PONDS BEHIND ERIE PIER DECISION DOCUMENT
MINNESOTA POLLUTION CONTROL AGENCY
SITE REMEDIATION UNIT 2

Site Name:	Ponds behind Erie Pier
Address:	Duluth Harbor
SR /AI Number:	SR0001358/AI207716
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STATEMENT OF PURPOSE

This Decision Document presents the selected remedial action for the Ponds behind Erie Pier section of the St. Louis River Area of Concern and summarizes the facts and determinations made by the Minnesota Pollution Control Agency (MPCA) in approving the selected response actions. The response actions were designed to minimize or remove exposure to sediment contaminants that bioaccumulate in the food chain to levels that are protective of human health and the environment. MPCA is proposing to dredge and remove contaminated sediments above cleanup levels, in order to minimize risks to human health and the environment and to be protective in the long term.

SITE BACKGROUND AND HISTORY

The Ponds behind Erie Pier (Site) are two open water ponds surrounded by shallow marsh wetlands in the St. Louis River Estuary within the boundaries of the St. Louis River Area of Concern (SLRAOC). Historical releases of contaminants resulted in sediment contaminated with heavy metals, mercury, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and dioxins/furans. Due to these releases the MPCA identified the Ponds behind Erie Pier as an area requiring remedial action to address contamination, a "Remedial Action Area", for the SLRAOC.

The Ponds behind Erie Pier site is located at the upstream end of the inner harbor, on the Minnesota side of the St. Louis River, and at the approximate intersection of Interstate 35 and Highway 2. The Site is adjacent to, and located behind, Erie Pier as viewed from the river. Erie Pier is an active 89-acre placement and reuse facility operated by the Duluth Seaway Port Authority and US Army Corps of Engineers, and is used as a confined disposal facility (CDF) for dredged sediments. The Site consists of wetlands with two open water ponds, a northeast pond and a southwest pond. The two wetland ponds are separated by a narrow piece of land approximately 30 feet in width; a small channel at the southern end links the ponds hydraulically. The wetland ponds are bordered by a small riparian area to the north consisting of mostly small trees and brush; beyond the riparian area is a dirt road followed by a relatively steep slope eventually leading up to Interstate 35. The northeastern and southwestern Site boundaries are characterized by marshland areas followed by forested land. The Site is bordered to the southeast by an active railroad causeway (Canadian Pacific Railway Co.). Historical maps show that the ponds were at one time a small inlet off the harbor but were cut off from the harbor and created when the railroad line was constructed. A short railroad trestle located at the western end of the Site links the wetlands to the harbor. The major landholders for the parcels within the Site include the City of Duluth, the State of Minnesota Department of Transportation, and Canadian Pacific Railway Co. The City of Duluth is in the planning stages for installing a bike path along the northern edge of the ponds, which

will provide the public increased access to the Site. It is anticipated that the bike path will likely be installed in 2019 prior to the Site's sediment remedy implementation.

SITE HISTORY

Historically, the area surrounding and including the Ponds behind Erie Pier has undergone several physical modifications since European settlement of the area. The 1889 Merritt's sectional survey map depicts the Site as part of the St. Louis River main channel. A peninsula (Grassy Point) is present southwest of the Site, and the Duluth Harbor is present east/northeast of the Site. The Northern Pacific Railway is depicted south of the Site crossing the SLR from West Duluth to West Superior. The area northwest of the Site appears to be residentially developed as West Duluth. The 1915 and 1917 United States Geological Survey (USGS) Topographic Map depicts the two ponds, separated by a berm, bounded by the railroad to the southeast and West Duluth to the northwest, which is apparent on subsequent maps.

The Duluth-Superior Harbor, which connects to Lake Superior, has a long history of serving the manufacturing and shipping needs for the Duluth-Superior Region and has been home to significant historical heavy industry including paper mills, coal gasification plants, and steel processing. The Duluth-Superior port remains active in the transportation of iron ore, coal, limestone, and grain, and is the largest port on the Great Lakes in terms of shipping volume.

DESCRIPTION OF CONTAMINANTS

In 2010-2011, the United States Environmental Protection Agency (USEPA) and United States Army Corps of Engineers (USACE) conducted an extensive sediment characterization project in the SLRAOC. An MPCA sponsored AOC-wide sediment characterization data as a baseline for planning level analysis of the assessment data, which determine areas of the SLRAOC in need of remediation, additional investigation, or restoration. The MPCA received funding from the USEPA, Great Lakes National Program Office (GLNPO) in 2013 to perform a detailed investigation to determine the nature and extent of contaminated sediments in the Ponds behind Erie Pier and prepare a Focused Feasibility Study (FFS). The sediment characterization of the Site from 2010-2015 identified sediment contaminated with cadmium, chromium, copper, lead, mercury, nickel, zinc, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and dioxins/furans. Contaminated sediment was generally identified throughout the Site and into Shoppers Creek, and considered to present a high likelihood of significant effects to benthic invertebrates.

The Ponds behind Erie Pier is a high priority for remedial action in the SLRAOC based on:

- Exceedance of Level II Sediment Quality Target (SQT) values for heavy metals throughout the Site
- High levels of bio-accumulating contaminants, including PCBs, mercury, and dioxins/furans that contribute to fish advisories in the SLRAOC.
- Expected increases in pedestrian and bicycling traffic to the adjacent area as a result of the City of Duluth's Cross-City trail expansion.

