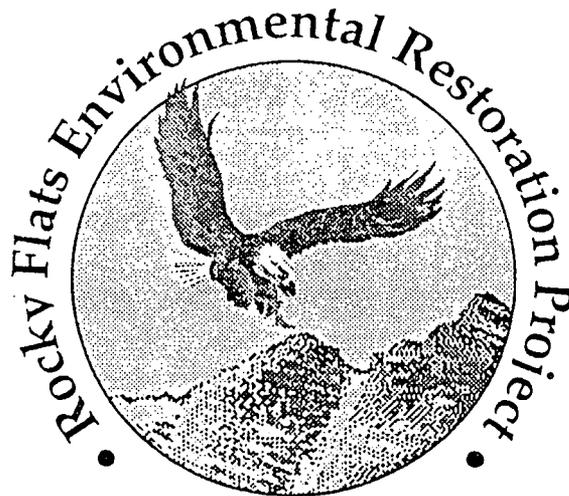




# DOE, RFFO Environmental Restoration Program

## Monthly Report for April 1994



May 20, 1994

ADMINISTRATIVE BOARD

DOCUMENT CLASSIFICATION  
REVIEW WAIVER PER  
CLASSIFICATION OFFICE

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## EXECUTIVE SUMMARY

### SIGNIFICANT ACTIVITIES AND ACHIEVEMENTS FOR APRIL 1994

The OU 1 Report to Keep Antimony and Manganese Off the Contaminants List was delivered to the regulatory agencies on April 22, 1994. Comments from the regulatory agencies should be received in May 1994. Revisions continued to be made to the final Phase III RFI/RI Report. The assumption is being made that antimony and manganese will not be added to the contaminant list. The final RFI/RI Report will be delivered to the regulatory agencies on June 17, 1994.

Construction of the permanent power installation at the OU 2 Field Treatment Unit began on April 8, 1994. Construction time is estimated at eight weeks. Completion of this project will eliminate numerous problems at the Field Treatment Unit.

DOE was granted authorization by the regulatory agencies to discontinue collection and treatment of surface water stations, SW-61 and SW-132, at the Operable Unit 2 Walnut Creek Interim Remedial Action (IRA) Facility. The water from these two stations was determined to be at or below the applicable relevant and appropriate requirement standards. SW-61 and SW-132 contribute 96 to 98 percent of the water collected and treated at the OU 2 Walnut Creek IRA facility. This is a precedence setting approval. Plans are to propose a similar discontinuation of collection of water at the Operable Unit 1, 881 Hillside, IRA facility.

The OU 4 Interim Measure/Interim Remedial Action Environmental Assessment Decision Document is being modified to include the logic for designing a 1,000-year engineered barrier, which includes installation of a subsurface ground water control structure and displacement of vadose zone soils. These changes are required so that the document is consistent with decisions made concerning these issues. The modified document will be ready for delivery to the regulatory agencies on May 27, 1994, in accordance with the newly-revised IAG milestones.

DOE received notification from the regulatory agencies that the request for extension of several IAG milestones in OU 4 was approved. The milestones affect the Interim Measure/Interim Remedial Action Environmental Assessment Decision Document and the Phase II RFI/RI Work Plan. Additionally, the notification also transmits regulatory approval to separate the Phase II Work Plan from the Interim Measure/Interim Remedial Action Environmental Assessment Decision Document.

Vacuuming of the OU 4 B South Pond continued. Approximately 276,000 gallons of sludge were transferred into 25 tanks in Tents Three and Four.

The Dispute Resolution Senior Executive Committee met on April 15, 1994, and ended the Pond Water Interim Measure/Interim Remedial Action dispute. The resolution states, "EPA and CDH did not act arbitrarily and capriciously in requiring DOE to develop and implement a Surface Water Management IM/IRA to regulate discharges from surface water ponds, control discharges of hazardous wastes and hazardous substances into surface water ponds, and require DOE to develop off-channel spill control and treatment capacity."

EPA, CDH, and DOE met to resolve the OU 8 dispute on the Phase I RFI/RI Report based on the April 14, 1994, extension request criteria received from the regulatory agencies. DOE presented an informal resolution process to EPA and CDH that consisted of the following: (1) DOE agreed to withdraw the dispute; (2) DOE agreed that a violation of the IAG occurred when the draft Phase I RFI/RI Report for Operable Unit 8 was not submitted on February 14, 1994; (3) DOE agreed that stipulated penalties have accrued from the day DOE was notified of the noncompliance and will continue to accrue; (4) All parties agreed to use their best efforts to finalize a settlement agreement that will resolve the stipulated penalties for Operable Unit 8 for some defined period of time in the future. After this time elapses, penalty accrual for Operable Unit 8 will resume should the violation continue; and (5) All parties agreed that this settlement agreement will resolve penalties associated with other IAG violations that have occurred or will occur, including, but not limited to, violations associated with Operable Units 9, 10, 12, 13, and 14. As before, penalties for these violations will resume accrual should these violations continue past the defined period of the settlement agreement. DOE continued discussions with the regulatory agencies and expects to reach an agreement in May 1994.

The OU 16 draft Record of Decision was submitted to the regulatory agencies on April 29, 1994.

Preliminary revised Human Health Risk Assessment schedules for imported operable units were completed in April 1994 that respond to the scope, schedule and cost impacts of the revised human health risk assessment requirements. Draft revised schedules for OUs 2, 3, 5, and 6 will be delivered to the regulatory agencies in June 1994. A revised schedule for OU 7 that incorporates the rescoping of that subproject will be developed separately.

IAG PERFORMANCE INDICATORS FOR MONTHLY REPORT

<u>Number of IAG Table Six Milestones to Date</u>	<u>(10/1/93 - 9/30 /94)</u>	<u>Current FY94 Since IAG Inception</u>
Scheduled (including approved extensions)	14	111
Met	2	90
Extensions Granted	8	35
Extensions Denied	2	4
Remaining this FY94 (to 9/30/94)	21	n/a
Added	0	5
Deleted	2	5

<u>Deliverables in Review by Regulators</u>	<u>Project</u>	<u>Date Submitted</u>
	OU 2 draft Phase II RFI/RI Report	16 Dec 93

<u>Field Work Currently Under Way</u>	<u>Project</u>	<u>Scheduled Complete</u>
Please note: these dates reflect scheduled field work and completed field work.	OU 2	08 Oct 93
	OU 3	13 Jul 93
	OU 4	Jun 95 <sup>a</sup>
	OU 7	30 Apr 93
	OU 8	28 Feb 95
	OU 9	30 Jan 95
	OU 10	15 Aug 94
	OU 12	05 Sep 94
	OU 13	06 10 96
	OU 14	25 Oct 96
	OU 15	12 Nov 93

<sup>a</sup> for field work Phases I and II

<u>IM/IRA Status</u>	<u>Gallons Treated</u>
OU 1 881 Hillside Treatment	2,119,738 gallons
OU 2 903 Pad Water Treatment	22,730,120 gallons
OU 4 Water Management Tasks (Interceptor Trench System and Pond Water)	3,008,964 gallons

<u>IAG Document Deliverables Due Next 6 months</u>	<u>Due Date</u>	<u>Expected Date</u>
OU 1 draft CMS/Feasibility Study Report	25 Aug 94	11 Nov 94*
OU 2 draft Proposed Plan	10 May 94	22 Mar 96*
OU 2 final CMS/Feasibility Study Report	10 May 94	13 Dec 95*
OU 2 final Proposed Plan	09 Aug 94	25 Jun 96*
OU 2 Subsurface IM/IRA Complete Test I	30 May 94	30 May 94
OU 3 final Phase I RFI/RI Report	21 Oct 94	18 Jul 95
OU 4 draft Phase I Proposed IM/IRA Decision Document	27 May 94	27 May 94
OU 4 draft Phase II RFI/RI Work Plan	27 May 94	23 May 94
OU 4 final Phase I Proposed IM/IRA Decision Document	06 Aug 94	06 Aug 94
OU 4 final Phase II RFI/RI Work Plan	06 Aug 94	12 Jul 94
OU 5 final Phase I RFI/RI Report	03 May 94	14 Nov 95*
OU 6 draft Phase I RFI/RI Report	10 Jun 94	19 Apr 95*
OU 7 draft Phase II RFI/RI Work Plan	13 Sep 94	07 Aug 95*
OU 8 final Phase I RFI/RI Report	12 Jul 94	10 Feb 98
OU 9 final Phase I RFI/RI Report	06 Sep 94	10 Sep 98
OU 10 draft Phase I RFI/RI Report	25 Aug 94	11 Feb 15
OU 11 draft Phase I RFI/RI	20 Sep 94	18 Apr 95
OU 12 final Phase I RFI/RI Report	15 Sep 94	17 Nov 99
OU 15 draft Phase I RFI/RI Report	01 Aug 94	01 Aug 94
Sitewide Industrial Area draft Responsiveness Summary	02 Aug 94	02 Aug 94
Sitewide Industrial Area final Responsiveness Summary	23 Aug 94	23 Aug 94

**DOE, Rocky Flats Plant**

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<u>Overdue Deliverables</u>	<u>Due Date</u>	<u>Expected Date</u>
Sitewide Industrial Area final Decision Document	23 Aug 94	23 Aug 94
OU 2 draft Phase II RFI/RI Report <sup>a</sup>	12 Mar 93	16 Dec 93*
OU 2 final Phase II RFI/RI Report	09 Aug 93	23 May 94*
OU 2 draft CMS/Feasibility Study Report	04 Nov 93	17 Oct 96*
OU 3 draft Phase I RFI/RI Report	14 Feb 94	31 Oct 94*
OU 5 draft Phase I RFI/RI Report	30 Nov 93	09 Feb 95*
OU 7 draft Phase I RFI/RI Report	12 Oct 93	21 Jun 94*
OU 7 final Phase I RFI/RI Report	16 Mar 94	02 Sep 94*
OU 8 draft Phase I RFI/RI Report	14 Feb 94	02 Nov 15
OU 9 draft Phase I RFI/RI Report	11 Apr 94	15 Jun 98
OU 12 draft Phase I RFI/RI Report	20 Apr 94	11 Mar 99
OU 13 draft Phase I RFI/RI Report	08 Aug 94	24 Mar 99

\* Completion date to be rescheduled because of Human Health Risk Assessment issues work stoppage.

<sup>a</sup> Partial delivery, because of the Human Health Risk Assessment issues work stoppage.

706 94

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PROBLEMS AND PROGRAMMATIC ISSUES

There were several meetings held among DOE, EG&G, and the public concerning the issue of the discovery of plutonium contamination in an OU 3, Offsite Areas, sampling well. This well is next to the east border of Rocky Flats and west of Indiana Avenue. It appears likely that a well or wells will need to be installed within the OU 3 borders to verify whether this contamination is present in ground water off of Rocky Flats. Initial follow-up studies suggest that the plutonium is caused by sediment in the samples resulting from non-aseptic well completion.

CDH denied a request for an extension for the OU 9 draft and final Phase I RFI/RI Report in a letter dated April 14, 1994. CDH also indicated that the missed milestones were in violation of the IAG, and that penalties would be assessed starting from the date when DOE received this notice.

Funding was identified for removal of storage items in or around Individual Hazardous Substance Sites within OU 10. These funds were allocated by RF Environmental Restoration Management. The responsibility for this project was transferred to the Accelerated Cleanup Team. However, until all materials are removed to the satisfaction of DOE, no RFI/RI assessment activities at the affected Individual Hazardous Substance Sites will be conducted.

CDH denied a request for an extension for the OU 12 draft and final Phase I RFI/RI Report in a letter dated April 20, 1994. CDH also indicated that the missed milestones were in violation of the IAG, and that penalties would be assessed starting from the date when DOE received this notice.



