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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF CALIFORNIA

UNITED STATES OF AMERICA, Plaintiff, v. IRON MOUNTAIN MINES, INC. and T.W. ARMAN, Defendants.	Civil No. S-91-0768 DFL/JFM (Consolidated for all purposes with Civil No. S-91-1167 DFL/JFM) **EXHIBIT B**
STATE OF CALIFORNIA, On behalf of the California Department of Toxic Substances Control and the California Regional Water Quality Control Board for the Central Valley Region, Plaintiff, v. IRON MOUNTAIN MINES, INC. and T.W. ARMAN, Defendants. AND RELATED COUNTER- AND THIRD-PARTY CLAIMS	DECLARATION OF RICK SUGAREK IN SUPPORT OF PLAINTIFF UNITED STATES OF AMERICA'S MOTION FOR PARTIAL SUMMARY JUDGMENT FOR RESPONSE COSTS Date: October 21, 2009 Time: 1:30 p.m. Courtroom No. 6 Hon. John A. Mendez

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DECLARATION OF RICK SUGAREK

I, Rick Sugarek, declare as follows:

1. I have been asked to make this declaration in support of the United States' Motion for Partial Summary Judgment for Response Costs.

2. I base this declaration on my personal knowledge gained through my experience as the Remedial Project Manager ("RPM") for the Iron Mountain Mine Site, on my review of the work of three other RPMs who assisted on the project, on my assembly and review of the Administrative Record files, and on my knowledge of the Site File for the Iron Mountain Mine site, which I describe in this declaration. In this declaration, I reference documents in the Site File which I reviewed to refresh my recollection, or which counsel requested. I am not incorporating any of the referenced documents.

3. I also base this declaration on prior declarations. For example, at the time I made earlier declarations, I counted communications in the different Administrative Records for the Site. I rely upon my earlier counts in this declaration.

Position, Duties and Experience

4. I am EPA's Remedial Project Manager for the Iron Mountain Mine Superfund Site ("IMM site" or "Site"), and I have been since April 1987, as I describe more fully below.

5. I have worked for the United States Environmental Protection Agency ("EPA") since September 1980.

6. I graduated from Texas A&M University in 1973 with Bachelor of Science degree in Chemical Engineering and Chemistry.

7. As Remedial Project Manager ("RPM") for the Iron Mountain Mine Site, my responsibilities included contract oversight; preparation, review and follow-up of EPA administrative orders for site cleanup, and for EPA information requests pursuant to CERCLA Section 104(e); preparation and review of technical documents for project design and

implementation; maintenance of site files and information; community relations; interpretation of EPA policies and procedures applicable to project activities; and the direction and coordination of negotiations with all federal, state, and local agencies, and potentially responsible parties with site responsibilities.

8. As RPM for the Iron Mountain Mine Site, I was assisted by three other RPMs, Bret Moxley, Mike Montgomery, and Cynthia Wetmore, whose responsibilities I describe in my discussion of the Records of Decision (ROD) below. Although I did not supervise their work, I reviewed their work for compliance with EPA guidance, for its impact on the development and evaluation of alternative remedies, and to assure that what they were doing was consistent with the overall project objectives.

9. As RPM for the Iron Mountain Mine Site, I was also responsible for determining which documents to include in each of the administrative records for all of the Records of Decision (RODs). I reviewed all the documents in each administrative record. I read the majority of the documents. I wrote many of the documents in RODs 2 through 5. I prepared the index to the administrative record for each ROD, including ROD 1.

10. As RPM for the Iron Mountain Mine Site, I was also responsible for sending the majority of the documents to the Iron Mountain Mine Site File. Over the course of my time as RPM, I reviewed all the documents in the Iron Mountain Mine Site File. I read many, and I wrote many others.

Contracting Process and My Duties

11. In consultation with my supervisors, I prepared a Superfund Comprehensive Accomplishments Plan ("SCAP") for each operable unit at the Iron Mountain Mine Site. (I describe operable units in my description of the NCP, below.) The SCAP was and is used to plan and to budget work progress at the Site up to completion. I participated in updating the SCAP at least annually.

12. For the most part, EPA performed Site work through contractors and through agreements with other Federal agencies with applicable expertise. Below, I describe my participation in creating and implementing those agreements.

Contracts

13. The most significant contracts at Superfund sites, including Iron Mountain Mine, were multi-site contracts. Through competitive bidding, EPA had contractual relationships for numerous types of services. For each type of service, EPA had contracts with one or more providers of the service who were available to provide needed services at Superfund sites.

14. Individual projects at individual sites were subjects of Work Assignments under multi-site contracts. An EPA Contracting Officer ("CO") issued each Work Assignment. The Contracting Officer was assisted by Contracting Officer Representatives: the Project Officer ("PO") who performed the financial and administrative duties related to each work assignment for all sites under the contract; and by the RPM for the Site, such as my self for the Iron Mountain Site, who prepared the technical and reporting requirements for each Work Assignment.

15. Under multi-site contracts, I initiated tasks for contractors by preparing a "Scope of Work" document which defined the technical and reporting requirements for what EPA wanted done. I also prepared an "Independent Government Cost Estimate" for use in evaluating the Work Plan, which the contractor later prepared once the CO issued the Work Assignment and Scope of Work.

16. I sent the Scope of Work and the Independent Government Cost Estimate to the Project Officer for the particular contract. The PO reviewed the Scope of Work for consistency with the contract and assured the availability of funding to perform the Scope of Work. The CO issued the Work Assignment.

17. Once the contractor received the Work Assignment and Scope of Work, as the technical representative of EPA for the Site, I often participated in a call with the contractor to discuss the Scope of Work being assigned.

18. In response to the Work Assignment and Scope of Work, the contractor prepared a Work Plan, which stated how the contractor planned to perform the work to meet the requirements of the Scope of Work and how much it would cost.

19. I reviewed the Work Plan for technical adequacy and reasonableness, and I recommended approval or revisions.

20. Once a Work Plan was approved, and work began, I oversaw the work. On several occasions, I recommended and the CO authorized the contractor to begin work prior to full approval of the Work Plan. There could be more than one Work Assignment being implemented at the Site at any one time, and that was the case at the Iron Mountain Mine Site. Often, while Site work was being done, I was on the phone with contractors daily or several times a week to provide technical direction to clarify requirements of the Scope of Work, or to provide technical or regulatory guidance.

21. During the course of the work, the contractor would submit vouchers for payment along with Progress Reports describing work performed. I reviewed all vouchers and Progress Reports to determine whether the reported progress was correct, and whether it justified the submitted charges – if they did, I recommended payment. The Project Officer approved payment.

22. Some tasks pursuant to a Work Assignment were on-going and had no discrete, final product. Examples of such tasks were the oversight of work by potentially responsible parties ("PRPs"), and general technical support provided by CH2M Hill under the multi-site engineering services contracts. For such tasks, my regular review of bills and progress reports was my primary form of review and control.

23. Other tasks required a "deliverable," meaning the production of a discrete report of a technical analysis or a field investigation, a full or partial Remedial Investigation/Feasibility Study ("RI/FS"), a final design and related technical documents, or the completion of a construction project. At the conclusion of a task requiring a "deliverable," I reviewed the work. If the task required construction, I did a final inspection. If necessary, I identified any final work or corrections needed before I could give final approval.

24. The PO would initiate closure of a Work Assignment, but he or she would seek my concurrence based on my review of the work.

25. I reviewed each bill which each contractor submitted while I have been the RPM for the Iron Mountain Mine Site. For each contract payment for which I recommended payment, I determined that the contractor had performed the work for the Iron Mountain Mine Site, and as required.

Interagency Agreements

26. In addition to contracts with private contractors, EPA entered into interagency agreements ("IAG") with other Federal agencies in order for the other agencies to provide services within their areas of expertise.

