plumbing.
- EW-09: Off, Operator to rewire motor leads.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer malfunction, operator to investigate.
- RW-23: Not turned on.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducer malfunction, to be investigated.

Sampling

- LGAC check samples were not collected this week.
- Weekly compliance samples were collected 1 February 2024 and sent to Eurofins.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 2 February 2024 to 8 February 2024
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 70.2 gpm. Recovery / Extraction Wells EW-02, EW-04, EW-05, EW-06, EW-08, EW-10, EW-11, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 706,850 gallons or 70 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 2 February 2024: Operators performed general O&M and cycled the filter press. Recalibrated the ORP sensor at the FBR and increased the acetic acid from 8 percent to 9 percent, the ORP was drifting more positive. Calibrated the YSI for pH, ORP, DO, and conductivity. Backwashed carbon vessel CT-2. Operators repaired plumbing inside vaults at EW-01 and EW-07. Univar onsite to batch the caustic mini-bulk. Mobilized to wellfield to investigate failed piezometers, PA-07, PA-26d, RW-13, and RW-25 require new transducers.
- Saturday, 3 February 2024: Operators performed general O&M and cycled the filter press twice. Insulated the pre-treatment side eye wash station.
- Sunday, 4 February 2024: Operators performed general O&M and cycled the filter press twice. Decreased EA-640 polymer pump CFP-7 from 300 spm to 280 spm. Operators observed the sump pump on pre-treatment side not working, adjusted the float switch length and it is now operating. Observed EA-640 polymer bottom tote is weak, plan to upgrade plumbing.
- Monday, 5 February 2024: Operators performed general O&M and cycled the filter press. Collected LGAC check samples and sent to ALS. Phosphorus level in FBR is low, increased phosphoric acid timer by 1 min. Applied NFPA diamond and placards to glycolic acid tote. Changed out the HCl drum at tank T-3 with caustic drum. Upgraded plumbing at EA-640 polymer tote. Operators dewatered Extraction Well EW-04 into a tote. IES electrical contractor onsite for a site walk at the Admin building basement. ERM intercepted a trespasser and instructed to leave.
- Tuesday, 6 February 2024: Operators performed general O&M and cycled the filter press twice. S. Lucas fixed issue with operators not receiving alarms. Completed plumbing at EA-640 polymer tote. Increased EA-640 polymer pump CFP-7 from 280 spm to 285 spm. Operators installed a new bump stop at the front gate; the

gate is now operational. Mobilized to wellfield for site cleanup. Cleaned and reassembled downhole pumps.

- Wednesday, 7 February 2024: Operators performed general O&M, cycled the filter press twice, and performed general housekeeping. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Applied NFPA diamond hazard label to acetic acid and phosphoric acid tanks.
- Thursday, 8 February 2024: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Pulled pumps at Extraction / Recovery Wells EW-09, EW-10, EW-11, EW-12, and RW-23 for redevelopment.

Recovery / Extraction Well Status

- The current influent flow rate is **50 gpm**, with Extraction / Recovery Wells EW-02, EW-04, EW-05, EW-06, EW-08, EW-13, and EW-14 in operation.
- EW-01, EW-03, and EW-07: Operators worked on plumbing repairs on 2/2.
- EW-09: Off, pulled pump for redevelopment.
- EW-10: Off, pulled pump for redevelopment.
- EW-11: Off, pulled pump for redevelopment.
- EW-12: Off, pulled pump for redevelopment.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Off, pulled pump for redevelopment.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers to be replaced.

Sampling

- LGAC check samples were collected 5 February 2024 and sent to ALS.
- Weekly compliance samples were collected 8 February 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report Week from: 9 February 2024 to 15 February 2024
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 54.6 gpm. Recovery / Extraction wells EW-02, EW-03, EW-04, EW-05, EW-06, EW-07, EW-08, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 505,720 gallons or 50 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 9 February 2024: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Prepared AP4 pump for redevelopment event.
- Saturday, 10 February 2024: Operators performed general O&M and cycled the filter press.
- Sunday, 11 February 2024: Operators performed general O&M and cycled the filter press.
- Monday, 12 February 2024: Operators performed general O&M and cycled the filter press. Collected LGAC check samples and sent to ALS. Installed HASP and lock on backflow preventor shed. Operator mobilized to wellfield to complete the plumbing at extraction wells EW-01, EW-03, and EW-07. Repaired leak at EW-07 and turned on EW-03 and EW-07. Site walk with Cleaning Service at the Admin building. Tested AP4 pump at EW-12 to prepare for well development.
- Tuesday, 13 February 2024: Operators performed general O&M and cycled the filter press. Subcontractor Shannon and Wilson onsite for well development using Hydropuls. Operators utilized AP4 pump at Trench 6 and generated about 2,000 gallons of groundwater into totes with turbidity > 500 NTUs.
- Wednesday, 14 February 2024: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Subcontractor Shannon and Wilson onsite to complete well development at Trench 6 using Hydropuls. Operators utilized AP4 pump at Trench 6 and generated about 1,250 gallons of groundwater into totes with turbidity > 500 NTUs. Redeployed and started pump at EW-12. Tidewater Environmental Services

picked up two iron sludge boxes (1 and 2) for transportation to the Roosevelt Landfill Disposal facility. Set up ISCO sampler and stormwater bottle for upcoming rain event.

- Thursday, 15 February 2024: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Operator took Extraction Well EW-07 out of service, received EW07_LOAD_FLT alarm and plan to swap out the pump/motor. Observed pin floc at plate separator (PS-1) weirs and multiple backwashes at the pressure filters, operators plan to clean PS-1 plates.

Recovery / Extraction Well Status

- The current influent flow rate is **65 gpm**, with Extraction / Recovery Wells EW-02, EW-03, EW-04, EW-05, EW-06, EW-08, EW-12, EW-13, and EW-14 in operation.
- EW-01: Operators completed repairs on 2/12. Would not start, pump to be pulled for redevelopment.
- EW-03: Operators completed repairs on 2/12 and back in service.
- EW-07: Operators completed repairs on 2/12 and back in service. Off as of 2/15 due to LOAD_FLT alarm. Operators to swap out pump/motor.
- EW-09: Off, pulled pump for redevelopment.
- EW-10: Off, pulled pump for redevelopment.
- EW-11: Off, redevelopment complete. Operators to redeploy pump.
- EW-12: Redevelopment complete, redeployed and started pump 2/14.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Off, pulled pump for redevelopment.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were collected 12 February 2024 and sent to ALS.
- Weekly compliance samples were collected 16 February 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.
- Setup ISCO sampler and stormwater bottle for upcoming rain event.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 16 February 2024 to 22 February 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for on 16 February the wellfield was off for 10 hours due to a power outage. Uptime for the reporting period was 94 percent. The average system influent flow rate for the week was 61.9 gpm. Recovery / extraction wells EW-02, EW-03, EW-04, EW-05, EW-06, EW-07, EW-08, EW-11, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 597,990 gallons or 59 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 16 February 2024: Operators performed general O&M and cycled the filter press. Cleaned plate separator (PS-1) plates with solids accumulation. Mobilized to river and collected samples with RC boat. Deployed 1/2-HP pump at Extraction Well EW-11 and restarted.
- Saturday, 17 February 2024: Operators performed general O&M and cycled the filter press. Operator observed a power outage occurred at 2015 on 2/16 with the air compressor and wellfield off. Restarted the GWET system and wellfield at 0620 with flow rates approximately 75 gpm. Introduced Trench 6 totes from redevelopment into GWET-INF. Set repaired pump P-7 in place, operators need to fit-up and connect power.
- Sunday, 18 February 2024: Operators performed general O&M and cycled the filter press. Observed ORP at FBR-REC indicating positive readings since power outage, plan to reseed the FBR. Adjusted EA-230 polymer dosage from 180 percent (1.1 ppm) to 195% (1.2 ppm). Continued to introduce totes from Trench 6 into GWET-INF.
- Monday, 19 February 2024: Operators performed general O&M and cycled the filter press. Backwashed carbon vessel CT-2. Univar onsite to batch the caustic mini-bulk. Replaced the FBR-REC ORP sensor salt bridge and recalibrated. Site walk with Pacific Fence to look at fencing repairs across the site. Continued to introduce totes from Trench 6 into GWET-INF. Pulled and redeployed a clean 1-HP pump from Extraction Well EW-07. Operators fall protection equipment inspected by ERMer M. Reyes. EW-03 and EW-04 motor overload fault alarm, able to restart and will continue to monitor.

