United States Environmental Protection Agency

U.S. Environmental Protection Agency (EPA)

Callahan Mine Superfund Site
Brooksville, ME

EPA Superfund Community Involvement **Proposed Plan**

You are Invited to Attend!

A public information meeting to learn about and openly discuss the proposed plan will be held July 9, 2009. A Public Hearing with a Formal Comment Session to provide citizens the opportunity to enter official comments for the public record about this proposed plan will be held on August 6, 2009.

Public Information Meeting
July 9, 2009
7:00 p.m.
Brooksville Town Office,
1 Town House Road
Brooksville, ME

Public Hearing
August 6, 2009
7:00 p.m.
Brooksville Town Office,
1 Town House Road
Brooksville, ME

Your Opinion Counts!!

EPA will be accepting public comment on this cleanup proposal from July 10, 2009 through August 10, 2009. You do not have to be a technical expert to comment. If you have a concern or preference regarding EPA's proposed cleanup plan, EPA wants to hear from you before making a final decision on how to protect your community.

To provide comments on the Proposed Plan, you may:

Offer oral comments during the public hearing on August 6, 2009 (see page 10 for details). Or

Send written comments postmarked no later than
August 10, 2009 to:
Edward Hathaway, RPM
U.S. EPA Region 1
1 Congress Street, Suite 1100 (HBT)
Boston, MA 02114-2023 Or

E-mail comments by August 10, 2009 to:
hathaway.ed@epa.gov

For further information about this meeting, call EPA Community Involvement Coordinator Pam Harting-Barrat (617) 918-1318, or toll-free at 1-888-372-7341 ext. 81318.

The Cleanup Proposal for Callahan Mine

EPA proposes the following cleanup action, known as Alternative CMS2, for Operable Unit 1 (OU1) and an Early Action for Operable Unit 2 (OU2). (Details regarding the cleanup approach begins on page 7)

The Proposed OU1 Cleanup Action consists of:

- Excavation of soil with PCB concentrations above the cleanup levels and disposal of the PCB waste at an appropriate off-site facility;
- Excavation of soil within the Residential Use Area of the Site that contains lead and arsenic above the residential cleanup levels
- Excavation of the waste rock/source materials in the Ore Pad, Waste Rock Pile 3 (WRP-3), and Mine Operations Area and subaqueous disposal in a confined aquatic disposal (CAD) cell in the former mine pit. Waste rock or soil commingled with petroleum contamination will be disposed off-site;
- Dredging of the Southern Goose Pond mine waste hot spot and the adjacent salt marsh sediments with contaminant concentrations above the cleanup levels and subaqueous disposal in the CAD cell in the former mine pit;
- Capping of the Tailings Impoundment with surface water diversion around and a horizontal drain within the Tailings Impoundment. As part of the capping, the Tailings Impoundment will be stabilized;
- Installation of a wetlands treatment system to treat the discharge of contamination from the horizontal drain that will be installed within the Tailings Impoundment;
- Land use controls to prevent disturbance of the Tailings Impoundment cap, treatment wetland, monitoring wells, CAD cell and any other component of the OU1 remedy; and
- Restoration of disturbed areas, including wetlands, and the possibility of mine waste removal in Goose Cove and Goose Pond as part of the wetland mitigation activities.

Long-term monitoring and maintenance would be performed to maintain the effectiveness of the cleanup. EPA would perform a review of this remedial action every five years.

The proposed Early Action for OU2 would consist of land use restrictions to prevent future residential use or groundwater consumption for the areas of the former Callahan Mine property portion of the Site that exceed the residential cleanup levels for soil or drinking water risk levels.

EPA is also seeking public comment on EPA's finding under the Toxic Substances Control Act (TSCA) regarding the PCB cleanup level to be used for the remedy. In addition, EPA requests public comment on the Agency's finding that the cleanup represents the least damaging practical alternative regarding potential impacts to wetlands. Page 7 contains more detail regarding these items.

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In accordance with Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA) 42 U.S.C. §9601 et seq., the law that established the Superfund Program, this document summarizes EPA's cleanup proposal for the Callahan Mine Superfund Site. For detailed information regarding the options evaluated for use at the Site, see the Callahan Mine Feasibility Study, which is available for review at the Site information repositories. The Site information repositories are located at the Brooksville Library, Brooksville, Maine and at EPA's Record Center at 1 Congress Street in Boston, MA. (See page 10 for more details.)

SDMS DocID 452677

A brief history of the Callahan Mine Site

• 1881 – 1964:
Intermittent mining operations occurred at the Site using underground shafts and tunnels. About 10,000 tons were mined;

• 1965 – 1968:
Site work began to prepare for open-pit mining. Two dams were installed to drain Goose Pond, and surface water was diverted to Weir Cove;

• 1968 – 1972:
Mining operation removed approximately 5 million tons of waste rock to access 0.8 million tons of ore for processing. The ore contained zinc, copper, lead, and cadmium;

• 1972:
Mining operations ceased and the mine pit measuring 600 feet in diameter and 300 feet deep was left in place. The dams were breached to allow Goose Pond to fill. The former mine pit remains submerged within Goose Pond;

• 1987:
Four underground storage tanks were removed;

• 1985:
Maine DEP completed Site Inspection Prioritization Report;

• 1999:
Maine DEP conducted Expanded Site Inspection;

• 2001:
EPA prepared Hazard Ranking Document package to evaluate listing of the Site on Superfund National Priorities List;

• 2002:
Callahan Mine Superfund Site was added to the National Priorities List;

• 2004:
EPA began Remedial Investigation and Feasibility Study (RI/FS);

• 2005:
State of Maine entered into Administrative Order to complete RI/FS; and

• 2009:
OU1 RI/FS completed and EPA issues Proposed Plan.

What areas were evaluated in the RI?

The Callahan Mine Superfund Site (Site) is located in the village of Harborside in the Town of Brooksville, Maine. The Site is located approximately 15 miles west of the Town of Blue Hill and 35 miles west of the Town of Bar Harbor on the northwest side of the Cape Rosier peninsula on Penobscot Bay. The Site includes the former Callahan Mine property, an elongated 120-acre property oriented north-south and accessed from Goose Falls Road, Goose Pond and Goose Cove. The Holbrook Island Sanctuary State Park is immediately east of the Site. Private residences and seasonal homes are located adjacent to the former Callahan Mine property on Old Mine Lane, Goose Falls Road and Cape Rosier Road.

The OU1 RI evaluated the entire study area shown on Figure 1. A substantial investigation program was implemented to identify the nature and extent of contamination and document threats to human health and the environment. Table 1 lists the investigations that were performed. The basic conclusions of the OU1 RI are listed below:

- Mining and mining related activities have left a legacy of contamination at the Site. The land portions of the Site include waste piles and access roads that contain levels of contamination higher than adjacent areas and background concentrations;
- PCBs were detected in a small area where the former ore processing facility was located;
- Arsenic, cadmium, copper, lead, and zinc are the contaminants most often detected above background levels and greater than health or ecological-based screening levels for soil;
- Cadmium is the most significant contaminant in groundwater with lead, manganese, copper, zinc, and arsenic also being detected above federal or state criteria;
- Four areas within Goose Pond and Goose Cove that were associated with past mine operational activities have the highest sediment concentrations of copper, lead, and zinc at the Site;
- Copper and zinc were detected above federal and state water quality criteria in Goose Pond surface water immediately adjacent to the Site;
- The sediment transport modeling and RI data suggest that the sediment contamination is not migrating from the Site to Penobscot Bay; and
- The Tailings Impoundment does not meet safety criteria for long-term stability.

How did the Site become contaminated?

The presence and widespread distribution of arsenic, copper, lead, and zinc are attributed to: spillage during transport, storage, and handling of ore and ore concentrate; disposal of tailings and waste rock; and contaminated wind blown dust. Although much of the waste rock removed during development of the open pit did not contain iron sulfide and low grade ore, other sub-ore grade waste rock contained iron sulfide and lesser amounts of copper, lead, and zinc-bearing minerals. Use of waste rock for fill across the Site, particularly for containment berms and site roads, contributed to site contamination.

In addition, there is a relatively small area of PCB contamination attributed to historical transformer leakage as well as a relatively small area of oil and gasoline contamination attributed to leaking underground storage tanks removed in 1987. Both of these areas are located within the Mine Operations Area. PCBs were detected at a concentration up to 7,900 mg/kg. Four seasonal residential lots within the Residential Use Area of the Site have soil contaminated with arsenic and lead.

Based on historical information, the primary source of the sediment contamination in Southern Goose Pond and the adjacent salt marsh is overflow from the Tailings Impoundment – either through the decant pipe or via overflow ditches at the northwest and southwest corners. Overflow from the northwest corner was a likely source of salt marsh contamination. A sedimentation basin constructed in Southern Goose Pond to contain overflow and decant discharge from the Tailings Impoundment also contributed to the sediment contamination.

Discharge of contaminated groundwater through seeps and weathering of waste rock via acid rock drainage, followed by surface water transport of suspended and dissolved material, likely contributed to sediment contamination. Overflow from the tailings impoundment and groundwater/seep discharge continue today. At WRP-3, weathering of waste rock via acid rock drainage followed by groundwater/seep and surface water transport of suspended and dissolved material also appear to be historical and potentially ongoing contributors to the Goose Pond estuary contamination.

The sediment contamination in Goose Cove and Dyer Cove are believed to be a result of mine operations. During early mine operation, groundwater seepage into the pit and entrained rock dust were pumped to an outfall in Goose Cove. Because of concerns about sediment accumulation in Goose Cove, Dyer Cove was dammed off and used as a settling pond for de-watering the open pit. Following settling, water in Dyer Cove was pumped to the mine water sump, where it was then pumped through a pipe that discharged into Goose Cove. In addition,

contaminated surface water runoff during and after mine operations as well as the discharge of contaminated groundwater are interpreted as historical and ongoing contributors to Dyer Cove sediment contamination.

During closure of the mine: the Goose Falls dam was breached, restoring limited tidal exchange in Goose Pond; the Marsh Creek dam was breached; and the pit and estuary were re-flooded. Although some rock and overburden debris were pushed or blasted into the pit at the time of mine closure, the pit remains submerged with a relatively thin mantle of accumulated sediment that drapes the former roads and pit bottom. Figure 2 shows the areas of the Site that were used in the mine operations.

Why is Cleanup Needed?

EPA has identified current and future potential threats to human health and the environment at the Callahan Mine Site. A detailed summary of the threats can be found in the OU1 RI/FS Reports. The key findings are presented below.

Threats to Human Health:

- PCBs are present in the soil of the Mine Operations Area at levels that are unsafe for even occasional human contact;
- Lead and arsenic are present in the soil at concentrations that are not safe for year round residential exposure; and
- Groundwater in certain areas of the Site is unsuitable for human consumption. The most highly contaminated groundwater is located beneath the Ore Pad.

Threats to the Environment:

- Sediments in Southern Goose Pond that contain mine waste along with high levels of copper, lead, and zinc, were found to be acutely toxic to benthic organisms;
- Lead and other metals were found to be accumulating in biota at the Site, including fish, crabs, clams, and salt grass;
- Food chain modeling identified the sediments in Southern Goose Pond and the adjacent salt marsh as a threat to insect and fish-eating birds;
- Surface water contains copper and zinc above levels that could adversely impact aquatic organisms; and
- Water discharging from the waste areas (seeps), particularly WRP-3, significantly exceeds levels that could adversely impact aquatic organisms.