27. In accord with EPA procedures for IAGs, I drafted IAGs for the Iron Mountain Mine Site on a form, which I sent to the Region IX Grants Management Section. The Grants Management Section processed each IAG for approval and signature by the other Federal agency, and by the Director of the Region IX Superfund Division (or his authorized delegate). The IAGs for the Iron Mountain Mine Site were site specific, and each included its own scope of work, unlike multi-site contracts for which there were separate Scopes of Work for individual Work Assignments created after the contract was entered. For each IAG, I would prepare a draft Scope of Work and negotiate a budget with the other Federal agency, both of which went into the draft IAG.

28. There was and is a presumption that Federal agencies follow the same principles of work and financial accounting as does EPA and, consequently, that it is not necessary to require them to submit the amount of documentation required of private contractors.

29. The Scope of Work under an IAG often was simpler and less detailed than under a private contract. The Federal agency usually exercised its independent judgment, more than did private contractors, in determining how to perform the work, and the agreements did not necessarily require the other agency to prepare a Work Plan. However, on occasion, a Federal agency would submit documentation similar to a Work Plan, as the Bureau of Reclamation did for its work on three water diversions under ROD 1, and for its design for the enlargement of the Spring Creek Debris Dam. When documentation similar to a Work Plan was submitted, I would review it, and comment as appropriate.

30. I also prepared a decision memorandum for use by the person who approved the IAG, usually the Director of the Region IX Superfund Division.

31. Once an IAG was approved, and work had begun, I would oversee the work to make sure that the work was consistent with the Scope of Work in the IAG.

32. As RPM, I was the Project Officer for the IAGs on Iron Mountain Mine, and I approved each payment for work done. The payments were made by an on-line system, automatically in the absence of a disapproval, but payments could be recovered in the event I entered my disapproval after payment was made. However, I had no cause to disapprove any Iron Mountain Mine IAG payments.

33. Work and payments under an IAG automatically ended at the end date of the agreement. After completion of the work or after the end of the Period or Performance, I initiated formal "close-out" of the agreement. The EPA Grants Management Specialist performed all subsequent activities necessary to close out the agreement and to de-obligate any remaining funds.

34. I reviewed each payment request from each Federal agency while I have been the RPM for the Iron Mountain Mine Site. For each payment for which I approved payment, I determined that the agency had performed the work for the Iron Mountain Mine Site, and as required.

Multi-Site Cooperative Agreements

35. CERCLA required EPA to consult with the State in which a Superfund site is located, and it still does. EPA had agreements with States under which EPA funded activities undertaken by the States in order to assure that the States could participate as required by CERCLA. The agreements were called Multi-site Cooperative Agreements ("MSCA") or State Cooperative Agreements ("SCA").

36. The California Department of Toxic Substances Control ("DTSC") represented California under the MSCA with California.

37. Pursuant to a MSCA, DTSC prepared Annual Work Plans proposing actions it would perform on California's behalf. I reviewed the annual Plans, negotiated the Scope of Work and budget, and recommended approval.

38. I monitored DTSC's participation in Iron Mountain Mine Site activities to assure that monies EPA provided were being used for the intended activities.

39. DTSC submitted Quarterly Progress Reports on its Iron Mountain Mine Site activities. I reviewed each report in order to assure that the Report reflected what had been done.

40. DTSC submitted requests for payment for all sites included under each MSCA, but DTSC broke down the requests by site and activity. I reviewed the Iron Mountain Mine Site activities in each request for payment and recommended payment.

41. I reviewed each payment request from DTSC while I have been the RPM for the Iron Mountain Mine Site. Because EPA does not control how the State performs its activities, I did not pass any judgment on how DTSC performed its work. For each payment for which I recommended payment, I did determine that DTSC had performed the work for which it was

requesting payment for the Iron Mountain Mine Site. Furthermore, had any work done by DTSC been inconsistent with the NCP, I would have called attention to the matter. At no time during the course of the Iron Mountain Mine cleanup did I find DTSC's work to be inconsistent with the NCP.

Site Description

42. The Site at one time encompassed approximately 4400 acres and more northwest of Redding, California. *See* SDMS 56145 (ROD 2) at p.6 (Decision Summary I.2). However, the Iron Mountain Mine Site is defined "to include the inactive mines on Iron Mountain and areas where hazardous substances released from the mines are now located." *See id.* Consequently, the Site has grown as additional contamination has been discovered downstream.

43. The Site contains four watersheds: Boulder Creek, Flat Creek, Spring Creek, and Slickrock Creek.

44. Mine-contaminated water flows off the Site and into two federally owned and operated reservoirs located about four miles downstream – first into the Spring Creek Reservoir and then into Keswick Reservoir, a dammed stretch of the Sacramento River.

45. The sources of Site contamination are several inactive underground, surface, and open pit mines, and associated tailings and waste piles. The inactive mines include the Richmond Mine, Hornet Mine, "Old Mine," "Number Eight Mine," and Brick Flat Pit.

46. The inactive mines and tailings are located on approximately 2800 acres owned by the defendant Iron Mountain Mines, Inc. since 1976. SDMS 58415 (May 31, 1990 Final Title Search Report by PRC).

47. At different times between the 1890s and 1963, the mines on the Site were mined for copper, zinc, gold, silver and pyrite (iron sulfide). Between 1897 and 1919 alone, the mines on the Site produced nearly 100,000 tons of copper. *See* SDMS 54224 (California Department of Mines and Geology December 1951 Special Report 14 at p.8).

Acid Mine Drainage and Heavy Metal Discharges

48. Past mining removed a protective stone cap on the mountain that had limited rainfall infiltration, and fractured the rock in the mountain, allowing rainwater to percolate through the highly mineralized rock, creating acid mine drainage and flushing contaminants into surface waters that drain Iron Mountain.

49. Mining also created waste rock and tailings piles, through which rainwater and runoff also percolate, creating acid mine drainage and flushing contaminants into surface waters that drain Iron Mountain.

50. The oxidation of iron sulfide (FeS_2) in the presence of oxygen (O_2) and Water (H_2O), produces sulfuric acid (H_2SO_4), and releases iron from the mineral deposit or mine waste into an acidic flow. The oxidation of copper, zinc, and cadmium containing minerals in the deposit or waste pile also forms sulfuric acid and releases these metals into the acidic flows. The acidic flows containing high levels of iron, copper, zinc and cadmium are termed acid mine drainage. Bacteria present in the inactive mines and waste piles, *ferroplasma acidarmanus*, accelerate the acid forming reactions.

51. Acidity is measured by pH, a scale on which 7 is neutral, numbers from 7 to 14 are increasingly basic, and numbers from 7 to zero are increasingly acidic. Numbers below zero are extremely acidic.

52. Measurements of acidity in the Richmond mine have required the development of new measuring techniques. Acid mine drainage ("AMD") in the mine has been measured with a pH of less than zero.

53. Prior to EPA's cleanup, acid mine drainage discharged from the mine adits and other openings, and from mine waste piles scattered around Iron Mountain Mine Site, carried the metals into surface waters that drain Iron Mountain and, ultimately, into the Sacramento River. Prior to the beginning of the EPA cleanup project, the Site was the largest known discharger of

heavy metals to surface waters in the United States. *See* SDMS 56073 (May 1992 announcement of Proposed Plan for Operable Unit 2 at p.3, which I prepared).

54. The EPA remediation project has so far reduced contaminant discharges from the Site by over ninety-five percent (95%).

Listing on the NPL and Requirements of the NCP

55. EPA completed a preliminary site assessment for the Iron Mountain Mine Site in May 1980, and performed a site investigation in September 1981. *See* SDMS 54013 (EPA Site Inspection Report with data from site inspection and California Regional Water Quality Control Board) and 60879 (May 14, 1980 Amended Preliminary Assessment data form prepared by EPA contractor from California Regional Water Quality Control Board interview and data).

56. Prior to EPA's undertaking actions to clean up the site, during drought conditions, the Site discharged an average of 260 pounds of Copper, 1100 pounds of Zinc, 10,000 pounds of Iron, and approximately 8.6 pounds of Cadmium *daily* to surface waters that drain from Iron Mountain. SDMS 56145 (ROD 2, Table 2-5). During normal and high water conditions, the Site discharged more metals.

