

**SPRING MEADOW LAKE SITE  
HELENA, MONTANA**

<b><u>Section</u></b>	<b><u>Page</u></b>
1.0 INTRODUCTION .....	1-1
1.1 PURPOSE OF RECLAMATION INVESTIGATION AND EVALUATION REPORT .....	1-1
1.2 ORGANIZATION OF INVESTIGATION .....	1-3
1.3 PROJECT MANAGEMENT .....	1-5
1.3.1 Project Team.....	1-5
1.3.2 Project Schedule .....	1-7
1.4 REFERENCE CITED .....	1-8

**LIST OF FIGURES**

<b>Figure</b>	<b>Page</b>
1-1 SPRING MEADOW LAKE SITE LOCATION MAP .....	1-2
1-2 SPRING MEADOW LAKE SITE COMPREHENSIVE RECLAMATION PROCEDURE.....	1-4

**LIST OF TABLES**

<b>Table</b>	<b>Page</b>
1-1 SPRING MEADOW LAKE SITE PROJECT TEAM.....	1-6
1-2 SPRING MEADOW LAKE SITE PROJECT SCHEDULE .....	1-8

## **1.0 INTRODUCTION**

The Spring Meadow Lake site is located along Highway 12 West (Euclid Avenue) on the western edge of Helena, Montana. The site consists of portions of Spring Meadow Lake State Park and the Montana Department of Fish, Wildlife and Parks' (FWP) Montana Wildlife Center. The Montana Wildlife Center is located north of Highway 12 and south of Spring Meadow Lake (Figure 1-1). Spring Meadow Lake was formed by the excavation of sand and gravel by the former Helena Sand & Gravel Company. The lake consists of an oval-shaped main lake connected to a circular-shaped north arm and an irregularly shaped east arm.

The Montana Wildlife Center portion of the site (2650 Euclid Avenue) is located on a flat lying lot overlooking the lake area. Buildings on the site were constructed in 1892 by the John Stedman Foundry and Machine Company, and housed those operations through 1901. The Western Improved Wire Fence Company of the United States of America next occupied the complex, but its tenure was short-lived and the site was abandoned in 1910. The Northwestern Metals Company acquired the site that year and installed a mill to process ore using the Baker-Burwell method. This operation went into bankruptcy in 1915 and the property was taken over by the New York – Montana Testing and Engineering Company in 1916. This company handled testing and milling of gold-silver and manganese ores. It was also unsuccessful and closed in 1920. In the late 1920s, George F. Jacoby and his partner Thomas Brownlow attained the site and the adjacent land and opened a gravel pit north of the old foundry/mill complex under the name Helena Sand and Gravel. This operation lasted until the late 1950s.

Subsequent use of the land has involved additional gravel pit operation, a construction business headquarters, and land speculation.

### **1.1 PURPOSE OF RECLAMATION INVESTIGATION AND EVALUATION REPORT**

The Spring Meadow Lake site consists of approximately 20 acres of mineral processing impacted lands. Four distinct waste areas and potential contaminated media (surface water contamination, surface soil contamination, subsurface soil contamination, and sediment contamination) are present at this site. Based on the Site Inspection and Hazardous Material Inventory completed by Montana Department of Environmental Quality, Mine Waste Cleanup Bureau (DEQ/MWCB) (2004), approximately 10,000 cubic yards (CY) of tailings and other mineral processing wastes are located within the site boundary, including at least one subsurface pit or sump with wet tailings. Contaminated sediments were also identified within



Spring Meadow Lake along the southern shore of the main lake and the southern portion of the east arm of the lake. Two water samples (SW-110 and SW-112), collected from the southern portion of the east arm of the lake had arsenic and manganese concentrations above water quality standards ([Montana DEQ 2004](#)). In addition, one water sample (SW-109) from the southern portion of the main Spring Meadow Lake had arsenic above the water quality standard. The DEQ/MWCB has decided to prepare a Reclamation Investigation (RI) and Expanded Engineering Evaluation and Cost Analysis (EEE/CA) report to address environmental impacts associated with the disposal of the former mineral processing wastes associated with the Spring Meadow Lake Site.

