

June 11, 2017

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 – May 2017
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 from **May 1 – 31, 2017**, and is submitted on behalf of Mallinckrodt US LLC.

If you have any questions regarding this report please feel free to contact me at 314-281-5947.

Sincerely,



Kathy Zeigler
Remediation Program Manager

cc: (all electronic copies)
Patricia Duft – Mallinckrodt US LLC
Kyle Jellison – Maine DEP
Susanne Miller – Maine DEP, Bangor
Audrey Snowden – Orrington Town Library
Paul White – Town of Orrington
David Wright – Maine DEP

**MONTHLY PROGRESS REPORT
ORRINGTON REMEDIATION SITE
Orrington, Maine
May 2017**

Report Date: June 11, 2017

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

- Met with DEP on May 10 to discuss site remediation and technical submittals, and held conference calls on May 18 and May 23 to discuss various remediation topics.
- 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.
- Continued operation of the perimeter air monitoring system and meteorological station and submitted weekly PAM reports to DEP.
- Continued operation of the on-site lab in compliance with DEP certification.
- Continued stockpile management of excavated materials and loading railcars for off-site shipment.
- Permitting (Upland)
 - No new activity.
- 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 IES and Landfill 5.
 - Conducted remediation monitoring in the vicinity of the Scrap Metal Yard, Southerly Stream, and Landfill 2 remediation areas during the week of May 22, 2017.
 - Received DEP comments on the Revised Short-Term CMP on May 2 and held a call with DEP on May 23 to discuss those comments.
- Landfill Ridge Area (CMI Closure Report Feb 3, 2017)
 - Continued to maintain erosion and sediment control measures.
- Landfill 1 (Draft CMI Plan Apr 25, 2017)
 - Presented the overall approach to the Landfill 1 remedial design, reviewed the planned supplemental sampling and presented the revised schedule to DEP on May 10, 2017.
 - Received DEP comments on to the Draft Landfill 1 CMI Plan Appendix K – Field Work Plan on May 11, 2017.
 - Began implementing field work as outlined in Appendix K.
 - Received DEP comments on the Draft Landfill 1 CMI Plan on May 31, 2017.
 - Conducted a site visit with potential contractors for the Landfill 1 remediation.
- Landfill 2 (CMI Plan Rev1 Oct 7, 2016; Addendums 1-3, final DEP Approval Apr 26, 2017)
 - Continued excavation and confirmation sampling activities per CMI Plan and Addendums 1-3 and tracking of non-hazardous and hazardous soil shipments.
- Landfills 3, 4 and 5 (CMI Plan – Rev 1, May 26, 2016; DEP Approval, Jul 12, 2016)
 - Continued to maintain erosion and sediment control measures and cap inspections.
 - Continued preparation of the Landfills 3-5 CMI Closure Report

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- Plant Area (Draft CMI Plan Feb 13, 2017)
 - Responded to DEP comments on the revised plan for TSSA #3 on May 9, received DEP approval on May 11, 2017 and initiated construction.
 - Continued field work to collect additional samples for mercury speciation testing, and data related to the design of the in situ treatment of the chloropicrin impacted soils.
 - Discussed the preliminary design for in situ treatment of the chloropicrin and supplemental data collected to date with DEP on May 10, 2017.
 - Initiated dosing studies for the in-situ treatment of the chloropicrin area.
 - Continued discussions about the proposed remedial design for the Plant Area with DEP including both technical and strategic approaches to resolve the issues.
- Scrap Metal Yard (CMI Plan – Rev 1, June 22, 2016; DEP Approval, July 22, 2016)
 - Continued to maintain erosion and sediment control measures.
 - Continued preparation of the Scrap Metal Yard CMI Closure Report
- Southerly Stream (CMI Plan – Rev 1, Oct 14, 2016; DEP Approval Nov 7, 2016)
 - Completed remedial action including and backfilling activities.
- Northern Drainage Ditch (CMI Plan – Rev 1, Aug 23, 2016; DEP Approved upon submittal; Final Addendum 1 Oct 27, 2016;)
 - Continued final grading of the remediation area and the staging area.
- Southern Cove (Final CMI Plan May 15, 2017; USACE Permit NAE-1999-02231 Apr 17, 2017; USACE Permit Modification May 3, 2017)
 - Continued pre-construction preparations to meet USACE permit requirements.
 - Coordinated with USACE and NMFS and requested a minor permit modification on May 1 and received the modified permit on May 3, 2017
 - Submitted the Final Southern Cove CMI Plan, including the final Construction Work Plan and Water Quality and Fish Monitoring Plan, to DEP on May 15, 2017.
 - Submitted a permit application to the Maine Bureau of Submerged Lands on May 31.
- Groundwater
 - Submitted screen intervals for monitoring wells in bedrock borehole P-13 to DEP on May 18, 2017 and received approval.
 - Interim Extraction System (IES):
 - Shut down EW-2 on May 30, 2017 due to groundwater seeping to the surface from an unknown leak. (The problem was resolved on Jun 8, see below.).
 - Continued operation of extractions wells and quarterly monitoring and reporting.
 - Groundwater Model (submitted Feb 22, 2016, DEP comments Jan 6, RTC Apr 28, 2017)
 - No new activity
 - Pre-Design for Groundwater at Landfills 3,4,5 (WP Aug 3, 2015; DEP CAL Sept 18,2015)
 - The pump test in the area of Landfills 3, 4, and 5 has been postponed until 2018 in order to evaluate the impact of the new caps on area groundwater levels and quality.
- 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.