- Tuesday, 20 February 2024: Operators performed general O&M and cycled the filter press twice. Collected LGAC check samples and sent to ALS. Mobilized to Scappoose Wastewater Treatment Plant to obtain activated sludge (RAS). Continued to introduce totes from Trench 6 into GWET-INF. Operator updated Stormwater program for a new email server. Operator mobilized to the wellfield to recalibrate transducers (PA-17i, PA-10i, PA-05, RW-24i, PA-06, PA-12i, PA-20d, MWA-66i, RW-11i, MWA-19, MWA-34i, PA-07, RW-20, PA-08, PA-09, PA-16i, and PA-26d).
- Wednesday, 21 February 2024: Operators performed general O&M, cycled the filter press, and general housekeeping. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Utilized the long reach forklift to reposition the Stormwater Conex box. Installed a damper after pump P-PS-9. Adjusted PID inputs for Extraction Well EW-13 level control. The Portland Police Department were notified of campsite with vehicles in Lot 1. Police officers met with operator and had the vehicles towed offsite.
- Thursday, 22 February 2024: Operators performed general O&M and cycled the filter press. Collected weekly compliance samples and sent to Eurofins. Continued to introduce Trench 6 totes into GWET-INF. Adjusted PID inputs for Extraction Well EW-02 level control. Dewatered outside cone bottom tank T-7c into dewater box #7 to prepare for redevelopment event.

Recovery / Extraction Well Status

- The current influent flow rate is **57 gpm**, with Extraction / Recovery wells EW-02, EW-03, EW-04, EW-05, EW-07, EW-11, EW-12, EW-13, and EW-14 in operation.
- EW-01: Would not start, suspect hose fouled out, pump to be pulled for redevelopment.
- EW-03: Motor overload fault, operators to swap out pump 2/23.
- EW-06: Operator turned off 2/18.
- EW-07: Operators changed out 1-HP pump 2/19.
- EW-08: Operator turned off 2/18.
- EW-09: Off, pulled pump for redevelopment.
- EW-10: Off, pulled pump for redevelopment.
- EW-11: Operators redeployed ½-HP pump 2/16.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Off, pulled pump for redevelopment.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were collected 20 February 2024 and sent to ALS.
- Weekly compliance samples were collected 22 February 2024 and sent to Eurofins.

Stormwater

- River and stormwater samples were collected on 16 and 19 February 2024 and sent to Eurofins.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 23 February 2024 to 29 February 2024
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 52.0 gpm. Recovery / Extraction Wells EW-02, EW-03, EW-04, EW-05, EW-07, EW-08, EW-09, EW-11, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 480,480 gallons or 48 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 23 February 2024: Operators performed general O&M and cycled the filter press. Operators performed the February water level event. Totes, hoses, and rental AP4 pumps were prepared for redevelopment. Operators backwashed carbon vessel CT-2 and replaced the GWET-EFF pH probe. Transducers were recalibrated at PA-21d, PA-28, and MWA-66i.
- Saturday, 24 February 2024: Operator performed general O&M and cycled the filter press.
- Sunday, 25 February 2024: Operator performed general O&M and cycled the filter press. Q1 quarterly groundwater sampling event began.
- Monday, 26 February 2024: Operators performed general O&M and cycled the filter press. Q1 quarterly groundwater sampling event continued. Shannon and Wilson field technician was onsite for redevelopment efforts. Trench 6 and Trench 5 were redeveloped. FBR-EFF pH was low at 7.1 pH, operator lowered acetic acid from 10 percent to 9 percent stroke rate.
- Tuesday, 27 February 2024: Operators performed general O&M and cycled the filter press. LGAC check samples were collected and sent to ALS. Q1 quarterly groundwater sampling event continued. Shannon and Wilson field technician was onsite for redevelopment efforts. Trench 5 and Trench 4 were redeveloped. Redevelopment water contained in totes was transferred to GWET-INF via Recovery Well RW-13i.
- Wednesday, 28 February 2024: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Q1 quarterly groundwater sampling event was completed.

Pumps were pulled from Extraction Wells EW-01 and EW-02. Shannon and Wilson field technician was onsite for redevelopment efforts. Trench 4 and Trench 1 were redeveloped. Redevelopment water contained in totes was transferred to GWET-INF via Recovery Well RW-13i. Clean pumps at EW-07, EW-08, EW-10, EW-11 were redeployed and EW-07 and EW-08 were restarted.

- Thursday, 29 February 2024: Operators performed general O&M and cycled the filter press. Weekly compliance samples were collected and sent to Eurofins. Shannon and Wilson field technician was onsite for redevelopment efforts. Trench 1 and Recovery Well RW-23 were redeveloped. Redevelopment water contained in totes was transferred to GWET-INF via Recovery Well RW-13i. OIT alarm system was updated for operators to receive emails, text alerts.

Recovery / Extraction Well Status

- The current influent flow rate is **70 gpm**, with Extraction / Recovery Wells EW-02, EW-04, EW-05, EW-07, EW-08, EW-09, EW-12, EW-13, and EW-14 in operation.
- EW-01: Redeveloped 1-HP pump to be redeployed 3/1.
- EW-02: Redeveloped, 1/2-HP pump redeployed 2/29 and currently at 6 gpm.
- EW-03: Operators to swap out pump, motor overload fault.
- EW-06: Operator turned off 2/18.
- EW-07: Redeveloped, 1-HP pump redeployed 2/28 and currently at 7.8 gpm.
- EW-08: Operator turned off 2/18.
- EW-09: Redeveloped, 1-HP pump redeployed 2/28 and currently at 5.8 gpm.
- EW-10: Redeveloped, 1-HP pump installed 2/28.
- EW-11: Redeveloped, 1/2-HP pump installed 2/28.
- EW-12: Redeveloped, 1-HP pump redeployed 2/26 and currently at 10 gpm.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Redeveloped, 1-HP pump to be redeployed 3/1.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were collected 26 February 2024 and sent to ALS.

- Weekly compliance samples were collected 29 February 2024 and sent to Eurofins.
- Q1 Quarterly groundwater samples were collected 26 February 2024 through 28 February 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 1 March 2024 to 7 March 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously except for a planned 2-hour shutdown to clean PS-1 on 3/1 and unplanned 4-hour shutdown due a pressure filter alarm on 3/5. Uptime for the reporting period was 96 percent. The average system influent flow rate for the week was 66.5 gpm. Recovery / Extraction Wells EW-01 through EW-10, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 631,990 gallons or 63 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 1 March 2024: Operators performed general O&M and cycled the filter press. Operators locked-out-tagged-out (LOTO) the sump pump on the pre-treatment side to repair the discharge hose that was not properly secured. The wellfield was shut down for 2 hours to clean the plate separator (PS-1). Backwashed carbon vessel CT-2. Returned rental AP4 pumps. Performed TSS on well development samples.
- Saturday, 2 March 2024: Operator performed general O&M and cycled the filter press. Added oil to air compressor. Cleaned up polymer spill on pre-treatment side.
- Sunday, 3 March 2024: Operator performed general O&M and cycled the filter press. Flushed out polymer area drains on pre-treatment side. Decreased CFP-8 acetic acid stroke rate from 7 percent to 6 percent, ORP was below -400 mV.
- Monday, 4 March 2024: Operators performed general O&M and cycled the filter press twice. LGAC check samples were collected and sent to ALS. Calibrated the handheld YSI for pH, DO, and ORP. Calibrated the FBR pH and ORP probes. Adjusted PID setpoints for level control on extraction well EW-12. Switched to backwash pump P-3 from P-4.
- Tuesday, 5 March 2024: Operators performed general O&M and cycled the filter press twice. Wellfield shutdown at 0230 due to backwash pump P-3 failed to start causing the pressure filters (PF-1) to reach high pressure setpoint. Restarted wellfield at 0630. Quarterly process check samples were collected and sent to Eurofins. Changed out downhole pumps at extraction wells EW-01 and EW-03.

