**Analysis of Brownfields Cumulative (ABCAs)**

**Draft Analysis of Brownfields Cleanup Alternatives**

**Analysis of Brownfields Cleanup Alternatives-Preliminary Evaluation for Mille Lacs Marine Site- Mille Lacs and of Ojibwe, MN**

1. **Introduction and Background**
	1. **Site Location**

The Mille Lacs Marine site is located at 38593 US Highway 169 in Onamia, Mille Lacs County, Minnesota. The site is on Tribal reservation lands.

* 1. **Previous Site Uses(s) and any previous cleanup/remediation**

The site was developed as a gas station and convenience store in the 1950s, it was closed in the 2000s. The site is currently used by the Mille Lacs Band as an auto mechanic shop. The auto mechanic shop provides oil changes and simple repairs to band owned vehicles only.

There are two Minnesota Pollution Control Agency (MPCA) leak numbers (7389 and 14334) associated with the site. Leak 739 was discovered on February 1, 1994 and was closed December 23, 1994. Lak number 14334 was discovered on July 11, 2001 and closed on April 1, 2002. The following cleanup and remediation steps have occurred:

* Two USTs where removed July 28, 2008. One a 10,000-gallon tank and a 4,000-gallon tank. Both tanks were in good condition. Soil samples were collected from the base of the excavation and analyzed for benzene, toluene, ethylbenzene, and xylene, methyl-tert-butyl ether, and gasoline range organics (GRO). There were no detections for any of the analytes.
* A pre-demolition hazardous building materials inspection occurred on August 27, 2017 for the former convenience store and a small storage barn. Finding included Asbestos containing materials in the convenience store. In addition, Poly-Chlorinated Biphenyls (PCBs), Mercury, chemical adhesives, and petroleum products in the barn. As a result, both structures and several yards of concrete were removed in 2019.
	1. **Site Assessment Finding**

The site findings are based on the June 2020 Phase II Environmental Site Assessment conducted by Tetra Tech, Inc.

* The soil was sampled and laboratory analyzed for VOCs, SVOCs, PCBs, pesticides, RCRA metals, mercury, cyanide, DRO, GRO and moisture content.
	+ Benzene was detected at concentrations exceeding the Mille Lacs Band cleanup standard (ML-SB02 and ML-SB06); EPA RSL (ML-SB06); and MPCA SLV (ML-SB01, ML-SB02, and ML-SB06).
	+ Ethylbenzene was detected at concentrations exceeding the Mille Lacs Band cleanup standard and EPA RSL (ML-SB06); and MPCA SLV (ML-SB02, ML-SB06 and ML-SB07).
	+ Toluene was detected at a concentration exceeding the Mille Lacs Band cleanup standard and MPCA SLV (ML-SB06).
	+ m,p-Xylene was detected at concentrations exceeding the Mille Lacs Band cleanup standard and MPCA SRV (ML-SB06) and MPCA SLV (ML-SB06 and ML-SB07).
	+ o-Xylene was detected at a concentration exceeding the MPCA SLVs (ML-SB06).
	+ Total xylene was detected at concentrations exceeding the Mille Lacs Band cleanup standard and MPCS SRV (ML-SB06) and MPCA SLV (ML-SB06 and ML-SB07).
	+ Arsenic was detected at concentrations exceeding the EPA RSL (ML-SB05, ML-SB10 and ML-SB12); however, the concentrations did not exceed the MPCA background concentration.
* Groundwater samples were collected from the 11 temporary monitoring wells installed during the December 2019 field investigation. The groundwater sample collected from GW-01 was submitted for laboratory analysis of VOCs. The groundwater samples collected from GW-03 and GW-11 were submitted for laboratory analysis of VOCs, SVOCs, PCBs, pesticides, cyanide, RCRA metals (including mercury), DRO, and GRO. The groundwater samples from GW-02, GW-04, GW-05, GW-06, GW-07, GW-08, GW-09, and GW-10 were submitted for laboratory analysis of VOCs, DRO, GRO, and lead.
	+ Benzene was detected at concentrations exceeding the EPA MCLs, MDH guidance, and the Mille Lacs Band cleanup standard (ML-GW05 and ML-GW06).
	+ Ethylbenzene was detected at concentrations exceeding the EPA MCLs, MDH guidance, and the Mille Lacs Band cleanup standard (ML-GW05 and ML-GW06).
	+ Toluene was detected at a concentration exceeding the EPA MCLs, MDH guidance, and the Mille Lacs Band cleanup standard (ML-GW05 and ML-GW06).
	+ m,p-Xylene, o-xylene, and total xylene were detected at concentrations exceeding the MDH guidance and the Mille Lacs Band cleanup standard (ML-GW05 and ML-GW06).
	+ DRO was detected at concentrations exceeding the MDH guidance (ML-GW05 and ML-GW06).
	+ GRO was detected at a concentration exceeding the MDH guidance (ML-GW06).
	+ Arsenic was detected at a concentration exceeding the EPA MCL and the Mille Lacs Band cleanup standard (ML-GW03).
	1. **Project Goal**