NEAR-TERM IAG TABLE SIX MILESTONES

<u>OU#</u>	<u>IAG</u> <u>Milestone Description</u>	<u>Date Scheduled</u> <u>to EPA/CDH</u>	<u>Status</u>
2 <sup>a</sup>	Submit draft Phase II RFI/RI Report	12 Mar 93	Extension denied (delinquent)
2 <sup>a</sup>	Submit final Phase II RFI/RI Report	9 Aug 93	Extension denied (delinquent)
7 <sup>a</sup>	Submit draft Phase I RFI/RI Report	12 Oct 93	*
2 <sup>a</sup>	Submit draft CMS/Feasibility Study Report		04 Nov 93
1	Submit final Phase III RFI/RI Report	15 Nov 93	Submitted 05 Nov 93. Revisions in Progress
5 <sup>a</sup>	Submit draft Phase I RFI/RI Report	30 Nov 93	*
3 <sup>a</sup>	Submit draft Phase I RFI/RI Report	14 Feb 94	*
8	Submit draft Phase I RFI/RI Report	14 Feb 94	Extension denied (NOV issued)
7 <sup>a</sup>	Submit final Phase I RFI/RI Report	16 Mar 94	*
SW	Submit draft Decision Document	23 Mar 94	Completed and submitted 14 Mar 94
9	Submit draft Phase I RFI/RI Report	11 Apr 94	Extension request denied
12	Submit draft Phase I RFI/RI Report	20 Apr 94	Extension request submitted
5 <sup>a</sup>	Submit final Phase I RFI/RI Report	03 May 94	Extension request submitted
2 <sup>a</sup>	Submit final CMS/Feasibility Study Report		10 May 94
2 <sup>a</sup>	Submit draft Proposed Plan	10 May 94	*
4	Submit draft Phase I Proposed IM/IRA Decision Document	27 May 94	On schedule
4	Submit draft Phase II Work Plan	27 May 94	On schedule
6 <sup>a</sup>	Submit draft Phase I RFI/RI Report	10 Jun 94	Extended from 4 Aug 93
4	Submit final Phase II RFI/RI Work Plan	05 Aug 94	On schedule
8	Submit final Phase I RFI/RI Report	12 Jul 94	Extension request denied
15	Submit draft Phase I RFI/RI Report	01 Aug 94	On schedule
SW	Submit Industrial Area draft Responsiveness Summary	02 Aug 94	02 Aug 94
4	Submit final Phase I Proposed IM/IRA Decision Document	05 Aug 94	On schedule
13	Submit draft Phase I RFI/RI Report	08 Aug 94	*
2 <sup>a</sup>	Submit final Proposed Plan	08 Aug 94	*
SW	Submit Industrial Area final Responsiveness Summary	23 Aug 94	On schedule
SW	Submit Industrial Area final Decision Document	23 Aug 94	On schedule
10	Submit draft Phase I RFI/RI Report	25 Aug 94	Extension request submitted
1	Submit draft CMS/Feasibility Study Report	25 Aug 94	Extended from 11 Feb 94
9	Submit final Phase I RFI/RI Report	06 Sep 94	Extension request denied
7 <sup>a</sup>	Submit draft Phase II RFI/RI Work Plan	13 Sep 94	*
12	Submit final Phase I RFI/RI Report	15 Sep 94	Extension request submitted
11	Submit draft Phase I RFI/RI Report	20 Sep 94	*
3 <sup>a</sup>	Submit final Phase I RFI/RI Report	21 Oct 94	Extended from 13 Dec 93
1	Submit CD/RD Work Plan	01 Nov 94	
7 <sup>a</sup>	Submit draft Phase I Proposed IM/IRA Decision Document	01 Nov 94	*
6 <sup>a</sup>	Submit final Phase I RFI/RI Report	18 Nov 94	Extended from 07 Jan 94
1	Submit draft Proposed Plan	22 Nov 94	Extended from 27 Sep 93
1	Submit final CMS/Feasibility Study Report	22 Nov 94	*
2 <sup>a</sup>	Submit Responsiveness Summary	13 Dec 94	
4	IM/IRA Responsiveness Summary	14 Dec 94	14 Dec 94
14	Submit draft Phase I RFI/RI Report	20 Dec 94	*

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15	Final Phase I RFI/RI Report	04 Jan 95	On schedule
13	Final Phase I RFI/RI Report	11 Jan 95	02 Dec 99
4	All Solar Ponds Emptied of Water and Sludge	20 Jan 95	Ahead of schedule
10	Final Phase I RFI/RI Report	30 Jan 95	Extension Request Submitted
7	Final Phase II RFI/RI Work Plan	15 Feb 95	*
11	Final Phase I RFI/RI Report	22 Feb 95	03 Jan 96
1	Submit final Proposed Plan	24 Feb 95	Extended from 04 Jan 94
9	Submit draft Phase II RFI/RI Work Plan	10 Mar 95	10 Sep 98
2	Submit final Responsiveness Summary	16 Mar 95	17 Nov 97
2	Submit draft Corrective Action Decision/ Record of Decision	16 Mar 95	17 Feb 97

\* Behind original IAG schedule; extension required.

<sup>a</sup> OU 2 through OU 7 may require additional extensions because of Human Health Risk Assessment issues work stoppage.

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## SECTION 1. INTRODUCTION

This monthly status report presents the current status and technical achievements of the Rocky Flats Environmental Restoration Program for April 1994. This program implements the Interagency Agreement (IAG) among the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the State of Colorado to investigate, assess, and remediate, where necessary, contaminated areas at or adjacent to DOE's Rocky Flats Site near Golden, Colorado. This agreement was signed on January 22, 1991. The work is being performed for DOE by EG&G Rocky Flats, Inc.

The Executive Summary of the report highlights significant achievements, summarizes milestone information, and presents any major unresolved issues of the program. Technical progress, schedule status, and milestone status for each Operable Unit (OU) as well as other program activities are presented in Section 2. Section 3 contains the schedules for routine environmental sampling as required by Paragraph 210 of the Interagency Agreement. Section 4 contains a list that identifies the subcontractors performing work on the program as required by Paragraph 13 of the IAG.

10/94



## SECTION 2. PROJECT STATUS

### 2.1 OU 1 - 881 HILLSIDE AREA

The alluvial ground water at the 881 Hillside Area, located north of Woman Creek in the southeast section of Rocky Flats (RF), was contaminated in the 1960s and 1970s with solvents and radionuclides. The area is approximately two miles from the eastern, outer edge of the plant's buffer zone at Indiana Street. The various Individual Hazardous Substance Sites (IHSS) that make up OU 1 were being investigated and treated as high-priority sites because of potentially elevated concentrations of organic compounds in the near-surface ground water and the proximity of the contamination to a drainage system leading to an offsite drinking water supply. The selected Interim Remedial Action (IRA) at OU 1 involved construction of an underground drainage system called a French drain that intercepts and contains near-surface ground water flowing from the OU 1 area. The near-surface water is treated at the 891 treatment facility, designed for this purpose, and released onsite into the South Interceptor Ditch along Woman Creek. Water collected from this ditch undergoes a secondary analysis prior to release. IRA construction was completed in April 1992. The Remedial Investigation and Feasibility Study to determine the final remedial action is continuing in parallel with operation of the IRA.

#### 2.1.1 OU 1 ASSESSMENT

Scope of Work Changes This Period      None

Technical Approach Changes This Period      None

IAG Milestone Accomplishments	Submit draft Phase III RFI/RI Work Plan	06 Feb 90
	Submit final Phase III RFI/RI Work Plan	31 Oct 90
	Submit draft Phase III RFI/RI Report	28 Oct 92
	Submit final Phase III RFI/RI Report	05 Nov 93

#### Future IAG Milestones Through FY95

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft CMS/Feasibility Study Report	25 Aug 94	25 Aug 94	11 Nov 94
Submit final CMS/Feasibility Study Report	22 Nov 94	22 Nov 94	08 Mar 95
Submit draft Proposed Plan	27 Sep 93	22 Nov 94	26 Jun 95
Submit final Proposed Plan	04 Jan 94	24 Feb 95	21 Sep 95
Submit draft Responsiveness Summary	23 Jun 95	23 Jun 95	28 Feb 96
Submit final Responsiveness Summary	22 Sep 95	22 Sep 95	05 Jun 96
Submit draft Corrective Action Decision/ Record of Decision	22 Sep 95	22 Sep 95	05 Jun 96
Submit final Corrective Action Record of Decision	22 Dec 95	22 Dec 95	16 Aug 96
Submit draft Title II Design	05 Jul 95		10 Mar 97

April Work Activity Status

**Remedial Investigation** - As a result of a meeting between DOE and EPA, DOE wrote a letter in March 1994 to EPA and CDH that proposed a resolution of the antimony and manganese contaminant issue. The following was agreed to:

1. Present the agencies with the data and concluding arguments concerning deletion of manganese and antimony as Contaminants of Concern in a summary report.
2. Resume work on the RFI/RI Report where risks associated with manganese and antimony will be discussed in the Uncertainty Analysis.
3. Resume work on the Feasibility Study/Corrective Measures Study, specifically finalization of Technical Memorandum (TM) #10, *Remedial Action Objectives*, and TM #11, *Alternatives Array*.

The Report to Keep Antimony and Manganese Off the Contaminants List was delivered to the regulatory agencies on April 22, 1994. Comments from the regulatory agencies should be received in May 1994. Revisions continued to be made to the final Phase III RFI/RI Report. The assumption is being made that antimony and manganese will not be added to the contaminant list. The RFI/RI Report will be delivered to the regulatory agencies on June 17, 1994.

**Feasibility Study/Corrective Measures Study** - TM #10, *Remedial Action Objectives*, was completed and is currently being reviewed. DOE is reviewing the first draft of TM #11, *Alternatives Array*.

Revisions are being made to the CMS/Feasibility Study schedule. Already completed activities were updated and statused with actual dates, and known dates were inserted for critical future activities. The schedule continues to need additional work. A meeting is being planned for May 1994 among the regulatory agencies, DOE, and EG&G to look at the durations and logic ties and in some instances what those ties imply.

Technical Memoranda

Project OU 1 - 881 Hillside

TM #10  
 TM Title Preliminary Remediation Goals  
 TM Status Submitted draft TM to DOE: Feb 93  
 EPA has submitted comments on TM #10. CDH  
 comments were received Feb 94  
 When preparation was concluded or is estimated to be  
 concluded: 20 Apr 94  
 Projected date of submittal to EPA/CDH: 22 Apr 94  
 (Comments are being incorporated)  
 Actual date of submittal: N/A  
 Date when comments were received: N/A

TM #11  
 TM Title Alternative Array  
 TM Status Submitted draft TM to DOE: 08 Mar 94  
 When preparation is concluded or is estimated to be  
 concluded: 22 Apr 94  
 Projected date of submittal to EPA/CDH: 03 May 94  
 Actual date of submittal: N/A  
 Date when comments were received: N/A

Planned Work for May

- Complete revisions to final RFI/RI Report.
- Anticipate comments from the regulatory agencies on draft TM #11; gain approval from the regulatory agencies of TM #10.

Problems None

Open Items None

2.1.2 OU 1 REMEDIATION

Scope of Work Changes This Period: None

Technical Approach Changes This Period: None

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**IAG Milestone Accomplishments**

Submit draft Proposed IM/IRA Decision Document	18 Sep 89
Submit Proposed IM/IRA Decision Document	06 Oct 89
Submit final IM/IRA Decision Document	05 Jan 90
Begin Phase I-A IM/IRA Construction	15 Jan 90
Restart Phase I-A IM/IRA Construction (after shutdown)	20 Jun 90
Begin Phase I-B IM/IRA Construction (ahead of schedule)	28 Sep 90
Submit IM/IRA Implementation Document	22 Feb 91
Begin Phase II-A IM/IRA Construction	01 Apr 91
Begin IM/IRA Testing	05 Aug 91
Begin Phase II-B IM/IRA Construction	03 Sep 91
Complete IM/IRA Construction (891 treatment building)	02 Mar 92
Complete IM/IRA Construction (French drain)	13 Apr 92

**Future IAG Milestones Through FY95**

None

**April Work Activity Status**

**Interim Measure/Interim Remedial Action Treatment Facility** - On April 6, 1994, the requirements for quarterly surface water sampling as part of the French drain Performance Monitoring Plan were discussed, and arrangements are being made to have this sampling occur.