- Wednesday, 6 March 2024: Operators performed general O&M and cycled the filter press twice. Operator started the autosampler 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. Repaired leak on y-strainer at extraction well EW-10 and turned it on. Increased CFP-8 acetic acid stroke rate from 6 percent to 8 percent, ORP was trending positive. Cleaned ½ hp and 1 hp pumps. Turned off EW-10 and EW-06 due to solids handling issues. Pump P-PS-9 failed, increase pressure from 40 psi to 50 psi and pump was operational.
- Thursday, 7 March 2024: Operators performed general O&M and cycled the filter press twice. Quarterly compliance samples were collected and sent to Eurofins. Started stormwater autosampler.

Recovery / Extraction Well Status

- The current influent flow rate is **70 gpm**, with Extraction / Recovery Wells EW-01, EW-03, EW-04, EW-05, EW-08, EW-09, EW-12, EW-13, and EW-14 in operation.
- EW-01: Redeployed 1-HP pump 3/5.
- EW-02: Off 3/5, ½-HP pump fouled and to be swapped out.
- EW-03: Redeployed 1-HP pump 3/5.
- EW-06: Operator turned off 3/6 for solids handling and low water column.
- EW-07: Off 3/5, 1-HP Pump fouled and to be swapped out.
- EW-10: Repaired leaks and bump tested.
- EW-11: Off, to be bump tested and checked for leaks.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Redeveloped, 1-HP pump to be redeployed.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were collected 4 March 2024 and sent to ALS.
- Quarterly process checks were conducted 5 March 2024 and sent to Eurofins.
- Quarterly compliance samples were collected 7 March 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted and started autosampler 7 March 2024.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 8 March 2024 to 14 March 2024
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 due to a failed mixer (AG-1) in the precipitate reactor on 11 March 2024. Uptime for the reporting period was 98 percent. The average system influent flow rate for the week was 61.8 gpm. Recovery / Extraction Wells EW-01 through EW-10, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 485,300 gallons or 48 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 8 March 2024: Operators performed general O&M and cycled the filter press twice. Backwashed carbon vessel CT-2. Sheen was observed on the bio-side floor, operators investigated tanks and found nothing unusual. Operator lowered GWET influent flow rates due to multiple backwashes on the pressure filters, suspect biofouling.
- Saturday, 9 March 2024: Operator performed general O&M and cycled the filter press twice.
- Sunday, 10 March 2024: Operator performed general O&M and cycled the filter press. Floc flowing over weir in the plate separator (PS-1) was observed, five plates in PS-1 were cleaned to correct the issue.
- Monday, 11 March 2024: Operators performed general O&M and cycled the filter press twice. Operator shut down the wellfield at 0430 due to failed mixer (AG-1) in the precipitate reactor. Operator able to turn AG-1 on with HOA switch in hand mode and restarted the wellfield at 0730. A jar test on GWET-INF was performed and the polymer dosage was increased to 1.37 ppm from 1.1 ppm.
- Tuesday, 12 March 2024: Operators performed general O&M and cycled the filter press twice. Camera inspection was completed at monitoring well MWA-34i and a hole was observed in the casing at around 17.5 ft bgs. A driller was contacted to repair/replace the monitoring well. Western States Fire Protection was onsite to inspect fire extinguishers, hydrants, and backflow preventors. Univar was onsite to batch the caustic mini-bulk.

- Wednesday, 13 March 2024: Operators performed general O&M and cycled the filter press twice. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. ½ hp and 1 hp pumps were cleaned. Operator mobilized to the wellfield to recalibrate the following transducers: PA-17, PA-03, PA-27d, PA-19d, PA-30d, PA-21d, PA-20d, MWA-58d, PA-22d, PA-23d, PA-15i, PA-16i, PA-25d. GWET team discussed pump pulling procedures.
- Thursday, 14 March 2024: Operators performed general O&M and cycled the filter press twice. Compliance and stormwater samples were collected and sent to Eurofins.

Recovery / Extraction Well Status

- The current influent flow rate is **70 gpm**, with Extraction / Recovery Wells EW-01, EW-03, EW-04, EW-05, EW-08, EW-09, EW-10, EW-12, EW-13, and EW-14 in operation.
- EW-02: Off, ½-HP pump fouled and to be swapped out.
- EW-06: Off to lower flow rates.
- EW-07: 1-HP pump fouled and to be swapped out.
- EW-11: Off, to be bump tested and checked for leaks.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Redeveloped, 1-HP pump to be redeployed.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were not collected.
- Compliance samples were collected 14 March 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.
- Stormwater samples were collected 14 March 2024 and sent to Eurofins.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 15 March 2024 to 21 March 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge proceeded continuously until a planned shutdown to clean biosolids in the GWET plant on Saturday, 16 March 2024. Uptime for the reporting period was 22 percent. The average system influent flow rate for the week was 21.0 gpm. Recovery / Extraction Wells EW-01, EW-03, EW-04, EW-05, EW-08, EW-09, EW-10, EW-12, EW-13, and EW-14 were in operation during the reporting period. The total influent volume for the week was 175,550 gallons or 17 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 15 March 2024: Operators performed general O&M, cycled the filter press, and backwashed carbon vessel CT-2.
- Saturday, 16 March 2024: Operator performed general O&M and cycled the filter press. Multiple backwash events occurred on the pressure filters, 12 events total over 24 hours. Operator observed high turbidities and biosolids at PF-EFF, FBR-INF, and SF-1. At 1322, operator shut down the wellfield and placed the bio side in a recirculation loop from Tanks T-3 to T-5.
- Sunday, 17 March 2024: Operator performed general O&M and cycled the filter press.
- Monday, 18 March 2024: Operators performed general O&M and cycled the filter press. Operators cleaned and recalibrated the pre-treatment PID, cleaned the plate separator (PS-1), dewatered tank T-9 to the outside flat bottom tank. Operators then added 3.5 gallons of bleach (12.5 percent sodium hypochlorite) to Tank T-12 and begun recirculating water from Tanks T-9 to SF-1 to T-5 and back to T-9. Operators then added 2 gallons of Peragreen (peracetic acid) to the pre-treatment sump and recirculated water from Tanks T-7 to PR-1 to PS-1 to T-1 to sump and back to T-7.
- Tuesday, 19 March 2024: Operators performed general O&M and cycled the filter press. The emergency shower/eyewash did not pass inspection due to cold not tepid water; the water heater was inoperable. Operators replaced the water heater with a new unit and the shower now produces tepid water. Operators continued recirculating both the pre-treatment and bio sides of the GWET plant. Operators added 2.5 gallons of bleach to Tank T-8 and recirculated water between the cone

bottom tanks (T-7A + T-7B) to T-8 to T-2 and the three pressure filter vessels. The addition of 4 gallons of Peragreen was added to the Tanks T-7 to T-1 loop and 1.5 gallons of bleach was added to the bio-side loop. GWET team including B. Robinson and A. Gardner mobilized to Trench 1 to walk-through the SOP and JHA of the pump pulling process at Extraction Well EW-01.

- Wednesday, 20 March 2024: Operators performed general O&M. Univar delivered one 55-gallon drum of Liquichlorine (12.5 percent sodium hypochlorite). Tidewater Environmental Services picked up two iron sludge boxes (1 and 2) for transportation to the Roosevelt Landfill Disposal facility. Operators continued recirculating both the pre-treatment and bio sides of the GWET plant. Operators added 3.5 gallons of bleach to tank T-2 to pressure filters loop, free chlorine at > 10 ppm. Operators then added an air bubbler in Tank T-2, also added 13 gallons of bleach to the bio-side loop, free chlorine at > 10 ppm. The sand filter (SF-1) was airlifted. The Tank T-5 bag filters were changed multiple times, first 10 um filters were used then 0.5 um filters.
- Thursday, 21 March 2024: Operators performed general O&M. Operators continued recirculating both the pre-treatment and bio sides of the GWET plant. SF-1 was airlifted at 20 psi (150 SCFH). Six gallons of bleach was added to the bio-side loop. Tank T-2 was recirculated to pressure filters loop, free chlorine at 0 ppm. Gate locks were replaced with new padlocks, four along the fence line, the backflow building, Connex boxes, and the guard shack.