EPA has identified the above conditions as an unacceptable threat to human health and the environment. The OU1 Feasibility Study was developed to identify cleanup options to protect human health and the environment.

Scope and Role of this cleanup action

The cleanup action presented in this Proposed Plan will be the first cleanup action for the Callahan Mine Site. EPA often implements a cleanup action in phases or "Operable Units". This allows for a focus on the portions of the Site where more immediate risk reduction is necessary and can provide more time to better understand other areas of the Site. For the Callahan Mine Site, EPA is creating two Operable Units. Operable Unit 1 (OU1) will target the following threats to human health and the environment, which are shown in Figure 3:

- Soil and waste contaminated with PCBs;
- Soil and waste that represent the most significant threat to surface water, sediments, and groundwater;
- Areas of sediment that were shown to be acutely toxic and represent a food chain threat; and
- Soil and waste contaminated with lead and arsenic in areas with current residential use.

An Early Action will also be implemented for Operable Unit 2 (OU2). The OU2 Early Action will address the future potential threat from ingestion of groundwater or direct contact with contaminated soil/waste within the former Callahan Mine property portion of the Site. The Early Action includes the implementation of land use restrictions on the former Callahan Mine property portion of the Site to:

- Prevent the installation of water supply wells; and
- Prevent residential development.

The area where institutional controls will be implemented as part of Early Action for OU2 is shown in Figure 4.

The remaining components of OU2 will address site wide groundwater contamination and site wide soil contamination. OU2 will also evaluate the success of OU1 to determine whether any additional actions are necessary to achieve the cleanup objectives for surface water and sediment. A supplemental RI Report and revised Human Health Risk Assessment (HHRA) and Baseline Ecological Risk Assessment (BERA) reports may be developed for OU2.

Remedial Action Objectives for OU 1

EPA develops Remedial Action Objectives (RAOs) for each cleanup action. The specific RAOs for OU1 are presented in Section 2.2 of the FS and are summarized below:

- Prevent contact with soil or waste containing PCBs above the cleanup levels;
- Prevent contact with soil or waste with lead or arsenic above the cleanup levels in the area of the Site with current residential use;
- Prevent exposure of biota to sediment, including the sediment/soil in the salt marsh, with concentrations of copper, lead, or zinc that may represent a threat to insectivorous and piscivorous birds, fish, and other aquatic organisms;
- Minimize impacts from waste rock and tailings within the OU1 area on groundwater, surface water, and sediment;
- Stabilize the Tailings Impoundment to achieve acceptable stability criteria;
- Comply with the applicable or relevant and appropriate federal and state regulations (ARARs) that apply to the cleanup action; and
- Minimize impacts of waste rock and tailings within the OU1 area on groundwater, surface water, and sediment.

The RAOs for OU2 are listed on page 9.

Cleanup Levels

In addition to the RAOs, EPA also identified the cleanup levels that will be used to determine if the OU1 cleanup action is protective of human health and the environment. The human health based cleanup levels for soil were developed based on the exposure assumptions used in the human health risk assessment, except for the residential cleanup level for arsenic which was set at the background level. The cleanup levels for sediment and wetlands were based on the ecological food chain modeling and the sediment toxicity testing. The cleanup levels for the OU1 Remedial Action are presented below:

Table 2

Human Health Based Cleanup Levels

Soil	Residential Land Use	Recreational Land Use
Arsenic	14 mg/kg	30 mg/kg
Lead	375 mg/kg	700 mg/kg
PCBs	1 mg/kg	1 mg/kg

Table 3

Cleanup Levels for Sediment and Wetlands

Sediment	Safe Level for aquatic biota and birds
Copper	790 mg/kg
Lead	710 mg/kg
Zinc	5100 mg/kg

Areas of the Site Where OU1 Cleanup Action is Necessary

The information from the OU1 RI, HHRA, and BERA was used to identify the areas that were evaluated in the OU1 FS for cleanup. These areas of the Site that represent the most significant threats to human health and the environment are the: mine waste source areas; southern Goose Pond and salt marsh sediments; and residential use area. These areas are summarized below and are shown in the Figure 3.

Mine Waste Source Areas

There are four significant mine waste source areas at the Site:

- **Ore Pad:** This area covers about 2.1 acres and contains about 16,000 cubic yards of waste rock. The Ore Pad is considered to be the most significant source of groundwater contamination and a major contributor to surface water contamination;
- **Mine Operations Area:** This area covers about 5.2 acres and contains about 44,000 cubic yards of waste rock. The PCB contamination and waste oil contamination is also located in this area;
- **WRP-3:** This area covers about 6.6 acres and contains about 216,000 cubic yards of waste rock. WRP-3 is the most significant source of surface water contamination and also contributes to sediment contamination; and
- **Tailings Impoundment:** The outside footprint of the Tailings Impoundment covers about 21 acres and contains about 716,000 cubic yards of material. The tailings are believed to be the most significant source of sediment contamination. Seepage from the Tailings Impoundment also contributes to surface water contamination. The Tailings Impoundment does not meet standard criteria for long-term stability.

Sediment, including Salt Marsh

Two areas of sediment that contain high levels of copper, lead, and zinc along with mine waste have been targeted for cleanup. These areas are:

- **Southern Goose Pond Mine Waste Hot Spot:** This 10-acre area within the 75-acre Goose Pond is adjacent to WRP-3 and the Tailings Impoundment. Mine waste, particularly tailings, have accumulated in the sediments in this area. The Southern Goose Pond mine waste hot spot was identified as an area that represents an unacceptable threat to ecological receptors.
- **Salt Marsh Mine Waste Hot Spot:** Seven acres of salt marsh are co-located within the Southern Goose Pond mine waste hot spot. Similar to the Southern Goose Pond mine waste hot spot, this area was also contaminated as a result of tailings deposition. The Salt Marsh mine waste hot spot was identified as an area that represents an unacceptable threat to ecological receptors.

Two other areas of contamination that were not evaluated for cleanup as part of the remediation are 1.5 acres of Goose Cove and 3.6 acres of Dyer Cove that contain mine waste in the sediment. This is because the HHRA and BERA did not identify these areas as presenting a significant threat to human health or the environment. Removal of the mine waste from these areas will be considered one of the potential wetland mitigation measures that may be performed as part of the cleanup.

Residential Use Area

This area of the Site extends along the access road leading from the former Callahan Mine property and is of concern because lead and arsenic were found in the road bed and residential yards exceeding levels acceptable for long-term residential contact.

Cleanup Alternatives Evaluated for the OU1 Remedial Action at the Callahan Mine Site

EPA considers a full range of alternatives to clean up a Superfund site before selecting a remedy. Many options are screened out early in the process because site-specific conditions render them ineffective and/or technically or administratively infeasible. Others are eliminated because they are cost prohibitive to implement. For the Callahan Mine Site, alternatives that require the off-site transport of the waste rock, sediment, or tailings were eliminated due to cost and community concerns. In addition, the only approach that was retained for the sediment cleanup was excavation or dredging because the site conditions would not allow for in-place capping or monitored natural recovery. The cleanup alternatives that survived the initial screening were subject to a detailed evaluation and comparative analysis in the OU1 Feasibility Study for the Callahan Mine Site (OU1 FS). These cleanup alternatives are summarized below.

Alternative CMS1 – No Action

Alternative CMS1, the No Action alternative, was retained as a baseline with which to compare the other alternatives, as required by CERCLA. This alternative does not include remedial action components to reduce the contribution of site source areas to groundwater, surface water, or sediment contamination. No action would be taken to reduce, control, or eliminate direct exposure risks to residents of seasonal properties along Old Mine Lane. No action would be taken to reduce, eliminate, or control risks to ecological receptors in Goose Pond or salt marsh areas. No institutional controls would be implemented to prohibit potable use of site groundwater or residential development of the Site. The only activity required by CERCLA under this alternative is to assess site conditions at least every five years. The estimated present value cost of CMS1 is $19,000.

Alternative CMS2 – Capping of Tailings Impoundment; Off-Site Disposal of PCB and Petroleum[1] Contaminated Soil; Subaqueous Disposal of Source Area Material (from the Ore Pad, Mine Operations Area, and WRP-3), Residential Use Area Soil, and Sediment in a Confined Aquatic Disposal (CAD) Cell in the Former Mine Pit

Alternative CMS2 includes: constructing surface water diversions to reduce the amount of upslope runoff flowing onto and infiltrating the Tailings Impoundment; installation of a low-permeability cover system to contain and isolate the Tailings Impoundment; installation of a horizontal drain to facilitate the dewatering of the Tailings Impoundment and the collection and treatment of the discharge from the horizontal drain in a constructed wetland; subaqueous disposal of WRP-3, Ore Pad, and Mine Operations Area source material, and Residential Use Area soil exceeding preliminary remediation goals (PRGs) in a CAD cell in the former mine pit; and off-site disposal of material contaminated with PCBs and waste commingled with petroleum. It is possible that additional measures, including a toe shear key or buttress would be identified during design as a necessary component to stabilize the Tailings Impoundment. Alternative CMS2 also includes the dredging and subaqueous disposal of sediments exceeding PRGs in southern Goose Pond and the adjacent salt marsh in a CAD cell in the former mine pit. Dyer Cove and Goose Cove sediments that contain mine waste may also be dredged and disposed in the CAD cell in the former mine pit as part of Site restoration and wetland mitigation activities. Additional components include institutional controls, environmental monitoring, and five-year reviews to control potential human-health and ecological risks due to exposure to contaminated waste material.

The estimated present value cost of CMS2 is $22.8 million. Figure 5 shows the major features of CMS2.

Alternative CMS3 - Capping of Tailings Impoundment; Off-Site Disposal of PCB and Petroleum[1] Contaminated Soil; Capping of Source Area Material (from the Ore Pad, Mine Operations Area, WRP-3), and Residential Use Area Soil; and disposal of Sediment in a Confined Aquatic Disposal (CAD) Cell in the Former Mine Pit

Alternative CMS3 includes: constructing surface water diversions to reduce the amount of upslope runoff flowing onto and infiltrating the Tailings Impoundment; installation of a low-permeability cover system to contain and isolate the Tailings Impoundment; installation of a horizontal drain to facilitate the dewatering of the Tailings Impoundment and the collection and treatment of the discharge from the horizontal drain in a constructed wetland; disposal of WRP-3, Ore Pad, and Mine Operations Area source material, and Residential Use Area soil exceeding PRGs into an on-Site waste cell that would then have a low permeability cover system installed over the waste; and off-site disposal of material contaminated with PCBs and waste commingled with petroleum. It is possible that additional measures, including a toe shear key or buttress would be identified during design as a necessary component to stabilize the Tailings Impoundment. Alternative CMS3 also includes the dredging and subaqueous disposal of sediments exceeding PRGs in southern Goose Pond and the adjacent salt marsh in a CAD cell in the former mine pit. Dyer Cove and Goose Cove sediments that contain mine waste may also be dredged and disposed in the CAD cell in the former mine pit as part of Site restoration and wetland mitigation activities. Additional components include institutional controls, environmental monitoring, and five-year reviews.