The collection well in Individual Hazardous Substance Site (IHSS) 119.1 was discovered to be damaged by movement of the hillside. The underground line that routes water from the collection well to the well vault may be broken. The most effective solution is to pump the water to the top of the collection well and route the water above ground to the collection well vault. This repair is scheduled for completion in May 1994.

The radiochemistry results were received for effluent Tank T-207. All parameters for radiochemistry were below Applicable Relevant and Appropriate Requirements. The tank was discharged (~100,000 gallons) on April 26, 1994.

Approximately 3,000 gallons of water from the Soil Vapor Extraction unit containing Volatile Organic Compounds were treated at the 891 Treatment Facility. However, only partial destruction of carbon tetrachloride was achieved. The water was held in Tank T-203 until

sample results were received. Based on the sample results, the water was pumped back into influent Tank T-201 for further treatment.

Treated ground water this month: 222,817 gallons  
Total treated to date: 2,119,738 gallons

**Planned Work for May**

Normal Operations

**Problems**

Effluent storage tank space is limited this time of year because of spring flows.

**Open Items**

None



## 2.2 OU 2 - 903 PAD, MOUND, AND EAST TRENCHES

The contamination at the 903 Pad and Mound areas is largely attributed to the storage in the 1950s and 1960s of waste drums that corroded over time, allowing hazardous and radioactive material to leak into the surrounding soil. Additional contamination may have resulted from wind dispersion during drum removal and soil movement activities. The East Trenches Area was used for disposal of plutonium and uranium contaminated waste and sanitary sewage sludge from 1954 to 1968. Two areas adjacent to the trenches were used for spray irrigation of sewage treatment plant effluent; these areas may have contaminants that were not removed by the treatment system.

An Interim Measure/Interim Remedial Action (IM/IRA) provides for surface water in source areas of contamination to be collected, treated, and discharged to the surface water drainage. Operation of the field-scale treatability unit for the South Walnut Creek drainage began in May 1991. The effectiveness of the treatment process was evaluated at three locations: the influent to the treatment facility, several points within the facility, and the discharge point. The unit is anticipated to remain in service until the final remedial action is operational. The Remedial Investigation and Feasibility Study are continuing in parallel with the IRA.

A second IM/IRA was established in late 1991. This Subsurface IM/IRA Plan/Environmental Assessment encompasses the 903 Pad, the Mound Area, and the East Trenches Area of OU 2. This IM/IRA describes the process to evaluate a remediation technology for removal of residual free-phase Volatile Organic Compound contamination at OU 2. The Volatile Organic Compound removal actions involve *in situ* vacuum-enhanced vapor extraction technology. The interim remedial action will provide information to aid in the selection and design of final remedial actions that address subsurface, residual free-phase Volatile Organic Compound contamination at OU 2.

### 2.2.1 OU 2 ASSESSMENT

**Scope of Work Changes  
This Period**                      None

**Technical Approach  
Changes This Period**                      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase II RFI/RI Work Plan (Alluvial)	21 Dec 89
	Submit final Phase II RFI/RI Work Plan (Alluvial)	12 Apr 90
	Submit draft Phase II RFI/RI Work Plan (Bedrock)	05 Feb 91
	Submit final Phase II RFI/RI Work Plan (Bedrock)	02 Jul 91
	Submit Field Report for Detailed Soil Vapor Survey	15 Dec 93
	Submit preliminary draft Phase II RFI/RI Report	16 Dec 93

Future IAG Milestones  
Through FY95

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase II RFI/RI Report	12 Mar 93	Denied	16 Dec 93*
Submit final Phase II RFI/RI Report	09 Aug 93	Denied	23 May 94*
Submit draft CMS/Feasibility Study Report	04 Nov 93		17 Oct 96*
Submit final CMS/Feasibility Study Report	10 May 94		13 Dec 95*
Submit draft Proposed Plan	10 May 94		22 Mar 96*
Submit final Proposed Plan	09 Aug 94		25 Jun 96*
Submit final Pilot Test Plan Site II	30 Aug 94		30 Aug 94
Submit final Pilot Test Report Site I	27 Oct 94		27 Oct 94
Submit draft final Pilot Test Report	28 Oct 94		28 Oct 94
Submit Responsiveness Summary	13 Dec 94		30 Jun 98*
Submit final Pilot Test Report	20 Dec 94		20 Dec 94
Submit draft Corrective Action Decision/ Record of Decision	16 Mar 95		02 Dec 98*
Submit final Responsive Summary	16 Mar 95		02 Dec 98*
Submit final Corrective Action Decision/ Record of Decision	15 Jun 95		10 Aug 99*
Submit Corrective Action Decision/ Record of Decision Work Plan	15 Jun 95		10 Aug 99*
Submit final Pilot Test Report Site II	01 Sep 95		01 Site 95
Submit final Pilot Test Report Site III	23 Apr 96		23 Apr 96

\* TBD due to Human Health Risk Assessment issues work stoppage.

April Work Activity  
Status

Remedial Assessment - The TM #9, *Contaminants of Concern*, comments are being addressed. A revised schedule and assumptions are being assembled for the continuation of the risk assessment and the RI report.

Treatability Study/Feasibility Study - Preparation of TM #1 of the Feasibility Study for OU 2 was initiated. Work is continuing on the ARARs strategy document and the Preliminary Remediation Goals (PRG) tables.

Technical Memoranda

Project

OU 2-903 Pad, Mound, and East Trenches

TM #5  
TM Title  
TM Status

Exposure Scenarios  
When preparation is concluded or is estimated to be concluded: 15 Jan 93  
Projected date of submittal to EPA/CDH: 15 Jan 93  
Actual date of submittal: 15 Jan 93  
Date when comments were received: 11 Feb 93 EPA,  
12 Mar 93 CDH

TM #6  
TM Title Modeling  
TM Status When preparation is concluded or is estimated to be concluded: 15 Jan 93  
Projected date of submittal to EPA/CDH: 15 Jan 93  
Actual date of submittal: 15 Jan 93  
Date when comments were received: 01 Apr 93 EPA,  
31 Mar 93 CDH

TM #7  
TM Title Surficial Soils  
TM Status When preparation is concluded or is estimated to be concluded: 07 Jan 93  
Projected date of submittal to EPA/CDH: 07 Jan 93  
Actual date of submittal: 12 Jan 93  
Date when comments were received: 21 Jan 93  
TM Approved

TM #8  
TM Title Bedrock  
TM Status When preparation is concluded or is estimated to be concluded: 15 Mar 93  
Projected date of submittal to EPA/CDH: 01 Mar 93  
Actual date of submittal: 15 Mar 93  
Date when comments were received: 14 Apr 93 EPA,  
14 Apr 93 CDH

TM #8 Addendum  
TM Title Contingency Plan for revised Phase II RFI/RI Work Plan (Bedrock)  
TM Status When preparation is concluded or is estimated to be concluded: TBD  
Projected date of submittal to EPA/CDH: TBD  
Actual date of submittal: TBD  
Date when comments are received: TBD

TM #9  
TM Title Chemicals of Concern  
TM Status When preparation is concluded or is estimate to be concluded: 24 Aug 93  
Projected date of submittal to EPA/CDH: Unknown due to work stoppage  
Actual date of submittal: 08 Dec 93  
Date when comments are received: 14 Jan 94

TM #10  
TM Title Toxicity Assessment  
TM Status When preparation is concluded or is estimated to be concluded: 24 Aug 93  
Projected date of submittal to EPA/CDH: Unknown due to work stoppage  
Actual date of submittal: TBD  
Date when comments are received: TBD

- Planned Work for May
- Start work on risk assessment.
  - Continue Soil Vapor Extraction work.
  - Continue work on the Feasibility Study.

Problems None

Open Items None

### 2.2.2 OU 2 REMEDIATION

Scope of Work Changes This Period None

Technical Approach Changes This Period None

IAG Milestone Accomplishments	Submit draft Proposed IM/IRA Decision Document	19 Jun 90
	Submit Proposed Plan IM/IRA Decision Document	18 Sep 90
	Submit draft Responsiveness Summary	13 Dec 90
	Submit final Responsiveness Summary and final IM/IRA Decision Document	11 Jan 91
	Field Treatability Test System Installation Complete	10 May 91
	Begin Field Treatability Testing (Carbon System)	03 May 91
	Submit draft Treatability Test Report (Phase I GAC)	01 Apr 92
	Complete IM/IRA Construction (radionuclides removal system)	24 Apr 92
	Begin Field Treatability Testing (radionuclides removal system)	2 Apr 92

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**Project Status**

Submit final Treatability Test Report (Phase I GAC)	02 Jun 92
Submit Subsurface Site I draft Test Plan	29 Oct 92
Submit Subsurface Site I final Test Plan	12 Jan 93
Submit Subsurface Site 2 draft Test Report	24 Jun 93
Submit draft Surface Water Field Treatability Report	13 Jul 93
Submit final Phase II Treatability Study Report	26 Jan 94
Begin Subsurface IM/IRA Test I	14 Feb 94

**Future IAG Milestones  
Through FY95**

None

**April Work Activity Status**

**Subsurface Interim Measure/Interim Remedial Action Operations Report** - The Comprehensive Soil Vapor Survey work, which was to assist with selection of the location for Soil Vapor Extraction Test Site 2, is not required and will not be conducted.

The Data Management Plan and the Implementation and Operation Plan for Test Site:1 are in revision. The TM #2, which evaluates offgas treatment alternative for treatment of extracted soil gas from IHSS 110, is currently in review. The TM will be issued as a controlled document once all comments have been addressed. Soil Vapor Extraction Pilot Tests 4-4, 10, and 11 were completed. Additional soil gas probes were installed. Sustained operations started this month as a 24-hour, 7-day a week program. Transfer of 12,000 gallons of ground water from Storage Tanks 2201 and 2202 to the OU 2 Surface Water Treatment Facility through the ground water transfer line was accomplished. A volume of 18,000 gallons remains in the storage tanks awaiting treatment. Facilities inspection of the ground water transfer system to the OU 2 Field Treatability Unit was conducted and the piping was approved for use.

DOE was granted authorization by the regulatory agencies to discontinue collection and treatment of surface water from surface water stations, SW-61 and SW-132, at the Operable Unit 2 Walnut Creek Interim Remedial Action Facility. The water from these two stations was determined to be at or below the applicable relevant and appropriate requirement standards. SW-61 and SW-132 contribute 96 to 98 percent of the water collected and treated at the OU 2 Walnut Creek IRA

facility. This is a precedence setting approval. Plans are to propose a similar discontinuation of collection of water at the Operable Unit 1, 881 Hillside, IRA facility.

Extended soil vapor operations were performed in the alluvial system. This effort was a substitution for bedrock testing. The bedrock testing will be discontinued as requested in an agreement with the regulatory agencies.

**Field Treatment Unit Surface Water Treatment Facility** - DOE was granted authorization by the regulatory agencies to discontinue collection and treatment of surface water stations, SW-61 and SW-132, at the Operable Unit 2 Walnut Creek Interim Remedial Action Facility. The water from these two stations was determined to be at or below the applicable relevant and appropriate requirement standards. SW-61 and SW-132 contribute 96 to 98 percent of the water collected and treated at the OU 2 Walnut Creek IRA facility. This is a precedence setting approval. Plans are to propose a similar discontinuation of collection of water at the Operable Unit 1, 881 Hillside, IRA facility.

The Field Treatability Unit has treated 9,000 gallons of Soil Vapor Extraction extracted ground water to date. Sample results from the first batch of Soil Vapor Extraction water (3,000 gallons) indicated that the Field Treatability Unit successfully removed the contaminants from the water. The Field Treatability Unit will continue to treat Soil Vapor Extraction water when the Field Treatability Unit is capable of accepting additional water.

The Field Treatability Unit continues to observe flow deterioration in the microfiltration membranes because of high precipitation. A chemical membrane soak lasting 10 hours was performed on April 16, 1994. This extended clean was able to remove deposits from the membranes and achieve sustained flow well above 100 gallons per minute.