Recovery / Extraction Well Status

- The current influent flow rate is **0 gpm**, with extraction / recovery wells off since 16 March at 1322.
- EW-01 + EW-02: Off, until Trench 1 treated with glycolic acid. EW-01 1-HP pump changed out.
- EW-07: 1-HP pump fouled and to be swapped out.
- EW-11: Off, to be bump tested and checked for leaks.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: Redeveloped, 1-HP pump to be redeployed.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were not collected.
- Compliance samples were not collected.

Stormwater

- Weekly ISCO sampler inspection conducted.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 22 March 2024 to 28 March 2024
Former Arkema Facility, Portland, Oregon

Plant Operations

Groundwater extraction at select recovery / extraction wells, treatment, and discharge were started Tuesday, 26 March 2024 following a planned shutdown to clean biosolids in the GWET plant. Uptime for the reporting period was 39 percent. The average system influent flow rate for the week was 12.2 gpm. Recovery / Extraction Wells EW-EW-03 through EW-14 were in operation during the reporting period. The total influent volume for the week was 119,580 gallons or 12 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 22 March 2024: Operators performed general O&M. Operators continued recirculating the bio side of the GWET plant from Tanks T-5, T-9, and sand filter (SF-1). Chorine residual at 1 ppm. The bleed valve and gauge were replaced on T-12 bag filter cannister. The outside poly tank with T-9 water was drained to the sump (SP-2). Jar test was performed on Tank T-9 water and determined that 0.1 ppm of coagulant (M-1883) was needed to drop out solids. Tank T-5 turbidity was 90 NTU.
- Saturday, 23 March 2024: Operator performed general O&M. Operator continued recirculating the bio side of the GWET plant. Tank T-5 turbidity approximately 90 NTU.
- Sunday, 24 March 2024: Operator performed general O&M. Operators continued recirculating the bio side of the GWET plant. Tank T-5 turbidity approximately 90 NTU.
- Monday, 25 March 2024: Operators performed general O&M. Received permission from PM to recirculate water from Tank T-5 to GWET-INF. Tank T-9 turbidity at 80 NTU with 2.55 mg/L total iron. Operators decided to recirculate Tank T-9 to GWET-INF and T-5 to T-9. Site walk with HVAC company of Administration building.
- Tuesday, 26 March 2024: Operators performed general O&M and cycled the filter press. Backwashed carbon vessels CT-1 and CT-2. Tank T-9 and GWET-INF turbidity at 10 NTU. Started up all extraction wells in Trenches 4, 5, 6, and 7. Flow rates at 45 gpm.
- Wednesday, 27 March 2024: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES

compliance samples. Started up extraction wells in Trenches 2 and 3. Wellfield flow rates at 70 to 75 gpm. Due to increase in backwash frequency, operator lowered flow rates in Trenches 2 and 3 and now operating at flow rate of 53 gpm. Operator met with the fire inspector to update the site knock box keys.

- Thursday, 28 March 2024: Operators performed general O&M. Compliance samples were collected and sent to Eurofins. Operators performed March water level event. Recalibrated transducers at PA-04, PA-8i, MWA-69, PA-06, PA-28, PA-14i, and MWA-47.

Recovery / Extraction Well Status

- The current influent flow rate is **53 gpm**, with Extraction / Recovery Wells EW-03 through EW-06 and EW-08 through EW-14 in operation.
- EW-01 + EW-02: Off, until Trench 1 treated with glycolic acid.
- EW-07: 1-HP pump fouled and to be swapped out, EW-07 LOAD_FLT.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: 1-HP pump to be redeployed.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.
- Recalibrated transducers PA-04, PA-8i, MWA-69, PA-06, PA-28, PA-14i, and MWA-47 on 3/28.

Sampling

- LGAC check samples were not collected.
- Compliance samples were collected 28 March 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler inspection conducted.

1050 SW 6th Avenue
Suite 1650
Portland, OR 97204

T +1 503 488 5282
F +1 503 488 5142

erm.com

Groundwater Extraction and Treatment (GWET) System Weekly Progress Report
Week from: 29 March 2024 to 4 April 2024
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 53.0 gpm. Recovery / Extraction Wells EW-EW-03 through EW-06 and EW-08 through EW-14 were in operation during the reporting period. The total influent volume for the week was 480,470 gallons or 48 percent of the target capture objective of 100 gpm at 100 percent uptime.

- Friday, 29 March 2024: Operators performed general O&M and cycled the filter press. The backwash flow rate was adjusted from 80 gpm to 105 gpm on pump P-4. Operator performed LOTO on backwash pump P-3 and was able to turn the shaft with a pipe wrench. Pump P-3 was back in service, and P-4 was out of service. Extraction well pressure gauge readings were documented in the wellfield.
- Saturday, 30 March 2024: Operator performed general O&M and cycled the filter press.
- Sunday, 31 March 2024: Operator performed general O&M and cycled the filter press.
- Monday, 1 April 2024: Operators performed general O&M and cycled the filter press. Flow rate setpoints were increased to 5 gpm from 3 gpm at Extraction Wells EW-03 and EW-04. Hach pH probe in tank T-6 was installed and calibrated. Monthly calibrations were performed on the YSI, FBR ORP probe, and FBR-EFF probe. All three pressure filter vessels were manually backwashed.
- Tuesday, 2 April 2024: Operators performed general O&M and cycled the filter press. All three pressure filter vessels were manually backwashed. Solids were drained from outside cone bottom tanks T-7A+B into a dewatering box. Batteries at front gate sensor were replaced. Home Depot delivered river rock for sink hole next to the stormwater Connex box.
- Wednesday, 3 April 2024: Operators performed general O&M and cycled the filter press. Operator started the auto-sampler for collection of the weekly NPDES compliance samples. Western States Fire Protection was onsite to exchange three fire extinguishers. Operator updated the text alarm descriptions. All three pressure filter vessels were manually backwashed.
- Thursday, 4 April 2024: Operators performed general O&M and cycled the filter press. Compliance samples were collected and sent to Eurofins. NorthStar

Chemical onsite to batch coagulant mini-bulk (M-1883). New GF Signet pH probe at Tank T-6 was operating inconsistently; operators plan on connecting the new Hach pH probe to the PLC.

Recovery / Extraction Well Status

- The current influent flow rate is **53 gpm**, with Extraction / Recovery Wells EW-03 through EW-06 and EW-08 through EW-14 in operation.
- EW-01 + EW-02: Off, until Trench 1 treated with glycolic acid.
- EW-07: Load fault alarm, suspect fouled check valve, pressure gauge at 50 psi.
- RW-14: Not turned on.
- RW-22: Off, ground fault, operators to investigate.
- RW-25: Off, transducer to be replaced.
- RW-23: 1-HP pump to be redeployed.

Transducer Status

- PA-07, PA-26d, RW-13, and RW-25: Transducers malfunctioned, replacement transducers ordered.

Sampling

- LGAC check samples were collected 1 April 2024 and sent to ALS.
- Compliance samples were collected 4 April 2024 and sent to Eurofins.

Stormwater

- Weekly ISCO sampler and stormwater pond inspection conducted.

ATTACHMENT 2 QUARTER 4, 2023, GROUNDWATER MONITORING DATA

Table 2-1
Volatile Organic Compounds Results
Arkema Quarter 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