The sediment portion of the Site totals approximately 14.4 acres. Contaminant of Concern (COC) contamination extends down to 1.0 meter below sediment surface (bss) primarily in the southwestern pond within the Shoppers Creek delta and to 0.5 meters or less in the remaining areas. The northern legs of the vegetated wetlands have not been sampled, therefore, the extent of COC impact in these areas is uncertain. A conservative estimate of the total volume of contaminated sediments, assuming

the entire 14.4-acre area contains COCs is approximately 64,000 cubic yards based on average depths of contamination and varying bathymetry.

Ponds behind Erie Pier Sediment Contamination Concentrations from the Remedial Investigation

Contaminant of Concern	Level 1 SQT	SQT Midpoint	Level 2 SQT	Units	Number Sample Stations	Stations > Level 1 SQT	Stations > SQT Midpoint	Stations > Level 2 SQT	Maximum Conc. Detected
Chromium	43	76	110	mg/kg	89	39	28	23	859
Cadmium	.99	3	5	mg/kg	89	38	31	28	60.8
Copper	32	91	150	mg/kg	89	51	18	2	193
Lead	36	83	130	mg/kg	89	41	28	20	380
Nickel	23	36	49	mg/kg	89	49	35	29	320
Zinc	120	290	460	mg/kg	89	38	22	11	656
Mercury	0.18	0.64	1.1	mg/kg	89	36	24	15	15.8
PCBs	60	370	680	ug/Kg	90	30	16	11	23600
Total PAHs	1600	12300	23000	ug/Kg	90	22	3	2	28041
PCDD/F Fish	0.85	11.175	21.5	Ng TEQ/Kg	11	9	2	1	49.92

The MPCA did not complete formal fish tissue or other biological studies specifically at the Ponds behind Erie Pier; however, the Minnesota Department of Health (MDH) placed fish consumption advisories for mercury and PCBs for the water bodies that comprise the SLRAOC and removing these advisories is one of the primary beneficial use indicators identified for the SLRAOC project. Completing remedial actions that eliminate or significantly reduce the exposure of benthic organisms to contaminated sediments in the Ponds behind Erie Pier will contribute to meeting the SLRAOC goals for this beneficial use indicator. Fish tissue studies are planned to occur prior to, and following remedial actions at the Site to evaluate the effectiveness of the remedial actions on the reducing the levels of bioaccumulating contaminants in resident fish.

As identified in the St. Louis River Remedial Action Plan (RAP, 1992) and later verified by the 2010-2015 sediment characterization efforts in the Ponds behind Erie Pier, the Site is contributing to the following beneficial use impairments to the St. Louis River Area of Concern (AOC):

1) Restrictions on dredging
2) Fish consumption advisory; and
3) Degradation of the benthos environment.

As recommended by the RAP, areas that are contributing to river sediment impairments should be addressed through remedial activities. In addition, the St. Louis River, including the Duluth/Superior Harbor, is listed as impaired water on the Clean Water Act 303(d) list for bioaccumulative toxins. Toxins include mercury, PCBs, and pesticides (DDT, dioxin, etc.). It is recommended by multiple agency programs that biotoxins be reduced with in the St. Louis River estuary and harbor. Removing or isolating the contaminated sediments from the surface water/sediment interface will help in the reduction of the impaired water resulting from bioaccumulative toxins in the SLR AOC.

Risk to Human Health

Significant exposure pathways are complete for human receptors. The Site is currently gated and closed to the public; however, trespassers visit the site frequently and have been observed fishing in the ponds. Fish consumption advisories are in effect for selected fish species in the SLR AOC due to elevated concentrations of PCBs and mercury found in fish tissue (MDH, 2014). Therefore, ingestion of biota via fish consumption is a risk to human health at the Site. No fish consumption advisory is currently in place for any of the other Site COCs, and the MDH does not currently provide meal advice based on COCs, except for mercury and PCBs, in fish (MDH, 2014). The City of Duluth is in the planning stages for installing a bike path along the northern edge of the ponds, which will provide the public increased access to the Site. While incidental ingestion of contaminated sediment and dermal contact with contaminated sediment exposure are possible, they are unlikely given the steep bank slopes, dense vegetation surrounding the Site, and current limited access to the Site. The COCs are generally non-volatile and not emitted from the waters of the Site; therefore, the inhalation of contaminated sediments is considered incomplete for human receptors.

Ecological Risks

Ingestion and dermal contact exposure are possible for ecological receptors. Contaminants could be released from sediments and through uptake by biota resulting in subsequent consumption of exposed biota by animals.

The limited screening ecological risk assessment prepared for the Detailed Investigation was conducted by comparing the sediment chemistry results with the Level 1 and Level 2 SQTs (Crane et al, 2000). SQTs are contaminant values that represent a level of protection of sediment-dwelling organisms. Level 1 SQTs identify chemical concentrations, which will provide a high level of protection for designated water uses, specifically for aquatic life. By comparison, a lower level of protection for designated water uses will be provided by the Level 2 SQTs. Therefore, goals of the SQTs developed for the protection of sediment dwelling organisms are:

- Level 1 SQTs are intended to identify contaminant concentrations below which harmful effects on sediment dwelling organisms are unlikely to be observed.
- Level 2 SQTs are intended to identify contaminant concentrations above which harmful effects on sediment-dwelling organisms are likely to be frequently or always observed.

Based on a comparison of the available analytical data and SQT values, the contaminants detected in the Ponds behind Erie Pier sediments exceeding the SQT values are considered a risk to the benthic community and the larger ecological environment, where they are found in the top meter of sediment.

SELECTION AND DESCRIPTION OF REMEDY

As the MPCA staff evaluated potential remediation options for the Ponds behind Erie Pier, they also established the following Remedial Action Objectives (RAOs) that should be accomplished by the remediation project.

