WORK ASSIGNMENT

8/15/83

CB3

A. Contractor: CH$_2$M-Hill
1941 Roland Clarke Place
Reston, VA. 22091

-084

B. Contract Number: 68-01-6692

C. SITE/Title: Iron Mountain Mine, CA - Remedial Investigation - $400K

D. Assignment Number: 48.9L17.0 what about start on FTFS?

E. Statement of Work: Attached Hill may not doesn't want sub-contract

F. Level of Effort (Work hours): 2500 SOW = ~12,000

C. Period of Performance: 12 months

Contracting Officer

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Contracting Officer Approval Dorothy C. Tyler Date 8/8/83

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Signature Paul F. Nadeau Date 8/5/83

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Signature Nancy Willis Date 8/5/83

Regional Site Project Officer

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Signature __________ Date __________

Rec'd 9/10/83

IRON MOUNTAIN MINE
Statement of Work
for
Remedial Investigation and Feasibility Study

Task 1. Description of the Situation

Objective: Identify, gather and summarize from available sources all background information pertinent to the site.

a. Site Background

The product of this element should be a detailed summary describing the regional location, pertinent boundary area features and general site physiography, hydrology and geology. The summary should define the total area of the site, general nature of the problem and include pertinent history relative to the origins of hazardous waste on-site.

b. Nature and Extent of Problem

The product of this element should be a detailed summary regarding the actual and potential on-site and off-site health and environmental effects. This product should compile and build upon the extensive information currently available on the site. This may include, but is not limited to, the type, physical state and amounts of the hazardous substances (predominantly sources of acid mine drainage (AMD) which include both point and non-point sources such as mine portals, seeps, and waste rock and tailings piles.

c. History of Response Actions

The product of this element should be a detailed summary of any previous response actions conducted by local, State and Federal agencies, including any site inspections, other technical reports and their results. This summary should address any enforcement activities undertaken to identify responsible parties. A list of reference documents and their location should be included.

3 Weeks	500 hours	$25,000

Task 2. Investigation Support

a. Conduct preliminary work necessary to conduct investigations and feasibility studies. Activities may include:

- Contractor Procurement - Prepare contractor procurement documents and award sub-agreements

to secure the services necessary to conduct the remedial investigation and feasibility study.

- Site Visit - Verify the site information developed in Task 1; become familiar with site topography, and access routes. Collect data for the preparation of the site safety plan.

- Define Boundary Conditions - Establish the site boundary conditions to limit the area of site investigations.

- Site Map - The product of this element will be the preparation of a site map showing all water features, drainage patterns, buildings, paved areas, easements, right-of-ways, major AMD point and non-point sources and major waste rock and tailings piles. The site map and all topographic surveys performed should be of sufficient detail and accuracy to locate and report all existing and future work performed at the site. Permanent baseline monuments, bench marks and a reference grid will be tied into a USGS reference system.

- Data Summary - The work will include the compilation and summary of all pertinent data, including previous and on-going studies, and the identification of any information gaps for study under Task III.

8 Weeks	480 Hours	$25,000

Task 3. Site Investigation

The objective of this task is the establishment and implementation of a comprehensive site investigation. The major goal of the investigation will be the collection of physical and chemical data to assess the preliminary remedial activities to be developed in Task 4 and to support the detailed evaluation of alternatives during the Feasibility Study (Tasks 11-14).

The site investigation program should involve an integrated approach employing surface water, soils and sediment and hydrogeologic investigations.

a. Products of the site investigation program should result in:

- Characterization of the impact of mine water on the water quality in Keswick Lake, the Sacramento River and the City of Redding water supply. Establish a supplemental water quality sampling program, if necessary, to fill existing data gaps.

- The identification and assignment of priorities to those point and non-point sources of AMD determined to be significant, based on their relative contributions to the total waste load originating from the mine site.

- The characterization of the extent of surface water contamination in the Spring Creek drainage basin with consideration for the seasonal changes in surface water flow quantity and quality.

- The determination of the present and potential extent of ground water contamination in the Flat Creek area.

- The development of adequate sampling programs which discuss the degree of hazard, location, number and frequency of sampling, sampling techniques and the method of analysis.

- A geohydrologic investigation to determine pathways of AMD through seeps, portals, fracture systems, etc.