57. In 1982, EPA ranked the Site, using the Hazard Ranking System. *See* SDMS 54021 (August 9, 1982 HRS Cover Sheet and work sheets summarizing HRS calculations).

58. On September 8, 1983, EPA promulgated amendments to the NCP which added the Site to the National Priorities List ("NPL"). 48 Fed. Reg. 40658 *et seq.* (Sept. 8, 1983).

59. EPA's actions at the Site were guided by and conducted pursuant to the National Contingency Plan ("NCP"), 40 C.F.R. Part 300, which consists of regulations establishing the methods and criteria for determining the appropriate responses to releases of hazardous substances. In the course of preparing and approving scopes of work and work plans, and in reviewing work performance and bills for work performed, all my actions as RPM were guided by the NCP, and by EPA guidance documents interpreting the NCP, in order to assure consistency of the Iron Mountain Superfund Site cleanup with the NCP.

60. At a site listed on the NPL, such as the Iron Mountain Mine site, the NCP requires the lead agency (in this case EPA) to study site conditions, examine cleanup alternatives, and make information available to the public for review and comment. This process results in a site-specific study, called a Remedial Investigation/Feasibility Study ("RI/FS").

61. The Remedial Investigation ("RI") entails data collection and "site characterization" in order to determine the nature and extent of contamination at the site, circumstances which may complicate remedial actions, and any information or data which may assist in reviewing alternative remedial actions, including assessment of human health and ecological risks.

62. Using data from the RI, a Feasibility Study ("FS") is prepared to set remedial action objectives, to screen potentially suitable technologies, to develop a range of feasible cleanup alternatives, and to screen the alternatives against nine remedy selection criteria specified in the NCP.

63. From alternatives that are developed and evaluated in the FS, EPA selects a Preferred Alternative and presents its proposed cleanup strategy in a Proposed Plan.

64. EPA presents its completed RI/FS and its proposed remedial action plan to the public, along with an analysis. EPA solicits public comment. For the Iron Mountain Mine Site, EPA made the Administrative Record (containing all information and data upon which EPA relied in selecting a remedial action plan.) available at its Regional Headquarters in San Francisco, at the Shasta County Public Library in Redding, near the Site, and at the Meriam Library at Cal State in Chico. EPA holds a public meeting, at which EPA provides information about its plan, and accepts public comment.

65. EPA evaluates both the oral and written comments received, and the RPM prepares written responses to each. If persuaded that changes should be made to its plan, EPA changes the plan. For example, in the case of this Site, EPA made such extensive changes to its original proposal for what became ROD 4, the Slickrock Creek Retention Reservoir plan, that

EPA reissued a revised proposed plan for another round of public review and comment. SDMS 57467 (May 1996 announcement of second Proposed Plan for Operable Unit 4).

66. After reviewing public comments, responding to them and, possibly, incorporating them, EPA selects the remedy it will implement at the Site, and issues a "Record of Decision" ("ROD") setting forth its selected remedial action plan. Each ROD summarizes site conditions, summarizes EPA's analysis of alternatives considered, explains the basis for the Agency's decision to select a particular remedial approach, and sets out a summary of comments received and responses to those comments. Each ROD is supported by an administrative record which contains all the information and data upon which EPA relied in selecting the final remedial action plan.

67. Signing of the ROD is followed by performance of the Remedial Design ("RD"), and the Remedial Action ("RA") in order to implement the remedial action plan.

68. If the RD is to be performed by a contractor, EPA prepares a Scope of Work and issues a Work Assignment to the contractor.

69. The contractor prepares a Work Plan and, once approved by EPA, prepares the RD in accordance with the Work Plan.

70. Once EPA approves the final RD, EPA issues a new Scope of Work for a Work Assignment to perform the RA.

71. The contractor prepares a Work Plan to conduct the RA, and once approved by EPA, the contractor implements the RA. Typically, EPA's contractor awards a subcontract to a construction firm and performs oversight of the construction activities to assure that the remedial action plan is implemented in accordance with the ROD.

72. At sites with complex environmental problems, EPA may divide the remedial actions into separate units, called operable units ("OUs"). For each operable unit, EPA follows the steps outlined above, culminating in a Record of Decision, its accompanying administrative record, and actions to implement the decision.

73. The subject of each Iron Mountain Site ROD was an operable unit. Each Iron Mountain Mine ROD was the decision document that selected a remedial action for contaminant sources within a designated operable unit at the Site. Data collected in the RI for an earlier ROD often supported the development and evaluation of remedial alternatives in a later ROD for the Iron Mountain Mine Site.

74. In certain instances of imminent and substantial endangerment, EPA undertakes Time-Critical Removal Actions. In such instances, the EPA prepares an Action Memo and a supporting administrative record, but not all other steps used in preparing a ROD are followed, such as public hearings.

75. Once EPA has decided upon a cleanup action, be the decision one resulting in a ROD or an Action Memo, design, construction, operation and maintenance are common stages of the implementation of the cleanup projects. EPA can do any or all of the stages itself, usually through private contractors and government agencies. However, the preferred approach is for EPA to require one or more potentially responsible parties to undertake one or more of the required actions, either by voluntary agreement or pursuant to an Administrative Order ("AO" or "106 Order").

76. The Administrative Record for each ROD contains copies of all documents relied upon by EPA in the course of making a final remedy selection, including all documents that form the basis for the selection. Examples of documents included in the Administrative Records are work plans and related contracting documents, interagency agreements, data validation and evaluation reports, engineering reports and other documents characterizing the Site and contamination at the Site, documents that assess the risk to human health and the environment posed by Site contaminants, documents that define the cleanup goals, objectives and regulatory requirements, the RI and FS, evaluations and summaries of alternative remedies, the Proposed Plan, public notices, public comments, responses to public comments, a compendium of all EPA

guidance relied upon and used (the guidance documents are incorporated by reference into the Administrative Record), and the Record of Decision selecting a final remedy.

77. The Iron Mountain Mine Site File records EPA's cleanup at the Iron Mountain Mine site. The Iron Mountain Mine Site File contains documentation of investigations to locate potentially responsible parties ("PRPs"), documentation of the RI/FS process, Records of Decision, the administrative records supporting each of the RODs, all documents necessary to design and implement EPA's remedy decisions, including records of communications, statements of work, work plans, contract documents, design documents (concept, intermediate, pre-final and final), constructions documents, progress reports, cost documents, etc.

78. As I stated above, as RPM for the Iron Mountain Mine Site, I was responsible for determining which documents to include in each administrative record for all RODs, and I was responsible for sending the majority of the documents to the Iron Mountain Mine Site File.

Iron Mountain Mines Site Remedies Overview

79. EPA began its first remedial investigation ("RI") of the Site in 1983. *See* SDMS 55832 (October 18, 1983 Letter, EPA (Takata) to California (Bailey), forwarding draft RI work plan for comment).

80. To date, EPA has completed five remedy selection decisions at the Iron Mountain Mine Site. The selected remedies are contained in RODs signed in 1986, 1992, 1993, 1997, and 2004, commonly referred to as ROD1 through ROD 5, respectively. (A sixth remedy selection and ROD are in progress as I write.) Concurrently with selection and implementation of the RODs, EPA undertook a time-critical removal action to perform emergency treatment operations at the Iron Mountain Mine Site in response to the threat of critical low water flows, during 1988 and 1989, subsequent aspects of which continued through 1994. EPA also undertook a time-critical removal action in 1997 after the only access to the treatment plant was washed out in a flood.

81. The costs incurred by EPA through February 1996 were incurred in the preparation and implementation of RODS 1 through 3, in the preparation of ROD 4, and for the time-critical removal action to perform emergency treatment operations in the late 1980s and early 1990s.

82. The remedies considered and implemented by EPA at Iron Mountain Mines, and described below, were meant to reduce or to eliminate discharges of contaminants (acid mine drainage and arsenic) from the Site which were harmful to human health or to the environment. Generally, the actions considered and undertaken were of four types: 1) source control, meaning restricting the creation of contaminants; 2) containment of the contaminants; 3) controlled discharge of the contaminants so as to keep concentrations below harmful levels; and 4) treatment to reduce or eliminate the contaminants.