The estimated cost of CMS3 is $25.5 million. Figure 6 shows the major features of CMS3

Cleanup Alternatives Evaluated for the OU2 Remedial Action at the Callahan Mine Site

The only alternative considered for the Early Action for OU2 at the Callahan Mine Site was institutional controls. This is a targeted cleanup action to limit contact with contaminated soil and prevent consumption of groundwater within the former Callahan Mine property area of the Site until the final OU2 cleanup decision is proposed and selected.

The OU2 Early Action would involve the placement of land use restrictions on the Site property to prevent use of the groundwater or future residential development within the former Callahan Mine property area of the Site.

How Does EPA Choose a Cleanup Plan?

EPA uses nine criteria to evaluate alternatives and select a final cleanup plan (called a remedial action) that will achieve the statutory goals of protecting human health and the environment, maintaining protection over time and minimizing contamination. These nine criteria make up the assessment process used for all Superfund sites.

Of these nine criteria, protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs) are considered threshold criteria that must be met for a candidate cleanup alternative to be selected. The next five criteria, called balancing criteria, are used to evaluate and compare the elements of the alternatives that meet the threshold criteria. This comparison evaluates which alternative provides the best balance of trade-offs with respect to the balancing criteria. State and community acceptance are considered modifying criteria factored into the final balancing of all criteria to a selected remedy. Consideration of state and community comments may prompt EPA to modify aspects of the preferred alternative or decide that another alternative provides a more appropriate balance. These criteria are as follows:

Threshold Criteria

1. Overall Protection of Human Health and the Environment. Will the alternative protect human health and plant and animal life from the contamination released by the Site? The chosen cleanup plan must meet this criterion.

2. Compliance with applicable or relevant and appropriate requirements (ARARs). Does the alternative meet all pertinent federal environmental and state environmental and facility citing statues, regulations, and requirements? Is a waiver required? The chosen cleanup plan must meet this criterion.

Balancing Criteria

3. Long-term Effectiveness and Permanence. How reliable will the alternative be for long-term protection of human health and the environment? Is contamination likely to present a potential risk again?

4. Reduction of Toxicity, Mobility, or Volume through Treatment. Does the alternative incorporate treatment to reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?

5. Short-term Effectiveness. How soon will the risks be adequately reduced? Are there short-term hazards to workers, the community, or the environment that could occur during the cleanup process?

6. Implementability. Is the alternative technically and administratively feasible? Are the materials and services needed to implement the cleanup alternative (e.g. treatment machinery, space at an approved disposal facility) readily available?

7. Cost. What is the cost of constructing and maintaining the cleanup alternative? Capital costs and the present value of all costs over the anticipated life of the cleanup alternative are presented.

Modifying Criteria

8. State Acceptance. Does the State agree with the recommendations? This criterion considers the state's preferences among or concerns about the alternatives, including comments on ARARs or the proposed use of waivers. This criterion is addressed following state input on the FS and Proposed Plan.

9. Community Acceptance. What suggestions or modifications do residents of the community offer during the comment period? What are their preferences and concerns about the alternatives? This criterion is addressed following community inputs on the FS and Proposed Plan.

Comparative Analysis of Alternatives

After completion of the detailed evaluation of alternatives, a comparative analysis of the alternatives is performed to identify the alternatives that satisfies the two threshold criteria of protection of human health and the environment and compliance with ARARs. The alternatives are then assessed to determine which option is the best based on the five balancing criteria. The alternative detailed analysis and comparative analysis can be found in Sections 4 and 5 of the Callahan Mine OU1 FS Report, which is part of the Administrative Record. The comparative analysis from the OU1 FS is summarized below.

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[1] *At the Callahan Mine Site, petroleum waste is intermixed with contaminated mine waste. Although CERCLA does not regulate petroleum cleanups, the commingled contaminated material containing CERCLA waste and petroleum waste will be cleaned up as part of the proposed CERCLA remedy.*

Threshold Criteria

1. Overall Protection of Human Health and the Environment.

Alternative CMS1, the No Action Alternative, would not eliminate, reduce, or control source areas or potential future exposure to contaminants exceeding PRGs and would not meet the RAOs. Therefore, it is not protective of human health and the environment and cannot be chosen as a final remedy.

Alternatives CMS2 and CMS3 would each be protective of human health and the environment. Both alternatives would eliminate the direct contact and incidental ingestion risks from PCBs, arsenic, and lead within the OU1 areas through removal and/or capping of this material. The PCBs will be taken to an appropriate off-site facility and the arsenic and lead in the residential area will either be disposed of in the CAD cell in the former mine pit (CMS2) or capped on-site (CMS3). The removal of the Ore Pad material will also control the most significant source of groundwater contamination. The removal of the Ore Pad, Mine Operations Area, and WRP-3 and either its disposal in the CAD cell (CMS2) or on-site capping (CMS3) will also remove and/or control significant sources of surface water contamination. Removal of WRP-3 and capping/stabilization of the Tailings Impoundment would prevent these areas from acting as a source of sediment and surface water contamination. Removal of the sediments that were found to be acutely toxic and which also represent a food chain threat and disposal into the CAD cell will eliminate that threat to the site biota. Both alternatives would implement institutional controls to prevent site use that could damage the components of the cleanup (particularly capped areas and the CAD cell).

Alternatives CMS2 and CMS3 are very similar in the degree to which they achieve protection of human health and the environment. CMS2 is more protective due to the greater long-term effectiveness afforded by placement of the material in the mine pit vs. reliance on an on-site cover system.

Both alternatives are equal with regard to protecting wetlands resources. As required by federal Executive Order 11990, entitled "Protection of Wetlands," through this Proposed Plan the public is invited to comment on the EPA's plans to protect wetland resources through the proposed remedial action.

2. Compliance with ARARs.

Alternative CMS1, No Action, would not comply with ARARs, therefore, it cannot be chosen as a final remedy.

Alternatives CMS2 and CMS3 would comply with the ARARs identified in the OU1 Feasibility Study. In particular, they would comply with the State of Maine mining rules and Clean Water Act. As part of complying with the Toxic Substances Control Act and its regulations, this Proposed Plan includes an EPA finding that the 1 ppm cleanup level for PCBs selected for in the remedy will not pose an unreasonable risk of injury to health or the environment.

Balancing Criteria

3. Long-term Effectiveness and Permanence.

Alternative CMS1, No Action, would not achieve this criterion since there would be no actions to protect human health or the environment.

Both alternatives CMS2 and CMS3 would provide long-term effectiveness and permanence. Both rely on the use of a cover system and stabilization of the Tailings Impoundment. Given the large quantity of material and the difficulty in relocating tailings, this is the more effective and permanent approach to achieve the RAOs and comply with ARARs for the Tailings Impoundment. With maintenance, cover systems provide reliable long-term controls. Both CMS2 and CMS3 remove the PCBs and transport the material to an appropriate off-site disposal location. This will be a long-term effective and permanent solution to prevent future contact with PCBs at the Site. Both CMS2 and CMS3 excavate the sediments that represent a threat to site biota. Subaqueous containment of the material in a CAD cell in the former mine pit will provide a high degree of long-term effectiveness and permanence. The material will be placed well below the rim of the mine pit and at a depth such that no disturbance of this material should occur due to tidal action, even during storm events. No maintenance beyond institutional controls to prevent deep water activities or dredging of this location would be necessary. CMS2 relies on this same approach to control the source material at WRP-3, Ore Pad, Mine Operations Areas (excluding PCBs and petroleum contaminated material which will be disposed of off-site), and arsenic and lead waste removed from the residential use areas. CMS3 would place WRP-3, Ore Pad, Mine Operations Areas (excluding PCBs and petroleum contaminated material which will be disposed of off-site), and arsenic and lead waste removed from the residential areas in an on-site cell and install a cover system as the long-term control. While this is an acceptable cleanup approach, the reliance on the long-term maintenance and periodic repairs to the cover system may result in a slightly lower degree of long-term effectiveness and permanence for CMS3.

CMS2, therefore, has a higher degree of long-term effectiveness and permanence than either CMS3 or CMS1.

4. Reduction of Toxicity, Mobility, or Volume through Treatment.

Alternative CMS1 does not contain any components to reduce the toxicity, mobility, or volume of contaminants through treatment.

Alternatives CMS2 and CMS3 rely on off-site disposal rather than treatment for the principal threat waste (PCBs) since the vast majority of PCB contaminated material is below EPA's guidance levels for treatment for PCBs and the quantity of PCBs materials is too small to warrant consideration of on-site treatment. The major components of CMS2 and CMS3 are source control measures for large volumes of low level threat wastes, which is consistent with EPA guidance. In the event that the wetlands treatment systems are installed, both CMS2 and CMS3 would achieve some level of reduction in toxicity, mobility, and volume through treatment as a result of the sulfide reduction to immobilize the metals in the treatment matrix.

5. Short-term Effectiveness.

Alternative CMS1 takes no actions so it does not achieve the RAOs. It would, however, have the lowest level of short-term impacts. Alternatives CMS2 and CMS3 have short-term effects with regard to the removal of the lead and arsenic contamination in the residential use area. This work would be scheduled to avoid periods when the seasonal residents occupy these homes. The homes themselves would not be altered by the cleanup. For the common components of CMS2 and CMS3, there would also be similar short-term impacts due to truck traffic transporting the PCB and petroleum contaminated material off-site for disposal and bringing the necessary materials to the Site for the remediation activities. There would also be truck traffic associated with the importation of the materials for the wetland treatment system and, over the long-term, removal of contaminated material from the treatment wetland systems.

The FS includes a remediation approach that fully considered the community's concerns regarding truck traffic. The cover systems would be constructed using geosynthetic material, which would require a relatively low volume of traffic, along with the use of stone from an on-site quarry. The use of on-site material eliminates several thousand truck trips on local roads. In addition, the fundamental approach to consolidate on-site under a cap or CAD, eliminates tens of thousands of truck trips that would be required on local road if the waste material was transported off-site.

Both CMS2 and CMS3 would result in short-term impacts to the wetland areas that are subject to excavation. Some permanent loss of these areas may occur to accommodate storm water control structures and the wetland treatment system associated with the cover system for the Tailings Impoundment. The areas that are not subject to permanent loss are expected to fully recover and achieve a higher level of function and value post-cleanup with the removal of the Site contaminants. In addition, there will be a permanent loss of the wetland areas that reside within the footprint of the Tailings Impoundment, WRP-3, and the Mine Operations Area. Some portion, and possibly all of the wetland on WRP-1 that contains the Stink Cove sediments would also be lost, depending upon

the amount of material from this area that may be used for on-site restoration activities. There will be short-term impacts to sub-tidal areas subject to dredging or excavation. However, the permanent removal of mine material from these areas will create a long-term benefit to the environment. Natural restoration is expected to occur relatively quickly, in addition to any supplemental restoration activity that may be implemented, such as the establishment of eel-grass beds.

For CMS2 and CMS3, the time period to achieve the RAOs will be short. The RAOs will be achieved once the source control and sediment activities are completed.

Overall, CMS2 and CMS3 are equal in time needed to achieve protection. CMS2 has a slightly lower degree of short term impacts because CMS3 requires additional quantities of materials to construct the second cover system.

6. Implementability

Alternative CMS1 takes no action, other than five-year reviews and therefore, would be technically easy to implement. Services and equipment are available to implement Alternatives CMS2 and CMS3. Construction of the cover systems would require large volumes of soil/crushed stone which is not currently available on site. On-site quarrying of non-sulfide rock would be performed to obtain material. None of these alternatives would interfere with the ability to undertake additional remedial actions.