28 Weeks	1,200 hours	$60,000

Task 4. Preliminary Remedial Technologies

Identify preliminary remedial technologies and provide details sufficient to ensure an adequate data base for the evaluation of alternatives during the Feasibility Study phase.

a. Investigate those technologies which will result in the reduction of quantity as well as the improvement in quality of the AMD originating from Iron Mountain Mine. Included in the investigation should be those technologies pertaining to water infiltration control, surface water division, water handling and discharge quality control methods.

b. The present system of controlled release reservoirs should also be evaluated; possible modifications to this present system may include enlarging the existing

Spring Creek Debris Dam, constructing a reservoir on Flat Creek and the intercepting and conveying Spring Creek to Flat Creek.

1 Week	600 Hours	$30,000

Task 5. Site Investigation Analysis

Prepare a thorough analysis and summary of all site investigations and their results. The objective of this task will be to ensure that the data from the site investigation are sufficient to support the Feasibility Study's evaluation phase. The results and data should be organized and presented logically so that the relationships between individual point and non-point discharge sources are apparent. An assessment of the collective impact of the point and non-point sources should also be addressed.

a. Data Analysis

Develop a summary of the type, extent of contamination, significant pathways and exposure assessments for each significant point and non-point source. Included in the analysis should be a relative ranking which underscores each point source's contribution, in percent, to the overall pollution loading on the entire site. This analysis should account for any seasonal changes in water quantity and quality and the degree to which either source control or off-site actions are required to significantly mitigate the threat to public health, welfare, or the environment.

b. Application to Preliminary Technologies

The product of this element will be the analysis of the results of the investigations in relation to the preliminary remedial technologies developed in Task 4.

Data supporting or rejecting types of remedial technologies and other conclusions should be presented.

8 Weeks	800 Hours	$40,000

Task 6. Final Report

Prepare a Final Report covering the remedial investigation phase and submit ten (10)copies. The report shall include the results of Tasks 1 through 5, and should include additional information in an appendix. Include a detailed outline, costs and scheduling for the Feasibility Study.

3 Weeks	500 Hours	$35,000

Task 7. Community Relations Support

The contractor may be required to furnish the personnel, services, materials and equipment required to undertake a community relations program. The objectives of this task are to achieve community understanding of the actions taken and to obtain community input and support prior to selection of the remedial alternatives. The community relations duties will be developed in discussions with EPA and the State. EPA's model statement of work will be the basis for the range of possible duties.

58 Weeks	1,450 Hours	$20,000

Task 8. Additional Requirements

The goals and products of this task will be applicable to both the Remedial Investigation and the Feasibility Study phases.

a. Reporting Requirements

Prior to the start of the Remedial Investigation, develop a master schedule for all remedial investigation and feasibility study elements. The master schedule should outline task initiation and completion dates, deliverable due dates and other key events. Monthly reports will be used to update the master schedule. Upon completion of the activities for each task, prepare a draft report section describing in detail the results of the task.

Monthly progress reports should be prepared that describe the technical and financial progress of the project. These reports should discuss the following items:

1. Identification of site activities.
2. Status of work at the site and progress to date.
3. Percentage of work completed by activity.
4. Difficulties encountered during the reporting period.
5. Actions and recommendations being taken to rectify problems.
6. Activities planned for the next month as an update to the master schedule.

7. Changes in personnel.

8. Actual expenditures including fee and direct labor hours expended for this period.

9. Cumulative expenditures including fee and direct labor hours.

10. Projection of expenditures for completing the project, including an explanation of any significant variation from the forecasted target.

11. A graphic representation of the proposed versus actual expenditures (plus fees) and a comparison of actual versus target direct labor hours. A projection to completion will be submitted for both.

b. Chain-of-Custody

Conduct field sampling activities and analyses which are documented in accordance with EPA chain-of- custody procedures.

c. Safety Plan

Develop a safety plan to protect the health and safety of personnel involved in the remedial investigation. The plan will be consistent with EPA and State guidance.

d. Quality Assurance/Quality Control

Prior to initiating work on the remedial investigation, prepare and submit a Quality Assurance project plan for the sampling, analysis and data handling aspects of the remedial investigation. The plan shall be developed consistent with the requirements of EPA's Contract Laboratory Program.

31 Weeks	240 Hours	$27,500

Fast Track Feasibility Studies

Task 9. Review and Evaluate the Feasibility Study: "Alternatives for Control of Toxic Metal Discharges from Representative Surface Areas at Iron Mountain Mine near Redding, California", by Ott Water Engineers, Geo/Resource Consultants and WESCO, October 1982.