Mines and Mine Terminology

83. A brief explanation of the following mine terminology may avoid confusion as one reads my declaration.

a. "Portal" is an entrance to an underground mine.

b. "Adit" is a horizontal access into an underground mine from the Portal or entrance. There may be a number of adits in a mine, including the Richmond Mine. However, references I make to the "Richmond Adit" refer to the single adit which CH2M Hill rehabilitated in order to assure access to the mine.

c. "Tunnel" is a horizontal access going all the way through a mountain. At times an Adit may be referred to as a Tunnel although, strictly speaking, the terms have different definitions. For example, many documents in the Administrative Records, including historical references, refer to the Lawson Adit as the "Lawson Tunnel."

d. "Haulage Level" is the horizontal access level in a mine on which cars on rails removed the ore from the mine. In the case of the Richmond Mine, the Richmond Adit was the Haulage Level.

e. "Grizzly Level" is the next level above the Haulage Level. In the Richmond Mine, the "Grizzly Level" was where ore mined from higher levels was assembled and passed down to the cars on the Haulage Level.

84. There were a number of mines in and on Iron Mountain including the following five which I discuss in this declaration:

a. Richmond Mine. In the case of the Richmond Mine, the mine, its portal, and the adit behind the portal all share the Richmond name.

b. Hornet Mine. The Hornet Mine is located about five hundred feet below the Richmond Mine in Iron Mountain. There are two major points of entry into the Hornet Mine: the Hornet Portal and the Lawson Portal. Because the Lawson Portal and the Lawson Adit are at a lower elevation than the entrance to the Hornet Mine at the Hornet Portal, acid mine drainage discharges at the lower elevation, and EPA's remedial focus was at the discharge from the Lawson Adit at the Lawson Portal. Consequently, on occasion, the Hornet Mine may have been referred to as the Lawson Mine in some Site documents.

c. Old Mine. The Old Mine is another mine in Iron Mountain, the entrance to which was long ago buried by a landslide of mining waste. Acid mine drainage from the Old Mine seeps from the landslide area.

d. Number Eight Mine. The Number Eight Mine, or No.8 Mine, is another mine in Iron Mountain which was also buried by the same landslide which buried the Old Mine. Acid mine drainage from the No.8 Mine discharges from the same seep with the Old Mine AMD.

e. Brick Flat Pit. Brick Flat Pit was an open pit mine on the top of Iron Mountain. As part of EPA's work on the Site, the Brick Flat Pit was partially filled with mine tailings removed from the site of the current water treatment plant, so as to raise the Pit's floor to a level allowing runoff to flow out of the Pit. Brick Flat Pit was then capped with an impermeable membrane. Brick Flat Pit was later modified with the installation of liners and leachate collection systems, and is now being used as a controlled disposal area for high density

sludge. The high density sludge is the waste product generated by the new water treatment facility. Runoff which currently flows out of the Pit is captured and conveyed to the new water treatment plant.

EPA Contractors and Agencies Doing Iron Mountain Mine Site Work

85. EPA performed much of its work on the response actions for the Iron Mountain Site through private contractors and through other government agencies whom it reimbursed. The amounts EPA paid to those contractors and agencies was over ninety percent (90%) of the costs EPA incurred and paid prior to March 1996. EPA refers to those costs as "extramural costs." The remaining ten percent (10%) of the costs were internal costs of EPA (payroll, travel, and indirect costs), which EPA refers to as "intramural costs," and which EPA is not seeking to recover at this time.

86. Of EPA's extramural costs, almost all were paid to the following six contractors and Federal agencies: Bureau of Reclamation, Geologic Survey, NOAA, Riedel Corporation, Planning Research Corporation, and CH2M Hill. I include descriptions of their work on specific projects in my later discussion of each ROD.

Bureau of Reclamation

87. The Bureau of Reclamation ("BuRec") of the United States Department of the Interior provided services to EPA under multiple IAGs. BuRec has expertise in the design, construction, operation, and evaluation of water control structures. In my description below of the EPA response actions at the Site, I describe BuRec design, construction, and oversight work done to develop and to implement different RODs.

88. In addition to its design work and oversight of construction work, BuRec also provided EPA with technical support by advising EPA on construction being done by Rhône-Poulenc (a PRP), and CH2M Hill. BuRec helped evaluate proposed changes to approved remedial designs during construction, which had been suggested by CH2M Hill and its

subcontractors, in order to assure that CH2M Hill's recommendations were technically sound and reasonably priced.

United States Geologic Survey

89. Under separate interagency agreements, the United States Geologic Survey (USGS) provided EPA with services in geochemistry and geology, including advice, monitoring, field investigations, and analyses. USGS took a major role in evaluating acid mine drainage discharges from the Site over the more than 20 years that EPA has been on the Site. In my description below of the EPA response actions at the Site, I describe USGS work done to develop and to implement different RODs.

National Oceanographic and Atmospheric Administration

90. The National Oceanographic and Atmospheric Administration ("NOAA") served as the lead Federal Agency for coordination with EPA and other State and federal natural resource trustee agencies regarding natural resource issues, including impacts to fish, wildlife, habitat, and other natural resources (*e.g.*, water resources) throughout the EPA response actions. Among other things, NOAA attended technical meetings between EPA and PRPs, and participated in EPA project review meetings to review the progress of the Site RI, FS, RD, and RA.

91. To perform its responsibilities at Iron Mountain Mine Site and other Region IX Sites, NOAA assigns an employee full-time to the EPA Region IX Headquarters.

Californial Department of Toxic Subtances Control

92. CERCLA requires EPA to consult with the State where a Superfund site is located. EPA has agreements with States under which EPA funds activities undertaken by the States. The agreements are called multi-site cooperative agreements ("MSCA") or State Cooperative Agreements ("SCA").

93. Under an SCA, the California Department of Toxic Substances Control ("DTSC") acted as the lead agency for the State of California for Superfund mining sites in California.

Riedel

94. Just as EPA has standing contracts for engineering services at Superfund sites, it also has contracts for emergency response technical support services for removal actions.

95. Riedel Corporation was EPA's Emergency Response contractor during 1988 and 1989 when EPA constructed an emergency water treatment plant at Iron Mountain Mine Site. Riedel operated the plant for EPA.

Planning Research Corporation

96. Planning Research Corporation (PRC) prepared an endangerment assessment to evaluate the potential threat to human health and the environment posed by contaminant sources at the Iron Mountain Mine Site. PRC later updated the Human Health Risk Assessment.

97. PRC performed the title search for the Site.

98. To assist EPA's response to comments on the Proposed Plan for Operable Unit 1 (which resulted in ROD 1), PRC performed technical review of an *in situ* leaching mining proposal developed by PRPs, specifically the defendants.

CH2M Hill

99. Most of the work done by the agencies and contractors I listed above was specific to one or another Iron Mountain Mine Site response action, and I describe them in my discussion of the response actions below. I also describe work by CH2M Hill in my discussion of the response actions below. CH2M Hill was EPA's "prime contractor" for the Iron Mountain Mine Site for more than two decades, and they performed an extensive amount of work not readily attributed to a particular response. Therefore, I describe here, in general terms, the technical and engineering services provided by CH2M Hill, and the manner in which EPA contractually obtained those services.

100. EPA enters into contracts with engineering firms for site technical and engineering services to be available for use at all its Superfund sites, except where there would be a conflict of interest.

101. At one time, EPA Headquarters entered into the contracts for site technical and engineering services on a national basis, and the contracts were called Remedial Services Contracts ("REM").

102. Later, EPA Regional Offices entered into the contracts for site technical and engineering services on a Regional basis, and the contracts were called Alternative Remedial Contract Support Services ("ARCS").

103. Subsequent to ARCS, and after March of 1996, EPA Regions have used similar contracts known as Regional Alternative Contracts ("RAC").