				Analyte	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene
				Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				FSWP SHSC (shaded values indicate results above the value shown)	NE	11	0.4	1.6	47	710	NE	NE	NE	0.076
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 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	12/12/2023	N	Shallow	MWA-63-121223	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	**0.27 j**	**0.40 j**	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.071 j**	*< 0.035 U*	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-03	12/11/2023	N	Shallow	PA-03-121123	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.11 j**	*< 0.035 U*	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-04	12/12/2023	N	Shallow	PA-04-121223	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.22**	**0.21**	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-08	12/11/2023	N	Shallow	PA-08-121123	*< 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	12/11/2023	N	Shallow	PA-09-121123	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.047 j**	*< 0.035 U*	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-31	12/12/2023	N	Shallow	PA-31-121223	*< 0.038 U*	**0.22 J+**	*< 0.056 U*	*< 0.070 U*	**0.21 J+**	**0.80**	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
MWA-81i	12/10/2023	N	Intermediate	MWA-81I-121023	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.092 j**	*< 0.035 U*	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-10i	12/12/2023	N	Intermediate	PA-10I-121223	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	*< 0.025 U*	**0.10 j**	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-15i	12/11/2023	N	Intermediate	PA-15I-121123	*< 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-16i	12/11/2023	N	Intermediate	PA-16I-121123	*< 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	12/11/2023	N	Intermediate	PA-17IR-121123	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.065 j**	**0.17 j**	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
PA-32i	12/13/2023	N	Intermediate	PA-32I-121323	*< 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-32i	12/13/2023	FD	Intermediate	DUP-02-121323	*< 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	12/10/2023	N	Intermediate	PA-44I-121023	*< 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-11i(d)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 0.038 U*	*< 0.025 U*	*< 0.056 U*	*< 0.070 U*	**0.029 j**	*< 0.035 U*	*< 0.084 U*	*< 0.15 U*	*< 0.050 U*	*< 0.17 U*
MWA-31i(d)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	**0.31 j**	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
MWA-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 1.8 U*	*< 3.9 U*	*< 5.2 U*	*< 2.4 U*	*< 2.2 U*	*< 2.8 U*	*< 2.9 U*	*< 4.3 U*	*< 4.1 U*	*< 3.3 U*
MWA-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	*< 0.22 U*	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
MWA-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 0.90 U*	*< 2.0 U*	*< 2.6 U*	*< 1.2 U*	*< 1.1 U*	*< 1.4 U*	*< 1.5 U*	*< 2.2 U*	*< 2.1 U*	*< 1.7 U*
PA-18d	12/12/2023	N	Deep	PA-18D-121223	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	*< 0.22 U*	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
PA-19d	12/13/2023	N	Deep	PA-19D-121323	*< 36 U*	*< 78 U*	*< 100 U*	*< 48 U*	*< 44 U*	*< 56 U*	*< 58 U*	*< 86 U*	*< 82 U*	*< 66 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	**2.8**	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
PA-21d	12/12/2023	N	Deep	PA-21D-121223	*< 90 U*	*< 200 U*	*< 260 U*	*< 120 U*	*< 110 U*	*< 140 U*	*< 150 U*	*< 220 U*	*< 210 U*	*< 170 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	*< 0.22 U*	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
PA-23d	12/11/2023	N	Deep	PA-23D-121123	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	*< 0.22 U*	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
PA-24d	12/11/2023	N	Deep	PA-24D-121123	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	*< 0.22 U*	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
PA-25d	12/11/2023	N	Deep	PA-25D-121123	*< 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	12/11/2023	N	Deep	PA-26D-121123	*< 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	12/12/2023	N	Deep	PA-27D-121223	*< 0.18 U*	*< 0.39 U*	*< 0.52 U*	*< 0.24 U*	**0.25 j**	*< 0.28 U*	*< 0.29 U*	*< 0.43 U*	*< 0.41 U*	*< 0.33 U*
PA-30d	12/13/2023	N	Deep	PA-30D-121323	*< 36 U*	*< 78 U*	*< 100 U*	*< 48 U*	*< 44 U*	*< 56 U*	*< 58 U*	*< 86 U*	*< 82 U*	*< 66 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID	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
Analyte					**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**
Unit					**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**	**µg/L**
FSWP SHSC (shaded values indicate results above the value shown)					**NE**	**NE**	**14**	**3.7**	**1.5**	**NE**	**10**	**NE**	**15**	**NE**
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 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	12/12/2023	N	Shallow	MWA-63-121223	*< 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	12/10/2023	N	Shallow	MWA-82-121023	*< 0.20 U*	*< 0.17 U*	**0.052 j**	*< 0.043 U*	*< 0.060 U*	*< 0.15 U*	*< 0.050 U*	*< 0.025 U*	*< 0.050 U*	*< 0.060 U*
PA-03	12/11/2023	N	Shallow	PA-03-121123	*< 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	12/12/2023	N	Shallow	PA-04-121223	*< 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	12/11/2023	N	Shallow	PA-08-121123	*< 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	12/11/2023	N	Shallow	PA-09-121123	*< 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	12/12/2023	N	Shallow	PA-31-121223	*< 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	12/10/2023	N	Intermediate	MWA-81I-121023	*< 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	12/12/2023	N	Intermediate	PA-10I-121223	*< 0.20 U*	*< 0.17 U*	**0.22 j**	*< 0.043 U*	*< 0.060 U*	*< 0.15 U*	*< 0.050 U*	*< 0.025 U*	*< 0.050 U*	*< 0.060 U*
PA-15i	12/11/2023	N	Intermediate	PA-15I-121123	*< 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	12/11/2023	N	Intermediate	PA-16I-121123	*< 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	12/11/2023	N	Intermediate	PA-17IR-121123	*< 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-32i	12/13/2023	N	Intermediate	PA-32I-121323	*< 0.20 U*	*< 0.17 U*	**0.12 j**	*< 0.043 U*	*< 0.060 U*	*< 0.15 U*	*< 0.050 U*	*< 0.025 U*	*< 0.050 U*	*< 0.060 U*
PA-32i	12/13/2023	FD	Intermediate	DUP-02-121323	*< 0.20 U*	*< 0.17 U*	**0.13 j**	*< 0.043 U*	*< 0.060 U*	*< 0.15 U*	*< 0.050 U*	*< 0.025 U*	*< 0.050 U*	*< 0.060 U*
PA-44i	12/10/2023	N	Intermediate	PA-44I-121023	*< 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)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 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)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 0.61 U*	*< 0.57 U*	*< 0.46 U*	*< 0.42 U*	*< 0.18 U*	*< 0.55 UJ*	*< 0.48 U*	*< 0.35 U*	*< 0.46 U*	*< 0.32 U*
MWA-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 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-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 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-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 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	12/12/2023	N	Deep	PA-18D-121223	*< 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	12/13/2023	N	Deep	PA-19D-121323	*< 120 U*	*< 110 U*	*< 92 U*	*< 84 U*	*< 36 U*	*< 110 U*	*< 96 U*	*< 70 U*	*< 92 U*	*< 64 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 0.61 U*	*< 0.57 U*	*< 0.46 U*	**0.63 j**	*< 0.18 U*	*< 0.55 U*	*< 0.48 U*	*< 0.35 U*	*< 0.46 U*	*< 0.32 U*
PA-21d	12/12/2023	N	Deep	PA-21D-121223	*< 310 U*	*< 290 U*	*< 230 U*	*< 210 U*	*< 90 U*	*< 280 U*	*< 240 U*	*< 180 U*	*< 230 U*	*< 160 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 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	12/11/2023	N	Deep	PA-23D-121123	*< 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	12/11/2023	N	Deep	PA-24D-121123	*< 0.61 U*	*< 0.57 U*	*< 0.46 U*	**1.1**	*< 0.18 U*	*< 0.55 U*	*< 0.48 U*	*< 0.35 U*	*< 0.46 U*	*< 0.32 U*
PA-25d	12/11/2023	N	Deep	PA-25D-121123	*< 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	12/11/2023	N	Deep	PA-26D-121123	*< 0.20 U*	*< 0.17 U*	*< 0.038 U*	**0.047 j**	*< 0.060 U*	*< 0.15 U*	*< 0.050 U*	*< 0.025 U*	*< 0.050 U*	*< 0.060 U*
PA-27d	12/12/2023	N	Deep	PA-27D-121223	*< 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	12/13/2023	N	Deep	PA-30D-121323	*< 120 U*	*< 110 U*	*< 92 U*	*< 84 U*	*< 36 U*	*< 110 U*	*< 96 U*	*< 70 U*	*< 92 U*	*< 64 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