An objective of this task is to review, evaluate and produce a project report regarding the above feasibility study and its conformance with the National Oil and Hazardous Substances Contingency Plan (NCP), CFR, Vol. 47 No. 137, Part V, July 16, 1982. Furnish all necessary personnel, materials and services required to revise the remedial action feasibility study, if needed, to ensure its conformance with the requirements of the NCP. This fast track feasibility study will recommend the alternative(s) determined to be most cost-effective and identify those alternative(s) that can be implemented immediately. The recommendation will be justified by stating the relative advantages over other alternatives considered. The consultant will prepare a conceptual design of the recommended remedial alternative, which will include, but is not limited to, the engineering approach including implementation schedule, special segmenting considerations, preliminary design criteria, preliminary site and facility layouts, budget cost estimate (including operation and maintenance costs), operating and maintenance requirements and duration, and an outline of the safety plan including cost impact on implementation.

4 Weeks	500 Hours	25,000

Task 10. Fast Track Evaluation for Revegetation Study

Determine if sufficient information and data presently exists to allow for an objective comparison of a revegetation alternative for not only individual point sources but for the point sources collectively on a site-wide basis. Furnish the personnel, services, materials and equipment to identify the waste rock, tailings piles and other significant pollution sources where revegetation is most likely to be productive and beneficial. Based on this work and the detail of available data, identify and recommend to EPA and the State a description of any supplemental studies needed. This fast track study approach is intended to allow time to integrate any needed additional studies by the time the alternative evaluation process has begun. Funding for any additional revegetation studies, if necessary, will be addressed upon completion of this task.

4 Weeks	150 Hours	$7,500

Feasibility Study

Task 11. Development of Alternatives

Based on the results of the remedial investigations, discussions with the State and EPA, and consideration of appropriate preliminary remedial technologies (Task 4), submit a detailed workplan for the recommended remedial actions for each significant point and non-point source of pollution. Develop a limited number of alternatives for source control for remedial action on the basis of the established remedial response objectives.

a. Establishment of Remedial Response Objectives

Preliminary cleanup objectives will be developed in consultation with EPA and the State for each significant point and non-point source identified in the remedial investigation.

b. Prepare an endangerment assessment of the no action alternative by comparing potential human exposure through consumption of contaminated water with appropriate EPA criteria and guidelines to determine the relative endangerment to public health.

c. Identification of Remedial Alternatives

Develop alternatives to incorporate remedial technologies (from Task 4), and other appropriate considerations for individual point sources as well as for a comprehensive site-specific approach. The alternatives will be developed in consultation with EPA and the State.

4 Weeks	600 Hours	$30,000

Task 12. Initial Screening of Alternatives

The alternatives developed in Task 11 will be screened by EPA, the State and the contractor to eliminate alternatives that are clearly not feasible or appropriate, prior to undertaking detailed evaluations of the remaining alternatives.

The initial screening of alternatives will use as a basis the following factors: cost, environmental protection and implementability and reliability.

4 Weeks	600 Hours	$31,500

Task 13. Evaluation of Alternatives

Evaluate the alternative remedies that pass the initial screening in Task 12 and recommend the most cost-effective (c/e) alternative for each significant point and non-point pollution source. Additionally, develop and recommend the c/e alternatives for the site overall.

- Preliminary Report

  Prepare a preliminary report presenting the results of Tasks 11 through 13 and the recommended remedial alternative(s), and submit ten (10) copies of the preliminary report between EPA and the State. EPA and the State will review and select a remedial alternative.

10 Weeks	2,400 Hours	$150,000

Task 14. Conceptual Design

Prepare a conceptual design of the remedial alternative selected by EPA and the State. The conceptual design will include, but is not limited to, the engineering approach including implementation schedule, special implementation requirements, institutional requirements, phasing and segmenting considerations, preliminary design criteria, preliminary site and facility layouts, budget cost estimate (including operation and maintenance costs), operating and maintenance requirements and duration, and an outline of the safety plan including cost impact on implementation. Any additional information required as the basis for the completion of the final remedial design will also be included.

6 Weeks	1,200 Hours	$75,000

Task 15. Final Report

Prepare a final report for submission to EPA and the State. The report will include results of Tasks 11 through 14 and should include any supplemental information in an appendix. Submit and distribute ten (10) copies between EPA and the State.

3 Weeks	1,000 Hours	$50,000

Task 16. Additional Requirements

The reporting requirements are described in Task 8 of the remedial investigation scope of work.

27 Weeks	240 Hours	$27,500