The administrative feasibility of obtaining regulatory approvals and the necessary permits for any off-site actions is considered good to the extent required for Alternatives CMS2 and CMS3. The administrative process to obtain institutional controls to protect the components of the remedy (caps, treatment wetland, monitoring wells, the CAD) also may be implemented for both CMS2 and CMS3. CMS2 and CMS3 are equal with respect to implementability.

7. Cost.

Of the two alternatives that would protect human health and the environment and comply with ARARs, CMS2 is the less expensive of the alternatives that meet the threshold criteria.

Cost Category	CMS1	CMS2	CMS3
Capital Costs (millions)	$0	$21.5	$24.1
Total Present Worth (30 yrs @ 7%) (millions)	$0.019	$22.8	$25.5

Modifying Criteria

8. State Acceptance and 9. Community Acceptance.

EPA and Maine DEP have had substantive discussions regarding the Site and the cleanup. EPA has received input from the Maine DEP indicating that they are supportive of the cleanup approach presented in this proposed plan. Maine DEP supports CMS2 as the Proposed Cleanup Option.

Community acceptance will be evaluated based on the feedback received during the comment period. EPA has worked closely with the community during the entire RI/FS. Numerous public meetings and fact sheets have been released to provide the public with a solid understanding of the Site conditions. The cleanup alternatives reflect the community input. In particular, significant efforts were made to identify cleanup approaches that would minimize truck traffic.

Public Notice of Determination that the PCB Cleanup Level is Protective of Human Health

EPA has made a finding under the Toxic Substances Control Act (TSCA) PCB Regulations at 40 CFR Part 761, that the cleanup level of 1 ppm established for PCBs at this Site will not pose an unreasonable risk of injury to health or the environment.

Public Notice of Unavoidable Impacts to Wetlands and Aquatic Resources

EPA is seeking public comment on the following:

In accordance with federal Executive Order 11990, entitled "Protection of Wetlands," EPA has determined that there may be unavoidable adverse impacts to wetlands and aquatic resources. To the extent that federally regulated wetlands and aquatic resources are located within and adjacent to the Ore Pad, Mine Operations Area, Waste Rock Pile-3, or the Tailings Impoundment, the contaminated portions of Goose Pond and the adjacent Salt Marsh may be removed and/or altered as part of the cleanup actions. Wherever possible, wetland areas will be restored. EPA has evaluated the requirements of the applicable regulations, including Section 404 of the Clean Water Act and identified the proposed actions as the least damaging practicable alternatives to protect federally regulated wetland and aquatic resources from exposure to contaminated sediments and contaminated surface water. These wetland areas at the Site are shown in Figure 7. As part of the remedial design process, EPA will consider whether, as mitigation for Site wetland alterations, EPA will dredge approximately 1.5 acres of Goose Cove and 3.6 acres of Dyer Cove to remove mine wastes that had been historically disposed of into these water-bodies. The dredged mine waste will be disposed of in the CAD cell.

Why Does EPA Recommend the Preferred Cleanup Alternatives Identified in this Proposed Cleanup Plan?

EPA recommends the preferred cleanup alternative presented below in this proposed cleanup plan as the best balance of the criteria used to evaluate various alternatives. This alternative is recommended because it is protective of human health and the environment, while at the same time being the most cost effective way to achieve the RAOs. The cleanup being proposed provides: both short-term and long-term protection of human health and the environment; attains all Federal and State applicable or relevant and appropriate requirements; utilizes permanent solutions to the maximum extent practicable by eliminating the most significant sources of surface water, groundwater, and sediment contamination and eliminates human contact with PCBs on site, as well as lead, and arsenic in the OU1 areas. In addition, EPA has taken into consideration the input from the local community in developing the cleanup plan. The proposed cleanup approach targets the use of on-site material to minimize local truck traffic and reduce carbon emissions. The proposed cleanup approach also allows for further studies to determine if natural processes will result in the cleanup of the portions of the Site outside the OU1 cleanup area. This includes: 65 of the 75 acres of Goose Pond; 35 acres of the former Callahan Mine property; and 16 acres of Salt Marsh. This phased cleanup approach targets the major threats to human health and the environment.

A Closer Look at EPA's Cleanup Proposal

EPA has selected a cleanup plan for OU1 at the Callahan Mine Site to protect human health and the environment. The cleanup plan is summarized below and presented in detail in the FS:

Alternative CMS2 – Capping of Tailings Impoundment; Off-Site Disposal of PCB and Petroleum Contaminated Soil; Subaqueous Disposal of Source Area Material (from the Ore Pad, Mine Operations Area, and WRP-3), Residential Use Area Soil, and Sediment in a Confined Aquatic Disposal (CAD) cell in the Former Mine Pit

This alternative would consist of the following key components:

- Pre-design Investigations and Studies;
- Tailings Impoundment Cover System with stabilization measures, possibly including a toe shear key or buttress ;
- Horizontal drain within Tailings Impoundment and passive treatment of the discharge from the horizontal drain in a constructed wetland;

- Excavation and subaqueous disposal of WRP-3, Ore Pad, and Mine Operations Area source material in the CAD cell in the former mine pit;
- Excavation of soil containing arsenic and lead above the cleanup levels in the Residential Use Area of the Site and subaqueous disposal in the CAD cell in the former mine pit;
- Excavation and off-site disposal of PCB-contaminated soil exceeding PRGs;
- Excavation and off-site disposal of petroleum-contaminated soil commingled with CERCLA waste;
- Dredging of Goose Pond and salt marsh sediment exceeding PRGs and subaqueous disposal in the CAD cell in the former mine pit;
- Establishment of institutional controls to protect the components of the remedy (including caps, treatment wetlands, monitoring well, and the CAD cell)
- Wetland restoration and mitigation, which may include dredging and subaqueous disposal in the CAD cell of mine waste located in Goose Cove and Dyer Cove;
- Installation of monitoring wells;
- Long-term operation and maintenance; and monitoring, including institutional control inspections; and
- Five-year reviews.

Figure 5 is an alternative remedy map showing the major components of this alternative.

Pre-design Investigations and Studies

A series of pre-design studies would be performed to support the design of the Remedial Action. Examples of pre-design that may be performed are listed below:

- Topographic survey;
- Pre-excavation sampling to refine estimates of the extent of PCB contamination at the Mine Operations area;
- Pre-dredge sampling to refine estimates of the extent of sediment contamination exceeding PRGs;
- Pre-excavation sampling to refine estimates of the extent of petroleum contamination at the Mine Operations area;
- Geotechnical pre-design investigation(s);
- Borings within the Tailings Impoundment to characterize physical properties and spatial variability of tailings in cut/fill areas (excavations, construction traffic, settlement, dewatering, etc.);
- Borings along and adjacent to the toe of the Tailings Impoundment berm to characterize physical properties and spatial variability of estuarine deposits and native clay soils (long-term and short-term global stability evaluations, design of toe improvements, etc.);
- Borings along and adjacent to the toe of WRP-3 to characterize estuarine deposits and native clay soils (short-term global stability evaluation, construction-related issues, etc.);
- Bench scale and pilot scale testing of the wetland treatment system; and
- An assessment of wetland mitigation requirements and design options.

Tailings Impoundment Cover System and Stabilization Measures

Alternative CMS2 would include regrading the tailings surface and berm to reduce modeled instability beneath and immediately behind the berm that could contribute to berm failure, and installing a low-permeability cover system. Additional measures, including a shear key or buttress could be included if determined necessary during the design. The cover system would include surface water diversions along its western edge to reduce the amount of upslope runoff potentially infiltrating under the edge of the cover system and infiltrating the Tailings Impoundment. The existing access road along the toe of the tailings impoundment berm would be retained and connected with the WRP-3 Haul Road after removal of WRP-3 to provide construction, maintenance, and long-term inspection/monitoring access to the area along the toe of the tailings impoundment berm.

The re-contoured surface would be capped with a low-permeability cover system to minimize infiltration/recharge and prevent human and ecological receptor contact with exposed tailings. The cover system is shown on Figure 8 and would consist of, from bottom to top: a cushion layer of regraded tailings or ½-inch or less of crushed stone; a 40-mil geomembrane; a geocomposite drainage layer; and approximately 15 inches of crushed stone. The design, however, would determine the actual thickness of the membrane most appropriate for a stone cover and whether a geosynthetic cushion would be needed to protect the geomembrane. The crushed stone would be obtained on-site by quarrying rock from the area west of the Ore Pad Haul Road and crushing it. This on-site quarrying and crushing approach was chosen to minimize the amount of heavy-truck traffic bringing material onto the site over the narrow and twisting local roads. The estimated volume of required crushed stone is 53,400 cubic yards. Therefore, on-site quarrying would eliminate the equivalent of 3,814 truck loads of material. A vegetative layer on the cover system is not being proposed in order to eliminate truck traffic needed to import large volumes of soil/loam.

With a low-permeability cover to reduce infiltration, the seepage of contaminated groundwater along the toe of the Tailings Impoundment berm is expected to decrease as groundwater within the Tailings Impoundment slowly drains. To further reduce adverse impacts on Goose Pond surface water and salt marsh areas, a horizontal drain would be installed, running south to north, within the tailings just above the clay/till layer, and near the eastern edge of the Tailings Impoundment to capture water draining from the tailings. The drain would provide several benefits compared to the capture of surface water in the ditch at the toe of the berm: reducing the estimated time needed to dewater near the Tailings Impoundment by about a third; improving capture of tailings drainage and reducing capture of run-off; and the amount of water requiring subsequent treatment.

A passive treatment system using an anaerobic wetlands system would be used to treat the water from the horizontal drain and a pilot-scale treatability test would be implemented. Up to approximately 1 acre appears available northeast of the Tailings Impoundment, while perhaps two acres are available within the property boundary at the southeast corner, for the placement of the wetland treatment system and storm water basins. Use of either area would require clearing and excavating of land, some of which is existing wetland.

Excavation and Disposal of WRP-3, Ore Pad, and Mine Ops Area Source Material in a CAD Cell in the Former Mine Pit

Source material for groundwater contamination and surface runoff contamination with metals at WRP-3 (including portions of the WRP-3 Haul Road), Ore Pad, and Mine Operations Area would be excavated and subject to subaqueous disposal in a CAD cell in the former mine pit. Horizontal boundaries for the excavation would be delineated based on interpretation of RI data as to the areas with the greatest potential to contribute to groundwater and surface water contamination. In addition, a 200-foot-wide strip at the western edge of WRP-2 between the Ore Pad and the Mine Operations Area would also be excavated. The vertical limit of excavation would be based on the PRGs for cleanup of the recreational areas. These PRGs have been chosen with the goal that these areas would not require further remediation under OU 2. Excavation would be performed with conventional earth moving equipment. Excavated material would most likely be transported to the mine pit by a combination of trucks and a floating conveyor system to deliver material to the approximate center of the pit. If fill material is needed as subgrade material for the Tailings Impoundment cap, some material designated for disposal in the mine pit may be used under the cap.

Excavation of Residential Use Area Surface Soil and Disposal in a CAD Cell in the Former Mine Pit

Surface soil exceeding the PRGs (see Table 2) at residential lots along Old Mine Lane would be excavated to a depth at which PRG exceedances no longer occur, and disposal in a CAD cell in the former mine pit. If fill material is needed under the Tailings Impoundment cap, some material designated for disposal in the mine pit may be used under the cap. At the completion of the remediation the area will be available for unrestricted residential use based on the lack of any CERCLA risk from either soil or groundwater contamination.