				Analyte	2-Butanone (Methyl ethyl ketone)	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane
				Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				FSWP SHSC (shaded values indicate results above the value shown)	14000	NE	NE	NE	1500	1.4	NE	1.7	14	150
Location ID	**Sample Date**	**Sample Type**	**Aquifer Classification**	**Sample ID**										
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 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	12/12/2023	N	Shallow	MWA-63-121223	*< 4.7 U*	*< 0.38 U*	*< 0.28 U*	*< 2.5 U*	*< 3.2 U*	*< 0.24 U*	*< 0.43 U*	**0.58 j**	*< 0.51 U*	*< 0.21 U*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.074 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
PA-03	12/11/2023	N	Shallow	PA-03-121123	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.061 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
PA-04	12/12/2023	N	Shallow	PA-04-121223	*< 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	12/11/2023	N	Shallow	PA-08-121123	*< 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	12/11/2023	N	Shallow	PA-09-121123	*< 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	12/12/2023	N	Shallow	PA-31-121223	*< 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	12/10/2023	N	Intermediate	MWA-81I-121023	*< 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	12/12/2023	N	Intermediate	PA-10I-121223	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.051 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
PA-15i	12/11/2023	N	Intermediate	PA-15I-121123	*< 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	12/11/2023	N	Intermediate	PA-16I-121123	*< 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	12/11/2023	N	Intermediate	PA-17IR-121123	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.067 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
PA-32i	12/13/2023	N	Intermediate	PA-32I-121323	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.030 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
PA-32i	12/13/2023	FD	Intermediate	DUP-02-121323	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.031 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
PA-44i	12/10/2023	N	Intermediate	PA-44I-121023	*< 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)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 2.5 U*	*< 0.12 U*	*< 0.15 U*	*< 1.7 U*	*< 3.1 U*	**0.031 j**	*< 0.038 U*	*< 0.060 U*	*< 0.16 U*	*< 0.13 U*
MWA-31i(d)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 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-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 47 U*	*< 3.8 U*	*< 2.8 U*	*< 25 U*	**55 j**	*< 2.4 U*	*< 4.3 U*	*< 2.9 U*	*< 5.1 U*	*< 2.1 U*
MWA-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 4.7 U*	*< 0.38 U*	*< 0.28 U*	*< 2.5 U*	*< 3.2 U*	*< 0.24 U*	*< 0.43 U*	**0.75 j**	*< 0.51 U*	*< 0.21 U*
MWA-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 24 U*	*< 1.9 U*	*< 1.4 U*	*< 13 U*	**22 j**	*< 1.2 U*	*< 2.2 U*	*< 1.5 U*	*< 2.6 U*	*< 1.1 U*
PA-18d	12/12/2023	N	Deep	PA-18D-121223	*< 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-19d	12/13/2023	N	Deep	PA-19D-121323	*< 940 U*	*< 76 U*	*< 56 U*	*< 500 U*	*< 640 U*	*< 48 U*	*< 86 U*	*< 58 U*	*< 100 U*	*< 42 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 4.7 U*	*< 0.38 U*	*< 0.28 U*	*< 2.5 U*	*< 3.2 U*	**2.6**	*< 0.43 U*	*< 0.29 U*	*< 0.51 U*	*< 0.21 U*
PA-21d	12/12/2023	N	Deep	PA-21D-121223	*< 2,400 U*	*< 190 U*	*< 140 U*	*< 1,300 U*	**3,100 j**	*< 120 U*	*< 220 U*	*< 150 U*	*< 260 U*	*< 110 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 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	12/11/2023	N	Deep	PA-23D-121123	*< 4.7 U*	*< 0.38 U*	*< 0.28 U*	*< 2.5 U*	**3.5 j**	*< 0.24 U*	*< 0.43 U*	*< 0.29 U*	*< 0.51 U*	*< 0.21 U*
PA-24d	12/11/2023	N	Deep	PA-24D-121123	*< 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	12/11/2023	N	Deep	PA-25D-121123	*< 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	12/11/2023	N	Deep	PA-26D-121123	*< 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	12/12/2023	N	Deep	PA-27D-121223	*< 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	12/13/2023	N	Deep	PA-30D-121323	*< 940 U*	*< 76 U*	*< 56 U*	*< 500 U*	*< 640 U*	*< 48 U*	*< 86 U*	*< 58 U*	*< 100 U*	*< 42 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

				Analyte	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chlorobromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane
				Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				FSWP SHSC (shaded values indicate results above the value shown)	0.92	0.16	64	NE	NE	28	NE	590	NE	1.3
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 0.083 U*	*< 0.025 U*	*< 0.20 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	*< 0.14 U*	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
MWA-63	12/12/2023	N	Shallow	MWA-63-121223	*< 0.53 U*	*< 0.30 U*	*< 0.44 U*	*< 0.29 U*	*< 0.35 U*	**1,100**	*< 0.28 U*	**4.8**	*< 0.42 U*	*< 0.43 U*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	*< 0.083 U*	*< 0.025 U*	*< 0.20 U*	*< 0.050 U*	*< 0.096 U*	**0.28**	*< 0.14 U*	**0.069 j**	*< 0.090 U*	*< 0.055 U*
PA-03	12/11/2023	N	Shallow	PA-03-121123	*< 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-04	12/12/2023	N	Shallow	PA-04-121223	*< 0.083 U*	*< 0.025 U*	*< 0.060 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	**0.16 j**	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
PA-08	12/11/2023	N	Shallow	PA-08-121123	*< 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-09	12/11/2023	N	Shallow	PA-09-121123	*< 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	12/12/2023	N	Shallow	PA-31-121223	*< 0.083 U*	*< 0.025 U*	*< 0.060 U*	*< 0.050 U*	*< 0.096 U*	**0.052 J+**	*< 0.14 U*	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
MWA-81i	12/10/2023	N	Intermediate	MWA-81I-121023	*< 0.083 U*	*< 0.025 U*	*< 0.20 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	*< 0.14 U*	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
PA-10i	12/12/2023	N	Intermediate	PA-10I-121223	*< 0.083 U*	*< 0.025 U*	**0.90**	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	**0.20 j**	**0.22**	*< 0.090 U*	*< 0.055 U*
PA-15i	12/11/2023	N	Intermediate	PA-15I-121123	*< 0.083 U*	*< 0.025 U*	*< 0.20 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	*< 0.14 U*	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
PA-16i	12/11/2023	N	Intermediate	PA-16I-121123	*< 0.083 U*	*< 0.025 U*	*< 0.20 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	**0.18 j**	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
PA-17iR	12/11/2023	N	Intermediate	PA-17IR-121123	**0.10 j**	*< 0.025 U*	*< 0.20 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	*< 0.14 U*	**0.055 j**	*< 0.090 U*	*< 0.055 U*
PA-32i	12/13/2023	N	Intermediate	PA-32I-121323	*< 0.083 U*	*< 0.025 U*	**0.15 j**	*< 0.050 U*	**0.19 j**	*< 0.030 U*	*< 0.14 U*	*< 0.055 U*	*< 0.090 U*	*< 0.055 U*
PA-32i	12/13/2023	FD	Intermediate	DUP-02-121323	*< 0.083 U*	*< 0.025 U*	**0.18 j**	*< 0.050 U*	**0.18 j**	*< 0.030 U*	**0.22 j**	**0.065 j**	*< 0.090 U*	*< 0.055 U*
PA-44i	12/10/2023	N	Intermediate	PA-44I-121023	*< 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)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 0.083 U*	*< 0.025 U*	*< 0.060 U*	*< 0.050 U*	*< 0.096 U*	*< 0.030 U*	*< 0.14 U*	**0.32**	*< 0.090 U*	*< 0.055 U*
MWA-31i(d)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 0.53 U*	*< 0.30 U*	*< 0.44 U*	*< 0.29 U*	*< 0.35 U*	**41**	*< 0.28 U*	*< 0.35 U*	*< 0.42 U*	*< 0.43 U*
MWA-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 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-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 0.53 U*	*< 0.30 U*	*< 0.44 U*	*< 0.29 U*	*< 0.35 U*	**150**	*< 0.28 U*	*< 0.35 U*	*< 0.42 U*	*< 0.43 U*
MWA-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 2.7 U*	*< 1.5 U*	*< 2.2 U*	*< 1.5 U*	*< 1.8 U*	**190**	*< 1.4 U*	*< 1.8 U*	*< 2.1 U*	*< 2.2 U*
PA-18d	12/12/2023	N	Deep	PA-18D-121223	*< 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	12/13/2023	N	Deep	PA-19D-121323	*< 110 U*	*< 60 U*	**7,600**	*< 58 U*	*< 70 U*	*< 52 U*	*< 56 U*	*< 70 U*	*< 84 U*	*< 86 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 0.53 U*	*< 0.30 U*	**18**	*< 0.29 U*	*< 0.35 U*	*< 0.26 U*	*< 0.28 U*	*< 0.35 U*	*< 0.42 U*	*< 0.43 U*
PA-21d	12/12/2023	N	Deep	PA-21D-121223	*< 270 U*	*< 150 U*	**11,000**	*< 150 U*	*< 180 U*	*< 130 U*	*< 140 U*	*< 180 U*	*< 210 U*	*< 220 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 0.53 U*	*< 0.30 U*	*< 0.44 U*	*< 0.29 U*	*< 0.35 U*	**13**	*< 0.28 U*	*< 0.35 U*	*< 0.42 U*	*< 0.43 U*
PA-23d	12/11/2023	N	Deep	PA-23D-121123	**0.69 j**	*< 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	12/11/2023	N	Deep	PA-24D-121123	**0.72 j**	*< 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	12/11/2023	N	Deep	PA-25D-121123	*< 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	12/11/2023	N	Deep	PA-26D-121123	*< 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	12/12/2023	N	Deep	PA-27D-121223	*< 0.53 U*	*< 0.30 U*	*< 0.44 U*	*< 0.29 U*	*< 0.35 U*	*< 0.26 U*	*< 0.28 U*	**0.49 j**	*< 0.42 U*	*< 0.43 U*
PA-30d	12/13/2023	N	Deep	PA-30D-121323	*< 110 U*	*< 60 U*	**22,000**	*< 58 U*	*< 70 U*	*< 52 U*	*< 56 U*	*< 70 U*	*< 84 U*	*< 86 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