1. Reduce human health risks associated with exposure to COCs through direct contact with sediments, inhalation, and incidental sediment ingestion by reducing sediment concentrations of COCs to protective levels or by eliminating direct contact or exposure potential;

2. Minimize or remove exposure to sediment contaminants that bioaccumulate in the food chain and contribute to fish consumption advisories;
3. Minimize or remove exposure of the benthic organisms to contaminated sediments above sediment cleanup goals;
4. Preserve or enhance aquatic habitat, if conditions allow, in a manner that contributes to the removal of beneficial use impairments (BUIs).

A revised Focused Feasibility Study (FFS) for the Ponds behind Erie Pier (the Site) was completed in 2018 and provides: a summary of current site conditions; a discussion of remedial action objectives (RAOs); and the identification, screening, evaluation, and comparison of potential alternatives. Following is a summary of the alternatives evaluated in the FFS:

Alternative 1: No Action
The no-action alternative would not achieve the remedial objectives.

Alternative 2: Monitored Natural Recovery and Institutional Controls
This alternative would not include any treatment or removal of contaminated sediment but does provide for 30 years of monitoring and controls on the use of the Ponds site.

Alternative 3: Enhanced Monitored Natural Recovery with Flow Control
This alternative would combine Alternative 2 (MNR), with the distribution of COC solidification/stabilization/treatment broadcast amendment covering approximately 14.4 acres to destroy, immobilize, and/or reduce the bioavailability of the sediment COCs.

Alternative 4: Excavation, and Sediment Consolidation, in Upland Caps
This alternative would consist of implementing elements in Alternative 3, excavation of COCs exceeding COC Clean Up Levels (CULs) across approximately 14.4 acres, and creation of upland caps with the treated sediment to reshape and improve wetland functions of the ponds. Approximately 64,000 cubic yards of sediment that exceeds COC CULs would be mechanically excavated and staged within the footprint of the Site, stabilized with amendment materials as needed, and finally consolidated into upland cap features that will reshape and improve the existing wetland functions of the ponds.

Alternative 5: Excavation and Off-Site Disposal and Wetland Restoration
This alternative would consist of implementing elements in Alternative 3 and temporarily isolating the ponds from surface water flow to allow for dry sediment excavation across approximately 14.4 acres. Approximately 64,000 cubic yards of sediment that exceeds COC CULs would be mechanically excavated and staged within the footprint of the Site, stabilized with amendment materials as needed, transported by roadway, and disposed of at an off-site landfill. Following sediment removal, upland features will be constructed to reshape and improve the existing wetland functions of the ponds and the ponds would be restored to a Class 4 wetland.

Alternative 6: Excavation and Off-Site Disposal
This alternative would consist of implementing elements in Alternative 3 and temporarily isolating the ponds from surface water flow to allow for dry sediment excavation across approximately 14.4 acres. Similar to Alternative 5, approximately 64,000 cubic yards of sediment that exceeds COC CULs would be mechanically excavated and staged within the footprint of the Site, stabilized with amendment materials as needed, transported by roadway, and disposed of at an off-site landfill. Following sediment removal, the area adjacent to the ponds would be restored to a wetland with no construction of upland features in order to maximize the amount of open water and overall pond depth for wildlife habitat.

The FFS included a comparative analysis to identify and compare advantages and disadvantages of each of the alternatives. This evaluation was done using the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) remedy selection criteria in general accordance with United States Environmental Protection Agency (USEPA) guidelines for feasibility studies (USEPA, 1990) which divides criteria into three groups.

1. **Threshold Criteria,** which relate to federal statutory requirements that each alternative must satisfy in order to be eligible for selection and including:
    - Overall protection of human health and the environment in both short and long term; and
    - Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) under federal, state, or local environmental laws and regulations.

2. **Primary Balancing Criteria,** which are the technical criteria upon which the detailed analysis is based on, including:
    - Long-term Effectiveness and Permanence;
    - Reduction of Toxicity, Mobility, or Volume through Treatment;
    - Short-term Effectiveness;
    - Implementability; and
    - Costs.

3. **Modifying Criteria based on state agency and community acceptance.**

Each remedial alternative was also evaluated based on Green Sustainable Remediation Criteria.

THRESHOLD CRITERIA

Alternative 1 No Action does not meet the threshold criteria but was carried forward as it is required for analysis under the NCP. Alternative 2 MNR does not meet the threshold criteria given that the Site's COCs are likely to have been present for decades with little evidence that natural processes can progress towards achieving RAOs within an acceptable time frame. Alternative 3 EMNR does not meet the threshold criteria since a combination of reagents, or other EMNR enhancements, capable of addressing the complex suite of COCs present that protect the benthic community within an acceptable time frame has not been validated. Alternatives 4, 5, and 6 will achieve protection of human health and the environment and comply with the identified ARARs. Contaminated sediment would remain in place under Alternative 4, requiring monitoring every 5 years to ensure long-term effectiveness. Alternative 5 and 6 would provide the highest level of protection since contaminated sediments would be removed from the aquatic environment. Additionally, based on stakeholder and MPCA input, Alternative 6 would result in the best habitat for fish and aquatic wildlife.

BALANCING CRITERIA

Long-Term Effectiveness and Permanence

Alternatives 1 and 2 are not effective in the long-term or permanent. Alternative 3 may provide increased effectiveness; however, it is uncertain whether a combination of MNR enhancements can achieve the RAOs for the complex suite of COCs present over the long term. Alternatives 4 and 5 are effective in the long term, however, contaminated sediment, although stabilized with Portland cement, would remain in place under Alternative 4, requiring long-term O&M and ICs to ensure long-term effectiveness; therefore, Alternative 4 is not as permanent. Alternative 5 and 6's disposal of sediment at

an off-site landfill would be equally effective in the long term. Since all contaminated sediments would be removed, Alternative 5 and 6 would provide the most permanence, even though contaminants would not be permanently destroyed in the landfill.

