

**EXPLANATION OF SIGNIFICANT  
DIFFERENCES  
(ESD)**

**IRON HORSE PARK SUPERFUND SITE  
OPERABLE UNIT 4**

**BILLERICA, MASSACHUSETTS**

**DRAFT FOR PUBLIC COMMENT**



**U.S. ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND - REGION 1  
5 POST OFFICE SQUARE  
BOSTON, MA 02109-3912**



components of the remedy as originally set forth in the July 25, 2011 Record of Decision (“ROD”).

This ESD is a draft document. It has been prepared to provide the public with an explanation of and an opportunity to comment on an EPA modification of the selected remedy for OU4 of the Site. The United States Environmental Protection Agency (“EPA”) is required to publish this ESD by Section 117(c) of the Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”), 42 U.S.C. § 9617(c), and the rule at 40 C.F.R. § 300.435(c)(2)(i). EPA has decided to seek public comment on this ESD pursuant to 40 C.F.R. § 300.825(b).

Under Section 117(c) of CERCLA, 42 U.S.C. § 9617(c), the rule at 40 C.F.R. 300.435(c)(2)(i), and EPA guidance (Office of Solid Waste and Emergency Response [OSWER] Directive 9200.1-23P), if the EPA determines that differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the ROD, with respect to scope, performance, or cost, EPA shall publish an ESD explaining the differences between the remedial action being undertaken and the remedial action set forth in the ROD, and the reasons such changes are being made. EPA has determined that the adjustments to the ROD provided in this ESD are significant, but do not fundamentally alter the overall remedy for OU4 of the Site with respect to scope, performance, or cost. Therefore, this ESD is properly issued.

#### D. SUMMARY OF CIRCUMSTANCES NECESSITATING THIS ESD

The July 2011 ROD for OU4 of the Site requires the excavation of contaminated sediments from B&M Pond which exceed ecological risk standards, Monitored Natural Recovery (MNR) of sediments outside of the B&M Pond area (primarily the Unnamed Brook) which exceed ecological risk standards, and stormwater runoff controls to prevent recontamination of sediments by stormwater runoff draining directly into the B&M Pond and the Unnamed Brook. The selected remedy also requires the establishment of a groundwater compliance boundary and groundwater monitoring to ensure that groundwater that exceeds groundwater performance standards remains within the groundwater compliance boundary.

The major components of the remedy are:

##### For Sediment

- Excavation of about 7,400 cubic yards of B&M Pond contaminated sediment.
- Dewatering, transport and disposal of contaminated sediments (either off-site or on-site to an OU3 landfill).
- Treatment of dewatering fluid (if necessary), with discharge to on-site surface waters, and possible stabilization of sediment prior to disposal.
- Wetland mitigation, as required.
- MNR in Unnamed Brook and other unexcavated sediments that exceed sediment

cleanup levels.

- Implementing stormwater runoff controls to prevent sediment recontamination.
- Institutional Controls, (including at least yearly compliance monitoring) to protect stormwater controls and to prevent disturbance of wetlands undergoing MNR or contaminated sediments that are naturally covered under the MNR process. ICs would remain in effect until no longer needed to support the remedial action.
- Assessing cleanup protectiveness every 5 years (until sediment cleanup standards are achieved). If MNR is achieved through the natural covering of contaminated sediments, 5 year reviews would be conducted for as long as contamination exceeding risk standards remains covered in place.

#### For Groundwater

- Groundwater monitoring to confirm that contaminants do not migrate beyond the compliance boundary for the Site (including the installation of new wells to supplement the existing monitoring well network).
- Institutional Controls, including at least yearly compliance monitoring, to prevent use of groundwater within the compliance zone, to prevent installation of wells in the buffer zone, and to protect components of the remedy.
- Five-year reviews.

The ROD estimated the cost of the selected remedy for OU4 at **\$ 5.4 million.**

#### Post ROD Developments

This ESD impacts the portion of the remedy which addresses sediment within B&M Pond only.

The ecological risk assessment which concluded that there is an ecological risk from exposure to sediment requiring a cleanup action in B&M Pond, was based on one toxicity sample at one location (SED-05, see Figure 1). Following the ROD and in anticipation of settlement negotiations with potentially responsible parties (“PRPs”) to perform the cleanup in the 2011 ROD, the PRPs requested the opportunity to sample sediment in B&M Pond in order to fully delineate the sediment locations where ROD established cleanup levels were exceeded.

Pursuant to an April 2012 Consent Order<sup>1</sup>, the PRPs collected shallow sediment samples from 12 locations within B&M Pond. The samples were analyzed for OU4 Contaminants of Concern (COCs) and compared with cleanup levels identified in the OU4 ROD.