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- Continued expanded Outfall 001 effluent monitoring (volatiles, semivolatiles, herbicides and manganese) for “new wastestreams” (i.e. construction water from each remedial area) per the MEPDES Discharge permit. Expanded monitoring for each new wastestream is required for 10 months or until wastestream ends. May was month 6 for the Northern Drainage Ditch and month 4 for the Southerly Stream and remediation of these areas is now complete. May was month 2 for the Landfill 2 area.
- The average daily flow through the GWTP was 72,865 gallons with 764,620 gallons of construction-related water. Increased flows were due to frequent rainy weather in May and below water table excavations on Landfill 2.
- Replaced the first of the five Mersorb beds with a used bed on May 4, 2017 and replaced the last Mersorb bed with a new bed on May 25, 2017.
- Generated six cubic yards of non-hazardous sludge.
- Submitted the April 2017 NetDMR to DEP on May 10 and the Toxsheet and Effluent Mercury Test Report form to DEP on May 12, 2017.
- Completed routine GWTP maintenance activities.
- 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 with weekly reports submitted to DEP.
- Validated EGAD EDDs and laboratory reports are submitted to DEP via the automated database system or the ftp site (for large laboratory reports) as they are available.
- Submitted EGAD EDDs of validated March remediation, IES, Site Perimeter, and Landfill 5 monitoring data and laboratory analytical reports to MEDEP on May 24, 2017.
- Replied to MEDEP comments and provided EGAD EDD of total organic halides (TOX) data on May 31.

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 (via conference call) on Jun 7, hold additional conference calls as needed on specific topics, and plan for detailed technical meeting on July 26, 2017.
- Attend the Town of Orrington Annual Meeting with DEP to present an update on the Orrington Site.
- Continue operation of the perimeter air monitoring system and weekly PAM reports to DEP.
- Continue operation of the on-site lab in compliance with DEP certification.
- Continued stockpile management of excavated materials and loading railcars for off-site shipment.
- Permitting (Upland)
 - Receive a response from MDIFW to the Request for Renewal of Site Review

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- Short-Term Comprehensive Monitoring Plan (Revised ST CMP Feb 24, 2017)
 - Conduct Short-Term CMP remediation monitoring in the vicinity of the Scrap Metal Yard, Southerly Stream, and Landfill 2 remediation areas and site perimeter monitoring, Landfill 5 assessment monitoring, and IES monitoring during the week of June 19, 2017.
- Landfill Ridge Area (CMI Closure Report Feb 3, 2017)
 - Continue to maintain erosion and sediment control measures.
- Landfill 1 (Draft CMI Plan Apr 25, 2017)
 - Continued implementing field work as outlined in Appendix K Draft Landfill 1 CMI.
 - Respond to DEP comments on the Draft Landfill 1 CMI Plan received on May 31, 2017.
- Landfill 2 (CMI Plan Rev1 Oct 7, 2016; Addendums 1-3, final DEP Approval Apr 26, 2017)
 - Continue excavation, confirmation sampling and backfill activities as outlined in the approved CMIP and Addendums 1-3 and tracking of non-hazardous and hazardous soil shipments.
 - Remediation is expected to be completed in summer 2017 with restoration to follow.
- Landfills 3-5 (CMI Plan – Rev 1, May 26, 2016; DEP Approval July 12, 2016)
 - Continue to maintain erosion and sediment control measures and complete cap inspections.
 - Submit the Landfills 3-5 CMI Closure Report to DEP.
 - Complete final restoration in summer 2017.
- Plant Area (Draft CMI Plan Feb 13, 2017)
 - Collect additional samples for mercury speciation testing and data related to the design of the in situ treatment of the chloropicrin and provide ongoing data to DEP as discussed during the meeting on May 10, 2017.
 - Continue preparing detailed technical information on key issues identified by DEP related to the Plant Area design for discussion at the July meeting.
- Scrap Metal Yard (CMI Plan – Rev 1, June 22, 2016; DEP Approval, July 22, 2016)
 - Continue to maintain erosion and sediment control measures.
 - Submit the Scrap Metal Yard CMI Closure Report to DEP.
 - Complete final restoration in Summer 2017.
- Southerly Stream (CMI Plan – Rev 1, Oct 14, 2016; DEP Approval Nov 7, 2016)
 - Begin final restoration of both the northern and southern segments of the Southerly Stream, expected to be completed in Summer 2017.
 - Begin preparation of the Southerly Stream Closure Report.
- Northern Drainage Ditch (CMI Plan Rev 1, Aug 23, 2016; DEP Approved upon submittal; Final Addendum 1 Oct 27, 2016;)
 - Begin final restoration, expected to be completed in Summer 2017.
 - Continue to maintain erosion and sediment control measures.
 - Begin preparation of the Northern Drainage Ditch Closure Report.
 - A draft figure showing the Southern Cove sediments adjacent to the Northern Ditch sheet pile area meet the MPS will be reviewed with DEP.
- Southern Cove (Final CMI Plan May 15, 2017; USACE Permit NAE-1999-02231 Apr 17, 2017; USACE Permit Modification May 3, 2017)
 - Receive the permit from the Bureau of Submerged Lands