Also, influent water to the Field Treatability Unit contains a soapy contaminant. The microfiltration membranes were not designed to handle water with soap, and serious flow deterioration is resulting from the soap coating the membranes. On numerous occasions, repeated low-membrane flux and chemical cleanings have caused increased downtime and increased operation costs. This issue is being investigated.

Inadequate influent water storage resulted in undesirable downtime and severely restricted the Field Treatability Unit from accepting water from other sources. Three additional double-walled tanks are being procured to eliminate this problem. Expected delivery and installation should occur by July 1994.

Construction of the permanent power installation at the Field Treatability Unit began on April 8, 1994. Four power poles were in place as of April 18, 1994. Expected construction time is estimated at eight weeks. Completion of this project will eliminate numerous problems at the Field Treatment Unit.

Treated surface water this month: 1,294,414 gallons  
Total treated water: 4,024,534 gallons

**Planned Work for May**

- Continue installation of permanent power.
- Procure and install new tanks.

**Problems**

Flow deterioration in the microfiltration membranes because of soap influent.

**Open Items**

None



**2.3 OU 3 OFFSITE AREAS**

OU 3 can be divided into two categories based on two main activities. The IAG directs activities according to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This involves assessment of contamination in offsite areas also referred to as Contamination of the Land Surface (IHSS 199), Great Western Reservoir (IHSS 200), Standley Lake (IHSS 201), and Mower Reservoir (IHSS 202). The second category responds to a 1985 out-of-court lawsuit settlement, McKay vs. U.S., which directed that the surface soil contamination be remediated. Remedial activities in compliance with the Settlement Agreement (deep disc plowing) began in 1985. The disturbance resulting from remediation is being revegetated with mediocre success. The overall schedule for this activity is determined by the year-to-year success of the revegetation effort and requirements of the landowners.

**Scope of Work Changes This Period**      None

**Technical Approach Changes This Period**      None

<b>IAG Milestones Accomplishments</b>	Submit draft Past Remedy Report	26 Oct 90
	Submit draft Historical Information/ Preliminary Health Risk Assessment Report	09 Nov 90
	Submit final Past Remedy Report	02 Apr 91
	Submit final Historical Information/ Preliminary Health Risk Assessment Report	16 Apr 91
	Submit draft Phase I RFI/RI Work Plan	10 Jul 91
	Submit final Phase I RFI/RI Work Plan	06 Dec 91

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	16 Jul 93	14 Feb 94	14 Feb 94*
Submit final Phase I RFI/RI Report	21 Oct 94		18 Jul 95*

\* TBD due to Human Health Risk Assessment issue work stoppage.

**April Work Activity Status**      The background comparisons were run for the surficial soils, surface water, and stream reservoir sediments. A preliminary list of potential Contaminants of Concern was generated. Some of the data sets for some media are too small for a strict statistical comparison. This data was collected under a Work Plan that was approved prior

to the adoption of the Gilbert methodology, which requires a more rigorous data set. A weight of evidence approach will have to be used. A strategy is currently being developed and will be presented to the regulatory agencies to get approval of the methodology before the Contaminants of Concern TM is completed.

A meeting was held with the U.S. Geological Service to refine the scope of a report that the service was contracted to submit as a result of its sampling in the reservoirs. This report will be incorporated into the Remedial Investigation report, if applicable.

A new schedule, which will reflect the impacts of the stop work order, is under development and will be proposed to the regulatory agencies. It is anticipated that the current data aggregation scenario will have only minor impacts on the overall project schedule.

The issue of plutonium in boundary wells has grown in its scope. A "hit" of 0.085 pci/l was detected in a well downgradient from Great Western Reservoir. The data concerning this well were evaluated, and it was determined that there was no indication of a Quality Assurance problem with the well. A statistical analysis performed indicated that the sample is an outlier and is statistically anomalous. This information was transmitted to the regulatory agencies. It is believed that the standard set by the Water Quality Control Commission (0.05 pci/l) does not apply to this well because it is downgradient from segments delineated in the guidance document. In other words, the ARARs for this well may be 15 pci/l. Work is proceeding on this basis.

Status on the air samplers indicates that the Public Service Company will supply two power hookups for free. The eagles have departed, but a contract with the Public Service Company for installation of the air samplers has been stalled because DOE must contract directly with the Public Service Company. This has made implementation of the contract very cumbersome. This issue continues to be worked.

Technical Memoranda

Project

OU 3-Offsite Areas

TM #1  
TM Title  
TM Status

Field Changes to RFI/RI Work Plan  
When preparation is concluded or is estimated to be concluded: 10 May 93  
Projected date of submittal to EPA/CDH: 10 May 93  
Actual date of submittal: 23 Apr 93  
Date when comments were received:

TM #2  
TM Title  
TM Status

Exposure Scenarios for the Human Health Risk Assessment  
When preparation is concluded or is estimated to be concluded: 12 May 93  
Projected date of submittal to EPA/CDH: 12 May 93  
Actual date of submittal: 03 May 93  
Date when comments were received: 15 Jul 93

TM #3  
TM Title  
TM Status

Modeling  
When preparation is concluded or is estimated to be concluded: 29 Sep 93  
Projected date of submittal to EPA/CDH: TBD  
Actual date of submittal: N/A  
Date when comments were received: N/A

TM #4  
TM Title  
TM Status

Contaminants of Concern (currently under a work stoppage)  
When preparation is concluded or is estimated to be concluded: 18 Oct 93  
Projected date of submittal to EPA/CDH: TBD  
Actual date of submittal: N/A  
Date when comments were received: N/A  
Currently under a work stoppage

**Planned Work for May**

- Continue Contaminants of Concern selection process.
- Begin Human Health Risk Assessment.
- Install air monitors.

**DOE, Rocky Flats Plant**

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**Problems**

A contract with the Public Service Company for installation of the air samplers has been stalled. Work to resolve this issue continues.

**Open Items**

None

## 2.4 OU 4 - SOLAR EVAPORATION PONDS

OU 4 is comprised of five solar evaporation ponds: 207A, 207B series (north, center, south), and 207C which were constructed for treatment and storage of process water from industrial operations. The process water contained treated acidic wastes, industrial liquid wastes (e. g., metal plating solutions), and low-level radioactive wastes.

As technology improved through the early 1960s and 1970s, the ponds were relined with various upgraded materials. However, leakage from the ponds into the soil and ground water was suspected. Interceptor trenches were installed in 1971 to collect and recycle contaminated ground water to the ponds and to minimize natural seepage and pond leakage from entering North Walnut Creek. In 1981, these trenches were upgraded by the current, larger Interceptor Trench System, which returned approximately 4 million gallons of ground water back into the solar evaporation ponds each year.

Process water has not been pumped into the ponds since 1986 and with the diversion of the Interceptor Trench System water to storage tanks in April 1993, ground water is no longer returned to the ponds. This placement of water into the ponds had been occurring without meeting Land Disposal Restrictions and Minimum Technology Requirements of Resource Conservation and Recovery Act (RCRA). A new, dedicated Building 910 evaporation-treatment facility became operational in July 1993. This building supplements the plant's waste treatment facility in Building 374 to process the water stored in the modular tanks. As various upgrades are installed in Building 374 and as other plant waste streams decrease in volume, Interceptor Trench System water will be preferentially treated in Building 374 rather than Building 910.

The Solar Evaporation Ponds Subproject is comprised of four technical areas: (1) remix of non-certified pondcrete and saltcrete, and pond sludge processing by means of the Agreement in Principle between CDH, DOE, and the Federal Facility Compliance Agreement; (2) a water management/treatment by means of the IM/IRA Decision Document signed by EPA, CDH and DOE; (3) the OU 4 assessment and remedial action, per the IAG which identified the ponds as one of the sixteen OUs to be remediated at RF and superseded the 1988 Ponds-Closure Plan submitted by DOE to the regulators; and (4) pad operations, storage, and disposal activities that are necessary to meet the plant's RCRA interim status and permit requirements for storage of pond wastes. The water management and pond sludge clean-out are necessary precursors to OU 4 assessment and remediation, and pad operations are necessary support activities at least until the pond sludge waste is processed and disposed. Revisions to scope in these areas are being implemented in accordance with the dispute resolution for OU 4.

Work in these four areas was planned to close the ponds and remediate OU 4. The work was scoped to (1) remove water from the ponds; (2) provide a treatment facility to replace the ponds as evaporation-treatment and storage units for pond-related contaminated ground water; (3) remove and dispose of pond sludge in compliance with all regulations such as the Land Disposal Restrictions of RCRA; (4) assess the nature and extent of contamination at the ponds; (5) complete a RCRA closure of the impoundments; and (6) remediate the ponds as needed.

**2.4.1 OU 4 ASSESSMENT**

**Scope of Work Changes This Period** Project Work Plans have been revised to incorporate the results of the OU 4 dispute resolution, as outlined in the future milestone section. Budget changes to implement the revised scope were submitted to DOE/HQ. While awaiting DOE/HQ's approval, DOE/RFFO is proceeding with the scope funded under these changes.

**Technical Approach Changes This Period** None

**IAG Milestone Accomplishments**

Submit draft Phase I RFI/RI Work Plan	08 Jun 90
Submit final Phase I RFI/RI Work Plan	26 Nov 90

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status*</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	21 May 93	Deleted	Deleted
Submit final Phase I RFI/RI Report	18 Oct 93	Deleted	Deleted
Submit draft Phase II RFI/RI Work Plan	22 Apr 94	27 May 94	23 May 94
Submit final Phase II RFI/RI Work Plan	19 Sep 94	06 Aug 94	12 Jul 94

\* Established revised dates in dispute resolution

**April Work Activity Status** The RCRA/CERCLA investigation field work will continue through approval of a Record of Decision and subsequent construction of the final corrective/remedial action in FY00 (if required). Further assessment/characterization under the remaining two ponds still containing sludge will not be known until vacuum sludge removal operations are complete.

**Technical Memoranda**

**Project OU 4-Solar Evaporation Ponds**

TM #1  
 TM Title Vadose Zone Investigation  
 TM Status Draft submitted to EPA/CDH: 16 Nov 92  
 Comments received: 30 Nov 92  
 Conditional Approval: 30 Nov 92  
 Projected submittal of final to EPA/CDH: 15 Dec 92  
 Actual submittal date of final: 15 Dec 92  
 Submittal of TM 1 Vadose Zone Schedule: 19 May 93  
 EPA/CDH final Approval of TM #1: 17 Jun 93

TM #2  
TM Title Modification to Field Activities  
TM Status Draft submitted to EPA/CDH: 18 Mar 93  
Comments received: 07 May 93  
Projected submittal of final to EPA/CDH: 07 Jun 93  
Actual submittal date of final: 09 Jun 93  
EPA/CDH final Approval of TM #2: 30 Jun 93

TM #3  
TM Title Environmental Evaluation  
TM Status Draft submitted to EPA/CDH: 19 Mar 93  
Comments received: EPA 21 Apr 93  
CDH 02 Jun 93  
Projected submittal of final to EPA/CDH: 30 Apr 93  
Actual submittal date of final: 02 Jul 93  
EPA/CDH final Approval of TM #3: 30 Jul 93

TM #4  
TM Title Human Health Risk Assessment Exposure Scenarios  
TM Status Draft submitted to EPA/CDH: 19 Mar 93  
Comments received: EPA 21 Apr 93, CDH 23 Apr 93  
Projected submittal of final to EPA/CDH: 11 Jun 93  
Actual submittal date of final: 11 Jun 93  
EPA/CDH final Approval of TM #4: 25 Jun 93

TM #5  
TM Title Exposure Models  
TM Status Projected submittal of draft to EPA/CDH: 01 Aug 93  
Actual submittal of draft : 24 Jun 93  
Projected submittal of final to EPA/CDH: 15 Oct 93  
Received stop work order: 24 Aug 93

TM #6  
TM Title Contaminants of Concern  
TM Status Projected submittal of draft to EPA/CDH: 09 Nov 93  
Projected submittal of final to EPA/CDH: 22 Dec 93  
Received stop work order: 24 Aug 93

TM #7  
TM Title Toxicity Assessment  
TM Status Projected submittal of draft to EPA/CDH: 04 Nov 93  
Projected submittal of final to EPA/CDH: 22 Dec 93  
Received stop work order: 24 Aug 93

**Planned Work for May:**

- Submit draft Phase II RFI/RI Work Plan on May 27, 1994.

