

Mallinckrodt US LLC

September 11, 2018

Mr. Chris Swain
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection
17 State House Station
Augusta ME 04333

**Subject: Monthly Progress Report – August 2018
Orrington Remediation Site
Orrington, Maine**

Dear Mr. Swain:

This Monthly Progress Report is submitted to Maine Department of Environmental Protection (DEP) in compliance with reporting requirements in the Board of Environmental Protection (BEP) Order (Order) effective April 3, 2014 for the Orrington Remediation Site (Site) in Orrington, Maine, which incorporates, with modifications, the Compliance Order issued by the DEP dated November 24, 2008. This Report covers the period of **August 2018** and is submitted on behalf of Mallinckrodt US LLC.

If you have questions regarding this report, please contact me at 314-225-4454.

Sincerely,



Kathy Zeigler
Remediation Program Manager

cc: (all electronic copies)
Kelly Bay – Director, Orrington Town Library
Keith Bowden – Chairman of Board of Selectman, Town of Orrington
Patricia Duft – Mallinckrodt US LLC
Susanne Miller – Maine DEP, Bangor
David Wright – Maine DEP

**MONTHLY PROGRESS REPORT
ORRINGTON REMEDIATION SITE
Orrington, Maine
August 2018**

Report Date: September 11, 2018

This Monthly Progress Report is submitted to the Maine Department of Environmental Protection (DEP) documenting the activities completed by Mallinckrodt US LLC (Mallinckrodt) and/or its representatives at the Orrington Remediation Site (the Site) along with a description of upcoming activities.

A discussion of all tasks and actions completed during the reporting period toward achieving compliance with the Order

- Telephone conversations were held with DEP to discuss various site activities with specific dates included below under the applicable topic.
- The on-site DEP oversight inspector continued to participate in weekly construction meetings in which current activities as well as a two-week look ahead are discussed. The on-site inspector also continued daily emails to summarize activities to ensure all parties agree on what is planned/accomplished.
- Continued operation of the perimeter air monitoring system and meteorological station.
- Continued operation of the Maine certified on-site lab.
- Continued stockpile management of excavated materials and loading railcars for off-site shipment.
- Received quarterly accounting report from DEP on Aug 28, 2018.
- Landfill Ridge Area (CMI Closure Report Feb 3, 2017; DEP Acceptance Aug 21, 2017)
 - Continued to maintain erosion and sediment control measures.
- Landfill 1 (CMI Plan – Rev2 Apr 30, 2018; DEP Conditional Approval Letter May 10, 2018; CMI Plan – Rev2 May 17, 2018 (revised to incorporate all conditions in DEP CAL)
 - Continued excavation activities in accordance with the DEP approved design documents and with DEP oversight.
 - Continued confirmation and record sampling in accordance with approved plans.
- Landfill 2 (CMI Closure Report Dec 21, 2017; DEP Approval Jul 2, 2018)
 - Continued to maintain erosion and sediment control measures.
- Landfills 3, 4 and 5 (CMI Closure Report Jul 25, 2017; DEP Acceptance Oct 3, 2017)
 - Continued to maintain erosion and sediment control measures and cap inspections.
- Plant Area (Draft CMI Plan Feb 13, 2017; Phase 1 Excavation Memo Rev1 Jan 2, 2018; DEP Approval of Phase 1 Jan 9, 2018.)
 - Continued work on Southerly Stream realignment in PA3 area and began final grading.
 - Completed backfilling PA1-2 and PA1-3.
 - Began final restoration in PA1 and PA2.
 - Received Commissioners response to Plant Area Petition to request the Board of Environmental Protection (BEP) to modify the Order on Aug 7, 2018
 - Completed concrete foundation sampling as discussed with DEP in June.
 - Continued operation of the Phase 1 SVE system and changed out carbon media on two vessels
- Scrap Metal Yard (CMI Closure Report Jul 25, 2017; DEP Acceptance Oct 3, 2017)
 - Continued to maintain erosion and sediment control measures.