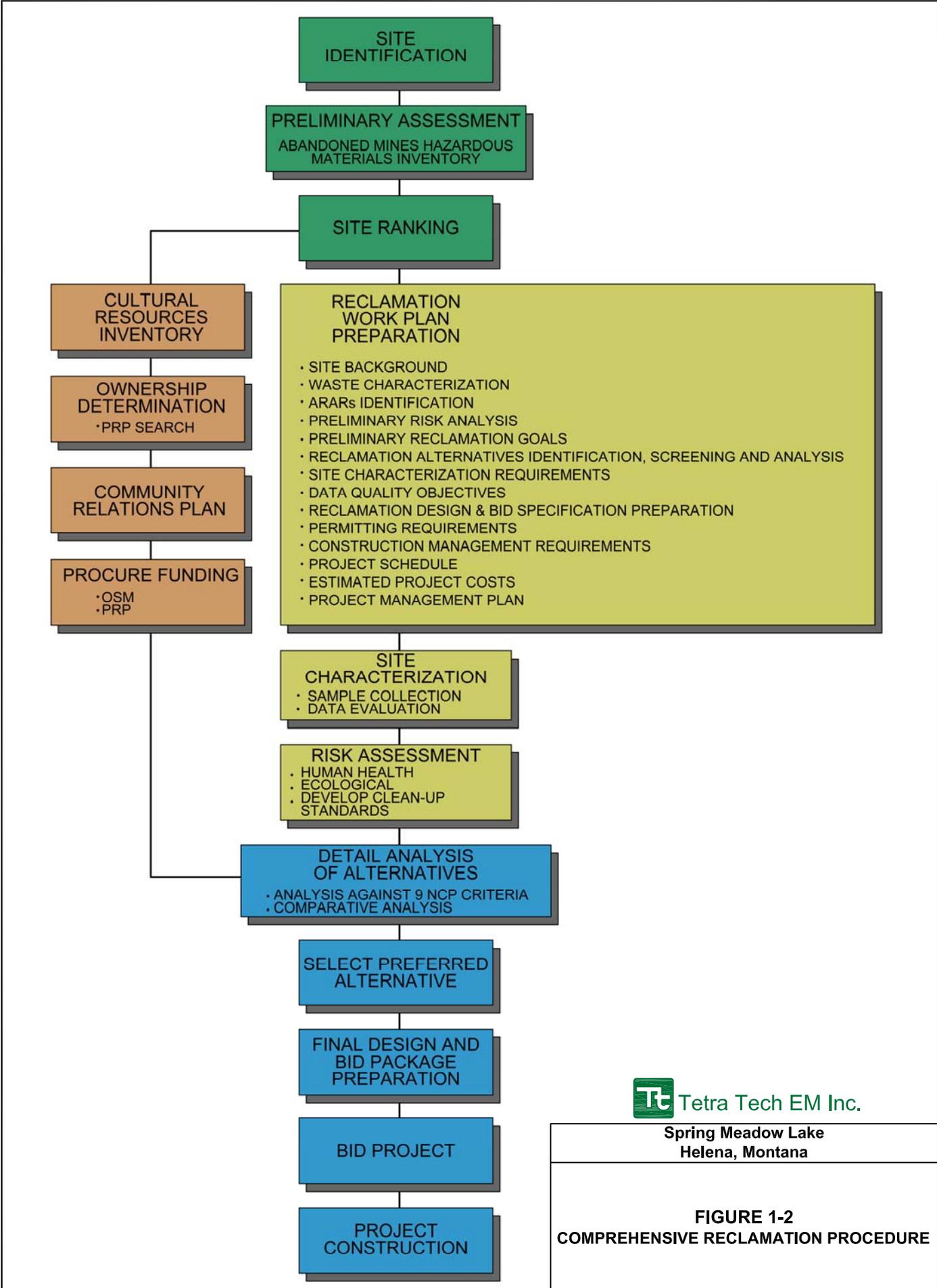
The RI and EEE/CA report has been prepared as a functional guide for conducting full-scale reclamation at the Spring Meadow Lake site. The reclamation activities proposed for the project site were developed as part of a comprehensive reclamation procedure ([Figure 1-2](#)). This reclamation procedure complies with the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Montana Comprehensive Environmental Cleanup and Responsibility Act (CECRA). The procedure streamlines certain aspects of the process to meet the regulatory requirements to clean up abandoned mine sites.