104. EPA selected CH2M Hill to be its prime contractor for site technical and engineering services in competitive bidding, originally under two REM contracts, one jointly with Ecology and Environment.

105. The site technical and engineering services contracts supervised by the Region were rebid approximately every 10 years. CH2M Hill continued as prime contractor for site technical and engineering in Region IX under an ARCS contract, and continues to under a RAC.

106. CH2M Hill has been EPA's prime contractor for the Iron Mountain Mine Site for the entire time EPA has had a technical and engineering services contractor performing work on the Site. As prime contractor, CH2M Hill also supervised Site work by its own subcontractors.

107. Throughout each ROD process, CH2M Hill provided technical support to EPA, with the exception of the short period when EPA selected (signed) ROD 1, at which time EPA had no prime contractor in place at the Site. CH2M Hill assisted EPA with the initial data collection and field investigation for each RI/FS. CH2M Hill helped EPA coordinate with the public by providing technical support in preparing informational materials, preparing technical

input for presentations, and handling the logistics for public meetings. CH2M Hill provided technical support to EPA in reviewing and responding to public comments.

108. CH2M Hill often designed the selected remedy (RD), and was often the prime contractor overseeing the construction of the remedy (RA) by construction subcontractors. When CH2M Hill did not, it provided technical support to EPA in reviewing or commenting on designs and their implementation by PRPs.

109. CH2M Hill also provided technical support to assist EPA enforcement activities, such as preparing technical aspects of the Scopes of Work for Administrative Orders issued by EPA, and providing EPA with technical support in negotiations of AOs with PRPs.

110. On behalf of EPA, CH2M Hill also provided oversight (observing and reporting) of work by PRPs who did work to implement the EPA Administrative Orders and RODs.

Remedies Selected and Implemented for Iron Mountain Mines Site

1986 ROD 1 – Partial Capping and Diversions

111. In 1986, EPA issued ROD 1, which selected certain remedial measures to begin to ameliorate the release of acid mine drainage ("AMD") from the Site.

112. As part of the RI/FS process for ROD 1 (partial capping of rainwater infiltration routes, and diversion of clean streams), CH2M Hill performed site field investigations and analyses, prepared reports of its investigations, drafted the RI and FS, evaluated alternative remedies, and assisted with arranging public meetings and review of public comments.

113. Throughout the ROD 1 process and subsequently, CH2M Hill assisted EPA with its enforcement activities by collecting and reviewing documents, and by providing technical assistance in reviewing the contentions of the PRPs.

114. ROD 1 selected both initial remedial actions, an additional feasibility study to evaluate one potential remedial approach, and contingent actions in the event the potential remedial approach was not feasible and the initial actions proved insufficient.

115. ROD 1 selected three distinct actions which were implemented at the Site in order to reduce formation of AMD or to manage its release: 1) partial capping of areas of the mountain subject to infiltration of rainwater, a first step in reducing the volume of AMD generated; 2) diversion of clean, upstream portions of Slickrock Creek around a mine waste slide and back into Slickrock Creek in order to prevent contamination of those clean waters; and 3) diversion of clean portions of Upper Spring Creek into Flat Creek to also prevent contamination of those clean waters, and to reduce the volume of water flowing into the Spring Creek Reservoir formed by the Spring Creek Debris Dam. Reducing inflows to the Spring Creek Reservoir effectively increased the reservoir's capacity to hold back and store contaminated waters, thereby reducing the likelihood that contaminated water would spill over the Spring Creek Debris Dam and into the Keswick Reservoir and the Sacramento River.

116. Using Superfund money, EPA performed most of the ROD 1 measures using contractors and other Federal agencies.

117. CH2M Hill designed and constructed the partial capping of Brick Flat Pit and of seven subsidence areas on Iron Mountain.

118. Under an IAG, BuRec designed and built the Slickrock Creek diversion.

119. Pursuant to EPA Administrative Order ("AO") 90-08, former defendant Rhône-Poulenc, Inc. constructed the Upper Spring Creek diversion. However, pursuant to an IAG, BuRec designed the Upper Spring Creek diversion and provided oversight of the construction.

120. ROD 1 also authorized a study of the feasibility of sealing the Richmond Mine as a means of restricting acid mine drainage formation, and of containing that which formed. CH2M Hill performed the study of the feasibility of sealing the mine with low density concrete ("LDCC").

121. CH2M Hill conducted investigations and studies to help EPA determine how to rehabilitate the Richmond Adit in order to assure the AMD sources would be accessible to investigation. Access to the mine was needed in order to study the sources of AMD, and to study

the feasibility of sealing the Richmond Mine. The access gained also allowed investigations which supported ROD 2.

122. CH2M Hill constructed repairs and reinforcement on 1500 feet of the Richmond Adit to establish access to the underground mine, at a cost of approximately one million dollars. BuRec provided construction oversight of the CH2M Hill rehabilitation of the adit.

123. CH2M Hill also assisted in reviewing designs for further rehabilitation of the Richmond Adit by Rhône-Poulenc under AO 91-07 (for O&M of infrastructure), and provided EPA oversight and quality assurance of the Rhône-Poulenc's further work on the adit. I describe all the Administrative Orders issued for the Iron Mountain Mine Site further below, including AO 91-07.

124. The USGS assisted with the study of the feasibility of sealing the Richmond Mine. The USGS conducted a geologic reconnaissance in order to assess the geologic conditions in the mine and to determine whether the generation of AMD was taking place at discrete locations or was widely distributed. Using the access gained by rehabilitation of the Richmond Adit, the USGS visited the Haulage and Grizzly levels of the Richmond Mine, took samples, and analyzed them. As I stated, above, the USGS had to develop new methods of analysis of the unprecedented levels of acid, which one USGS investigator, Charles Alpers, described as "the world's worst water." SDMS 104624 (March 23, 2000 San Francisco Chronicle article).

125. The Richmond Adit rehabilitation, and the investigations it made possible, also contributed to the RI/FS for ROD 2 for capture and treatment of AMD from the mine, after the underground investigations determined that sealing the mine was not feasible.

126. ROD 1 selected two remedial actions which were never implemented: 1) diversion of the South Fork of Spring Creek; and 2) enlargement of the Spring Creek Debris Dam to increase the reservoir's capacity to contain acid mine drainage. BuRec prepared designs for each remedy but, based on the designs, EPA found that the costs were much greater than

anticipated and that better solutions existed. Both remedial actions were unselected in ROD 4. I discuss studies of the Spring Creek Debris Dam under ROD 2 and ROD 4, below.

127. Tom Mix was my predecessor as RPM for the Iron Mountain Mine Site, and he was responsible for ROD 1. Although I did not participate in the actual decision making contained in ROD 1, as part of my responsibilities, I prepared the index of those documents that formed the basis of EPA's remedy selection in the 1986 ROD. In preparing the index, I consulted with my predecessor, Tom Mix, regarding the identification of relevant documents for the ROD 1 administrative record. In that manner, I had occasion to review, to read, and to index documents in the Administrative Record for ROD 1.

128. Defendants IMMI and Arman participated extensively in the remedy selection process which resulted in ROD 1. For example, by letter dated April 5, 1982 , EPA notified IMMI of its potential liability under CERCLA and requested that IMMI perform the RI/FS for the Iron Mountain Mine contaminant discharges. *See* SDMS 58809 (1986 AR 41) (April 5, 1982 Letter, EPA (Sullivan) to Ted Arman). IMMI declined to conduct the Iron Mountain Mine Remedial Investigation by letter April 14, 1982. *See* SDMS 54017 (April 14, 1982 Letter, Arman to EPA (Summerlee), requiring removal obstacles to private funding as a pre-condition).

129. Twelve years ago, I reviewed the administrative record for ROD 1, and I counted 359 documents (22.8% of the total) authored by or addressed to the defendant IMMI or its representatives. I previously attested to my count in my January 30, 1997 Declaration in Support of Plaintiffs' Motion to Limit Review to the Administrative Record (I am told it is Dkt. 630), and I rely upon paragraphs 30 through 36 of that declaration now, in addition to my recollection.