Excavation and Off-Site Disposal of PCB-Contaminated Soil

Soil with PCBs exceeding a concentration of 1 ppm would be excavated and segregated in temporary stockpiles for testing prior to disposal. Current estimates are that up to 2,197 cubic yards of soil would exceed 1 ppm PCBs. An estimated 220 cubic yards of soil would exceed 50 ppm. Excavated material with PCBs concentrations equal to or greater than 50 ppm would be disposed of in a hazardous waste landfill permitted for PCB disposal (or at a PCB disposal facility approved under 40 CFR Part 761). Excavated material with concentrations above 1 ppm but less than 50 ppm would be disposed of at an appropriate off-site facility.

Dredging of Sediment Hot Spots in Southern Goose Pond and the Adjacent Salt Marsh Sediment and Disposal in a CAD Cell in the Former Mine Pit

The sediments exceeding the PRGs in Table 3 that are located in Southern Goose Pond and Salt Marsh would be dredged and disposed in the CAD cell in the former mine pit. Dyer Cove and Goose Cove sediments may also be dredged and disposed in the CAD cell in the former mine pit as part of wetland mitigation activities. The OU1 FS assumed the use of a hydraulic dredge that pumps dredged material directly to the mine pit through high-density polyethylene piping. This would eliminate the need for on-shore handling, dewatering, and the construction of an upland confined disposal facility. A drop tube would be used to lower the actual discharge point and reduce entrainment of material in the upper portion of the water column. Silt curtains would be placed around the mine pit to reduce the potential for turbid water to migrate to other areas of Goose Pond. Proper selection and operation of dredge equipment along with water quality monitoring will help minimize migration of suspended material from the dredge site. In addition, silt curtains will be used as appropriate to minimize migration of suspended material from the area being dredged.

Dredged material will be placed below the mixing boundary in the former mine pit to prevent long-term contamination of surface water in the remainder of Goose Pond. Information gathered during the RI identified a mixing boundary within the 300-foot deep mine pit about 30 feet below mean sea level. Water below this boundary does not mix with the upper waters of Goose Pond. Source material placed below this boundary would not be expected to contaminate surface water in the remainder of Goose Pond. The available data indicate that the mine pit can hold up to 1,300,000 cubic yards of source material and dredged sediment without filling above the mixing boundary. This is more than adequate to hold the estimated 101,000 cubic yards of sediment and 347,000 cubic yards of source material and soil identified for disposal in the former mine pit. This volume would only fill the pit to an estimated depth of 120 feet below sea level. The estimated level of fill in the mine pit after implementation of CMS2 is shown in Figure 8.

Backfilling of dredged areas in Goose Pond is not planned. This is primarily because the mine waste has artificially filled Goose Pond and removal would partially re-establish the pre-mine hydrology. The salt marsh, excavated or disturbed during remedial activities, would be restored and any permanent loss of area or function would be included in the wetland mitigation component of the cleanup.

Wetland Mitigation

Implementation of Alternative CMS2 would result in alteration of upland Wetlands B, C, D, and E; coastal; and subtidal wetlands. The levels of compensatory wetland mitigation will be established during the design. One mitigation concept is to remove the mine waste deposits from Goose Cove and Dyer Cove and place that material in the CAD cell in the former mine pit to allow these areas to be restored to depth and habitat type comparable to pre-mining conditions. Removal of this material would also reduce the contaminant levels in those areas.

Institutional Controls

As part of this alternative, institutional controls would be implemented to prevent any disturbance of the Tailings Impoundment cover system or the CAD cell in the former mine pit.

Long-Term Operation, Maintenance, and Monitoring

Anticipated maintenance activities would be expected to include: maintenance of the low-permeability cover system at the Tailings Impoundment; maintenance of storm water diversions and drainage structures to prevent/repair erosion damage; possible removal of contaminated media and the addition of clean to the treatment wetland; possible repair of reconstructed salt marsh, and repair/replacement of damaged monitoring wells. A long-term monitoring plan would be developed to evaluate the success of the cleanup actions. This plan would include groundwater, surface water, sediment, and biota monitoring and would also collect data to support the Five-Year Reviews. Inspections of the Site and verification that the proper notices and restrictions are in place at the local governmental offices would also be included to verify that the institutional controls have not been violated.

Five-Year Reviews

Under CERCLA§ 121(c), 42USC §9621(c), any remedial action that results in contaminants remaining on-site at concentrations above those allowing unlimited exposure and unrestricted use must be reviewed at least once every five years. Five-year reviews will be performed to determine whether the implemented OU1 remedy continues to be protective of human health and the environment, or whether the implementation of additional remedial action is appropriate.

Summary of cost

The present worth for Alternative CMS2, based on a 7 percent discount rate and a 30-year duration, is estimated to be $22,839,800.

OU 2 Early Cleanup Action

EPA has identified the need for an Early Action for the OU2 area. Specifically, since the finalization of the OU2 RI/FS and selection of an OU2 cleanup action is dependent upon the completion of the OU1 Remedial Action, many years will pass before an OU2 cleanup can be implemented. The Callahan Mine Superfund Site Human Health Risk Assessment identified the future consumption of contaminated groundwater and the direct contact with lead and arsenic contaminated soil in a residential setting as potential threats to human health. To address this threat to human health, EPA will implement an early cleanup action to prevent residential development or groundwater use within the former Callahan Mine portion of the Site.

The Remedial Action Objectives for the early cleanup action are:

- Prevent exposure to soil or waste with concentrations of lead or arsenic above the Site specific cleanup levels for future residential use within the former Callahan Mine portion of the Site; and
- Prevent ingestion of bedrock groundwater in excess of federal safe drinking water act Maximum Contaminant Levels (MCLs); Maximum Contaminant Level Goals (MCLGs); State of Maine Maximum Exposure Guidelines; or EPA risk standards within the former Callahan Mine portion of the Site.

The design for the early cleanup action will identify the extent of the former Callahan Mine portion of the Site that exceeds the residential PRGs for

arsenic and lead developed for the OU1 cleanup and the extent of groundwater that exceeds MCLs, MCLGs, MEGs, or risk based standards in the absence of these. Figure 4 shows the extent of the area of the former Callahan Mine portion of the Site that would be subject to institutional controls using the existing Site data.

The early cleanup action will include the placement of land use restrictions that run with the land to effectively prevent future residential use or installation of water supply wells within the former Callahan Mine portion of the Site. Restrictive covenants are the primary mechanism to achieve this objective with local and/or state ordinances or zoning to supplement the property restriction.

Because the only RAOs are to prevent the use of the Site and not restore groundwater or contain/remove contaminated soil, no other technologies or alternatives were considered, other than No Action. The OU2 Feasibility Study will develop and analyze technologies with respect to any groundwater restoration, migration control, or soil remediation. A very simplified nine criteria analysis was performed in Section 6 of the OU1 FS for No Action and Institutional Controls for an early cleanup action for OU2.

EPA has determined that a cleanup action is appropriate for OU2 at the Callahan Mine Superfund Site. The Early Action provides the best balance of the NCP criteria to ensure protection of human health prior to the implementation of the OU2 response action. The Early Action may be the only remedial action for OU2 or may be the first component of additional remedial actions that will be evaluated in the OU2 Feasibility Study and selected in a future OU2 ROD.

How You Can Comment On EPA's Cleanup Proposal?

To provide an opportunity for public input on the OU1 Proposed Plan, EPA will hold a 30-day public comment period, from July 10, 2009 to August 10, 2009. EPA will hold an informational meeting on July 9, 2009 prior to the start of the public comment period. EPA will accept formal written comments and hold a public hearing on August 6, 2009. EPA uses this public input to improve the cleanup proposal. Your formal input and ideas will become part of the official public record. The transcript of comments and EPA's written responses will be documented in a Responsiveness Summary when EPA releases the final cleanup decision.
There are three different ways in which individuals can express their comments on this Proposed Plan:

Comments can be submitted in writing to EPA by August 10, 2009 to:

Edward Hathaway, RPM
U.S. EPA Region 1
1 Congress Street, Suite 1100 (HBT)
Boston, MA 02114-2023

Comments can be sent to the EPA RPM by email at: hathaway.ed@epa.gov by August 10, 2009.

Comments can be spoken into the official public record during the public hearing on August 6, 2009.

EPA encourages anyone with a concern or who favors the cleanup plan, to express their opinion during the comment period. All comments are welcome. Any of the three mechanisms above are acceptable for providing comments and all of the comments are given equal weight.

Two types of public meetings will occur with respect to the OU1 Proposed Plan. The first will be an informational meeting to explain the proposed OU1 cleanup and answer any questions that may arise. This meeting will focus on a discussion of the OU1 Proposed Plan and RI/FS and is considered informational only. Comments that are made during this meeting will not be part of the "official record." The second type of meeting, a public hearing, will occur during the official comment period. At this meeting, EPA will provide a brief summary of the cleanup proposal and then the floor will be open for spoken comments. A stenographer will be present to record all of the comments offered during this comment session. Comments made must be limited in duration in order to allow all individuals present to have an opportunity to speak their comments into the record. EPA does not respond to any of the comments made at the public hearing other than to indicate the time limits or request clarification. At the close of the formal comment session, if time permits, EPA will be available to answer questions.

Although EPA's Early Action for OU2 is not a final agency remedial action subject to formal public comment, any feedback the public wishes to provide on the proposed early action during the OU1 public comment period will be accepted and will be considered before a final decision on implementing the proposed early action for OU2 is made. The comment period will last for thirty days unless an extension is requested. EPA will typically allow a thirty day extension, if requested. Once the comment period has ended, EPA will assemble and evaluate all of the submitted comments. Appropriate revisions to the final selected OU1 remedy Plan will be made based on these comments. EPA will then sign the OU1 Record of Decision (ROD) describing the chosen cleanup plan. The OU1 ROD and a summary of responses to public comments will be made available to the public at the public repositories. The final decision on the OU2 Early Action, including any responses to public comments, will also be made available at the public repositories.

For More Information about the Cleanup:

The Administrative Record is a collection of documents generated during the investigation of the Callahan Mine Site that form the basis for selection of the cleanup action. The Administrative Record can be found at the following locations:

EPA Records Center
1 Congress Street, Suite 1100,
Boston, MA 02114-2023
(617) 918-1453
Hours:
10:00 a.m.-noon, 2:00 p.m.-5:00 p.m.

Brooksville Public Library
1 Town House Road,
Brooksville, ME 04617
(207) 326-4560
Hours:
Monday and Wednesday:
9 a.m. to 5p.m.
Thursday Evening: 6 p.m. to 8 p.m.
Saturday: 9 a.m. to 12 noon

Additional information about the Callahan Mine Site is also available on the EPA New England website: www.epa.gov/ne/superfund/sites/callahan
(type Callahan Mine into the search box).