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- Southerly Stream (CMI Closure Report Nov 15, 2017)
 - Continued to maintain erosion and sediment control measures.
- Northern Drainage Ditch (CMI Closure Report Nov 27, 2017)
 - Continued to maintain erosion and sediment control measures.
- Southern Cove (CMI Closure Report Jan 14, 2018, DEP Approval Aug 3, 2018)
 - Continued to maintain erosion and sediment control measures adjacent to the Cove.
 - Performed planting of wetland areas.
 - Received DEP approval of closure report Aug 3, 2018
- Short-Term Comprehensive Monitoring Plan (Revised ST CMP Feb 24, 2017)
 - The Short-Term CMP includes monitoring of potential remediation impacts as well as ongoing monitoring of groundwater, the GW extraction system (GWES) and Landfill 5.
 - Conducted monitoring in accordance with the Short-Term CMP the week of Aug 13, 2018.
- Groundwater
 - Final GW Extraction System (GWES) Plan Oct 16, 2017; DEP Approval Jan 9, 2018)
 - Participated in site visits with DEP personnel on Aug 6 and Aug 23 to discuss Final GWES details.
 - Sent revised extraction well locations for the final GWES to DEP on Aug 1, 2018 and received approval the same day.
 - Submitted force main design to DEP Aug 10, 2018.
 - Started up the temporary EW-3 / EW-5 Extraction system on Aug 15, 2018 with approximately 15 gallons per minute (gpm) flow from each well. Following MEDEP request and subsequent approval of associated MEPDES permit modification, flow was increased to approximately 16 gpm from each well.
 - Submitted request to DEP to abandon damaged piezometer PZ15-06 on Aug 21, 2018.
 - Received DEP approval of request to abandon extraction wells (EW-1, EW-2, EW-4, MW601) that will not be part of the temporary or long-term extraction system on Aug 13 and completed the work on Aug 23, 2018.
 - Submitted a request to DEP to use EW-5 instead of new FEW-5 in Final GWES on Aug 27, 2018.
 - Deployed pressure transducers in several Landfill 1 monitoring points Aug 31, 2018.
 - Began Final GWES control building and piping/electrical design.
 - Groundwater at Landfills 3,4,5 (PD WP Jul 19, 2018)
 - Received DEP Comments/Approval of Pre-Design Work Plan for Landfills 3-5 Bedrock Groundwater Conditions on Aug 27, 2018. This work plan includes a schedule through submittal of the conceptual design to DEP.
 - Groundwater Model (Model Feb 22, 2016, DEP Acceptance of Model Sept 15, 2017)
 - No new activity

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- Groundwater Treatment Plant (GWTP) Operation
 - Collected mercury compliance samples from Outfall 001 (3x/week with analysis per USEPA Method 1631) and Outfall 002 (one sample per discharge day with analysis per USEPA Method 245.1) for analysis by Katahdin Analytical Labs.
 - Continued expanded Outfall 001 effluent monitoring (volatiles, semivolatiles, herbicides and manganese) for “new wastestreams” (i.e. construction water) per the MEPDES Discharge permit. Expanded monitoring is required for 10 months or until wastestream ends. August was Month 8 for the Plant Area construction activity and Month 4 for the Landfill 1 construction activity.
 - The average daily flow through the GWTP was 45,920 gallons with 185,143 gallons of construction-related water.
 - Submitted the July 2018 NetDMR on Aug 9, 2018 and the July Toxsheet and Effluent Mercury Test Report form to DEP on Aug 13, 2018.
 - Participated in a DEP-DWQ audit of the GWTP operations on Aug 28, 2018, No issues were noted.
 - Completed routine GWTP maintenance activities.
 - Awaiting response to MEPDES permit renewal application submitted May 20, 2018.
- Other Site Activities
 - Completed routine site maintenance activities

A detailed summary of all results of sampling, tests, shipments from the Site and other data received by Mallinckrodt in the prior (previous month) reporting period pursuant to this Order

- Air monitoring and meteorological data is collected continuously by the perimeter air monitoring system and stored in the computer system. Weekly reports are sent to Mallinckrodt. If a measurement that exceeds 50% of MPS occurs, Mallinckrodt will notify the DEP within 48 hours. An annual report of all data for the preceding year will be submitted to DEP by March 1 of the following year.
- Unvalidated data and laboratory reports are submitted to DEP via the automated database system as they are available. Data validation is conducted by TechLaw as outlined in the Maine DEP approved Data Validation Protocol dated Jan 29, 2018 and a summary of the validation results sent to DEP and Mallinckrodt.
- Submitted laboratory analytical reports and EGAD EDDs for data collected in June according to the Short-Term CMP on Jul 6, 2018.
- Submitted laboratory analytical reports and EGAD EDDs for data collected in July according to the Short-Term CMP on Aug 2, 2018.

A discussion of all tasks and actions scheduled for the coming reporting period including the date for initiating and completing such activities including percent completion where applicable.

- Meet with DEP technical team on Sept 18, 2018.
- Continue technical discussions with DEP on remediation activities and pending submittals.
- Continue to include the on-site DEP oversight inspector in weekly construction meetings.