130. The defendants Arman an IMMI had submitted a business plan for in-situ mining. EPA and the Colorado School of Mines Research Institute (CSMRI) reviewed the plan submitted by IMMI, but found it to be insufficient and experimental, for reasons described in the CSMRI report, and in a letter from EPA to Arman and IMMI. *See* SDMS 54084 (July 31, 1986 CSMRI Report); SDMS 55761 (April 30, 1987 letter, EPA (Zelikson) to Ted Arman (letter erroneously

scanned to end of May 16, 1991 Final Risk Assessment Report)). EPA also concluded that the defendants' proposal was only marginally viable economically and that IMMI had insufficient funding to implement its plan. Even after signing ROD 1, at the request of defendants Arman and IMMI, EPA deferred implementation for 60 days in order to allow them to submit an environmental cleanup plan for the in-situ mining proposal for them to assume responsibility for implementation of ROD 1, a plan which EPA also found inadequate. *See* SDMS 54767 (November 6, 1986 letter, EPA (Ramirez) to Ralph Wegis (Counsel for defendant Arman) at p.2); SDMS 55761 (April 30, 1987 letter, EPA (Zelikson) to Ted Arman). (I also described the subject of this paragraph in paragraphs 34 through 36 of my January 30, 1997 Declaration in Support of Plaintiffs' Motion to Limit Review to the Administrative Record.)

131. EPA analyzed and responded to the defendants' comments and alternative proposals, with the help of CH2M Hill, among others. The USGS assisted EPA with its analysis of and response to comments by other PRPs.

Time-Critical Removal Action – Emergency Treatment Plant

132. Responding to the threat of critically low water flows during the winter of 1988-89, EPA, constructed and operated a treatment plant designed to remove cadmium, copper, and zinc from the Richmond Portal drainage, which drained into Boulder Creek, and which ultimately flowed into the Sacramento River.

133. The low water flows in the Sacramento River resulted in increased concentrations of contaminants due to reduced dilution. The purpose of the treatment plant was to reduce the concentration of contaminants in the water entering Boulder Creek and, ultimately, into the Sacramento River.

134. The EPA emergency response unit's private contractor, Riedel, sized, installed and operated a small-portable treatment plant, along with necessary associated infrastructure such as piping and a de-watering cell for treatment residues.

135. When similar flow conditions threatened during subsequent winters, EPA issued Administrative Order 89-18 requiring Arman and IMMI to operate a new 60 gallon per minute ("gpm") emergency treatment plant for drainage from the Richmond Portal. The AO ordered the other PRP, Rhône-Poulenc, to construct and operate the treatment plant if Arman and IMMI did not. Arman and IMMI declined on August 30, 1989. SDMS 61944 (September 20, 1989 letter, EPA (Zelikson) to T.W. Arman).

136. Rhône-Poulenc built and operated the new 60 gpm emergency water treatment plant.

137. CH2M Hill provided EPA with oversight of the Rhône-Poulenc design and operation of the new 60 gpm emergency water treatment plant, including the taking and analysis of water samples to gauge the effectiveness of the water treatment.

138. In 1992, EPA issued AO 92-26 requiring the PRPs, including Arman and IMMI, to double the capacity of the new treatment plant to 120 gallons per minute (gpm), which Rhône-Poulenc did.

139. Rhône-Poulenc complied with the Administrative Orders to operate the emergency water treatment plant until ROD 2 was implemented, and the emergency actions were no longer required.

Administrative Orders

140. Rhône-Poulenc largely complied with all the Administrative Orders from 1989 through its settlement with EPA in 2000. The AOs during that time were seven in number: AO 89-18 for construction of the second emergency treatment plant; AO 90-08 for construction of the Upper Spring Creek diversion under ROD 1; AO 91-07 for operation and maintenance of all remedial action ROD 1 facilities on the site, *e.g.*, the caps, roads, treatment plant, diversions, and rehabilitation of underground mine workings at the Richmond mine adit; AO 92-26 for doubling the capacity of the second emergency treatment plant; AO 93-01 for design and construction, under ROD 2, of the present, larger treatment plant to treat acid mine drainage from the

Richmond Portal and the Lawson Portal; and AO 94-12 for modifications to the new, larger treatment plant under ROD 3 to include acid mine drainage from the Old Mine and Number Eight Mine seep. (A seventh AO 97-16 was later issued for design and construction of the Slickrock Creek Retention Reservoir under ROD 4, but none of that work is included in the First Cost Package.) Although included as respondents on the AOs, neither Arman nor IMMI contributed to compliance with any ordered actions.

141. The work by Rhône-Poulenc pursuant to AO 91-07 (O&M of Site infrastructure) required design and construction of both repairs and modifications to the existing infrastructure on the Site, typically on an annual cycle. As it did for construction and operation of the emergency treatment plant, CH2M Hill provided EPA with on-site oversight of Rhône-Poulenc's compliance with all of the AOs, including 91-07.

1992 ROD 2 – Waste Piles and Treatment Plant for Richmond and Lawson AMD

142. In late 1985, EPA amended the NCP and added program management principles which encouraged remediation in phases, each known as an Operable Unit ("OU"), in order to expedite action on significant risks or to facilitate management of large, complex sites. *See* 40 CFR § 300.430(a)(1)(ii); 40 C.F.R. § 300.68(c) (1985).

143. Consistent with the new NCP, for purposes of conducting the second RI/FS at the Iron Mountain Mine Site, EPA designated as "the Boulder Creek Operable Unit" the contaminant discharge sources in the Boulder Creek watershed. The OU included the two largest sources of acid mine drainage at the Site, those being the Richmond Portal and the Lawson Portal AMD discharges.

144. As part of the investigation and study (RI/FS) process leading to ROD 2 (capture and treatment of Richmond and Lawson AMD), CH2M Hill assisted EPA in evaluating a counterproposal by PRP Rhône-Poulenc to flood the Richmond Mine by installing a cement plug in the Richmond Adit and two interconnections to the Hornet Mine. The purpose of flooding the Richmond Mine was to deprive the mineralized areas of the mine of the oxygen necessary for the

chemical reactions needed to create the AMD. (The proposal differed from the LDCC proposal studied under ROD 1, which would have filled the mine with low density cellular concrete in order to seal the mine and to exclude water.)

145. CH2M Hill did modeling of the mountain, and did many engineering evaluations to evaluate the efficacy of the proposal to flood the mine workings. Among the many studies performed by CH2M Hill, were studies to determine whether flooding could work in the acidic environment of the Site, how to introduce water so as to assure the mine was flooded, how to plug the mine so as to keep water in, and how to monitor the mine so as to know whether flooding was working. CH2M Hill's work allowed EPA to conclude the proposal would not work.

146. USGS also assisted EPA in responding to voluminous comments by PRPs, including the defendants. USGS's assistance included conducting field investigations and providing geochemistry consultation for the EPA RI/FS. For example, a technical argument presented by the Rhône-Poulenc assumed the age of the gossan deposit on top of Iron Mountain was only 10,000 years. USGS took core samples and preformed analyses showing the gossan deposit on top of the mountain to be at least 700,000 years old.

147. Rhône-Poulenc also contended that sealing the Richmond Mine would stop all acid mine drainage from the Lawson Portal. (Rhône-Poulenc proposed sealing connections between the Richmond Mine and the Hornet (Lawson) Mine, in addition to sealing the Richmond Adit. Consequently, it was the complete sealing of connections between the Richmond and Hornet Mines, more than the flooding, which the Rhône-Poulenc insisted would end AMD from the Lawson Portal.) USGS analyses of the AMD showed that not more than one percent (1%), and perhaps much less of the AMD from the Lawson Portal originated in the Richmond Mine and, consequently, even if sealing the Richmond Mine were feasible it would not remedy the entire problem.

148. In order to assist EPA, USGS had to develop new analytical methods to collect and to analyze in an oxygen-free environment the highly acidic solutions generated by the unique conditions at the Site.