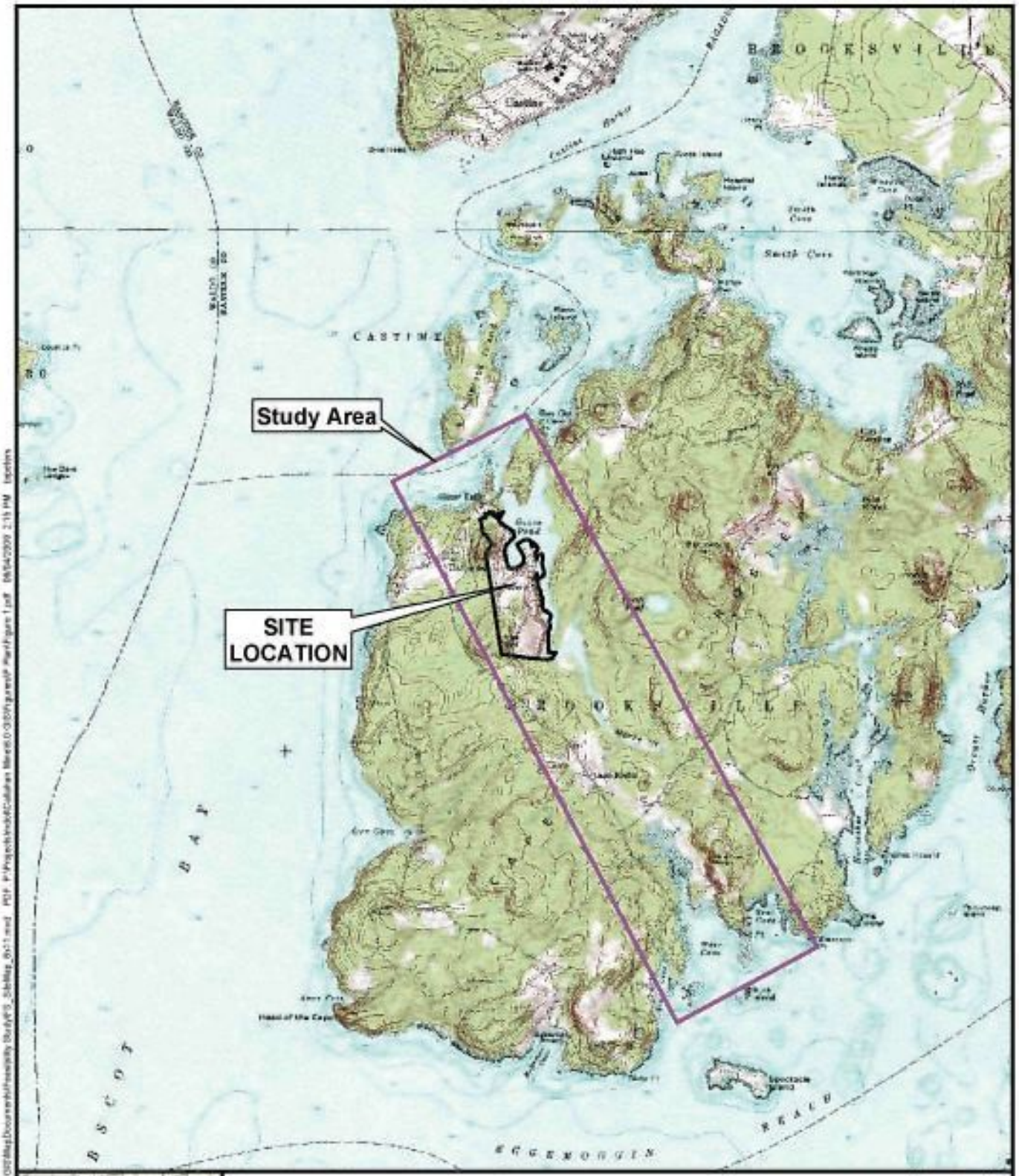
If you have any questions about the Callahan Mine Site, please contact:

Ed Hathaway
EPA Remedial Project Manager
617-918-1372
hathaway.ed@epa.gov; or

Pam Harting-Barrat
EPA Community Involvement
617-918-1318
harting-barrat.pamela@epa.gov

Table 1
Summary of Investigations

Year of Investigation	Principal Investigator	Investigation Description	Sampling Summary
2004	USEPA - TRC	Initial Remedial Investigation	30 surface soil samples
			12 surface water samples
			1 seep sample
			23 sediment samples
			Bathymetry survey of Goose Cove and Goose Pond
			Geophysical surveys to map bedrock
2005	Maine DOT - MACTEC	Phase 1A 2005 Remedial Investigation	189 surface soil samples
			15 surface water samples
			13 seep samples
			564 sediment samples
			41 ecological sample locations
2006	Maine DOT - MACTEC	Phase 1A 2006 Remedial Investigation	22 soil borings
			16 piezocone penetrations
			5 piezometers
			14 overburden monitoring wells
			10 bedrock monitoring wells
			1 round residential drinking water sampling
			2 rounds groundwater sampling
			2 synoptic groundwater level surveys
			4 air monitoring stations
			Electromagnetic surveys
			15 seep samples
			7surface water samples
2007	Maine DOT - MACTEC	Phase 1B 2007 Remedial Investigation	12 soil borings
			10 piezometers
			9 overburden monitoring wells
			4 bedrock monitoring wells
			44 test pit excavations
			1 round residential drinking water sampling
			1 round groundwater sampling
			1 synoptic groundwater level survey
			9-month water elevation monitoring
			5 seep samples
			325 surface soil samples
			103 sediment samples
			55 subsurface soil samples
			6 surface water samples
2008	Maine DOT - MACTEC	Clam Tissue/Sediment Bioavailability Study	22 clam tissue samples
			22 sediment samples



1:24,000 scale digital topographic map obtained from Maine Office of GIS at http://apollo.ogis.state.me.us/catalog

N

0 2,000 4,000 Feet

Prepared/Date: BRP 06/04/09 | Checked/Date: SWR 06/04/09

Figure 1
Site and Study Areas

Callahan Mine Superfund Site
Brooksville, Maine
MACTEC, Inc.

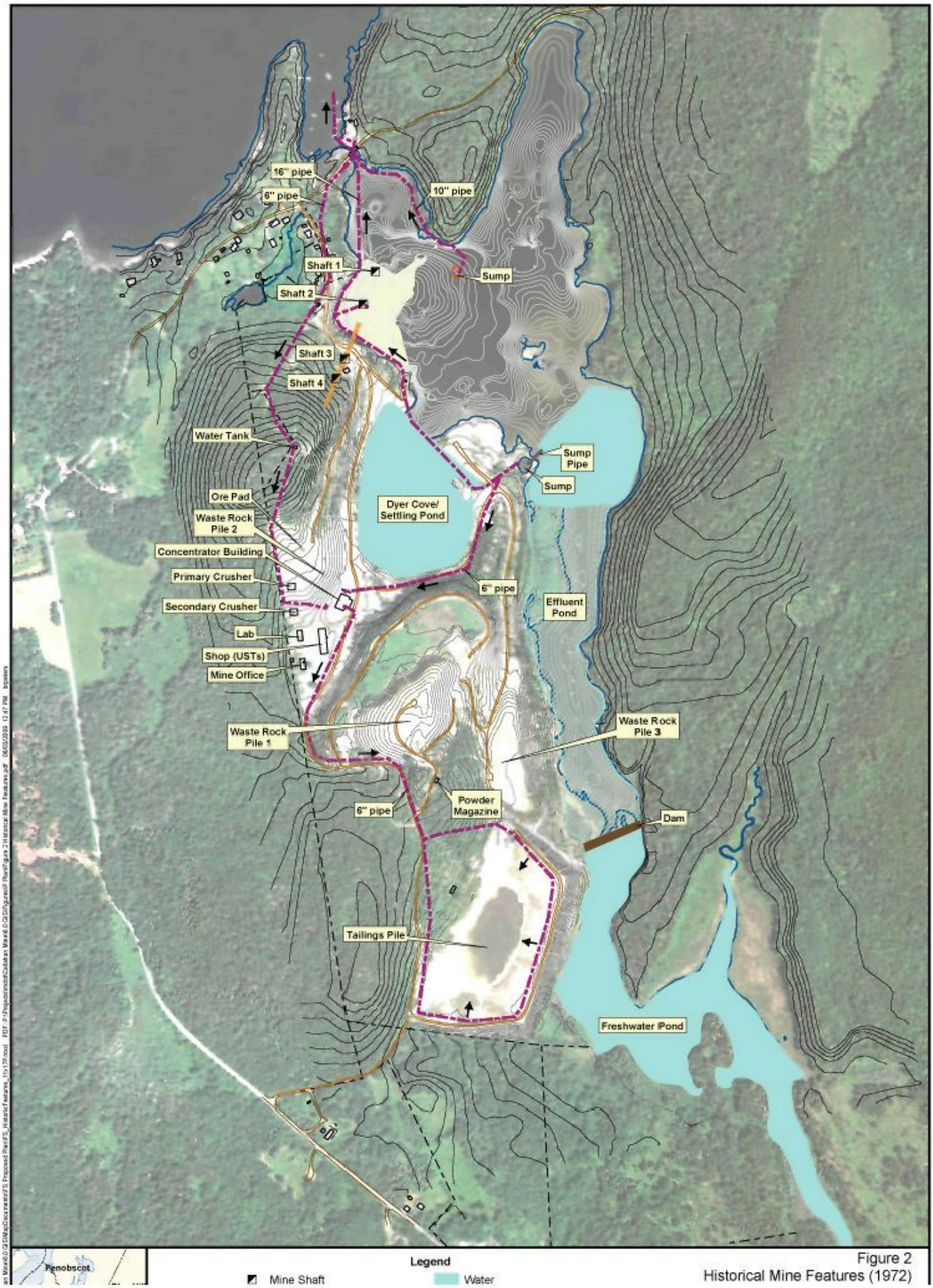
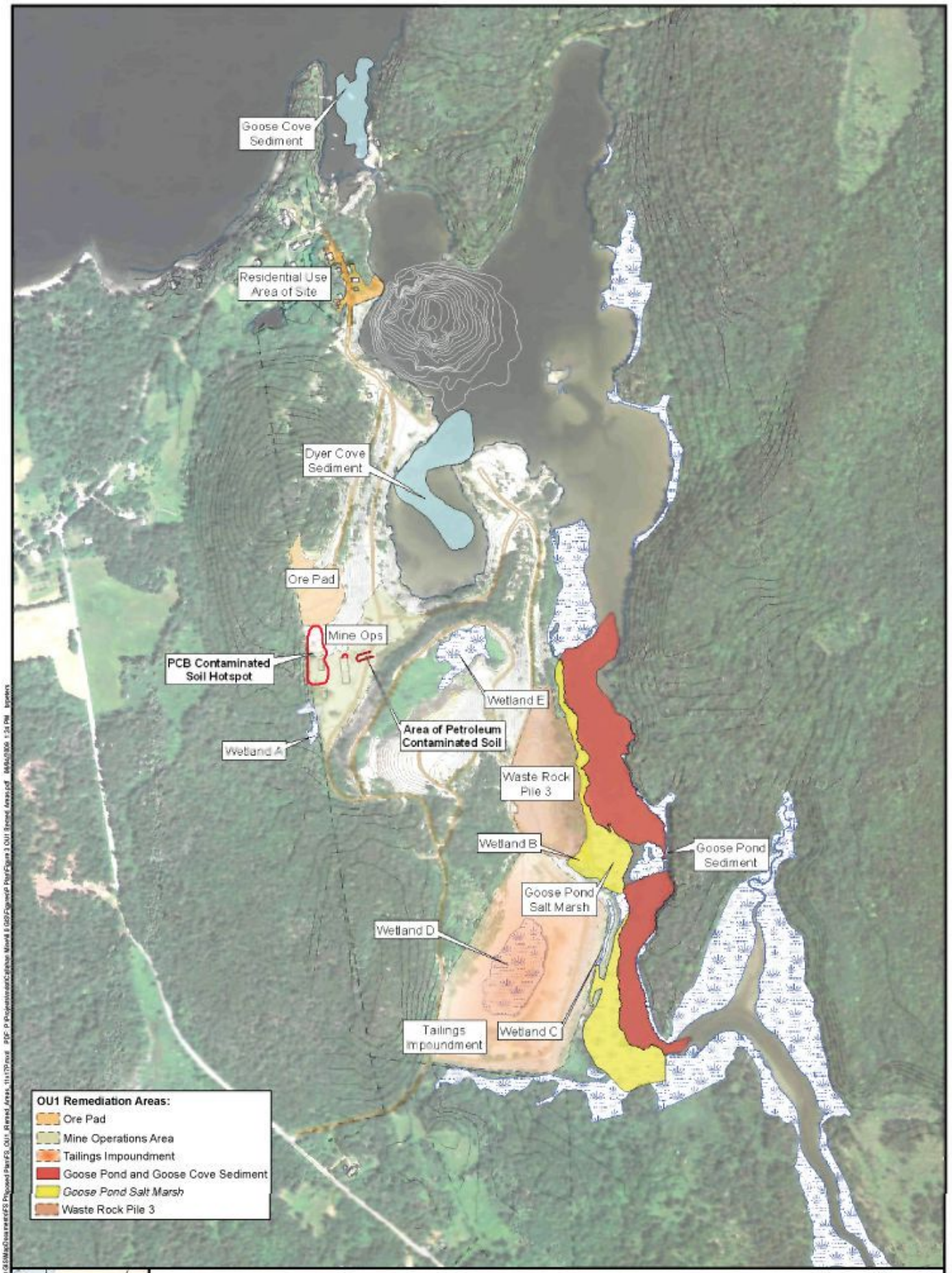