Estimated construction completion time required for alternative implementation ranges from 0 weeks for Alternative 1 to 45 weeks over two construction seasons for Alternative 5. Alternatives 1 through 3 can be completed in one construction period. While Alternatives 4, 5, and 6 are anticipated to require two construction seasons, the first to drain the pond and excavate and treat/dispose of the sediments, and a second season to restore the wetland.

In summary, Alternative 3 may provide low to moderate achievement of these criteria since the COCs will stay in the aquatic environment and only be treated once they come in contact with the reagents of the EMNR cover. Alternative 4 will provide a moderate to high achievement of this criterion by isolating all of the contaminated sediment in the aquatic environment above the CULs. Alternative 5 and 6 will provide a high achievement of this criterion by removing all of the contaminated sediment in the aquatic environment above the CULs.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternative 2 provides no achievement of these criteria because no treatment is involved in the remedy. Alternatives 3, 4, 5, and 6 attempt to treat the contaminated sediments to reduce toxicity, mobility, or volume. Alternative 3 would enhance the natural processes through the addition of reagents to immobilize or sequester the COC while also adding a cover that accelerates the burial of the COC beyond bioactive zone. Alternatives 4, 5, and 6 include the ex situ addition of sediment stabilization reagents to excavated sediment as a means to bind excess free water and immobilize the COCs. Addition of the sediment stabilization reagents would indirectly reduce the toxicity and mobility of sediment disposed of either on-site beneath an upland cap or at an off-site landfill. Therefore, removal of contaminants from the aquatic environment and treatment of the sediments would provide a reduction in toxicity and mobility of contaminants. Removal and treatment of the contaminants followed by disposal at a landfill would be considered permanent.

In summary, Alternatives 4, 5, and 6 will provide the highest achievement of this criterion by removing the contaminated sediment in the aquatic environment above CULs and the addition of a solidification agent to sediment will reduce mobility of contaminated sediments. Alternative 3 would provide moderate achievement of this criterion since the sediments would be covered with a reactive cap although the contaminated sediment would remain in the aquatic environment underneath the cover. Alternatives 1 and 2 will provide no achievement of this criterion, as all the contaminated sediment would remain in place undergoing only natural degradation.

Short-Term Risks

There are no short-term risks associated with Alternatives 1 and 2 as no actions would be implemented at the Site; however, the pending installation of a bike path adjacent to the Site would increase the potential for exposure to the contaminated sediments. The rest of the alternatives would have some short-term risks during implementation of the remedy through the activities of implementation. Alternatives 3, 4, 5, and 6 require varying amounts of excavation and/or capping that may impact short-term effectiveness. The potential short-term risks increase as the volume of contaminated sediment to be excavated or consolidated increases due to additional coordination and the uncertainty of resuspension and migration potential. The potential short-term risks to the community and workers with Alternatives 3, 4, 5, and 6 are associated with safety, noise, and related impacts due to working in the ponds and adjacent to the proposed bike path lane or other publicly accessible locations. There are

also potential short-term risks to workers from dust created from stabilization agents that are stockpiled and mixed for Alternatives 3, 4, 5, and 6. Truck transportation of sediments to an off-site landfill for Alternative 5 would also have an increase in the short-term risks to the community and workers. Alternatives 1 and 2 would provide the least short-term adverse effects to aquatic habitat and biota because the sediment would not be disturbed during implementation. Short-term adverse effects to aquatic habitat and biota for Alternatives 3 would include displacement of fish and possibly smothering of benthic organisms. Alternatives 4, 5, and 6 would provide the most adverse effect since both harvest the wetland inhabitants with the pond drainage and removal of the sediments that would destroy the current benthic community. The effects from Alternatives 3, 4, 5, and 6 would occur during remedy construction and during the recovery period after the wetlands had been reshaped and revegetated and surface water flow had been restored. Benthic organisms and wetland inhabitants would be expected to be re-established for all alternatives within several growing seasons. Following the wetland restoration in Alternatives 4, 5 and 6, the overall quality of the wetland will be improved with the removal of invasive species, if any are present, and surface flow optimization during the reconstruction phase.

Overall, Alternatives 1 and 2 will have a high achievement of the short-term effectiveness criterion. Alternative 3 will have a moderate achievement of the short-term effectiveness criterion due to an increase in short-term risks from the reactive cover implementation. Alternatives 4, 5, and 6 will have a low achievement of the short-term effectiveness criterion as it presents the greatest short-term adverse effects to the wetland ecology the total excavation of contaminated sediments. Alternatives 5 and 6 also presents short-term risks to the community from construction truck traffic to an off-site landfill.

Implementability

There are no implementability concerns associated with Alternatives 1 and 2.
Reactive cover, excavation, capping, restoration, surface water control structures, as well as monitoring and/or O&M that would be required under Alternatives 3, 4, 5, and 6 are all technically feasible and implementable from an engineering perspective. These technologies have been implemented successfully at other sediment sites and could be readily implemented at the Site. Services and materials are available for implementing each component of the remedy.

Weather could significantly impact productivity, particularly if done in the early spring or late fall. High winds in the late fall produce large waves that could impact productivity. Water craft-based activities would be postponed in the spring until ice breaking in the ponds is completed. Winter or freezing conditions in the fall could also impact productivity. Alternative 5 has the longest estimated time to complete and, therefore, would stand to be the most impacted by weather.