149. In 1992, EPA issued ROD 2 to address AMD discharges from the Richmond and Lawson Portals.

150. EPA concluded that past mining and blasting had fractured the mountain rock too extensively for plugging to work as a means to deprive the chemical reaction of the oxygen needed to generate AMD in the Richmond Mine. Even if plugging were successful at the Richmond Mine, it would not address the acid mine drainage discharges from the Hornet Mine via the Lawson Adit. Consequently, EPA selected a different remedy for ROD 2, that being to capture and treat AMD from the Richmond and Lawson Adits.

151. Once EPA issued ROD 2 and called for AMD from the Richmond and Lawson Portals to be captured and treated, CH2M Hill assisted EPA in reviewing and commenting on designs for the treatment plant, and negotiating with the PRP Rhône Poulenc which was to build the plant. The CH2M Hill personnel brought to the project expertise in fields such as piping, pumps, quality control and quality assurance, and civil, electrical, structural and chemical engineering, USGS personnel contributed geochemical expertise.

152. Pursuant to ROD 2 and AO 93-01, Rhône-Poulenc designed and constructed a treatment plant where drainage from the Richmond Portal and the Lawson Portal was neutralized and the metals captured in a sludge.

153. CH2M Hill helped EPA develop a plan to oversee construction of the treatment plant in order to assure that it met the specifications EPA had set out in ROD 2.

154. During the treatment plant construction, CH2M Hill oversaw construction, including equipment tests to assure work conformed with the EPA specifications.

155. In addition to assisting EPA with the design and construction of the water treatment plant, CH2M Hill assisted EPA in developing a plan for monitoring Rhône-Poulenc's operation of the plant, using EPA approved test methods.

156. Among other issues which arose during consideration of the RI/FS, Rhône-Poulenc insisted that a collateral facility to concentrate the treatment plant sludge was unnecessary. Rhône-Poulenc produced numerous technical documents purporting to show why a high density sludge ("HDS") facility was unnecessary. CH2M Hill evaluated each document and assisted EPA in responding to each.

157. CH2M Hill undertook an engineering study of the need for a HDS facility ancillary to the treatment plant, as a result of which EPA determined that a HDS facility was needed.

158. Under the agreement by which Rhône-Poulenc built the treatment plant, EPA undertook to build the associated HDS facility which would produce a high density sludge from the treatment plant waste output. CH2M Hill designed and managed the construction of the HDS facility by construction subcontractors. BuRec provided technical assistance to EPA to perform construction oversight of CH2M Hill's actions to construct the HDS facility.

159. The HDS facility reduced the sludge volume in half, thereby significantly increasing the life of the sludge disposal facility at Brick Flat Pit, reducing sludge disposal costs, and improving the reliability of sludge disposal operations.

160. The treatment plant sludge is disposed of in a lined fill area within a former open pit mine, known as Brick Flat Pit, located at the top of Iron Mountain.

161. After construction of the treatment plant, CH2M Hill provided oversight of the removal of sludge from the water treatment facility, and of placement of the sludge in the disposal facility at Brick Flat Pit.

162. The treatment plant discharged treated water into Spring Creek.

163. In addition to the new treatment plant, under ROD 2, Rhône-Poulenc designed and implemented the remedial action to excavate, consolidate, and cap several acid-producing waste piles in order to restrict creation of and to contain contaminants. CH2M Hill provided oversight of Rhône-Poulenc's work.

164. Bret Moxley also served as an RPM on ROD 2 by preparing the human health risk assessment for the RI. Although I did not supervise Mr. Moxley, I reviewed his work for consistency with the overall project objectives.

165. Cynthia Wetmore also served as an RPM to implement ROD 2 by overseeing the construction of the HDS facility, which the PRPs declined to build. Although I did not supervise Ms. Wetmore, I was responsible for overseeing the design of the plant, and I reviewed Ms. Wetmore's work for consistency with the design requirements and the overall project objections.

166. As part of my responsibilities, I reviewed and approved the index of documents that formed the basis of EPA's remedy selection in ROD 2, *i.e.*, the administrative record for ROD 2.

167. The administrative record for ROD 2 includes some materials relevant to earlier remedial actions on the Site. For example, the ROD 2 administrative record includes public comments on ROD 1, comments which were only summarized in the ROD 1 administrative record.

168. The administrative record for ROD 2 also documents EPA's acquisition of historic information about the mines on Iron Mountain, and about contaminant discharges from the mines, as well as information from the files of State and federal agencies about the operation of the mines and their contaminant discharges. EPA used the information to develop a more detailed understanding about what mining operations had taken place at the Site, where they happened, and how the mining had been performed. The information was useful in preparing the investigation for the RIs for all later RODs, *e.g.*, the information was useful in knowing what chemical contaminants to look for at different locations on the Site.

169. Defendants IMMI and Arman also participated in the remedy selection process which resulted in ROD 2, continuing to encourage EPA to consider resource recovery options, favoring IMMI's mining proposal as a preferred remedial approach. Twelve years ago, I reviewed the administrative record for ROD 2, and I counted 260 documents (9.8% of the 2,648 total) authored by or addressed to the defendant IMMI or its representatives. I previously attested to my count in my January 30, 1997 Declaration in Support of Plaintiffs' Motion to Limit Review to the Administrative Record (I am told it is Dkt. 630), and I rely upon paragraphs 56 and 57 of that declaration now, in addition to my recollection.

1993 ROD 3 – Addition of Old/# 8 Mine AMD to Treatment Plant

170. Once EPA issued ROD 2, calling for capture and treatment of AMD from the Richmond and Lawson Adits, EPA undertook to investigate the practicality and utility of also capturing and treating, in the same treatment plant, AMD from the single seep fed by the now buried Old Mine and Number 8 Mine ("#8 Mine). This RI/FS was designated as Operable Unit 3 and culminated in the issuance of ROD 3.

171. As it had for all previous RODs, CH2M Hill assisted EPA in performing the RI/FS and developed and evaluated a range of remedial alternatives leading to ROD 3.

172. ROD 3, issued in 1993, called for the collection and treatment of AMD from the Old Mine and Number 8 Mine.

173. The efforts to implement ROD 3 became an extension of the ongoing efforts to implement the acid mine drainage collection and treatment remedy that was selected in ROD 2 for acid mine drainage discharges from the Richmond and Lawson Adits. The PRP modified its treatment plant design to accommodate the additional acid mine drainage discharges from the Old Mine and No.8 Mine.

174. CH2M Hill designed and constructed the HDS facilities for EPA to meet the requirements of ROD 2 and ROD 3 concurrently. EPA's work to design and construct the

remedial actions selected in ROD 2 and ROD 3 was performed pursuant to the same RD work assignments and the same RA work assignment.

175. Rhône-Poulenc constructed the modified, enlarged water treatment plant, pursuant to AO 94-12, and constructed the associated collection and conveyance facilities required by ROD 3.

176. After EPA issued ROD 3, CH2M Hill continued to provide technical support to assist EPA in performing the RD/RA for the HDS facilities, along with associated coordination with the public.

177. Both CH2M Hill and BuRec provided EPA with assistance in overseeing the design and construction of the water treatment plant meant to capture and treat the additional AMD from the Old and Number 8 Mines.

178. As I stated above, the new treatment plant treated contaminated water to reduce contaminants to safe levels, and discharged treated water to Spring Creek.

179. The contaminants removed by the treatment process were contained in the high density sludge which was formed by the treatment operations. The treatment sludge was disposed of in a lined fill area within Brick Flat Pit, where it was contained to prevent contamination of the environment.

180. Mike Montgomery also served as an RPM on ROD 3 by helping me write the RI/FS. Although I did not supervise Mr. Montgomery, I reviewed his work for consistency with the overall project objectives.

181. As part of my responsibilities, I reviewed and approved the index of documents that formed the basis of EPA's remedy selection in ROD 3, *i.e.*, the administrative record for ROD 3.

182. I recall that the defendants Arman and IMMI participated in the process leading to the ROD 3 remedy selection. However, I am unable to quantify their participation, as I did for

RODs 1 and 2, because any notes of made of my review of the Administrative Record are over ten years old and in storage.