Analyte					Dibromomethane	Dichlorodifluoromethane (Freon 12)	Ethylbenzene	Ethylene dibromide	Hexachlorobutadiene	Isopropylbenzene (Cumene)	m,p-Xylenes	Methyl tert-butyl ether	Methylene chloride	Naphthalene
Unit					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
FSWP SHSC (shaded values indicate results above the value shown)					NE	NE	7.3	NE	0.01	NE	1.8	NE	59	12
Location ID	Sample Date	Sample Type	Aquifer Classification	Sample ID										
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 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	12/12/2023	N	Shallow	MWA-63-121223	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	*< 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	12/11/2023	N	Shallow	PA-03-121123	*< 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	12/12/2023	N	Shallow	PA-04-121223	*< 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	12/11/2023	N	Shallow	PA-08-121123	*< 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	12/11/2023	N	Shallow	PA-09-121123	*< 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	12/12/2023	N	Shallow	PA-31-121223	*< 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-81i	12/10/2023	N	Intermediate	MWA-81I-121023	*< 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-10i	12/12/2023	N	Intermediate	PA-10I-121223	*< 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-15i	12/11/2023	N	Intermediate	PA-15I-121123	*< 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-16i	12/11/2023	N	Intermediate	PA-16I-121123	*< 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-17iR	12/11/2023	N	Intermediate	PA-17IR-121123	*< 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-32i	12/13/2023	N	Intermediate	PA-32I-121323	*< 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-32i	12/13/2023	FD	Intermediate	DUP-02-121323	*< 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-44i	12/10/2023	N	Intermediate	PA-44I-121023	*< 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-11i(d)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 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-31i(d)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
MWA-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 3.4 U*	*< 5.3 U*	*< 5.0 U*	*< 4.0 U*	*< 7.9 U*	*< 4.4 U*	*< 5.3 U*	*< 4.4 U*	*< 14 U*	*< 9.3 U*
MWA-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
MWA-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 1.7 U*	*< 2.7 U*	*< 2.5 U*	*< 2.0 U*	*< 4.0 U*	*< 2.2 U*	*< 2.7 U*	*< 2.2 U*	*< 7.2 U*	*< 4.7 U*
PA-18d	12/12/2023	N	Deep	PA-18D-121223	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
PA-19d	12/13/2023	N	Deep	PA-19D-121323	*< 68 U*	*< 110 U*	*< 100 U*	*< 80 U*	*< 160 U*	*< 88 U*	*< 110 U*	*< 88 U*	*< 290 U*	*< 190 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
PA-21d	12/12/2023	N	Deep	PA-21D-121223	*< 170 U*	*< 270 U*	*< 250 U*	*< 200 U*	*< 400 U*	*< 220 U*	*< 270 U*	*< 220 U*	*< 720 U*	*< 470 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
PA-23d	12/11/2023	N	Deep	PA-23D-121123	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
PA-24d	12/11/2023	N	Deep	PA-24D-121123	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
PA-25d	12/11/2023	N	Deep	PA-25D-121123	*< 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-26d	12/11/2023	N	Deep	PA-26D-121123	*< 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-27d	12/12/2023	N	Deep	PA-27D-121223	*< 0.34 U*	*< 0.53 U*	*< 0.50 U*	*< 0.40 U*	*< 0.79 U*	*< 0.44 U*	*< 0.53 U*	*< 0.44 U*	*< 1.4 U*	*< 0.93 U*
PA-30d	12/13/2023	N	Deep	PA-30D-121323	*< 68 U*	*< 110 U*	*< 100 U*	*< 80 U*	*< 160 U*	*< 88 U*	*< 110 U*	*< 88 U*	*< 290 U*	*< 190 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

				Analyte	n-Butylbenzene	n-Propylbenzene	o-Chlorotoluene (2-chlorotoluene)	o-Xylene	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene	Toluene	trans-1,2-Dichloroethene
				Unit	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				FSWP SHSC (shaded values indicate results above the value shown)	NE	NE	NE	13	NE	NE	NE	0.33	9.8	1000
Location ID	**Sample Date**	**Sample Type**	**Aquifer Classification**	**Sample ID**										
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 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	12/12/2023	N	Shallow	MWA-63-121223	*< 0.44 U*	*< 0.50 U*	*< 0.51 U*	*< 0.39 U*	*< 0.49 U*	*< 0.53 U*	*< 0.58 U*	**24**	*< 0.39 U*	*< 0.39 U*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	*< 0.23 U*	*< 0.091 U*	*< 0.12 U*	*< 0.15 U*	*< 0.17 U*	*< 0.19 U*	*< 0.26 U*	**0.34 j**	*< 0.050 U*	*< 0.033 U*
PA-03	12/11/2023	N	Shallow	PA-03-121123	*< 0.23 U*	*< 0.091 U*	*< 0.12 U*	*< 0.15 U*	*< 0.17 U*	*< 0.19 U*	*< 0.26 U*	*< 0.084 U*	**0.15 j**	*< 0.033 U*
PA-04	12/12/2023	N	Shallow	PA-04-121223	*< 0.23 U*	*< 0.091 U*	*< 0.12 U*	*< 0.15 U*	*< 0.17 U*	*< 0.19 U*	*< 0.26 U*	**0.12 j**	*< 0.050 U*	*< 0.033 U*
PA-08	12/11/2023	N	Shallow	PA-08-121123	*< 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-09	12/11/2023	N	Shallow	PA-09-121123	*< 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	12/12/2023	N	Shallow	PA-31-121223	*< 0.23 U*	*< 0.091 U*	*< 0.12 U*	*< 0.15 U*	*< 0.17 U*	*< 0.19 U*	*< 0.26 U*	**0.21 j**	*< 0.050 U*	*< 0.033 U*
MWA-81i	12/10/2023	N	Intermediate	MWA-81I-121023	*< 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	12/12/2023	N	Intermediate	PA-10I-121223	*< 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	12/11/2023	N	Intermediate	PA-15I-121123	*< 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	12/11/2023	N	Intermediate	PA-16I-121123	*< 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	12/11/2023	N	Intermediate	PA-17IR-121123	*< 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	12/13/2023	N	Intermediate	PA-32I-121323	*< 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	12/13/2023	FD	Intermediate	DUP-02-121323	*< 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	12/10/2023	N	Intermediate	PA-44I-121023	*< 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)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 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*	**0.037 j**
MWA-31i(d)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 0.44 U*	*< 0.50 U*	*< 0.51 U*	*< 0.39 U*	*< 0.49 U*	*< 0.53 UJ*	*< 0.58 U*	*< 0.41 U*	*< 0.39 U*	*< 0.39 U*
MWA-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 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-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 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-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 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	12/12/2023	N	Deep	PA-18D-121223	*< 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	12/13/2023	N	Deep	PA-19D-121323	*< 88 U*	*< 100 U*	*< 100 U*	*< 78 U*	*< 98 U*	*< 110 U*	*< 120 U*	*< 82 U*	*< 78 U*	*< 78 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 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	12/12/2023	N	Deep	PA-21D-121223	*< 220 U*	*< 250 U*	*< 260 U*	*< 200 U*	*< 250 U*	*< 270 U*	*< 290 U*	*< 210 U*	*< 200 U*	*< 200 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 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	12/11/2023	N	Deep	PA-23D-121123	*< 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-24d	12/11/2023	N	Deep	PA-24D-121123	*< 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	12/11/2023	N	Deep	PA-25D-121123	*< 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	12/11/2023	N	Deep	PA-26D-121123	*< 0.23 U*	*< 0.091 U*	*< 0.12 U*	*< 0.15 U*	*< 0.17 U*	*< 0.19 U*	*< 0.26 U*	*< 0.084 U*	**0.052 j**	*< 0.033 U*
PA-27d	12/12/2023	N	Deep	PA-27D-121223	*< 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	12/13/2023	N	Deep	PA-30D-121323	*< 88 U*	*< 100 U*	*< 100 U*	*< 78 U*	*< 98 U*	*< 110 U*	*< 120 U*	*< 82 U*	*< 78 U*	*< 78 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