Implementability also includes administrative feasibility of the remedy. As with most sediment remediation activities, multiple State and Federal agencies and other stakeholders input is required, providing a lower achievement of administrative feasibility of implementing a remedy. Additional time will be required to obtain any necessary approvals and permits from other agencies. Alternatives 5 and 6 will require more coordination with other regulatory agencies due to off-site disposal than Alternatives 1, 2, 3, and 4. Permits for the reactive cover and capping, however, would be required for Alternatives 3 and 4.

In summary, Alternatives 1 and 2 have no actions to be implemented and will provide the highest achievement of the implementability criterion. Alternative 3 provides a moderate achievement of the implementability criterion since it only requires the reactive cover and does not require contaminated sediment staging and disposal. Alternative 3 also requires less overall coordination than Alternatives 4, 5

and 6. Alternatives 4, 5, and 6 will provide the lowest achievement of the implementability criterion as they all require more coordination with other regulatory agencies; however, Alternative 6 is more implementable than Alternatives 4 and 5 because reconstruction of upland features are not required, making Alternative 6 more simple.

Cost Effectiveness

Based on the cost estimates to date, Alternative 1 provides the most cost-effective option, followed by Alternative 2 because it requires MNR monitoring. Alternative 3 is the next most cost effective as no sediment excavation is required. Alternatives 4, 5, and 6 are the least cost effective, with Alternative 5 being the highest cost, as they require total removal of contaminated sediments and the two trade off the cost for on-site cap construction (Alternative 4) for transport costs and disposal costs (Alternatives 5 and 6).

MODIFYING CRITERIA

The modifying criteria, which includes state agency and community support and acceptance, were evaluated during the public notice period in April and May 2019, and at a public open house meeting held on April 18, 2019. Feedback received from stakeholders and the public during this period included a suggestion to select Remedial Alternative 5 due to the increased potential for environmental and recreational benefits. MPCA has actively engaged the adjacent landowners (the City of Duluth and MN DOT), the Fond Du Lac Band of Lake Superior Chippewa and other project partners in meetings throughout 2017-2019. These groups were an active part in the creation and selection of Remedial Alternative 6.

GREEN SUSTAINABLE REMEDIATION CRITERIA

Greenhouse Gas Emissions

Alternatives 1 would have no GHG emissions. Alternative 2 would only produce GHG emissions associated with mobilization/demobilization and boat operation associated with sampling efforts. Alternatives 3, 4, 5, and 6 would result in GHG emissions from the mobilization, operation, and demobilization of all fuel-powered construction equipment required to construct the cap and/or excavation. Alternatives 5 and 6 would also produce emissions during transport by truck to the disposal facility. Reduction of emissions can be accomplished by using equipment that is compliant with the latest USEPA non-road engine standards and retrofitting older equipment with appropriate filters.

Toxic Chemical Usage and Disposal

There are no known toxic chemicals associated with these alternatives with the exception of Portland cement used as the stabilization agent for Alternatives 4, 5 and 6.

Energy Consumption

Alternative 1 would consume no additional energy. Alternative 2 would consume minimal amounts of fossil fuels compared to the other alternatives. Alternatives 3, 4, 5, and 6 would result in the consumption of fossil fuels for the mobilization, operation, and demobilization of all diesel-powered construction equipment associated with the dredging, hauling, and disposal of the contaminated sediment and the installation of the cover/cap material. Only placement of cap material is required for Alternatives 3 whereas Alternative 4 requires consolidation and cap material placement, resulting in more fossil fuel consumption. Alternatives 5 and 6 would require the greatest amount of energy to implement as dredging and transportation of dredged materials to an off-site landfill is required.

Use of Alternative Fuels

Alternatives 1 and 2 would not require the use of alternative fuels. Biodiesel blended fuels (B10 or B20) could be used as a supplemental fuel source for all diesel powered construction equipment associated with Alternatives 3, 4, 5 and 6.

Water Consumption

Alternatives 1 and 2 would not require the consumption of water. There are few water consumption considerations associated with Alternatives 3. A minimal quantity of water would be required to decontaminate personnel and equipment during sediment dredging/consolidation activities with Alternatives 4, 5, and 6.

Waste Generation

Alternatives 1, 2, 3, and 4 would not generate waste beyond personal protective equipment (PPE) and other on-site consumables. Alternatives 5 and 6 would generate waste that includes the dredged contaminated sediments that would be removed from the Site and disposed of at an off-site landfill.

Comparative Analysis Summary

The comparative analysis of the alternatives narrative discussion and quantitation identified Alternative 6 as the highest scoring alternative to address contamination. The next highest scoring alternatives were Alternatives 4 and 5. Alternatives 1 and 2, do not achieve overall protection of human health and the environment; do not achieve ARARs; are not effective in the long term; do not reduce toxicity, mobility, or volume of contamination; and are not effective in the short term; however, these two alternatives are implementable and cost effective. Alternative 3 scored slightly better than alternatives 1 and 2, but less than alternatives 4, 5 and 6. Alternative 3's duration to implement is the shortest and is the least complex of the active remediation alternatives.

Based on the information provided in the FFS report and on input provided by the Minnesota Department of Natural Resources, Minnesota Department of Transportation, the City of Duluth, Fond du Lac Band of Lake Superior Chippewa, the US Environmental Protection Agency Great Lakes National Program Office, a US Army Corps of Engineers Value Engineering evaluation team, and other stakeholders, the MPCA staff has selected **Alternative 6-Sediment Excavation and Off-Site Disposal** as the preferred option for remediation of contaminated sediment at the Ponds behind Erie Pier. Some of the primary reasons for selecting Alternative 6 are summarized below.