**Problems** None

Open Items                      None

## 2.4.2 OU 4 REMEDIATION

Scope of Work Changes  
This Period                      None

Technical Approach  
Changes This Period                      None

IAG Milestone  
Accomplishments                      None. The first IAG remediation milestone for this OU is the draft Phase I Proposed IM/IRA Decision Document scheduled for May 27, 1994 (after agreement to the 43-day extension).

### Future IAG Milestones Through FY95

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I Proposed IM/IRA Decision Document	14 Apr 94	27 May 94	23 May 94
Submit final Phase I Proposed IM/IRA Decision Document	12 Sep 94	06 Aug 94	12 Jul 94
All Solar Ponds Emptied of Water and Sludge	new	20 Jan 95	11 Jul 95
IM/IRA Responsiveness Summary	25 Jan 95	14 Dec 94	10 Oct 94
IM Title II Design	24 Jun 96	10 Feb 95	27 Jan 95
Begin Phase I IM/IRA Construction	28 Jan 97	17 Sep 95	15 Aug 95

**April Work Activity Status**      **Phase I Interim Measures/Interim Remedial Action Plan (IM/IRA) Program** - Analyses of various options developed for solutions to the barrier and vadose zone soils problems were completed. The analyses indicate that the most appropriate approach involves installation of an enhanced performance (1,000-year) barrier and displacement of all vadose zone soils within the boundary of the IHSS above a subsurface drainage layer.

The IM/IRA Environmental Assessment Decision Document is being modified to include the reasoning for utilization of the 1,000-year engineered barrier, installation of subsurface ground water control structures, and displacement of vadose zone soils. These changes are required so that the document is consistent with decisions made by the Joint Working Group concerning these issues. The modified document will be ready for submittal

to the regulatory agencies on May 27, 1994, in accordance with the newly-revised IAG milestones.

DOE was informed by CDH and the Office of the Attorney General that agreement was reached as to the standard that will be applied to ground water in an effort to demonstrate that vadose zone soils are protective of the ground water. The CDH has determined that, in keeping with the residential use scenario that determined certain remediation goals, it should be assumed that residential occupancy of the land immediately adjacent to the capped site is possible and that such residents may drill water wells on their property. Therefore, the drinking water standard will be applied to the remediation of the ground water. Assessments performed to date indicate that saturation of the vadose zone soils would mobilize sufficient contaminants such that this standard would be exceeded. The problem was resolved by installation of ground water control structures and displacement of contaminated soils above the structures. Although need for the standard is no longer acute, its identification will be beneficial for action determinations in the future.

A "fatal-flaw" analysis was performed on the concept of returning stabilized pond sludge to the ponds for incorporation into the IM/IRA. The analysis was biased in that it considered only the product produced by the cementation process. This bias was intentional since significant funds have already been expended to develop this product and since the proposed remedial action should be capable of expansion to accommodate the volume of product that would be expected. The analysis considered cost, technical issues, legality, and regulatory concerns. No technical barriers were identified.

A waiver was granted by DOE to allow Title II design of the remedial system to proceed prior to National Environmental Policy Act action. This approach was planned in the baseline schedule; therefore, the decision, while critical for success, represents no acceleration of start of construction.

DOE received notification from the regulatory agencies that the request for extension of several IAG milestones was approved. The milestones affect the IM/IRA Environmental Assessment Decision Document and the Phase II RFI/RI Work Plan. Additionally, the agencies and DOE have agreed to separate the Phase II RFI/RI Work Plan from the IM/IRA Environmental Assessment

Decision Document so that the Work Plan can be submitted as a stand-alone document. The draft of the plan is to be transmitted to the regulatory agencies by May 27, 1994, followed by the final plan scheduled for August 6, 1994.

**Regulatory** - Actions were initiated to revise the plant's RCRA Part B modification request to incorporate sludge storage in tanks. The storage is currently governed by interim status, but a Part B application for the 750 pad was submitted to the state and public for comment. To avoid delaying other sections of the existing Part B modification request, it may be necessary to withdraw the solar ponds storage area from the existing request and initiate a separate request. No impacts to cost or schedule are anticipated.

**Pond Sludge Status and Issues** - Vacuuming of the B South Pond continued during the month. Approximately 276,000 gallons of sludge were transferred into 25 tanks in Tents Three and Four.

Decanting of water from previously filled tanks began. Approximately 18,000 gallons of water were decanted from the first two polyethylene tanks. The decanted water is being transferred to the Building 374 evaporator. It appears that decanting will substantially reduce the number of tanks required for storage of B Pond sludge and may do away with the need for purchasing additional tanks. Decanted water is transferred to Building 374 using a tanker truck. A spill occurred during the second transport run. Operations personnel failed to secure the cover on the tanker's inlet port and about 35 gallons of decant liquid were spilled on the ground. All required notifications were made. Training of personnel in the revised decanting procedure was completed.

Preparations continue for operations in C Pond and the clarifier. The assembly of the off-road forklift truck and miller/breaker for grinding C Pond salt was completed April 22, 1994. Performance testing of the vehicle and training runs began April 26, 1994. Special assessment Readiness Reviews are underway for both the C Pond and clarifier. The Readiness Assessment Checklist was approved by DOE. Work is continuing with CDH to obtain its approval of change to Interim Status for both areas.

Preparations are being made to transfer clarifier and C Pond sludge to tanks on the 750 Pad. Prior to

beginning transfer, the CDH must approve the 750 pads for storage of the sludges and must approve the certifications of the remainder of the tanks. CDH concerns in regard to the adequacy of the sludge characterization are the remaining barrier to obtaining approval for the storage; discussions were reopened on this issue. A certification package was delivered to CDH for the next twelve tanks, and state action is pending. State approvals could become the critical path to transferring this sludge.

**Waste Storage** - Run-on water inside the tents was not collected for treatment in Building 374, as required by the agreement with CDH and DOE. This was discovered in a routine CDH tour of the 750 Pad. The volume inside the tents was caused by back up of the pad runoff inside the pad berms. As allowed by the agreement, nothing has been done to the berms on the 750 pad to allow the runoff to exit the pads. The water inside the tents was subsequently collected for treatment in Building 374 and remedial actions initiated to ensure the problem is not repeated.

**Planned Work for May**

- Prepare and submit IM/IRA Decision Document on May 27, 1994.
- Continue sludge removal operations on Pond 207B South.
- Commence sludge removal operations in Pond 207C.

**Problems**

Lack of agreement as to the appropriate standard to be used for the vadose contamination created many uncertainties regarding remediation. The regulatory agencies recently identified a standard that allows detailed remediation methodologies to be determined.

**Open Items**

Incorporate stabilized pond sludge into the IM/IRA.

Uncertainty regarding acceptance of the State of Colorado's Corrective Action Management Unit regulation.



**2.5 OU 5 - WOMAN CREEK**

This activity encompasses assessment and remediation of 11 IHSSs in the Woman Creek drainage: Original Landfill (IHSS 115); Ash Pits (IHSS 133.1 - 133.4); Incinerator (IHSS 133.5); Concrete Wash Pad (IHSS 133.6); Detention Ponds C-1 and C-2 (IHSS 142.10 and 142.11); Surface Disturbance (IHSS 209), southeast of Building 881; and Water Treatment Plant Backwash Pond (IHSS 196). Two additional surface disturbances have been identified, one south of the Ash Pits and a second west of IHSS 209. These last two sites were included in the OU 5 Work Plan. IHSS 196 was administratively assigned to this Operable Unit. Possible contamination in this operable unit was caused by landfill operations, storm-water runoff into holding ponds, and ash-pit operations. Constituents in OU 5 are believed to include depleted uranium, metals, pesticides, Polychlorinated biphenyls, and volatile organic components. Media affected include soils, sediments, surface water, ground water, and air.

**Scope of Work Change This Period**                      None

**Technical Approach Changes This Period**                      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	05 Apr 91
	Submit final Phase I RFI/RI Work Plan	30 Aug 91

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	30 Nov 93		11 May 95*
Submit final Phase I RFI/RI Report	03 May 94		14 Nov 95*

\* Completion date to be rescheduled due to Human Health Risk Assessment issues work stoppage.

**April Work Activity Status**                      DOE received the Human Health Risk Assessment schedules on April 25, 1994, responding to the scope, schedule and cost impacts of the stop work order.

The EPA comments on the draft TM #13, *Modeling*, are being responded to in a comment/response format.

A technical review of draft TM #15, *Addendum to the Field Sampling Plan*, was completed by DOE. The comments are being addressed.

A letter was received from the EPA on April 19, 1994, giving final approval to TMs #1 through #10. Verbal approval was granted prior to beginning the work.

Technical Memoranda

Project

OU 5 - Woman Creek Priority Drainage Remedial Investigation

TM #1  
TM Title  
TM Status

Surface Water and Sediments  
When preparation is concluded or is estimated to be concluded: 30 Nov 92  
Projected date of submittal to EPA/CDH: 30 Nov 92  
Actual date of submittal: 13 Oct 92

TM #2  
TM Title  
TM Status

Surface Geophysics  
When preparation is concluded or is estimated to be concluded: 30 Nov 92  
Projected date of submittal to EPA/CDH: 30 Nov 92  
Actual date of submittal: 13 Oct 92

TM #3  
TM Title  
TM Status

Soil Sampling at IHSS 115  
When preparation is concluded or is estimated to be concluded: 07 May 93  
Projected date of submittal to EPA/CDH: 07 May 93  
Actual date of submittal: 26 Jan 93

TM #4  
TM Title  
TM Status

Soil Sampling at IHSS 133  
When preparation is concluded or is estimated to be concluded: 07 Jun 93  
Projected date of submittal to EPA/CDH: 07 Jun 93  
Actual date of submittal: 12 Apr 93

TM #5  
TM Title  
TM Status

Soil Gas Sampling at IHSS 115  
When preparation is concluded or is estimated to be concluded: 07 May 93  
Projected date of submittal to EPA/CDH: 07 May 93  
Actual date of submittal: 25 Mar 93

TM #6  
TM Title  
TM Status

Cone Penetrometer at IHSS 115  
When preparation is concluded or is estimated to be concluded: 14 Apr 93  
Projected date of submittal to EPA/CDH: 14 Apr 93  
Actual date of submittal: 25 Mar 93

TM #7  
TM Title Soil Borings at IHSS 133  
TM Status When preparation is concluded or is estimated to be concluded: 07 May 93  
Projected date of submittal to EPA/CDH: 07 May 93  
Actual date of submittal: 19 Feb 93

TM #8  
TM Title Monitoring Wells at IHSS 115  
TM Status TM #8 was canceled and has been replaced by a letter outlining the justification behind the location of the wells in IHSS 115

TM #9  
TM Title Monitoring Wells at IHSS 133, Ash Pits, Incinerator and Concrete Wash Pad  
TM Status When preparation is concluded or is estimated to be concluded: 14 May 93  
Projected date of submittal to EPA/CDH: 06 May 93  
Actual date of submittal: 06 May 93  
EPA/CDH comments scheduled: 11 Jun 93  
Actual date of submittal: 28 Jun 93

TM #10  
TM Title Soil Borings at IHSS 209  
TM Status When preparation is concluded or is estimated to be concluded: 06 Mar 93  
Projected date of submittal to EPA/CDH: 06 Mar 93  
Actual date of submittal: 06 Mar 93

TM #11  
TM Title Contaminants of Concern  
TM Status When preparation is concluded or is estimated to be concluded: 17 Aug 94

TM #12  
TM Title Exposure Scenarios  
TM Status When preparation is concluded or is estimated to be concluded: 24 Nov 93  
Projected date of submittal to EPA/CDH: Submittal of TM #12 was delayed due to the Human Health Risk Assessment stop work order.  
Actual date of submittal: N/A

**DOE, Rocky Flats Plant**

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TM #13  
TM Title  
TM Status

Modeling  
When preparation is concluded or is estimated to be concluded: 12 Jan 94  
Projected date of submittal to EPA/CDH: Submittal of TM #12 was delayed due to the Human Health Risk Assessment stop work order.  
Actual date of submittal: N/A

TM #14  
TM Title  
TM Status

Toxicity Assessment  
When preparation is concluded or is estimated to be concluded: 17 Aug 94  
Projected date of submittal to EPA/CDH: 17 Aug 94  
Actual date of submittal: N/A

TM #15  
TM Title  
TM Status

Addendum to the Field Sampling Plan  
When preparation is concluded or is estimated to be concluded: 22 Jul 94  
Projected date of submittal to EPA/CDH: 22 Jul 94  
Actual date of submittal: N/A

**Planned Work for May**

- Resume work of the Human Health Risk Assessment (data aggregation and background statistical analysis).