				Analyte	trans-1,3-Dichloropropene	Trichloroethene	Trichlorofluoromethane (Freon 11)	Vinyl chloride
				Unit	µg/L	µg/L	µg/L	µg/L
				FSWP SHSC (shaded values indicate results above the value shown)	NE	3	NE	0.24
Location ID	**Sample Date**	**Sample Type**	**Aquifer Classification**	**Sample ID**				
MWA-41	12/10/2023	N	Shallow	MWA-41-121023	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
MWA-63	12/12/2023	N	Shallow	MWA-63-121223	*< 0.41 U*	**4.1**	*< 0.36 U*	*< 0.22 U*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	*< 0.092 U*	**0.33**	*< 0.12 U*	*< 0.040 U*
PA-03	12/11/2023	N	Shallow	PA-03-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-04	12/12/2023	N	Shallow	PA-04-121223	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-08	12/11/2023	N	Shallow	PA-08-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-09	12/11/2023	N	Shallow	PA-09-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-31	12/12/2023	N	Shallow	PA-31-121223	*< 0.092 U*	**0.090 j**	*< 0.12 U*	*< 0.040 U*
MWA-81i	12/10/2023	N	Intermediate	MWA-81I-121023	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-10i	12/12/2023	N	Intermediate	PA-10I-121223	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	**0.25**
PA-15i	12/11/2023	N	Intermediate	PA-15I-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-16i	12/11/2023	N	Intermediate	PA-16I-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-17iR	12/11/2023	N	Intermediate	PA-17IR-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-32i	12/13/2023	N	Intermediate	PA-32I-121323	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	**0.083 j**
PA-32i	12/13/2023	FD	Intermediate	DUP-02-121323	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	**0.072 j**
PA-44i	12/10/2023	N	Intermediate	PA-44I-121023	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
MWA-11i(d)	12/13/2023	N	Deep	MWA-11I(D)-121323	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
MWA-31i(d)	12/11/2023	N	Deep	MWA-31I(D)-121123	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
MWA-56d	12/12/2023	N	Deep	MWA-56D-121223	*< 4.1 U*	*< 2.6 U*	*< 3.6 U*	*< 2.2 U*
MWA-56d	12/12/2023	FD	Deep	DUP-01-121223	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
MWA-58d	12/12/2023	N	Deep	MWA-58D-121223	*< 2.1 U*	*< 1.3 U*	*< 1.8 U*	*< 1.1 U*
PA-18d	12/12/2023	N	Deep	PA-18D-121223	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
PA-19d	12/13/2023	N	Deep	PA-19D-121323	*< 82 U*	*< 52 U*	*< 72 U*	*< 44 U*
PA-20d	12/12/2023	N	Deep	PA-20D-121223	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
PA-21d	12/12/2023	N	Deep	PA-21D-121223	*< 210 U*	*< 130 U*	*< 180 U*	*< 110 U*
PA-22d	12/12/2023	N	Deep	PA-22D-121223	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
PA-23d	12/11/2023	N	Deep	PA-23D-121123	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
PA-24d	12/11/2023	N	Deep	PA-24D-121123	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
PA-25d	12/11/2023	N	Deep	PA-25D-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-26d	12/11/2023	N	Deep	PA-26D-121123	*< 0.092 U*	*< 0.066 U*	*< 0.12 U*	*< 0.040 U*
PA-27d	12/12/2023	N	Deep	PA-27D-121223	*< 0.41 U*	*< 0.26 U*	*< 0.36 U*	*< 0.22 U*
PA-30d	12/13/2023	N	Deep	PA-30D-121323	*< 82 U*	*< 52 U*	*< 72 U*	*< 44 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.
J- = The concentration of the sample is considered to be biased low, as the associated QC results are outside the lower control limits.
J+ = The concentration of the sample is considered to be biased high, as the associated QC results exceed the upper control limits.
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 4, 2023, Groundwater Monitoring Report
Arkema Inc. Facility
Portland, Oregon

				Analyte	Chloride	Perchlorate
				Unit	mg/L	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	12/10/2023	N	Shallow	MWA-41-121023	**5.6**	*< 2.0*
MWA-63	12/12/2023	N	Shallow	MWA-63-121223	**15**	*< 2.0*
MWA-82	12/10/2023	N	Shallow	MWA-82-121023	**14**	*< 10*
PA-03	12/11/2023	N	Shallow	PA-03-121123	**4.6**	*< 4.0*
PA-04	12/12/2023	N	Shallow	PA-04-121223	**6.1**	*< 2.0*
PA-08	12/11/2023	N	Shallow	PA-08-121123	**29**	*< 4.0*
PA-09	12/11/2023	N	Shallow	PA-09-121123	**5.6**	*< 2.0*
PA-31	12/12/2023	N	Shallow	PA-31-121223	**6.4**	*< 2.0*
MWA-81i	12/10/2023	N	Intermediate	MWA-81i-121023	**39**	*< 2.0*
PA-10i	12/12/2023	N	Intermediate	PA-10i-121223	**58**	*< 4.0*
PA-15i	12/11/2023	N	Intermediate	PA-15i-121123	**4.4**	*< 10*
PA-16i	12/11/2023	N	Intermediate	PA-16i-121123	**12**	*< 4.0*
PA-17iR	12/11/2023	N	Intermediate	PA-17iR-121123	**20**	*< 4.0*
PA-32i	12/13/2023	N	Intermediate	PA-32i-121323	**32**	*< 4.0*
PA-32i	12/13/2023	FD	Intermediate	DUP-02-121323	**34**	*< 4.0*
PA-44i	12/10/2023	N	Intermediate	PA-44i-121023	**1.9**	*< 4.0*
MWA-11i(d)	12/13/2023	N	Deep	MWA-11i(d)-121323	**780**	*< 10*
MWA-31i(d)	12/11/2023	N	Deep	MWA-31i(d)-121123	**14,000**	**28,000**
MWA-56d	12/12/2023	N	Deep	MWA-56d-121223	**14,000**	**14,000**
MWA-56d	12/12/2023	FD	Deep	DUP-01-121223	**14,000**	**14,000**
MWA-58d	12/12/2023	N	Deep	MWA-58d-121223	**19,000**	**50,000**
PA-18d	12/12/2023	N	Deep	PA-18d-121223	**54**	*< 10*
PA-19d	12/13/2023	N	Deep	PA-19d-121323	**340**	*< 10*
PA-20d	12/12/2023	N	Deep	PA-20d-121223	**810**	*< 10*
PA-21d	12/12/2023	N	Deep	PA-21d-121223	**340**	*< 10*
PA-22d	12/12/2023	N	Deep	PA-22d-121223	**5,300**	**13,000**
PA-23d	12/11/2023	N	Deep	PA-23d-121123	**30,000**	*< 300*
PA-24d	12/11/2023	N	Deep	PA-24d-121123	**31,000**	*< 200*
PA-25d	12/11/2023	N	Deep	PA-25d-121123	**12**	*< 2.0*
PA-26d	12/11/2023	N	Deep	PA-26d-121123	**27**	*< 2.0*
PA-27d	12/12/2023	N	Deep	PA-27d-121223	**450**	*< 10*
PA-30d	12/13/2023	N	Deep	PA-30d-121323	**320**	*< 10*

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.