Figure 2
Historical Mine Features (1972)



Legend
Bathymetric Contour

Figure 3
OU1 Remediation Areas

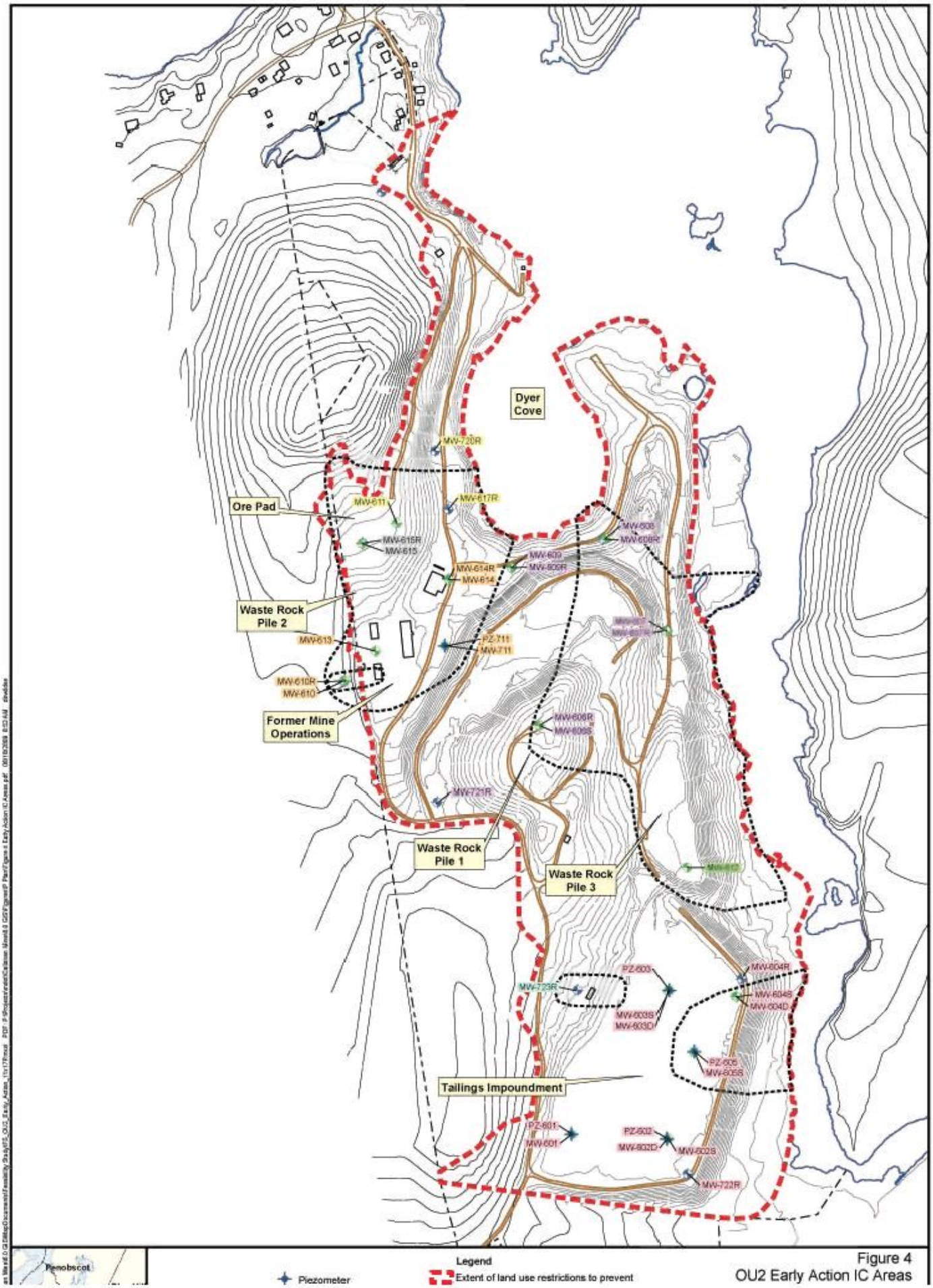


Figure 4
OU2 Early Action IC Areas

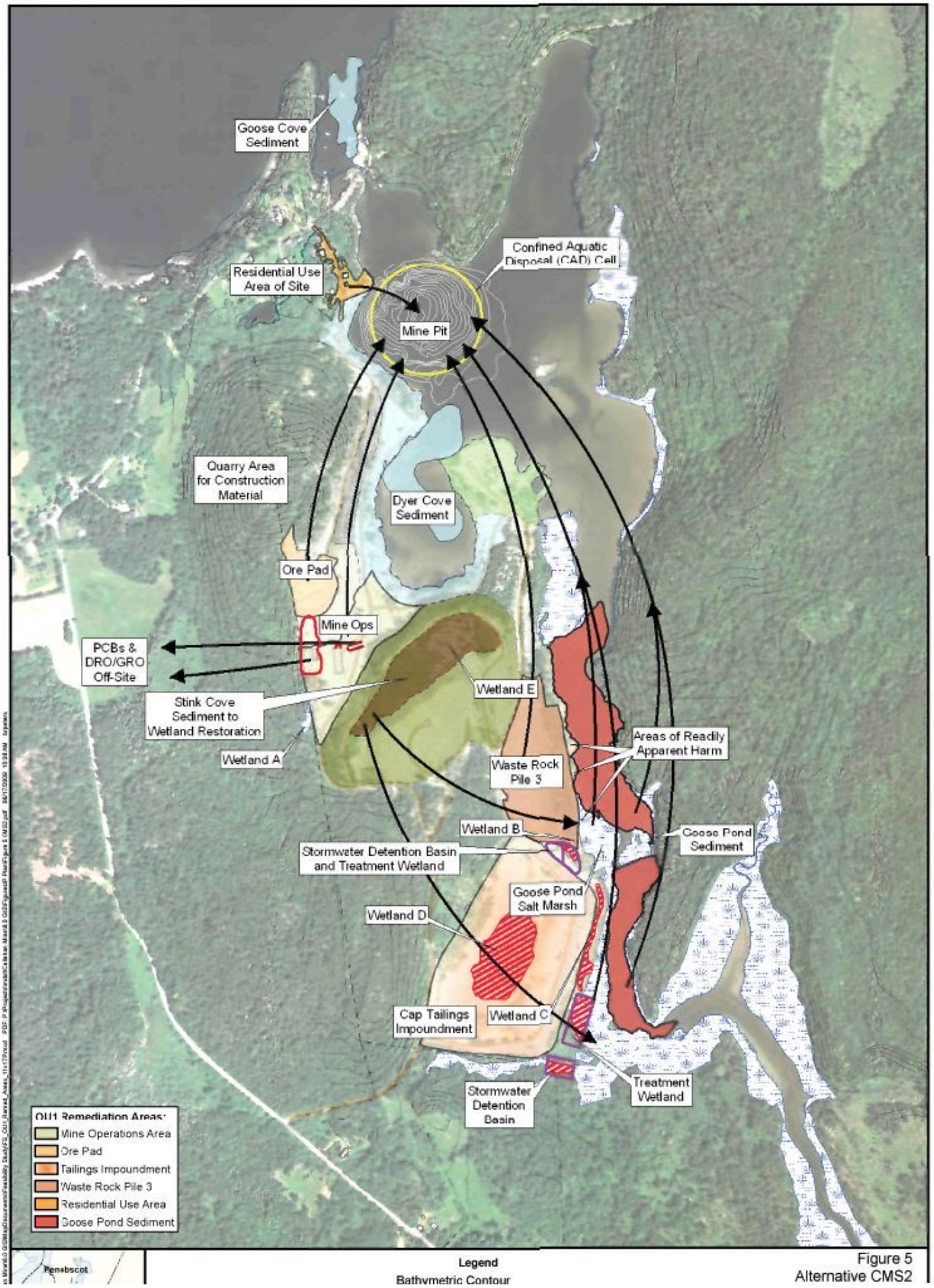


Figure 5
Alternative CMS2

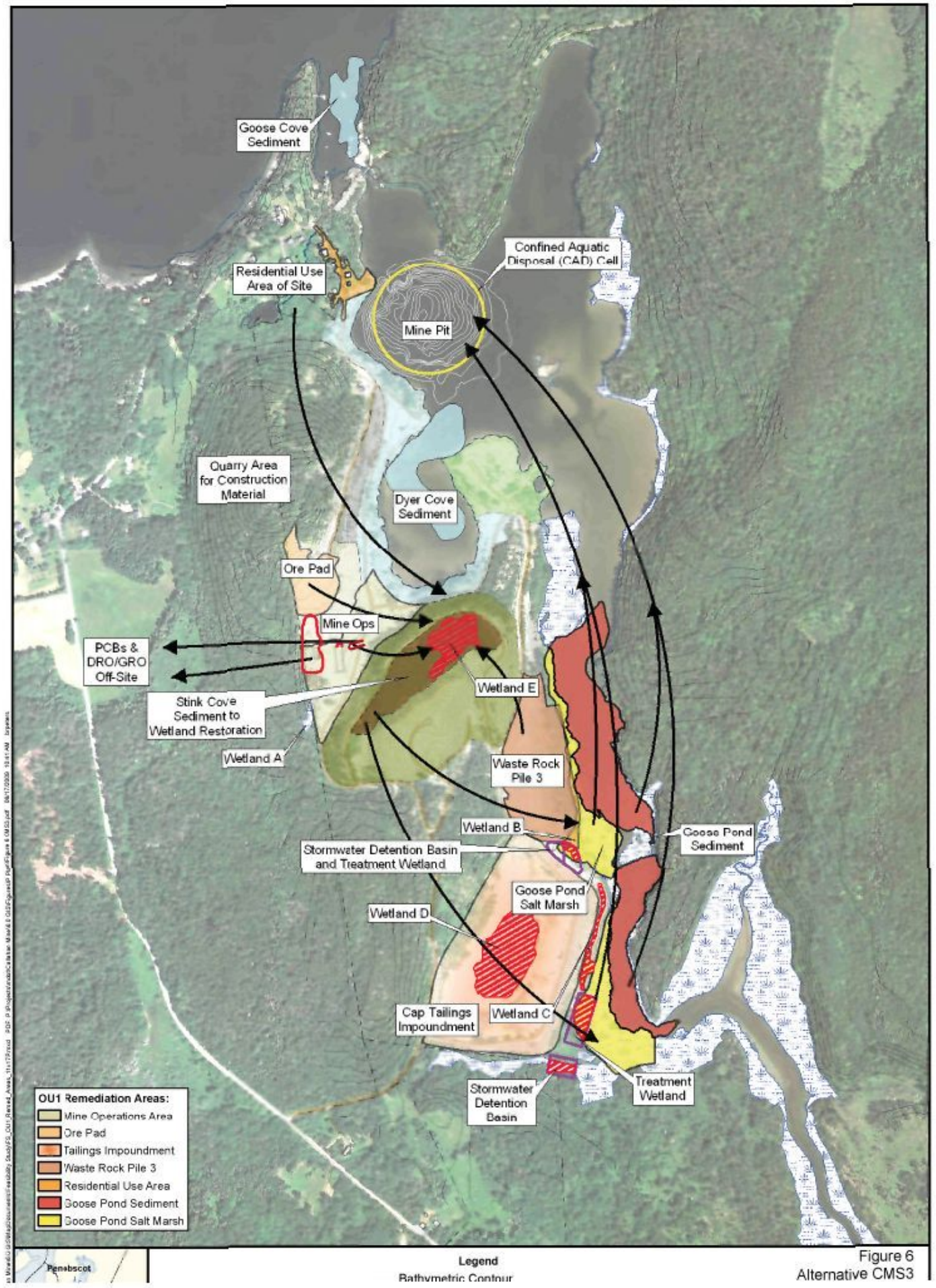


Figure 6
Alternative CMS3

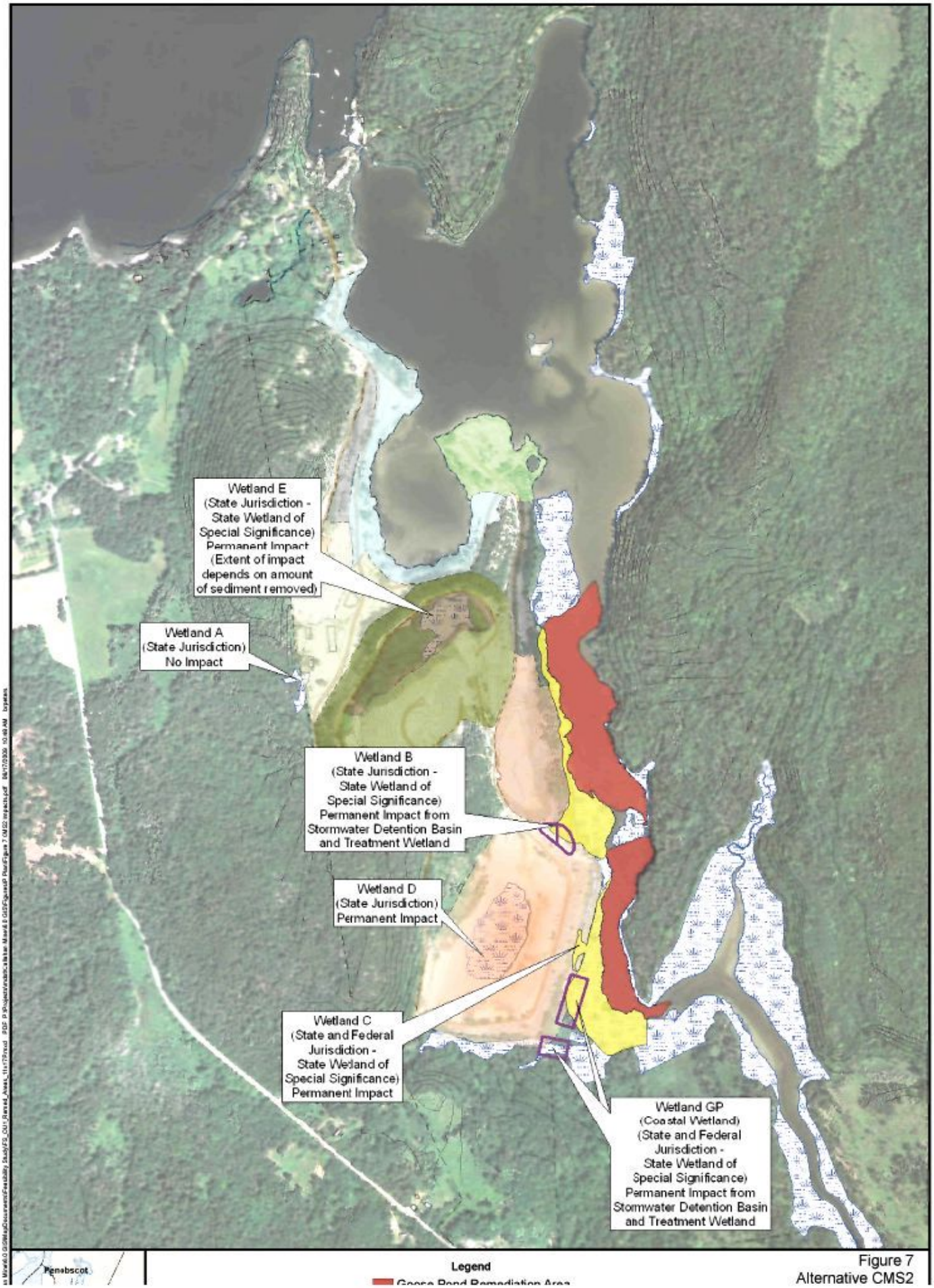
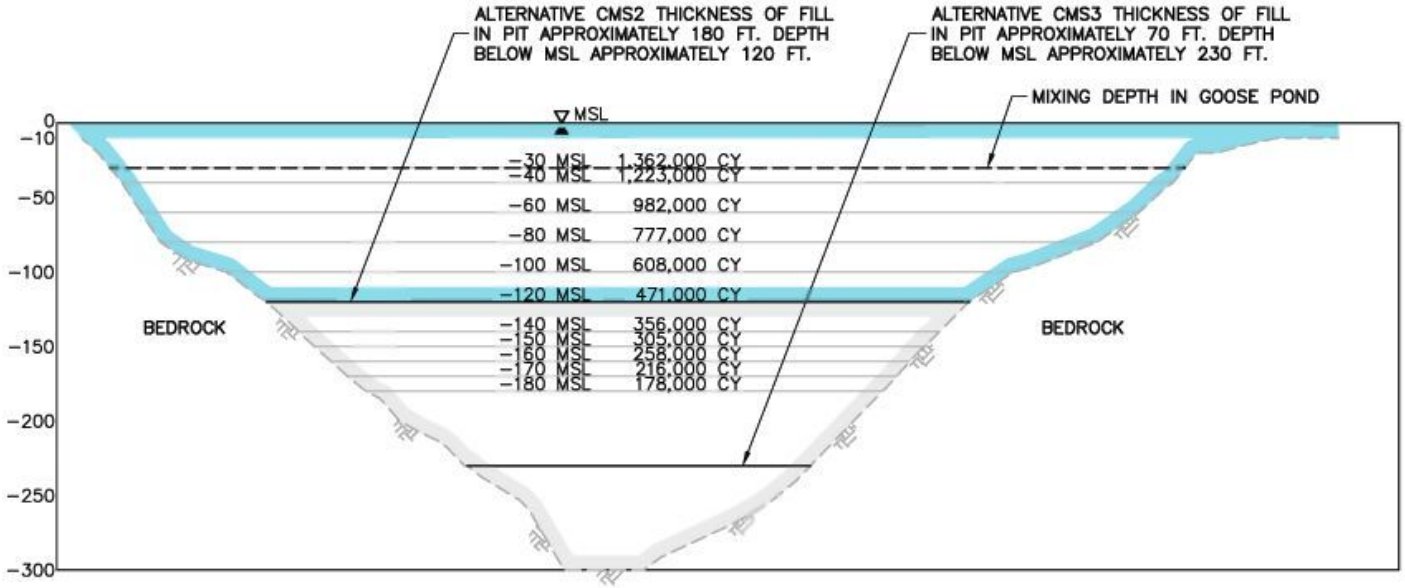
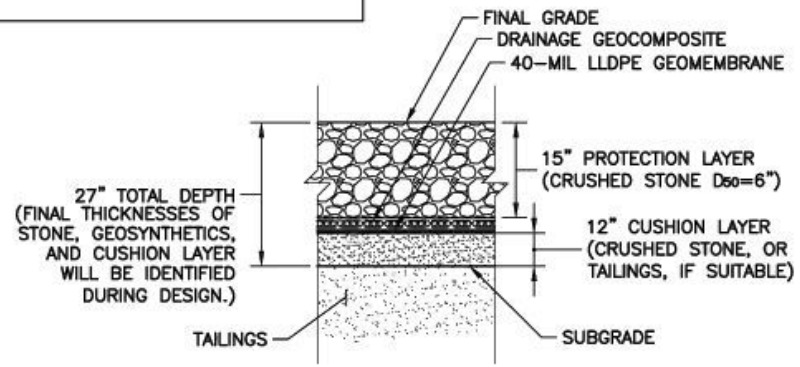


Figure 7
Alternative CMS2



WEST TO EAST CROSS-SECTION THROUGH MINE PIT

0 40 80 160
SCALE IN FEET



INFILTRATION BARRIER CAP
NTS

Prepared/Date: DEL 06/17/09
Checked/Date: SWR 06/17/09

CALLAHAN MINE SUPERFUND SITE
BROOKSVILLE, MAINE

MACTEC

CAD CELL AND TAILINGS IMPOUNDMENT COVER SYSTEM

Project 3612-06-2047.30
Figure 8

M:\Projects\Callahan Mine Site\FS Figure 8 CADCELL.dwg Wed, 17 Jun 2009 - 3:48pm rhholmes

United States Environmental Protection Agency

U.S. Environmental Protection Agency (EPA)

Callahan Mine Superfund Site
Brooksville, ME

You are Invited to Attend!

Public Information Meeting
July 9, 2009
7:00 p.m.

Brooksville Town Office,
1 Town House Road
Brooksville, ME

Public Hearing
August 6, 2009
7:00 p.m.

Brooksville Town Office,
1 Town House Road
Brooksville, ME

United States Environmental Protection Agency
1 Congress Street
Suite 1100
Boston, MA 02114-2023

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