- Alternative 6 is protective of human health and the environment, and achieves the remedial objectives (reducing human health risks, removing exposure to sediment contaminants that bioaccumulate in the food chain, removing exposure to benthic organisms to contaminated sediments, and enhancing or preserving aquatic habitat), but at less cost and time than Alternative 5.
- Alternative 6 maximizes the amount of open water and overall pond depth by removing and disposing of deposited contaminated sediments. This will provide improved habitat for fish and aquatic wildlife.
- Alternative 6 minimizes disturbance to upland areas outside of the ponds, thereby maintaining the existing wetland buffer and upland vegetation.
- The construction duration of Alternative 6 is shorter than Alternative 5, thereby causing less disruption to the City trail and recreational users. The shorter construction duration also limits the time contractors will need access the MnDOT property underneath the interstate bridge and associated safety risks.

- Primary stakeholders, technical advisors, and adjacent landowners support Alternative 6, which will remove the BUIs and allow for planned future uses of the land adjacent to the Ponds behind Erie Pier.
- Alternative 6 will maximize the use of State of Minnesota Bonding and Great Lakes Legacy Act funding for the remediation of contaminated sediments impacting the St. Louis River Area of Concern.

Detailed Description of Selected Remedial Alternative 6: Sediment Excavation and Off-Site Disposal

Since development of the FFS, the Ponds behind Erie Pier remedial Alternative 6 has been further evaluated by a Federal Value Engineering team and project stakeholders. Based on feedback from these groups and the comments from the public, some components of the selected alternative from the FFS will be modified in the final project design. Several habitat components will be added to the final project design including: the placement of clean benthic substrate to provide habitat for benthic organisms and native fish species, the creation of deeper water habitat features for fish, new substrate placement and varied depth surfaces for wetland/nearshore vegetation, the reduction of the project impact on existing bird habitat, the installation of sediment traps and long-term BMPs to control future sediment loading to maintain the open water and prevent sediment loading in the wetland.

The selected Remedial Alternative 6 will consist of the removal of sediments with Contaminants of Concern (COC) concentrations exceeding Cleanup Levels (CULs). Contaminated sediments from both ponds and a portion of Shoppers Creek will be excavated, transported to a staging area, dewatered, and transported by roadway for disposal at an off-site landfill. The project team is actively working to use an alternative staging area for temporary sediment storage and dewatering. We understand that the City of Duluth owned land adjacent to the Ponds currently provides habitat for native and migratory bird species. Utilizing an alternative location for temporary storage and dewatering will remove the need to disturb much of the adjacent upland vegetation and existing habitat. In addition to minimizing habitat disturbance, an alternative staging area will lessen the overall project impact of construction on the City of Duluth recreational trail. Upland areas that are disturbed by construction activities will be restored to pre-construction condition or revegetated with native plant species. The project design team will work with the City of Duluth and MDNR on a vegetation plan for disturbed areas.

Following sediment removal, a dredge residual layer of clean sediment will be placed throughout the ponds' footprint. In addition to the dredge residual layer, an engineered cap of clean substrate will be placed over contaminated sediments in the limited areas around the interstate bridge abutments and the active Canadian Pacific rail causeway where excavation is not feasible. The project design team will work with MDNR staff to select substrates that provide habitat potential for resident fish species. MDNR has expressed a preference for maintenance and expansion of open water, which Alternative 6 will achieve. The project design team is actively working with the City of Duluth to study and develop plans for the installation of sediment traps to control future sediment loading in the Ponds. These sediment traps and other best management practices (BMPs), will help ensure maintenance of the expanded open water areas created as part of the project.

No upland features, such as those detailed in Alternative 4 and 5, will be constructed, maximizing the amount of open water and overall pond depth for wildlife habitat. Upland areas that are disturbed by construction activities will be restored to pre-construction condition of improved. Minimal ICs and a limited LTM maintenance program will be implemented following completion of remedy construction based on the removal of contaminated sediments.

Long-Term Monitoring

Since Alternative 6 removes the majority of impacted sediment with COC concentrations above the CULs and disposes of them off-site, a limited post-treatment LTM program is warranted. Baseline predesign sediment sampling and post-treatment QA/QC sediment monitoring is required.

Data collection will consist of the following:

· Collection of sediment chemical data for COCs to refine area and depth of sediment requiring off-site disposal;

· Bathymetric surveys to confirm existing conditions and cap integrity.

Institutional Controls

Since contaminated sediments above CULs would be removed over the majority of the Site, ICs will be required only in the limited capped areas around the bridge abutments and active rail causeway.

Cost

The costs associated with each alternative are presented as Class 4 (+50/-30) estimates and are appropriate for remedial design alternative evaluations only. The estimated total present value cost for Alternative 6 is $15,726,000.

PUBLIC COMMENTS AND RESPONSES

On April 18, 2019, the MPCA held an open house for public review and comment on the Ponds behind Erie Pier's six viable clean-up alternatives. The MPCA published a request for comments on April 8, 2019 and accepted public comments through May 10, 2019. The MPCA received one public comment letter collaboratively submitted by multiple organizations. The comments and represented organizations are presented below.