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- Continue to review the on-site DEP oversight inspector emails outlining planned and completed activities to ensure no miscommunication.
- Continue operation of the perimeter air monitoring system.
- Continue operation of the on-site lab in compliance with Maine certification.
- Continue stockpile management of excavated materials and loading railcars for shipment
- Landfill Ridge Area (CMI Closure Report Feb 3, 2017; DEP Acceptance Aug 21, 2017)
 - Continue to maintain erosion and sediment control measures.
- Landfill 1 (CMI Plan – Rev2 Apr 30, 2018; DEP Conditional Approval Letter May 10, 2018; CMI Plan – Rev2 May 17, 2018 (revised to incorporate all conditions in DEP CAL)
 - Continue implementation of the Landfill 1 remediation, including providing updated documentation to the DEP for review and approval as required.
 - Continue collection of confirmation and record samples in accordance with approved plans.
- Landfill 2 (CMI Closure Report Dec 21, 2017; DEP Approval Jul 2, 2018)
 - Continue to maintain erosion and sediment control measures.
- Landfills 3, 4 and 5 (CMI Closure Report Jul 25, 2017; DEP Acceptance Oct 3, 2017)
 - Continue to maintain erosion and sediment control measures and complete cap inspections.
- Plant Area (Draft CMI Plan Feb 13, 2017; Phase 1 Excavation Memo Rev1 Jan 2, 2018; DEP Approval of Phase 1 Jan 9, 2018.)
 - Perform excavation of PA1-11, PA1-12, and PA1-13
 - Complete Phase I excavation
 - Continue final restoration of Phase 1 Plant Area
 - Complete new Southerly Stream channel adjacent to PA3 area
 - Continue operation of the SVE system and performance monitoring.
 - Receive formal approval of the Piping within Excavations Protocol submitted to DEP on Jun 27, 2018.
 - Review concrete foundation sampling results with DEP at Sept meeting.
 - Submit Revised Petition to request the Board of Environmental Protection (BEP) to modify the Order.
- Scrap Metal Yard (CMI Closure Report Jul 25, 2017; DEP Acceptance Oct 3, 2017)
 - Continue to maintain erosion and sediment control measures.
- Southerly Stream (CMI Closure Report Nov 15, 2017)
 - Continue to maintain erosion and sediment control measures.
 - Receive DEP approval of the Southerly Stream Closure Report. The DEP response was due 90 days from submittal, or Feb 16, 2018.
- Northern Drainage Ditch (CMI Closure Report Nov 27, 2017)
 - Continue to maintain erosion and sediment control measures.
 - Receive DEP approval of the Northern Ditch Closure Report. The DEP response was due 90 days from submittal, or Feb 28, 2018.
- Southern Cove (CMI Closure Report Jan 14, 2018, DEP Approval Aug 3, 2018)
 - Monitor vegetation growth and maintain as needed, .
 - Complete restoration replanting activities.

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- Short-Term Comprehensive Monitoring Plan (Revised ST CMP Feb 24, 2017)
 - Conduct Short-Term CMP remediation monitoring in accordance with the approved plan.
- Groundwater
 - Final GW Extraction System (GWES) Plan Oct 16, 2017; DEP Approval Jan 9, 2018)
 - Continue operation of temporary EW-3/EW-5 extraction system.
 - Prepare for drilling of Final GWES extraction wells and construction of Final GWES, including control building.
 - Continue quarterly monitoring and reporting per the approved Short-Term CMP.
 - Groundwater at Landfills 3,4,5 (PD WP Jul 19, 2018)
 - Receive DEP comments and approval of the Pre-Design Work Plan for Landfills 3-5 Bedrock Groundwater Conditions and begin planning for implementation.
 - Groundwater Model (Model Feb 22, 2016, DEP Acceptance of Model Sept 15, 2017)
 - No planned activity
- Groundwater Treatment Plant (GWTP) Operation
 - Receive the renewed MEPDES permit
 - Continue compliance sampling of Outfall 001 and 002 per the MEPDES permit.
 - Submit August 2018 NetDMR and Toxsheet and Effluent Mercury Test Report to DEP.
 - Continue maintenance activities and routine GWTP maintenance.
- Other Site Activities
 - Continue routine site maintenance activities.

Tasks not completed as required, original and revised completion dates, reasons for delay, actions taken to minimize the delay and any other problems or anticipated problems

- DEP responses to the Closure Reports for the Southerly Stream and the Northern Drainage Ditch are overdue.