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- Begin remediation of SMA-1 in June with in-water work starting mid- to late July.
- Groundwater
 - Complete two monitoring wells in bedrock borehole P-13 during the week of June 5, 2017.
 - Prepare and submit data transmittal report for 1st quarter 2017 routine and remediation monitoring data.
 - Interim Extraction System (IES):
 - Investigate the leak at EW-2. (The problem was resolved on Jun 8 when a leak at the collar on the discharge line was repaired and pumping from EW-2 was restored.)
 - Continue operation of extraction wells and quarterly monitoring and reporting per the Revised Short-Term CMP.
 - Groundwater Model (submitted Feb 22, 2016, DEP comments Jan 6, RTC Apr 28, 2017)
 - Respond to any comments on the Response to DEP Comments on the GW model report.
 - Pre-Design for Groundwater at Landfills 3,4,5 (WP Aug 3, 2015; DEP CAL Sept 18,2015)
 - No current activity other than ongoing monitoring of groundwater levels and quality.
- Groundwater Treatment Plant (GWTP) Operation
 - Continue compliance sampling of Outfall 001 and 002 as described above.
 - Submit May 2017 NetDMR and Toxsheet and Effluent Mercury Test Report to DEP.
 - Continue maintenance activities and routine GWTP maintenance.
- Other Site Activities
 - Complete 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

- The overall schedule was modified to begin remediation of Landfill 1 in late 2017 and remediation of the Plant Area in 2018. A revised master schedule was presented to DEP at the May 10, 2017 meeting and will be updated for the July meeting.

The quantity of waste shipped to the various disposal locations

- Shipped six cubic yards of non-hazardous sludge from the Groundwater Treatment Plant to the EQ facility in Belleville Michigan on May 8, 2017.
- As of the end of May 2017:
 - Leach Field: Soil excavation and off-site disposal is complete.
 - A total of 14 railcars, containing 1379 tons of non-hazardous Leach Field soils, have been shipped offsite to the Republic disposal facility in Niagara Falls, New York.
 - Landfill Ridge: Soil excavation and off-site disposal is complete.
 - A total of 564 railcars, containing 55,158 tons of non-hazardous Landfill Ridge soils, have been shipped offsite.
 - 534 railcars to the Republic disposal facility in Niagara Falls, New York
 - 30 railcars to the US Ecology Stablex disposal facility in Quebec, Canada.

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- Scrap Metal Yard: Soil excavation and off-site disposal is complete.
 - A total of 413 railcars, containing 40,556 tons of non-hazardous Scrap Metal Yard soils, have been shipped offsite
 - 412 railcars to the Republic disposal facility in Niagara Falls, New York
 - 1 railcar to the US Ecology Stablex disposal facility in Quebec, Canada.
- Northern Drainage Ditch: Soil excavation and off-site disposal is complete.
 - A total of 207 railcars, containing 19,583 tons of non-hazardous Northern Drainage Ditch soils, have been shipped offsite.
 - 207 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 75 railcars, containing 6,956 tons of non-hazardous Southerly Stream soils, have been shipped offsite.
 - 65 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:
 - 86 railcars of Landfill 2 soils were shipped in May 2017.
 - 27 railcars containing 2,464 tons of non-hazardous Landfill 2 soils to the Republic disposal facility in Niagara Falls, New York
 - 59 railcars containing 5,746 tons of listed waste soils from Landfill 2 to the US Ecology Stablex disposal facility in Quebec, Canada
 - A total of 101 railcars containing Landfill 2 soils have been shipped offsite to date.
 - 42 railcars containing over 4,000 tons of non-hazardous Landfill 2 soils
 - 32 railcars of non-hazardous soils to the Republic disposal facility in Niagara Falls, New York
 - 10 railcars of non-hazardous soils to the US Ecology Stablex disposal facility in Quebec, Canada.
 - 59 railcars containing 6,631 tons of listed waste soils to the US Ecology Stablex disposal facility in Quebec, Canada

Additional information regarding the progress of the work

- A new *On The Penobscot* community newsletter was mailed to all Orrington residents and other key recipients in May.
- The BeyondHoltraChem.com website is now live and will be periodically updated to reflect ongoing remediation activities.