The purpose of a cleanup at this site is to mitigate any risk to human health and the environment. The site is currently being utilized by the Tribes Aanjibimaadzing program for training of WEX workers under the supervision of a trained mechanic. In addition to the current use of the site, there is no current redevelopment plans for the location.

1. **Applicable Regulations and Cleanup Standards**
	1. **Cleanup Oversight Responsibility**

The cleanup will be overseen by the Tribal Brownfields Program and Environmental Program, in coordination with U.S. EPA Region 5. Certified contractor Deep Earth Technologies Inc. will be hired to conduct the cleanup.

* 1. **Cleanup Standards for major contaminants**

These standards will follow rules and regulations during cleanup tasks and activates:

Mille Lacs Band of Ojibwe Environmental Cleanup Standards

* 1. **Laws & Regulations Applicable to the Cleanup (briefly summarize any federal, tribal, state, and local laws and regulations that apply to the cleanup)**

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act; State of Minnesota Cleanup Criteria Requirements; Tribal laws. The cleanup contractor will be required to follow OSHA and EPA regulations and notifications. Federal, State and Tribal laws regarding procurement of contractors to conduct the cleanup will be followed. In addition, all appropriate permits will be obtained prior to the work commencing.

1. **Evaluation of Cleanup Alternatives**
2. **Compliance**
3. **Effectiveness**
4. **Implement ability**
5. **Cost (Conceptual costs for comparative analysis only)**
6. **Cleanup Alternatives**
	1. **Cleanup Alternatives Considered (minimum two different alternatives plus No Action)**

To address contamination, three different alternatives were considered, including:

* Alternative #1: No action
* Alternative #2: Combination of Air Sparing and Soil Vapor Extraction
* Alternative #3: Cool-Ox Treatment

Alternative #1: No Action

Advantages

* No Cost

Disadvantages

* All contamination will still exist
* Health, environment, and safety hazards remain
* Not compliant with Federal, Tribal, and State regulations
* The “No Action” alternative is technically ineffective

Alternative #2: Combination of Air Sparing and Soil Vapor Extraction

Advantages

* Would remove all soil and groundwater contamination

Disadvantages

* Estimated treatment length is 12 to 24 months
* Estimated total cost is $550,000

Alternative #3: Cool-Ox Treatment

Advantages

* Estimated cost is $99,592, which is in budget of current funds

Disadvantages

* The soil and groundwater will be treated for BTEX and GRO, however a single application does not guarantee the site will be remediated to closure.
	1. **Cost Estimate of Cleanup Alternatives (summary of the compliance, effectiveness, implement ability, and a preliminary cost estimate for each alternative)**

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| --- | --- | --- | --- | --- | --- |
| Cleanup Alternative | Compliance | Effectiveness | Implement-ability | Cost | Comment |
| **Alternative #1: No Action** | Not Compliant | Not Effective | Implementable | Low (3rd) | **This alternative does not satisfy the cleanup goals or allow for redevelopment of the site** |
| **Alternative #2: Combination of Air Sparing and Soil Vapor Extraction** | Compliant | Effective | Implementable | High (1st) | **This alternative satisfies the cleanup goals and allows for redevelopment of the site** |
| **Alternative #3: Cool-Ox Treatment**  | Compliant | Effective | Implementable | Moderate (2nd) | **This alternative satisfies the cleanup goals and allows for redevelopment of the site in a timely manner** |

* 1. **Recommended Cleanup Alternative**

Of the here cleanup alternatives evaluated for selection at the Mille Lacs Marina site, located at 38593 US Highway 169 in Onamia, MN 56359, the preferred alternative recommended is: Alternative 3: Cool-Ox Treatment. This alternative was selected based on compliance with state/federal regulations, effectiveness in protecting human health and the environment in both the short-term and long-term, feasibility of implementation, and cost effectiveness.