**Problems**

None

**Open Items**

DOE is currently reviewing an extension request.

**2.6 OU 6 - WALNUT CREEK**

This activity encompasses assessment and remediation in the Walnut Creek Drainage of 19 IHSSs: A-series Detention Ponds, Ponds A-1 through A-4 (IHSSs 142.1 through 142.4 and 142.12); the B-series Detention Ponds, Ponds B-1 through B-5 (IHSS 142.5 through 142.9); the North, Spray Field (IHSS 167.1); the East Area Spray Field (IHSS 216.1), the Trenches A, B and C (IHSS 166.1, 166.2 and 166.3); the Sludge Dispersal Area (IHSS 141); the Triangle Area (IHSS 165); the Old Outfall Area (IHSS 143), and the Soil Dump Area (IHSS 156.2).

Completion of field operations resulted in obtaining the following samples from the IHSSs in OU 6: stream sediment, pond sediment, surface soil, subsurface soil, surface and ground water.

Eleven new ground water monitoring wells, installed in OU 6 to supplement five existing wells, were sampled quarterly for a minimum of one year. Geophysical surveys and radiation surveys were performed in selected areas to supplement the sampling activities.

The regulatory agencies have proposed a new IM/IRA on the operation of the RF Ponds. On April 15, 1994, the regulatory agencies and DOE agreed that the ponds will be managed by the Pond Water Management IM/IRA.

**Scope of Work Changes This Period**      None

**Technical Approach Changes This Period**      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	19 Apr 91
	Submit final Phase I RFI/RI Work Plan	16 Sep 91

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	10 Jun 94		19 Apr 95*
Submit final Phase I RFI/RI Report	07 Jan 94	18 Nov 94	16 Nov 95*

\* Completion date to be rescheduled due to Human Health Risk Assessment issues work stoppage.

**April Work Activity Status**      Background comparison on the analytical data is proceeding as scheduled. The data set to be used for comparing pond sediments to background is still in the process of being determined. EPA has agreed to allow OU 6 to pursue the same methodology for background

4/4/94

comparisons for pond sediments as OU 3. The weight of evidence approach, comparing the sediments in the A and B series of ponds with other ponds and reservoir sediments along the Front Range, is the current approach. However, this data set may not be large enough to use for background comparison.

**Pond Water Interim Measure/Interim Remedial Action**

- The Dispute Resolution Senior Executive Committee met on April 15, 1994, and ended the dispute over issues relating to the Pond Water Management IM/IRA. The resolution states, "EPA and CDH did not act arbitrarily and capriciously in requiring DOE to develop and implement a Pond Water Management IM/IRA to regulate discharges from surface water ponds, control discharges of hazardous wastes and hazardous substances into surface water ponds and require DOE to develop off-channel spill control and treatment capacity."

A meeting was held between DOE and EG&G to discuss the ramifications of the dispute resolution agreement on existing programs and potential schedules. At this meeting, the following decisions were reached: 1) OU 7 will conduct an expedited Landfill Leachate Collection IM/IRA to assume collection construction only and the Landfill Leachate Collection IM/IRA will be submitted to EPA and CDH within six months of the resolution; 2) Influent/effluent/spill tanks (500,000 gallons) will be installed under the Industrial Area IM/IRA, and an IAG milestone for this activity will be proposed and submitted within three months; and 3) The draft Pond Water IM/IRA will be submitted to CDH and EPA for their review within six months.

**Technical Memoranda**

Project

OU 6 - Walnut Creek

TM #1  
TM Title  
TM Status

Work Plan Modifications  
Approved by EPA: 08 Jan 93

TM #2  
TM Title  
TM Status

Exposure Scenarios  
When preparation is concluded or estimated to be concluded: 15 Nov 94  
Projected date of submittal to EPA/CDH: 15 Nov 94  
Actual date of submittal: TBD  
Date when EPA/CDH comments received: TBD

TM #3  
TM Title Modeling Description  
TM Status When preparation is concluded or is estimated to be concluded: 10 Nov 93  
Projected date of submittal to EPA/CDH: 10 Nov 93  
Actual date of submittal: 10 Nov 93  
Date when EPA/CDH comments received: 23 Dec 93

TM #4  
TM Title Contaminants of Concern  
TM Status When preparation is concluded or is estimated to be concluded: 29 Aug 94  
Projected date of submittal to EPA/CDH: 29 Aug 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

TM #5  
TM Title Toxicity Factors  
TM Status When preparation is concluded or is estimated to be concluded: 05 Aug 94  
Projected date of submittal to EPA/CDH: 05 Aug 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

- Planned Work for May
- Conclude comparison of analytical database to background data.
  - Begin nature and extent of contamination.
  - Complete contaminant toxicity screens.

Problems None

Open Items None



**2.7 OU 7 - PRESENT LANDFILL**

The Present Landfill - OU 7 is located north of the plant complex on the western edge of an unnamed tributary of North Walnut Creek and comprises eight IHSSs. IHSS 114 includes landfill waste and leachate at the Present Landfill, soils beneath the landfill potentially contaminated with leachate, and sediments and water in the East Landfill Pond. IHSS 203 contains potentially contaminated soils at the Inactive Hazardous Waste Storage Area. A section of the Present Landfill located in the southwest corner was used between 1986 and 1987 as a temporary storage area for hazardous waste. The Present Landfill began operation in August 1968 and was originally constructed to provide for disposal of RF nonradioactive and nonhazardous wastes. In September 1973, tritium was detected in leachate from the landfill. During the mid-1980s, extensive investigations were conducted on the waste streams (types) placed into the landfill; consequently, hazardous wastes/hazardous constituents were identified. Although currently operating as a nonhazardous sanitary landfill, the facility is considered an inactive hazardous waste disposal unit undergoing RCRA closure. In order to maintain the landfill pond at an acceptable volume to prevent discharge, spray evaporation of landfill pond water was applied to the north and south of the landfill pond comprising IHSSs 167.2 and 167.3, respectively. IHSS 167.1 located to the north of the landfill pond was used as a spray evaporation area for landfill pond water and Building 771 and 774 footing drains water. Prior to 1964, IHSSs 166.1, 166.2, and 166.3 were used as sludge disposal trenches for sanitary sludge from Building 995.

**Scope of Work Changes This Period**

Addition of a Landfill Leachate Collection IM/IRA. As a result of the Resolution of Dispute of the Senior Executive Committee, the DOE is required to develop and implement a Surface Water Management IM/IRA. As a part of this agreement, a separate IM/IRA for the collection of leachate from OU 7 is to be delivered to the regulatory agencies by October 13, 1994.

**Technical Approach Changes This Period**

None

**IAG Milestone Accomplishments**

Submit draft Phase I RFI/RI Work Plan	08 Jun 90
Submit final Phase I RFI/RI Work Plan	28 Aug 91
Submit draft Phase I RFI/RI Report	19 Apr 94
Submit draft Phase II RFI/RI Work Plan	19 Apr 94

Future IAG Milestones  
Through FY95

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit final Phase I RFI/RI Report	16 Mar 94		02 Sep 94*
Submit Preliminary draft IM/IRA	13 Oct 94		13 Oct 94
Release final draft IM/IRA for Public Comment	28 Nov 94		28 Nov 94
Submit final Responsiveness Summary and IM/IRA	10 Mar 95		10 Mar 95
Release final Responsiveness Summary and IM/IRA	24 Mar 95		24 Mar 95
Submit draft Phase I Proposed IM/IRA Decision Document	01 Nov 94		14 Feb 97*
Submit final Phase II RFI/RI Work Plan	15 Feb 95		15 Apr 96*
Submit final Phase I Proposed IM/IRA Decision Document	06 Apr 95		16 Oct 97*
Submit IM/IRA Responsiveness Summary	14 Aug 95		14 May 98*

\* Completion date to be rescheduled due to Human Health Risk Assessment issues work stoppage. Current scoping negotiations projected to result in deletion of these milestones.

**April Work Activity Status** The OU 7 Work Plan TM was received by DOE on April 19, 1994. This submittal satisfies IAG deliverables.

Work continues on the OU 7 Health and Safety Plan Addendum.

A meeting was held among CDH, DOE, and EG&G on April 14, 1994, to discuss Field Sampling Plan issues. The possibility of further streamlining the OU 7 schedule was also discussed.

The Data Quality Objectives development process was completed with approval from the regulatory agencies.

The Applicable or Relevant and Appropriate Requirements Development Report is currently being reviewed by RFFO.

**Technical Memoranda**

Project

OU 7 - Present Landfill

TM #1  
TM Title  
TM Status

Exposure Scenarios  
Initial reviews completed by DOE/HQ and DOE. Review completed by EPA and CDH. Response summary developed and submitted to all parties for review.

Reviews complete. Revised response summary completed 25 May 93, with a final review underway prior to transmittal to the regulatory agencies.

TM #2  
TM Title  
TM Status

Model Description  
Transmitted to EPA and CDH for review: 08 Jan 93  
Initial review by EPA , CDH, and DOE completed:  
30 April 93  
Draft response summary complete: 25 May 93

TM #3  
TM Title

Addendum to final Phase I RFI/RI Work Plan. Surface Soil and Asbestos Pit Disposal Area Characterization Plan.

TM Status

Transmitted to DOE for review: 05 Feb 93  
Transmitted to the EPA and CDH for review: 08 Feb 93  
Comments received: 26 Apr 93  
Conditional approval by the EPA and CDH received:  
22 Feb 93  
Clarification of outstanding comments from EPA and CDH received: 03 May 93

TM #4  
TM Title  
TM Status

Contaminants of Concern  
When preparation is concluded or is estimated to be concluded: TBD  
Projected date of submittal to EPA/CDH: TBD  
Actual date of submittal: TBD

**Planned Work for May**

- Submit revised Work Plan to the regulatory agencies.
- Continue negotiations with the regulatory agencies regarding the Pond Water IM/IRA.
- Continue development of the Environmental Assessment

**Problems**

The Corrective Action Management Unit concept is an integral part of the presumptive remedy. Without the regulatory agencies approval, it may not be possible to implement the remedy into the IM/IRA Decision Document.

**Open Items**

None

5/25/93

5/10/94



5/10/94

**2.8 OU 8 - 700 AREA**

The 24 Individual Hazardous Substance Sites (IHSSs) that constitute Operable Unit (OU) 8 encompass separate sites inside and around the production area of the Rocky Flats. Contamination sources within the various IHSSs include above ground and underground tanks, equipment washing areas, and releases inside buildings which potentially affected areas outside the buildings. Contaminants from these sources may have been introduced into the environment through spills on the ground surface, underground leakage and infiltration, and in some cases through precipitation runoff. The chemical composition of the contaminants varies widely between the IHSSs, ranging from low-level radioactive mixed wastes to nonradioactive organic and inorganic compounds.

OU 8 is within the Industrial Area at Rocky Flats (RF) and is being managed collectively with the other Operable Units that are within the Industrial Area. The Industrial Area OUs consist of OUs 8, 9, 10, 12, 13, and 14. All of these Industrial Area OUs are being investigated together because of similar field investigation techniques (e.g., surface soil sampling, radiation survey, etc). The main benefit from integrated management of the Industrial Area OUs is improved oversight, coordination, and reduced costs.