1997 ROD 4 – Slickrock Creek Retention Reservoir

183. The studies EPA undertook as part of the RI/FS process for ROD 2 informed EPA that only seventy percent (70%) of the copper contaminants from the Site would be captured and treated by the ROD 2 treatment plant. Remedies selected by ROD 3 would increase to eighty-five the percentage of copper captured and treated. In order to capture and control the discharges of the remaining fifteen percent, EPA decided to go forward with the design of an enlargement of the Spring Creek Debris Dam, as authorized by ROD 1. ROD 1 had selected enlargement of the dam as a contingent remedy, to be implemented in the event the LDCC mine plugging plan proved not to be feasible, as was the case.

184. BuRec designed an enlargement of the Spring Creek Debris Dam, which would raise the dam height by 50 feet to increase the storage capacity for containment of runoff from 5,000 acre-feet to 15,000 acre-feet.

185. CH2M Hill assisted EPA in supplying BuRec with information and advice in the course of its design for the enlargement of the Spring Creek Debris Dam.

186. BuRec's dam design work cost approximately $6.8 million. The detailed design effort demonstrated that the cost of enlarging the dam would be much more than previously estimated in ROD 1. Consequently, EPA designated Site-wide contaminated water management as Operable Unit 4 (OU4).

187. For OU4, EPA developed and evaluated a range of Site-wide water management alternatives, including an alternative that would enlarge the Spring Creek Debris Dam, and EPA sought additional public comment as part of the process leading to ROD 4.

188. As for the previous RODs, CH2M Hill assisted EPA in collecting data, preparing studies, reviewing proposals, negotiating details with the PRPs, coordinating with the public, and related technical enforcement support activities.

189. As part of the RI/FS for the ROD 4 remedy, CH2M Hill investigated the feasibility of building two small containment dams on two streams as an alternative to expansion of the Spring Creek Debris Dam that BuRec was designing – design work which was suggesting the dam would be much more expensive to construct than originally estimated.

190. EPA proposed to enlarge the Spring Creek Debris Dam but, in its request for public comment, EPA also requested comments on an alternative to the proposal, that being construction of dams in Boulder Creek and in Slickrock Creek.

191. PRP Rhône-Poulenc's comments persuaded EPA that a dam in Slickrock Creek alone was sufficient to capture area sources of AMD, such that enlargement of the Spring Creek Debris Dam would be unnecessary.

192. The BuRec design for enlargement of the Debris Dam was never built, but the design allowed an accurate construction cost estimate, and recognition that enlarging the Spring Creek Debris Dam was not the most cost effective solution.

193. In September 1997, EPA issued ROD 4, which required construction of a small dam in Slickrock Creek in order to contain the contaminated surface water runoff from that watershed. AMD captured at this dam was directed to the treatment plant.

194. PRP Rhône-Poulenc designed the dam called for by ROD 4. The design was a variation of the two dam alternative studied by CH2M Hill for the RI/FS.

195. After the settlement with Rhône-Poulenc in 2000, CH2M Hill modified portions of the Rhône-Poulenc design, and oversaw the construction of the Slickrock Creek Retention dam on behalf of EPA

196. Some of the remedial investigation and feasibility study supporting ROD 4 took place before March of 1996, and EPA incurred and paid some of those costs before March 1996, *e.g.*, the BuRec design of the enlargement of the Spring Creek Debris Dam, and the CH2M Hill investigations of containment dams on Boulder and Slickrock Creeks.

197. All design and construction of the Slickrock Creek Retention dam followed issuance of ROD 4 in September 1997, and no charges related to design and construction of the dam as built are included in the costs which EPA incurred and paid through the end of February 1996.

198. As part of my responsibilities, I reviewed and approved the index of documents that formed the basis of EPA's remedy selection in ROD 4, *i.e.*, the administrative record for ROD 4.

199. I recall that the defendants Arman and IMMI participated in the process leading to the ROD 4 remedy selection. However, I am unable to quantify their participation, as I did for RODs 1 and 2, because any notes of made of my review of the Administrative Record are over ten years old and in storage.

2000 Settlement with PRP Rhône Poulenc

200. In late 2000, EPA reached a settlement with PRP Rhône Poulenc. I participated in negotiation of the settlement. Rhône Poulenc was the successor to the mining concerns which preceded the defendants Arman and IMMI on the Site.

201. After an opportunity for comments, on December 8, 2000, the Court approved the settlement with Rhône Poulenc, in the form of a Consent Decree.

202. The financial elements of the settlement with Rhône Poulenc were set out in paragraph V.6 of the Consent Decree and were as follows.

a. $17,943,891 was distributed as follows:

(1) $10 million for natural resources damages ($2.0 million to the Natural Resources Trustees and $8.0 million to the Department of the Interior for the Natural Resources Trustees); and

(2) The remainder ($7,943,091 plus interest) was paid into the Iron Mountain Superfund Site Special Account for reimbursement of future costs incurred by EPA.

The total of $17,943,891 was the net Rhône Poulenc was to pay after being credited $635,000 for upgrades it made to the Minnesota Flats Treatment Plant and $90,000 for costs it incurred for installing cathodic protection.

b. Rhône Poulenc also paid to a Trust the amount necessary to fully fund an insurance policy intended to assure that costs of cleanup of the Iron Mountain Site would be paid for the foreseeable future. The Consent Decree, paragraph V.6B, estimated the amount Rhône Poulenc would pay to fully fund the Trust to be $141,901,277. However, EPA has never known the amount Rhône Poulenc paid to the Trust. EPA has never received any money from the Trust.

c. American International Specialty Lines Insurance Company, a subsidiary of AIG, issued the policy. The insurance policy had three components: a Policy Premium which would fund operation and maintenance of the Iron Mountain Site cleanup for thirty years; a Terminal Payment Deposit; and a Site Operator Deposit.

d. Endorsement No. 4 of the insurance policy estimated the Terminal Payment would be $62,476,445 as of October 12, 2000, the actual amount to depend on changes in interest rates. Endorsement No. 4 states that a $513,992,267 Terminal Payment shall be made to the Named Insureds 30 years and one day after inception of the policy, *i.e.*, on December 16, 2030. The Named Insureds under the policy are EPA, the California Regional Water Quality Board, and the California Department of Toxic Substances Control.

e. The expectation of the parties to the Consent Decree was that the Terminal Payment would be sufficient to pay for the Iron Mountain Site cleanup in perpetuity. However, there was and is no guarantee that, after inflation, that the Terminal Payment will be sufficient, nor is there any guarantee that AISLIC will be solvent in 2030.

Iron Mountain Superfund Site Special Account

203. Pursuant to the December 2000 Consent Decree, Rhône-Poulenc (then doing business as Aventis) paid $7,982,212.30 into the Iron Mountain Superfund Site Special Account to be used for payment of future cleanup costs.

204. The funds in the Special Account continued to earn interest.

205. On July 31, 2008, EPA authorized the spending of $7,982,212 from the Special Account to implement the Iron Mountain Mine Site ROD 5.

206. EPA estimates the total cost of implementing ROD 5 will be in excess of $40 million of which monies from the Special Account will fund only a fraction.

207. ROD 5, for which Special Account Funds are presently being spent, provides for the removal by dredging of contaminated sediments from the Keswick Reservoir. In addition to the environmental benefits of the cleanup under CERCLA, an ancillary benefit will be the removal of operating limitations on the Spring Creek Debris Dam power production.

208. Presently, EPA plans to spend only about $7,500,000 of the funds in the Special Account to implement ROD 5. I anticipate that all of the funds will be spent by the end of this year, December 31, 2009.

209. With the continued accrual of interest, EPA anticipates there will be more than $2,500,000 left in the Special Account after the completion of ROD 5, and that those remaining funds will be spent to implement ROD 6, once EPA completes its selection of the ROD 6 remedy. ROD 6 is being developed to cleanup the remaining sources of acid mine drainage in the Boulder Creek watershed on the Site.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 18th day of August, 2009, in San Francisco, California.

RICK SUGAREK