Summary of Public Comments and MPCA Responses

Support for Alternative Five – Sediment Dredging and Offsite Disposal
Comment: Thank you for inviting comments on the Ponds behind Erie Pier project. We understand that the MPCA has identified six alternatives under the August 2018 Feasibility Study. The five undersigned groups are writing in support of Alternative 5: Excavation and Off-Site Disposal and Wetland Restoration. We understand that the agency's preferred option is Alternative 6: Excavation and Off-Site Disposal, so our comments will focus on the benefits we see for Alternative 5 in comparison to Alternative 6. Many of our groups were involved in helping secure the state bonding funds that have been used to implement this project and importantly to match the federal Great Lakes Legacy funds. We have a long-term investment in the outcomes of this project. We support Alternative 5 over Alternative 6 for the following reasons: • Alternative 5 allows the state to "Move dirt once." If the State leaves habitat restoration for some possible later project, it is far less likely to happen. While both alternatives address chemical contaminants most effectively for the Area of Concern, only Alternative 5 accomplishes a complete remediation project, including broad habitat goals for the Estuary. It is highly likely that the important habitat restoration work under Alternative 5 done as part of this project would be far less expensive than coming back in some future year to do the work.

Alternative 6 significantly increases the likely cost of restoration due to removal of established vegetation and high probability of invasive species like buckthorn taking over the project site. Separating off costs for revegetation significantly increases the overall cost to the state.

• Alternative 5 provides much better human use.

The habitats proposed under Alternative 5 include upland features that will be constructed to reshape and improve the existing wetland functions of the ponds. The ponds would have a large peninsula of restored upland Class 6 wetland. Class 4 wetlands would develop in the rest of the ponds, aided by improved water flow. These Class 4 wetlands provide water quality protection, floodwater detention, wildlife and fisheries habitat, and recreation. This habitat restoration will return the Ponds to a state much more similar to the pre-settlement habitat that was found here. Alternative 5 provides a better contribution to human health and better supports the City of Duluth's plans for the Cross City Trail. Connections to nature, including bird and wildlife watching, are an important contributor to human health. The Ponds behind Erie Pier, with access provided by the Cross City Trail, provides shorebird and migratory songbird viewing opportunities in the heart of the urban environment.

• Alternative 5 provides improved wildlife observation, especially birdwatching. The Feasibility Study asserts, in section 5.1, that "based on stakeholder and MPCA input, Alternative 6 would result in the best habitat for fish and wildlife." This assertion is not supported in the current document, and our groups disagree fundamentally with that assertion.

Alternative 5 is more aligned with the future use of the area as planned by the City and the Minnesota DNR. For many years, Erie Pier has been known to be important for birds. Birders have identified up to 40 species of birds in one day, including many migratory shorebirds. One local birder, referencing the large numbers of unusual species he's found at Erie Pier, called it a "rarity magnet." The Audubon Society says that under some conditions, this is the best shorebird birding spot in Duluth. However, access to Erie Pier is officially not allowed. Bird use should be an important consideration in the remediation objectives. With the construction of the Cross City Trail next to the Ponds, public access to this habitat complex will increase significantly. Under Alternative 5, the environment will be more welcoming, more conducive to human health, and will be much more similar to the habitat found in the adjacent Erie Pier, likely making for a comparable birdwatching experience. The combination of improved habitat and improved access will return this area to a premier birding destination.

• Alternative 5 provides better fishing opportunities. As the August 2018 feasibility study notes, "The Site is currently gated and closed to the public; however, trespassers visit the site frequently and have been observed fishing in the ponds." With the ponds re-opened for public access, there is little doubt anglers will return. In general, a more diverse habitat is better habitat for both fish and wildlife.

Although Alternative 5 appears to have increased costs when compared with Alternative 6, this is only because it defers the cost of revegetation to other agencies. If MPCA can't afford Alternative 5, we suggest partnering with Minnesota DNR and the City of Duluth to make Alternative 5 work as a "single entry project," with habitat objectives being addressed at the same time as the remediation. Alternative 5 aligns better with City of Duluth plans for the expansion of the Cross City Trail, provides a focus on green infrastructure, fits the objectives of the city's "Remediation to Restoration to Recreation" St. Louis River Corridor Initiative, and will have deeper community support. We believe it is the best option for the community, the estuary, and the delisting of the Area of Concern.

Thank you. Please direct any feedback or questions to Andrew Slade, Great Lakes Program Director, Minnesota Environmental Partnership, andrew@mepartnership.org or (218) 727-0800.

Signers

Clean Water Action Minnesota

Duluth Audubon Society

Save Lake Superior Association

Save Our Sky Blue Waters

W.J. McCabe Chapter of the Izaak Walton League

Response:

We would like to thank you providing comment on the proposed cleanup alternatives for the Ponds behind Erie Pier on behalf of the Minnesota Environmental Partnership, Clean Water Action Minnesota, Duluth Audubon Society, Save Lake Superior Association, Save our Sky Blue Waters, and the W.J. McCabe Chapter of the Izaak Walton League. All comments were considered when making the decision for selection of the cleanup alternative.

At the open house on April 18, 2019 we shared the Focused Feasibility Study for the Ponds behind Erie Pier. The study's six proposed clean-up alternatives were each carefully considered along with all comments. One letter with written comments about the alternatives was received during the 30-day public comment period.

Based on the information provided in the FFS report and on input provided by the Minnesota Department of Natural Resources, Minnesota Department of Transportation, the City of Duluth, Fond du Lac Band of Lake Superior Chippewa, the US Environmental Protection Agency Great Lakes National Program Office, a US Army Corps of Engineers Value Engineering evaluation team, and other stakeholders, the MPCA staff has selected Alternative 6-Sediment Excavation and Off-Site Disposal as the preferred option for remediation of contaminated sediment at the Ponds behind Erie Pier. Some of the primary reasons for selecting Alternative 6 are summarized below.