**Scope of Work Changes This Period**                      None

**Technical Approach Changes This Period.**                      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	01 May 92
	Submit final Phase I RFI/RI Work Plan	01 Dec 92

**Future IAG Milestone Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	14 Feb 94	Denied	02 Nov 15
Submit final Phase I RFI/RI Report	12 Jul 94	Denied	10 Feb 98

**April Work Activity Status**                      EPA, CDH, and DOE met to resolve the OU 8 dispute on the Phase I RFI/RI Report based on the April 14, 1994, extension request criteria received from the regulatory agencies. DOE presented an informal resolution process to EPA and CDH that consisted of the following: (1) DOE agreed to withdraw the dispute; (2) DOE agreed that a violation of the IAG occurred when the draft Phase I RFI/RI Report for Operable Unit 8 was not submitted on February 14, 1994; (3) DOE agreed that stipulated penalties have accrued from the day DOE was notified on the noncompliance and will continue to accrue; (4) All

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parties agreed to use their best efforts to finalize a settlement agreement by May 1, 1994, that will resolve the stipulated penalties for Operable Unit 8 for some defined period of time in the future. After this time elapses, penalty accrual for Operable Unit 8 will resume should the violation continue; and (5) All parties agreed that this settlement agreement will resolve penalties associated with other IAG violations that have occurred or will occur, including, but not limited to, violations associated with Operable Units 9, 10, 12, 13, and 14. As before, penalties for these violations will resume accrual should these violations continue past the defined period of the settlement agreement. DOE continued discussions with the regulatory agencies and expects to reach an agreement in May 1994.

DOE received the preliminary draft TM #1, *Foundation and Building Under Drains*, for review on April 19, 1994. All comment/responses must be received by May 27, 1994.

Field work using the High Purity Germanium detector for radiation surveys on OU 8 IHSS was completed on April 14, 1994.

**Industrial Area Integrated Operable Units (8,9,10,12,13, and 14)** - Resources from the Environmental Restoration Accelerated Cleanup Working Group are being utilized to prioritize and schedule removal of materials from IHSSs.

On April 14, 1994, DOE and EG&G discussed responses to DOE comments on the draft Industrial Area Integrated Field Sampling Plan. DOE accepted EG&G's responses; DOE received a revised draft final document on April 28, 1994. The revised draft final of the Industrial Area Integrated Field Sampling Plan will be delivered to the regulatory agencies for review and concurrence in May 1994.

**Technical Memoranda**

**Project**

**OU 8-700 Area**

TM #1

TM Title

Footings/Under Drains Data Compilation and Field Sampling Plan

TM Status

When preparation is concluded or is estimated to be concluded: 18 Apr 94

Projected date of submittal to EPA/CDH: 22 Apr 94

Actual date of submittal: N/A

Date when EPA/CDH comments received: N/A

**Planned Work for May**

- Plan site walks to review the current status of materials stored in OU 8 IHSSs.
- Complete review of TM #1; receive regulatory agency comments.
- Complete the draft final Integrated Field Sampling Plan for the Industrial Area OUs.
- Begin planning for resurveying the Industrial Area for the Environmental Evaluation.
- Begin small mammal trapping for the Industrial Area Environmental Evaluation.

**Problems**

None

**Open Items**

None



## 2.9    OU 9 - ORIGINAL PROCESS WASTE LINES

This activity involves characterizing a series of tanks and associated process waste lines. The original process waste lines consisted of 35,000 feet of buried pipeline that transferred process wastes from production buildings to onsite treatment plants. A system of 60 designated pipe sections, 39 single and multiple storage tank sites, and three other areas of suspected process waste leakage is included in OU 9. The system was placed into operation in 1952, and additions were made to the system through 1975. The original system was replaced over the 1975-1983 period by the new process waste system. Some tanks and lines from the original system were incorporated into either the new process waste system or the fire water deluge collection system.

The original system is known to have transported or stored various aqueous process wastes containing low-level radioactive materials, nitrates, caustics, and acids. Small quantities of other liquids were also introduced in the system, including medical decontamination fluids, miscellaneous laboratory liquids, and laundry effluent. The RFI/RI Phase I Work Plan includes inspection and sampling of the tanks and pipelines that are accessible and soil sampling to determine the extent of contamination in the vadose zone. The soil sampling will be performed by installing test pits and boring where known or suspected releases occurred, near pipe joints and valves, at approximately 100 - 200-foot intervals along the pipelines, and by installing borings around the outdoor tanks. Soil characterization studies will determine the need for soil removal and/or treatment. The results of the Phase I RFI/RI will determine the need for interim and/or final remediation action.

OU 9 is within the Industrial Area at Rocky Flats and is being managed collectively with the other OUs that are within the Industrial Area. The Industrial Area OUs consist of OUs 8, 9, 10, 12, 13, and 14. All of these Industrial Area OUs are being investigated together because of similar field investigation techniques: e.g., surface soil sampling, radiation survey, etc. The main benefit from integrated management of the Industrial Area OUs is improved oversight, coordination, and reduced costs.

**Scope of Work Changes  
This Period**                      None

**Technical Approach  
Changes This Period**                      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	08 Jun 90
	Submit final Phase I RFI/RI Work Plan	26 Nov 91

Future IAG Milestones  
Through FY95

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	11 Apr 94	Denied	04 Jan 01
Submit final Phase I RFI/RI Report	06 Sep 94	Denied	10 Sep 98
Submit draft Phase II RFI/RI Work Plan	10 Mar 95		23 Jul 04
Submit draft Phase I Proposed IM/IRA Decision Document	01 May 95		31 Oct 03
Submit final Phase II RFI/RI Work Plan	07 Aug 95		01 Apr 05
Submit final Phase I Proposed IM/IRA Decision Document	27 Sep 95		12 Jul 04

**April Work Activity Status**

Work was initiated on incorporating the comments from the regulatory agencies on TM #1, *Volume I - A, Field Sampling Plan for Outside Tanks*. This included preparing a response to these comments. Comments from CDH were received on April 21, 1994, and comments were received from EPA on April 29, 1994. The delay in receiving comments from the regulatory agencies has caused an approximate 5-week delay in the schedule.

Work resumed on the preparation of TM #1, *Volume II-A, Field Sampling Plan for Outside Tanks*. The information gathered during the site walks is being evaluated and prepared for incorporation into the TM.

CDH has indicated that the active outside tanks that are not RCRA Interim Status should be included in the outside tank investigation. This would mean that six additional tanks need to be included in the investigation. DOE is actively working this issue by re-examining whether these tanks should be included. Additional information regarding the status of these tanks is needed for this evaluation and is currently under preparation.

CDH denied a request for an extension for the OU 9 draft and final Phase I RFI/RI Report in a letter dated April 14, 1994. CDH also indicated that the missed milestones were in violation of the IAG and that penalties would be assessed starting from the date DOE received the notice.

Technical Memoranda

Project

OU 9-Original Process Waste Lines

TM #1

TM Title

Field Sampling Plan - Original Process Waste Line -  
Volume I-A - Outside Tanks

TM Status

When preparation is concluded or is estimated to be  
concluded: Jan 94  
Projected date of submittal to EPA/CDH: Mar 94  
Actual date of submittal: 15 Mar 94  
Date when EPA/CDH comments received: N/A

TM #1

TM Title

Field Sampling Plan - Volume 2A - Outside Pipelines

TM Status

When preparation is concluded or is estimated to be  
concluded: Jul 94  
Projected date of submittal to EPA/CDH: Aug 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

**Planned Work for May**

- Continue work on TM #1, *Volume I-A, Outside Tanks*.  
Address agency comments.
- Continue work on TM #1, *Volume II-A, Outside  
Pipelines*.

**Problems**

The delay in receiving comments from the regulatory  
agencies on the TM #1, *Volume 1-A, Outside Tanks*, has  
caused an approximate 5-week delay in the schedule.

**Open Items**

None



**2.10 OU 10 - OTHER OUTSIDE CLOSURES**

Operable Unit (OU) 10 is composed of 15 Individual Hazardous Substance Sites (IHSSs) scattered throughout plantsite. Six of the IHSSs are located in the Protected Area, two are located in the buffer zone near the present landfill, and the remaining IHSSs are located near various buildings throughout plantsite. The types of wastes and contaminants identified at these sites include pondcrete/saltcrete storage, diesel and fuel spills, and heavy metal contamination. A draft and final Technical Memorandum will be developed which will summarize the non-intrusive portion of the OU 10 fieldwork. Other IHSS specific intrusive activities are scheduled for FY94.

OU 10 is currently being managed collectively with the other Industrial Area Operable Units (OUs 8, 9, 12, 13, 14). All of these OUs are being investigated collectively due to similarities in the field work for these OUs (e. g. surficial soil sampling, *in-situ* radiation surveys, soil gas sampling, etc). Combining this work will result in improved oversight, coordination, and reduced costs.

**Scope of Work Changes This Period**      None

**Technical Approach Changes This Period**      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	27 Nov 91
	Submit final Phase I RFI/RI Work Plan	01 May 92

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	25 Aug 94		02 Nov 15
Submit final Phase I RFI/RI Report	30 Jan 95		19 Jul 16
Submit draft Phase I Proposed IM/IRA Decision Document	26 May 95		26 Feb 18
Submit draft Phase II RFI/RI Work Plan	27 Jun 95		25 May 17

**April Work Activity Status**      After pre-evolution meetings and safety briefings, soil gas sample collection in OU 10 began on April 13, 1994, in IHSS 170 and 174, Property Utilization and Disposal yard. A total of 15 soil gas samples were collected. IHSS 176 soil gas survey will follow the completion of IHSS 170/174. After completion of all OU 10 soil gas sampling locations, OU 12 soil gas sampling will commence.

Soil gas sample collection continues at IHSS 170/174. Forty soil gas samples were collected to date. The soil

gas subcontractor was instructed to stop work on the sampling until the issue with detection limits is clarified for analyzing for methane and hydrogen sulfide. Because these are unique analytes for OU 10, the soil gas crews could be redirected to continue work on other OUs, with no delay because of the analyte list. This problem is expected to be resolved quickly, and the soil gas survey should restart by May 3, 1994. If the detection limit issue for methane and hydrogen sulfide cannot be reconciled soon, resources will be directed to OU 12.

All High Purity Germanium survey data was collected for OU 10 and in the Industrial Area OUs. The Gamma survey group is currently using the associated Global Positioning equipment of the Gamma system to survey all of the surficial soil sampling locations. All surficial soil sampling locations, for example, were surveyed using Global Positioning equipment. These points will be input into the Environmental Management Geographic Information System for use in later data correlation and analysis.

**Industrial Area Individual Hazardous Substance Site Material Removal** - accelerated cleanup actions funding was identified for removal of storage items in or around IHSS within OU 10. Until all materials are removed satisfactorily, no RFI/RI assessment activities will be conducted at the affected IHSS.

The Accelerated Cleanup Group discussed barriers to and logistics for possible early action cleanup activities in IHSSs 129 and 170/174 in OU 10. Some progress was made, but problems related to waste generation and storage were not resolved, prompting the Accelerated Cleanup Group to consider possibly another tank removal candidate. Cleanup of contaminated soils in the Property Utilization and Disposal yard could be expedited, while problems with IHSS 129 are resolved.

**Planned Work for May**

- Complete soil gas surveys.
- Complete beneath pavement soil samples.
- Begin data evaluation for TM.

**Problems**

The regulatory agencies have not formally approved the Industrial Area OU integration process.

**Open Items**

Transfer of IHSS 213/214 to OU 4. No work is planned on these IHSSs as part of OU 10.



**2.11 OU 11 - WEST SPRAY FIELD**

The West Spray Field is located within the Rocky Flats buffer zone immediately west of the plant security area. The West Spray Field was in operation from April 1982 to October 1985. During operation, excess liquids from solar evaporation ponds 207B North and Center (contaminated ground water in the vicinity of the ponds and treated sanitary sewage effluent) were pumped periodically to the West Spray Field for spray application. The spray field boundary covers an area of approximately 105 acres, 38 of which received direct application of hazardous waste. The RFI/RI process will entail field studies to investigate the presence or absence of hazardous constituents in soil and ground water.