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<sup>1</sup> The Consent Order required collection of shallow (from 0-1 foot below sediment surface) and deeper (from 1-2 feet below sediment surface) sediment samples from across B&M Pond. Samples were to be analyzed for contaminants with cleanup requirements (Total PAHs, 4,4-DDD, Total PCBs, lead, chromium, copper, vanadium and zinc), as well as other parameters (Total Organic Carbon (TOC), grain size, AVS/SEM and pore water). The objective of the sampling was to delineate the vertical and lateral extent of sediment requiring remediation.

The results of the sampling, conducted in August 2012, and reported in a January 2013 Report submitted pursuant to the Consent Order, demonstrated that various COCs (polycyclic aromatic hydrocarbons [PAHs], polychlorinated biphenyls [PCBs], 4,4 DDD, chromium, copper, lead, vanadium, and zinc) exceeded cleanup levels to some degree at all 12 sample locations. These results, taken as is, would have required excavation of sediments throughout virtually the entire B&M Pond in accordance with the OU4 ROD. However, it is possible for cleanup levels to be exceeded at locations which are not toxic (which do not present an unacceptable risk to ecological receptors). This is due to environmental factors at each location such as percentage of organic matter present, overall chemistry of the sample location (and any interaction with the COCs), sediment grain size, and the impacts that these factors can have on the bio-availability of the COCs (the availability of the COCs to be consumed by the potentially at-risk organisms).

As a result, EPA determined it was appropriate to consider whether the exceedances shown by the 2012 sampling data indicated actual widespread toxicity in B&M Pond sediment. Based on the limited evidence of ecological risk (one sample exhibiting toxicity), EPA determined it was appropriate to undertake a sediment toxicity sampling effort. In addition, based on the results of the sediment delineation effort (indicating that virtually the entire pond might require remediation), EPA was concerned with conducting a widespread sediment excavation and the significant disruption the excavation would cause to the wetland, without further information to support such an extensive excavation.

Because of the dual concerns regarding the accuracy of the spatial extent of sediment toxicity in the pond and the potentially unnecessary widespread disruption of the wetland, in June 2013, EPA collected sixteen sediment samples in B&M Pond and one reference sample in a nearby pond to be evaluated for toxicity. The sample locations were distributed over almost the entire pond area (see Figure 1). The samples were used to perform 10-day aquatic toxicity tests (the same toxicity testing that had been utilized previously in the Risk Assessment at the Site). The samples were also analyzed for metals, pesticides, PCBs, PAHs and Total Organic Carbon. The results of the sampling effort, reported in August 2013, showed that none of the 2013 sample locations exhibited toxicity which would lead to unacceptable ecological risk from the sediment. Therefore, only the previously identified location (SED-05) exhibits toxicity in sediment that requires remediation in order to address ecological risk.

As a result of more recent, specific information regarding the actual toxicity of sediment in B&M Pond, this ESD documents the reduction of the volume of contaminated sediment requiring remediation in B&M Pond, and the establishment of new criteria to delineate the boundaries of sediment excavation in B&M Pond. EPA's determination in the ROD that sediment and surface water at B&M Pond do not pose a risk to human health is unchanged. Only ecological risk is present at B&M Pond.

The ROD estimated that approximately 7,400 cubic yards of B&M Pond sediment

would need to be excavated. It is now estimated that up to approximately 1,000 cubic yards will require excavation. In addition, new delineation criteria are required to determine the necessary extent of sediment excavation. Because most locations in the B&M Pond with exceedance(s) of sediment cleanup levels do not present an unacceptable risk, sediment cleanup levels contained in the ROD will no longer be used to determine the extent of sediment excavation. Instead, sediment excavation will be delineated with additional toxicity sampling. If a delineation sample is toxic, the sediment associated with that sample will require excavation. If a delineation sample is found to be not toxic, the associated sediment will not require excavation.

#### E. AVAILABILITY OF DOCUMENTS

This ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the following locations and may be reviewed at the times listed:

U.S. Environmental Protection Agency  
Records Center  
5 Post Office Square, Suite 100  
Boston, MA 02109  
617-918-1440  
Monday-Friday: 9:00 am - 5:00 pm  
Saturday and Sunday – Closed

Billerica Public Library  
25 Concord Road  
Billerica, MA 01821  
978-971-0948  
Monday-Thursday: 9:00 am – 9:00 pm  
Friday-Saturday: 9:00 am – 5:00 pm  
Sunday: 1:00 pm – 5:00 pm