## **1.2 ORGANIZATION OF INVESTIGATION**

Existing data available for the Spring Meadow Lake site have been evaluated and permission from owners to access property has been obtained by DEQ. The Reclamation Investigation and Evaluation Report is organized into six sections. The references are presented at the end of each section, which document the publications and materials used in the preparation of these sections. The contents of each section are briefly described below.

*Section 1.0 Introduction* - This section presents the purpose, organization, and management of the Spring Meadow Lake site RI and EEE/CA.

*Section 2.0 Environmental Setting* - This section describes the location of the Spring Meadow Lake site, including (1) climatic, geologic, and hydrologic characteristics of the site; (2) the biological setting such as the wildlife resources and the vegetation indigenous to the area; (3) threatened and endangered species concerns; and (4) present land uses and local population.



Spring Meadow Lake  
Helena, Montana

**FIGURE 1-2  
COMPREHENSIVE RECLAMATION PROCEDURE**

*Section 3.0 Description of Property* - This section presents a summary of past mineral processing activities and the results of any past sampling and characterization at the site. The estimated types, volumes, and contaminant concentrations from existing data are provided. Ownership information and cultural issues are also provided in this section.

*Section 4.0 Reclamation Work Plan* - This section presents the reclamation work plan for the Spring Meadow Lake site, including (1) preliminary reclamation objectives and goals; (2) the field sampling plan; (3) the quality assurance protocol plan; (4) the laboratory analytical plan; and (5) the health and safety plan.

*Section 5.0 Reclamation Investigation* - This section presents the results of the reclamation investigation field activities, including (1) site and waste characterization; (2) reclamation and land use characterization; (3) human health risk assessment; (4) ecological risk assessment; and (5) conclusions.

*Section 6.0 Expanded Engineering Evaluation and Cost Analysis* - This section presents a detailed analysis of reclamation alternatives that regulatory agencies can use for reclamation decision-making, including (1) reclamation objectives and goals; (2) applicable or relevant and appropriate requirements; and (3) the development and screening of reclamation alternatives.

## **1.3 PROJECT MANAGEMENT**

The DEQ/MWCB and Tetra Tech EM Inc. team of professionals working on the investigation and evaluation of the Spring Meadow Lake site is presented in Section 1.3.1. The preliminary schedule for completing tasks and submitting plans and reports is presented in [Section 1.3.2](#).

### **1.3.1 Project Team**

The successful completion of this project requires the continual cooperation between DEQ/MWCB, FWP, and Tetra Tech EM Inc. personnel. The DEQ/MWCB, FWP, and Tetra Tech EM Inc. personnel working on this project are presented in [Table 1-1](#).

**TABLE 1-1**

**PROJECT TEAM  
SPRING MEADOW LAKE SITE**

<b>Agency/Firm</b>	<b>Personnel</b>	<b>Project Title</b>	<b>Contact Information</b>
Montana Department of Environmental Quality/Mine Waste Cleanup Bureau	Vic Andersen	Bureau Chief	841-5025
	John Koerth	Spring Meadow Lake Project Manager	841-5026
Montana Fish, Wildlife, and Parks	Paul Valle	Design and Construction Bureau Chief	841-4013
	Craig Marr	Park Manager	495-3270
	Stella Capoccia	Wildlife Education and Rehabilitation Center Director	449-1312
Tetra Tech EM Inc.	Chris Reynolds	Program Manager Quality Assurance Manager Field Laboratory Supervisor	442-5588
	J. Edward Surbrugg	Project Liaison/Project Manager	
	Joe Faubion	Field Team Leader	
	Matt Hulbert	Field Team Member	
	Laura Newman, P.E.	Field Team Member	
	Dan Shaffer	Field Team Member	
	Jessica Allewalt	Field Team Member	
	Gary Sturm, P.E.	Project Engineer	
	Aaron Cade	Technical Support Team Member	
	Alicia Stickney	Technical Support Team Member	