As of the end of August 2018, the quantity of waste shipped is shown below:

- **Leach Field: Soil excavation and off-site disposal is complete.**
 - A total of 14 railcars, containing 1,379 tons (TSDf weight) of non-hazardous Leach Field soils, have been shipped off site to Republic facility in Niagara Falls, New York.
- **Landfill Ridge: Soil excavation and off-site disposal is complete.**
 - A total of 564 railcars, containing 55,158 (TSDf weight) tons of non-hazardous Landfill Ridge soils, have been shipped off site.
 - 534 railcars to the Republic disposal facility in Niagara Falls, New York
 - 30 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.
- **Scrap Metal Yard: Soil excavation and off-site disposal is complete.**
 - A total of 413 railcars, containing 40,556 tons (TSDf weight) of non-hazardous Scrap Metal Yard soils, have been shipped off site
 - 412 railcars to the Republic disposal facility in Niagara Falls, New York
 - 1 railcar to the US Ecology Stablex disposal facility in Quebec, Canada.

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- **Northern Drainage Ditch: Soil excavation and off-site disposal is complete.**
 - A total of 307 railcars, containing 29,440 tons (TSDf weight) of non-hazardous Northern Drainage Ditch soils, have been shipped off site.
 - 307 railcars to the Republic disposal facility in Niagara Falls, New York
 - 0 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.
- **Southerly Stream: Soil excavation and off-site disposal is complete.**
 - A total of 112 railcars, containing 10,583 tons (TSDf weight) of non-hazardous Southerly Stream soils, have been shipped off site.
 - 102 railcars to the Republic disposal facility in Niagara Falls, New York
 - 10 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.
- **Landfill 2: Soil excavation and off-site disposal is complete.**
 - A total of 441 railcars containing Landfill 2 soils have been shipped off site to date.
 - 118 railcars of 11,557 tons (TSDf weight) of non-hazardous Landfill 2 soils
 - 108 railcars to the Republic disposal facility in Niagara Falls, New York
 - 10 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.
 - 323 railcars containing 31,497 tons (Site weight) of hazardous (listed waste) soils to the US Ecology Stablex disposal facility in Quebec, Canada
- **Southern Cove: Sediment removal and off-site disposal is complete.**
 - A total of 190 railcars containing 18,548 tons (TSDf weight) of non-hazardous Southern Cove sediments, have been shipped off site.
 - 190 railcars to the Republic disposal facility in Niagara Falls, New York
 - 0 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.
- **Plant Area: Soil excavation and shipments are ongoing.**
 - In August 2018, 0 railcars of Plant Area non-hazardous soils were shipped off site containing 0 tons.
 - A total of 185 railcars containing 17,950 tons (TSDf weight) of non-hazardous soils have been shipped from the Site:
 - 165 railcars to the Republic disposal facility in Niagara Falls, New York
 - 20 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.
- **Landfill 1: Soil excavation and shipments are ongoing.**
 - In August 2018, a total of 96 railcars of Landfill 1 soils were shipped off site:
 - 80 railcars containing 7,810 tons of non-hazardous soils
 - 16 railcars containing 1,560 tons of hazardous soils
 - A total of 311 railcars containing Landfill 1 soils have been shipped off site to date.
 - 209 railcars of 20,441 tons (Site weight) of non-hazardous soils
 - 209 railcars to the Republic disposal facility in Niagara Falls, New York
 - 0 railcars to the US Ecology Stablex disposal facility in Quebec, Canada
 - 102 railcars containing 9,966 tons (Site weight) of hazardous soils to the US Ecology Stablex disposal facility in Quebec, Canada
- **General Debris**
 - On Aug 30, 2018 one roll-off containing 16,140 lbs of metal debris was sent to AIM Recycle Metals with total mercury samples of 0.246 mg/kg and 0.019 mg/kg.

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- **GWTP Sludge**
 - None

Maine Hazardous Waste Tax

- **As of August 30, 2018, the total Maine State Hazardous Waste Tax paid to the State of Maine (through Q2 2018) is \$2,147,096.**
 - The 2nd Quarter 2017 report shows 13,150.65 tons of hazardous soil disposed for a total fee of \$789,039 which was paid 9/28/17.
 - The 3rd Quarter 2017 report shows 14,125.95 tons of hazardous soil disposed for a total fee of \$847,557 which was paid 12/1/17.
 - The 4th Quarter 2017 report shows 4,220.13 tons of hazardous soil disposed for a total fee of \$253,208 which was paid.
 - The 1st Quarter 2018 report shows 0 tons of hazardous soil disposed for a total fee of \$0 which was paid.
 - The 2nd Quarter 2018 report shows 4,288.20 tons of hazardous soil disposed for a total fee of 257,292 which was paid 8/22/18.

Additional information regarding the progress of the work

- BeyondHoltraChem.com is periodically updated to reflect ongoing site activities.
- The *On The Penobscot* newsletter is issued periodically to update Orrington residents on site activities.