## II. SUMMARY OF SITE HISTORY, CONTAMINATION AND SELECTED REMEDY

### A. SITE HISTORY, CONTAMINATION AND SITE RISKS

#### History

The 553 acres of land that now make up the Iron Horse Park Site were first purchased by the B&M Railroad (now Boston & Maine Corporation, a subsidiary of Pan Am Railways which is a subsidiary of Pan Am Systems, Inc.) in 1911. Prior to that year, the Site consisted of approximately 18 privately owned parcels that Boston & Maine Corporation (B&M) consolidated. Since 1911, a variety of industrial disposal practices have resulted in the creation of numerous lagoons, landfills, and open storage

areas. At various times over the years, B&M has sold or leased several parcels of the land and some of the buildings on the Site to various companies. B&M operated an oil and sludge recycling area beginning sometime prior to 1938. This operation took place on property which was subsequently owned by Penn Culvert Company and currently, Cooperative Reserve Supply, Inc. In 1944, the B&M Railroad sold approximately 70 acres of land in the western portion of the Site to Johns-Manville Products Corporation, which at that time began to manufacture structural insulating board that contained asbestos. Three unlined lagoons were built to dispose of the resulting asbestos sludge waste. At approximately the same time, B&M leased approximately 15 acres of land in the eastern portion of the Site to Johns-Manville to be used as a landfill for asbestos sludge and other asbestos mill wastes generated by their manufacturing operations. EPA capped this landfill in 1984 as part of an "Immediate Removal Action" under CERCLA. The B&M Landfill, the RSI Landfill, and the B&M Locomotive Shop Disposal Areas were unmonitored landfill/disposal operations.

Iron Horse Park was listed on the National Priorities List (NPL) in 1984 and was subsequently divided into four operable units (OUs). OU1 is the Boston & Maine (B&M) Wastewater Lagoons, OU2 is the Shaffer Landfill, and OU3 was originally the remainder of the site, including an active industrial complex (the Iron Horse Industrial Park), a railyard, numerous manufacturing operations, open storage facilities, landfills, and lagoons. Areas of concern (AOCs) in OU3 consist of the B&M Railroad Landfill, the B&M Shop Disposal Areas (A and B), the RSI Landfill, the Old B&M Oil/Sludge Recycling Area, the Contaminated Soils Area, and the asbestos contamination areas (including the Asbestos Landfill and the Asbestos Lagoons). Investigational activities, including a baseline ecological risk assessment (BERA) and baseline human health risk assessment (HHRA), were completed for OU3 in 1997. At the time of the Feasibility Study (FS) for OU3, completed in 2004, it was decided that site-wide surface water, sediment, and groundwater required additional investigation and the OU3 FS was then limited to site source areas. Therefore, OU4 includes residual groundwater, surface water, and sediment contamination. It should be noted that groundwater associated with Shaffer Landfill (OU2), which was addressed under a 1993 ROD for OU2, was not included as part of the OU4 evaluation.

This ESD impacts the portion of the OU4 remedy which addresses sediments within B&M Pond only.

### Contamination

Contaminated sediments and surface water at the Site are likely the result of contaminated groundwater discharge and runoff impacted by contaminated soils.

Contaminants with Preliminary Remediation Goals established in the OU4 ROD (PAHs, PCBs, 4,4 DDD, chromium, copper, lead, vanadium, and zinc) were detected throughout B&M Pond and in numerous locations were detected above ROD established cleanup levels. The location with the highest detected concentrations

(SED-05) is in the southwest portion of the pond, adjacent to the edge of the B&M Landfill (AOC 1 of Operable Unit 3). This is the same location which exhibited toxicity, and which was utilized to establish sediment cleanup levels in the OU4 ROD. (See Figure 1).

### Site Risks

EPA evaluated in several ecological risk assessments whether contamination in surface water or sediment poses an unacceptable ecological risk (for additional detail, see Section G of the OU4 ROD). EPA determined, as documented in the OU4 ROD, that there is a moderate risk posed to bottom dwelling organisms, specifically benthic invertebrates, from exposure to contaminated sediment in the B&M Pond and the Unnamed Brook. The sediment risk documented in the OU4 ROD was due to the presence of: PAHs, PCBs, 4,4 DDD, chromium, copper, lead, vanadium, and zinc.

The sediment cleanup levels that were established in the OU4 ROD are as follows:

|            |       |       |
|------------|-------|-------|
| Total PAHs | 4,834 | ug/kg |
| 4,4'-DDD   | 16    | ug/kg |
| Total PCBs | 1     | mg/kg |
| Chromium   | 22    | mg/kg |
| Copper     | 63    | mg/kg |
| Lead       | 115   | mg/kg |
| Vanadium   | 23    | mg/kg |
| Zinc       | 128   | mg/kg |

As discussed earlier, the sediment cleanup levels established in the ROD were set at levels that EPA has now determined are not toxic in the B&M Pond. Therefore, the cleanup levels above are no longer applicable to sediment in the B&M Pond. Toxicity testing in the B&M Pond (as demonstrated in the 2013 toxicity sampling results) has eliminated most of B&M Pond from requiring sediment excavation. The remaining area where unacceptable risk exists, and where sediment excavation is required, is in the vicinity of sample location SED-05, adjacent to the edge of the B&M Landfill. (See Figure 2). The extent of sediment excavation in this area will be determined by toxicity testing rather than by setting new cleanup levels.