The responsibilities of the DEQ/MWCB, FWP, and Tetra Tech EM Inc. project team members are presented below.

**Mine Waste Cleanup Bureau Personnel Responsibilities:**

- **Bureau Chief** - The bureau chief administers all MWCB activities.
- **Project Manager** - The MWCB project manager will monitor the performance of the contractor, review and approve QA measures, and provide direction to the Tetra Tech EM Inc. project liaison, project manager, and field team leader.

**Montana Fish, Wildlife, and Parks Personnel Responsibilities:**

- **Design and Construction Bureau Chief** – The bureau chief will coordinate document reviews with MWCB.

- **Park Manager** – The park manager will coordinate field work schedules with MWCB, Montana Wildlife Center, and Tetra Tech EM Inc.
- **Wildlife Education and Rehabilitation Center Director** – The wildlife center director will manage on-site notification and check in responsibilities for Tetra Tech EM Inc. field personnel.

**Tetra Tech EM Inc. Personnel Responsibilities:**

**Program Manager** - The program manager will administer all project activities, staffing, and budgets.

- **Quality Assurance Manager** - The quality assurance manager will review all work products for technical quality and consistency.
- **Project Liaison** - The project liaison will coordinate project activities with the MWCB project manager.
- **Project Manager** - The Tetra Tech EM Inc. project manager will oversee project field activities and work products. The project manager/project liaison will keep the field team informed of all project activities.
- **Field Laboratory Supervisor** - The field laboratory supervisor will oversee field analytical activities and will coordinate with the project manager and field team leader to complete the field activities. The field laboratory supervisor will also coordinate data review, validation, and auditing requirements.
- **Field Team Leader** - The field team leader will oversee the field sampling activities and coordinate with the wildlife center director to schedule all field activities.
- **Field Team Members** - The field team members will assist the field team leader and field laboratory supervisor to complete the field activities.
- **Project Engineer** – The project engineer will have primary responsibility for completing the engineering evaluation and the development and screening of reclamation alternatives.
- **Technical Support Team Members** - The technical support team members will assist the Tetra Tech EM Inc. project manager to complete all work products.

**1.3.2 Project Schedule**

The preliminary project schedule is presented in [Table 1-2](#). This schedule assumes that the work assignments and agency review proceed in a steady and continuous manner.

**TABLE 1-2**

**PROJECT SCHEDULE  
SPRING MEADOW LAKE SITE**

<b>Document Submittal and Task Completion</b>	<b>Date</b>
Draft Reclamation Work Plan	February 11, 2005
Final Reclamation Work Plan	March 11, 2005
Reclamation Field Activities	Spring 2005
Draft Reclamation Investigation Report	May 20, 2005
Final Reclamation Investigation Report	June 24, 2005
Draft Expanded Engineering Evaluation/Cost Analysis Report	June 24, 2005
Final Expanded Engineering Evaluation/Cost Analysis Report	July 29, 2005

**1.4 REFERENCE CITED**

Montana Department of Environmental Quality – Mine Waste Cleanup Bureau (DEQ/MWCB), 2004. Abandoned Hard Rock Mine Priority Site Investigation and Hazardous Materials Inventory. Spring Meadow Site, Lewis and Clark County, PA 25-505. Completed by Tetra Tech EM Inc.

Montana DEQ. 2004. Montana Numeric Water Quality Standards (Circular WQB-7). January.