- Alternative 6 is protective of human health and the environment, and achieves the remedial objectives (reducing human health risks, removing exposure to sediment contaminants that bioaccumulate in the food chain, removing exposure to benthic organisms to contaminated sediments, and enhancing or preserving aquatic habitat), but at less cost and time than Alternative 5.
- Alternative 6 maximizes the amount of open water and overall pond depth by removing and disposing of deposited contaminated sediments. This will provide improved habitat for fish and aquatic wildlife.
- Alternative 6 minimizes disturbance to upland areas outside of the ponds, thereby maintaining the existing wetland buffer and upland vegetation.
- The construction duration of Alternative 6 is shorter than Alternative 5, thereby causing less disruption to the City trail and recreational users. The shorter construction duration also limits the time contractors will need access the MnDOT property underneath the interstate bridge and associated safety risks.
- Primary stakeholders, technical advisors, and adjacent landowners support Alternative 6, which will remove the BUIs and allow for planned future uses of the land adjacent to the Ponds behind Erie Pier.
- Alternative 6 will maximize the use of State of Minnesota Bonding and Great Lakes Legacy Act funding for the remediation of contaminated sediments impacting the St. Louis River Area of Concern.

We understand the desire for efficiency in projects throughout the St. Louis River Estuary, and to coordinate habitat restoration and sediment remediation projects where possible. However, the Ponds behind Erie Pier site is not a priority habitat site identified in the St. Louis River Area of Concern (SLR AOC) Remedial Action Plan. MPCA has discussed habitat and restoration priorities with the MDNR and other SLR AOC restoration partners. The scope of other priority habitat restoration sites

throughout the SLR AOC (Grassy Point, Kingsbury Bay, Interstate Island, 40th avenue west, Perch Lake, Mud Lake, Interstate Island, etc.) have the MDNR and MPCA resources fully extended. The Ponds behind Erie Pier project will remain focused on the remedial action objectives for sediment remediation, and MPCA will work with our partners at MDNR to incorporate habitat components where feasible.

Since development of the FFS, the Ponds behind Erie Pier remedial Alternative 6 has been further evaluated by a Federal Value Engineering team and project stakeholders. Based on feedback from these groups and the comments from your letter, some components of the selected alternative from the FFS will be modified in the final project design. Several habitat components will be added to the final project design including: the placement of clean benthic substrate to provide habitat for benthic organisms and native fish species, the creation of deeper water habitat features for fish, new substrate placement and varied depth surfaces for wetland/nearshore vegetation, the reduction of the project impact on existing bird habitat, the installation of sediment traps and long-term BMPs to control future sediment loading to maintain the open water and prevent sediment loading in the wetland.

The selected Remedial Alternative 6 will consist of the removal of sediments with Contaminants of Concern (COC) concentrations exceeding Cleanup Levels (CULs). Contaminated sediments from both ponds and a portion of Shoppers Creek will be excavated, transported to a staging area, dewatered, and transported by roadway for disposal at an off-site landfill. The project team is actively working to use an alternative staging area for temporary sediment storage and dewatering. We understand that the City of Duluth owned land adjacent to the Ponds currently provides habitat for native and migratory bird species. Utilizing an alternative location for temporary storage and dewatering will remove the need to disturb much of the adjacent upland vegetation and existing habitat. In addition to minimizing habitat disturbance, an alternative staging area will lessen the overall project impact of construction on the City of Duluth recreational trail. Upland areas that are disturbed by construction activities will be restored to pre-construction condition or revegetated with native plant species. The project design team will work with the City of Duluth and MDNR on a vegetation plan for disturbed areas.

Following sediment removal, a dredge residual layer of clean sediment will be placed throughout the ponds' footprint. In addition to the dredge residual layer, an engineered cap of clean substrate will be placed over contaminated sediments in the limited areas around the interstate bridge abutments and the active Canadian Pacific rail causeway where excavation is not feasible. The project design team will work with MDNR staff to select substrates that provide habitat potential for resident fish species. MDNR has expressed a preference for maintenance and expansion of open water, which Alternative 6 will achieve. The project design team is actively working with the City of Duluth to study and develop plans for the installation of sediment traps to control future sediment loading in the Ponds. These sediment traps and other best management practices (BMPs), will help ensure maintenance of the expanded open water areas created as part of the project.

We are aware of the desire of the City of Duluth and your groups to improve public access, fishing amenities and recreational opportunities at the Ponds behind Erie Pier Site. We support those endeavors as well, but they are outside of the scope of the State Bonding funds awarded to the MPCA to complete sediment remediation in the SLR AOC. However, the US EPA Great Lakes National Program Office encourages and welcomes the opportunity to discuss options to complete habitat restoration projects through the Great Lakes Restoration Initiative (GLRI). If you are interested, we encourage your organizations to reach out to Leah Medley, St. Louis River Area of Concern

Coordinator, at the US EPA Great Lakes National Program office to discuss potential options. Her contact information is medley.leah@epa.gov or (312)-886-1307.

MPCA is starting the design of the selected remedial alternative with the US Army Corps of Engineers. We will continue to collaborate and coordinate with the MDNR and City of Duluth as the detailed design develops. This project requires an environmental review and will allow for additional public comment.

The selected response actions are consistent with the Minnesota Environmental Response and Liability Act, Minn. Stat. §§ 115B.01 to .18, and are not inconsistent with the Federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9601 et seq and the National Contingency Plan, 40 C.F.R Part 300. I have determined the selected response actions are protective of public health and welfare and the environment.

Kathryn J. Sather

Kathryn J. Sather
Division Director
Remediation Division

10/11/2019

Date