EPA determined, as documented in the OU4 ROD, that there is not an unacceptable ecological risk present from exposure to surface water.

### **B. SUMMARY OF THE PORTION OF THE OU4 REMEDY AT B&M POND ORIGINALLY DESCRIBED IN THE OU4 ROD**

As described in Section I.D. of this ESD, at the B&M Pond the remedy selected in the OU4 ROD calls for excavation of approximately 7,400 cubic yards of contaminated sediment which exceeds site specific cleanup levels, dewatering, transport and

disposal of contaminated sediments (off-site or on-site at an OU3 landfill), treatment of dewatering fluid (if necessary) with discharge to on-site surface waters and potential stabilization of sediment prior to disposal and wetland mitigation, as required.

### III. Basis for the document

This ESD documents the reduction of the volume of contaminated sediment requiring excavation in B&M Pond, and proposes that sediment toxicity testing be used to delineate the extent of contamination requiring excavation in B&M Pond. Post-ROD toxicity testing in the B&M Pond demonstrated that, aside from one location (location SED-05) adjacent to the B&M Landfill, sediments in the B&M Pond that exceeded ROD established cleanup levels were not toxic to ecological receptors. Therefore, only sediments in the vicinity of SED-05, as determined by toxicity testing, will require excavation.

All other sediment and groundwater components of the remedy documented in the July 25, 2011 ROD are unchanged and are not impacted by this ESD.

### IV. DESCRIPTION OF SIGNIFICANT DIFFERENCES

The modifications to the remedy are summarized below.

#### Original Remedy for Iron Horse Park OU4

The original remedy for Iron Horse Park OU4 is described in detail in Section I.D. of this ESD.

#### Modified Remedy

The purpose of this ESD is to modify the portion of the remedy regarding contaminated sediments in the B&M Pond.

Because most of the sediment in B&M Pond is not toxic, the volume of sediment in need of excavation in the pond is reduced from the estimated volume in the OU4 ROD.

Sediment cleanup levels established in the ROD are no longer appropriate to delineate the limits of sediment excavation in the B&M Pond. Instead, toxicity testing will be used to delineate the area that will require remediation. EPA estimates that the volume of sediments in need of excavation will not exceed 1,000 cubic yards (see Figure 2). The OU4 ROD estimated volume of sediments in need of excavation was 7,400 cubic yards.

Sediment that exhibits toxicity as a result of toxicity testing will be excavated and disposed as described in the OU4 ROD.

#### Summary of Costs

There will be reduced costs associated with this ESD due to a reduction in the estimated

volume of sediment to be excavated in B&M Pond.

Based on an estimated maximum volume of sediment excavation of approximately 1,000 cubic yards the estimated capital cost for OU4 would fall from \$3.4 million to approximately \$735,000.

#### V. SUPPORTING AGENCY COMMENTS

The Commonwealth of Massachusetts is reviewing the ESD and will provide its final comments and/or approval by the close of the public comment period.

#### VI. STATUTORY DETERMINATIONS

This ESD documents EPA's modification of the OU4 ROD to change the cleanup levels used to determine the extent of contaminated sediments in the B&M Pond requiring excavation and the resulting estimated volume of contaminated sediment in B&M Pond requiring excavation.

EPA believes that the modified remedy as stated in this ESD remains protective of human health and the environment, complies with all Federal and State requirements that are applicable or relevant and appropriate to this remedial action, meets the remedial action objectives specified in the OU4 ROD, and is cost-effective.

#### VII. PUBLIC PARTICIPATION COMPLIANCE

EPA is providing a 30-day public comment period on this ESD from May 5, 2014 through June 9, 2014. Notice of availability for review of the ESD and the Administrative Record will be published in the Lowell Sun newspaper on May 5, 2014, encouraging the public to submit comments on this ESD.

Comments should be postmarked or emailed by **June 9, 2014** and sent to: Don McElroy, EPA New England, 5 Post Office Square, Boston MA 02109 or via email to: [mcelroy.don@epa.gov](mailto:mcelroy.don@epa.gov)

Any significant comments received during the public comment period will be addressed in a responsiveness summary. In accordance with Section 117(d) of CERCLA and Section 300.825(a) of the NCP, the final ESD and supporting documentation shall become part of the Administrative Record for the Site. This ESD and the Administrative Record are available for public review at the locations and times listed in Section I(E) above.

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James T. Owens III, Director  
Office of Site Remediation and Restoration

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date