**Scope of Work Changes This Period**      None

**Technical Approach Changes this Period**      In accordance with regulatory guidance, surficial soil sampling and sampling for Volatile Organic Analytes in the subsurface materials and ground water were added to the Field Sampling Plan.

**IAG Milestone Accomplishments**

Submit draft Phase I RFI/RI Work plan	08 Jun 90
Submit final Phase I RFI/RI Work plan	02 Jan 92

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	20 Sep 94		18 Apr 95
Submit final Phase I RFI/RI Report	22 Feb 95		03 Jan 96
Submit draft Phase II RFI/RI Work Plan	21 Aug 95		25 Nov 96

**April Work Activity Status**      Revisions to the Field Sampling Plan TM were submitted to the regulatory agencies on April 4, 1994.

A meeting was held with CDH, EPA, DOE, and EG&G to discuss the following issues concerning the revised Field Sampling Plan: 1) a better approach to explaining statistical methodology; 2) how to provide more proof for the possible existence of perched water; and 3) locations for the addition of four more boreholes and monitoring wells at the West Spray Field. The locations were plotted on a map; the map was provided to CDH. The regulatory agencies also agreed to fewer subsurface materials samples.

CDH has stated that it would forego detailed sampling for Volatile Organic Compounds at the West Spray Field so that resonant sonic drilling methods can be used. CDH agreed to this because the potential location of contaminated perched water tables is more important than sampling for Volatile Organic Compounds, the existence of which is doubtful because of past methods of applying Solar Pond Water to the area.

CDH issued written comments and conditional approval of the surface soil sampling plan in April 1994.

The readiness review is underway. Training of personnel is underway. Decontamination facilities will be available at the end of May 1994 or the beginning of June 1994. The initial Readiness Review meeting was held April 13, 1994.

**Technical Memoranda**

**Project**

**OU 11 - West Spray Field**

TM

TM Title

TM Status

Revised Field Sampling Plan and Data Quality Objectives  
Informally submitted to EPA/CDH: 2 Feb 94  
Currently, undergoing revisions and addressing comments  
Awaiting CDH comments

TM #1

TM Title

TM Status

Exposure Scenarios  
When preparation is concluded or is estimated to be concluded: Mar 94 (late)  
Projected date of submittal to EPA/CDH: 02 May 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

TM #2

TM Title

TM Status

Modeling  
When preparation is concluded or is estimated to be concluded: 22 Mar 94 (late)  
Projected date of submittal to EPA/CDH: 12 May 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

TM #3

TM Title

TM Status

Contaminants of Concern  
When preparation is concluded or is estimated to be concluded: 20 Sep 94

Projected date of submittal to EPA/CDH: 09 Nov 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

TM #4  
TM Title  
TM Status

Toxicity  
When preparation is concluded or is estimated to be concluded: 10 Oct 94  
Projected date of submittal to EPA/CDH: 12 Dec 94  
Actual date of submittal: N/A  
Date when EPA/CDH comments received: N/A

**Planned Work for May**

- Revise the Field Sampling Plan TM in accordance with formal comments from the regulatory agencies; finalize the Field Sampling Plan TM.
- Survey surface soil sample locations.
- Begin surface soil sampling.

**Problems**

None

**Open Items**

None

6700.94

**2.12 OU 12 - 400/800 AREA**

The 400/800 Area involves assessment and remediation of the ten Individual Hazardous Substance Sites (IHSSs) within the 400/800 Area: Multiple Solvent Spills at the West and South Loading Dock Areas (IHSSs 116.1 and 116.2); Fiberglassing Areas North and West of Building 664 (IHSSs 120.1 and 120.2); Cooling Tower Ponds - northeast and southwest of Building 460 (IHSSs 136.1, and 136.2); Building 881 - Conversion Site(147.2); Radioactive Site - South Area (IHSS 157.2); Acid Leaks (2) (IHSS 187); and Multiple Acid Spills (IHSS 189).

Assessment will consist of preparing a Phase I RFI/RI Work Plan, which will include both an Environmental Evaluation and a Human Health Risk Assessment. Implementation of this Work Plan includes field work and sample analysis. After implementation, a Phase I RFI/RI Report will be prepared. A Phase II Investigation may be performed as necessary. A Feasibility Study to determine the best methods to remediate the area will be conducted as part of the assessment.

Remediation may consist of development and execution of a Remedial Action Plan (RAP) based on results obtained during the assessment phase of the project. This process includes review and approval by the regulatory agencies, followed by a Record of Decision, release to the public, and implementation of the plan.

OU 12 is within the Industrial Area at Rocky Flats and is being managed collectively with the other OUs that are within the Industrial Area. The Industrial Area OUs consist of OUs 8, 9, 10, 12, 13, and 14. All of these Industrial Area OUs are being investigated together because of similar field investigation techniques (e. g., surface soil sampling, radiation survey, etc). The main benefit from integrated management of the Industrial Area OUs is improved oversight, coordination, and reduced costs.

**Scope of Work Changes This Period**            None

**Technical Approach Changes This Period**            None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	08 May 92
	Submit final Phase I RFI/RI Work Plan	05 Oct 92

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	20 Apr 94	Denied	11 Mar 99
Submit final Phase I RFI/RI Report	15 Sep 94	Denied	17 Nov 99

6208 90

**April Work Activity Status**

The surficial soil sampling portion of the OU 12 nonintrusive field work continues. Sampling of paved areas began on April 18, 1994, and will be completed in May 1994. Soil gas surveys in OU 12 will begin after completion of OU 10 soil gas survey sampling.

There is a concern regarding High Purity Germanium laboratory samples. According to the 123 Laboratory procedures, the sample amounts the laboratory needs to run the High Purity Germanium is 1500 milliliters. The field Standard Operating Procedures only requires 500 milliliters to be gathered. Since there are a substantial number of samples already collected, it would be extremely expensive to re-sample. The 123 Laboratory representative stated that a new calibration standard could be obtained in a matter of two to three weeks. The solution to this issue was to buy a new calibration standard and to modify the existing procedure for the 123 Laboratory.

**Technical Memoranda**

The first TM scheduled for OU 12 is the nonintrusive TM due in August 1994.

**Planned Work for May**

- Continue surface soil sampling in paved areas.
- Complete soil gas survey permits and have them approved.

**Problems**

None

**Open Items**

None

**2.13 OU 13 - 100 AREA**

Cleanup of the 100 Area involves the assessment and remediation of 14 Individual Hazardous Substance Sites (IHSSs): Chemical Storage - North, Middle, and South Sites (IHSSs 117.1, 117.2 and 117.3); Oil Burn Pit #1 (IHSS 128); Lithium Metal Destruction Site (IHSS 134); Waste Spills (IHSS 148); Fuel Oil Tank (IHSS 152); Radioactive Site - North Area (IHSS 157.1); Radioactive Site - Building 551 (IHSS 158); Waste Peroxide Drum Burial (IHSS 169); Solvent Burning Ground (IHSS 171); Valve Vault 12 (IHSS 186); Caustic Leak (IHSS 190); and the Hydrogen Peroxide Spill (IHSS 191), and the Scrap Metal Site (IHSS 197).

Assessment will consist of preparing a Phase I RFI/RI Work plan, which will include both an Environmental Evaluation and a Human Health Risk Assessment. After implementation of this Work Plan, field work and sample analysis will be conducted, data will be analyzed, and the Phase I RI Report will be prepared. A Feasibility Study to determine the best methods to remediate the area will be conducted as part of the assessment.

Remediation will consist of development and execution of a Remedial Action Plan based on results obtained during the assessment phase of the project. This process includes review and approval by the regulatory agencies, followed by a Record of Decision, release to the public, and implementation of the plan.

OU 13 is within the Industrial Area at the Rocky Flats (RF) and is being managed collectively with the other OUs that are within the Industrial Area. The Industrial Area OUs consist of OUs 8, 9, 10, 12, 13, and 14. All of these Industrial Area OUs are being investigated together because of similar field investigation techniques: e.g., surface soil sampling, radiation survey; etc. The main benefit from integrated management of the Industrial Area OUs is improved oversight, coordination, and reduced costs.

**Scope of Work Changes This Period**            None

**Technical Approach Changes This Period**            None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	15 May 92
	Submit final Phase I RFI/ RI Work Plan	12 Oct 92

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	08 Aug 94		24 Mar 99
Submit final Phase I RFI/RI Report	11 Jan 95		02 Dec 99

7-20-94

April Work Activity Status

The Readiness Review is complete. A soil disturbance permit was issued for surficial soil and soil gas sampling.

Revised figures from TM #1, *Addendum To The Field Sampling Plan*, were submitted to the regulatory agencies. A meeting was held with the regulatory agencies to discuss sampling locations, and a revised set of sampling maps was prepared and distributed to the regulatory agencies.

An effort to gain access to portions of IHSS 197, which lies in the area between the fences surrounding the Protected Area, in order to perform a sodium iodide survey is continuing. This sodium iodide survey is necessary to confirm detection of plutonium found during the High Purity Germanium detector survey.

A meeting was held to resolve issues regarding analytical procedures for laboratory-based High Purity Germanium detector analysis of vertical profile soil samples. The main issue revolves around radon measurements. Samples are to be containerized so that radon leakage does not occur over the 30-day holding time. This issue affects all the OUs utilizing laboratory High Purity Germanium analysis of vertical profile samples.

Technical Memoranda

Project

OU 13-100 Area

TM #1

TM Title

Addendum to Field Sampling Plan

TM Status

When preparation is concluded or is estimated to be concluded: Feb 94

Projected date of submittal to EPA/CDH: Feb 94

Actual date of submittal: 03 Mar 94

Date when EPA/CDH comments received: N/A

A nonintrusive TM will be prepared in FY95 summarizing the nonintrusive field work and recommending Stage II activities for the remedial investigation intrusive field work.

Planned Work for May

- Begin surficial soils sampling upon completion of OU 12 sampling and approval of sampling locations by the regulatory agencies.

**Problems**

Removal of material stored in IHSSs continues to be unresolved.

**Open Items**

The removal of material stored in the IHSSs for all of the Industrial Areas OUs was turned over to the Accelerated Cleanup Group for implementation.



**2.14 OU 14 - RADIOACTIVE SITES**

Work at the "Radioactive Sites" involves the assessment and remediation of eight Individual Hazardous Substance Sites (IHSSs): Radioactive Site - 700 Area Site #1 and Site #2 (IHSS 131); Radioactive Soil Burial - Building 334 Parking Lot and Soil Dump Area (IHSSs 156.1); Building 444 Parking Lot (IHSS 160) and Building 664 (IHSS 161); and Radioactive Site - 700 Area Site #2 (IHSS 162); and Radioactive Sites - 800 Area which includes the Concrete Slab, Building 886 Spills, and the Building 889 Storage Pad (IHSSs 164.1, 164.2, and 164.3). In 1991, one of two Soil Dump Area IHSSs (156.2) was deleted from OU 14 and added to OU 6.

Assessment will consist of preparing a Phase I RFI/RI Work Plan, which will include both an Environmental Evaluation and an Human Health Risk Assessment. After implementation of this work plan, field work and sample analysis will be conducted, data will be analyzed, and the Phase I RI Report will be prepared. A Feasibility Study to determine the best methods to remediate the area will be conducted as a subsequent phase to the assessment phase.

Remediation will consist of development and execution of a Remedial Action Plan based on results obtained during the assessment phase and feasibility study of the project. This process includes review and approval by EPA and CDH, followed by a Record of Decision, release to the public, and implementation of the plan.

OU 14 is within the Industrial Area at Rocky Flats (RF) and is being managed collectively with the other OUs that are within the Industrial Area. The Industrial Area OUs consist of OUs 8, 9, 10, 12, 13, and 14. All of these Industrial Area OUs are being investigated together because of similar field investigation techniques: e.g., surface soil sampling, radiation survey, etc. The main benefit from integrated management from the Industrial Area OUs is improved oversight, coordination, and reduced costs.

**Scope of Work Changes This Period**                      None

**Technical Approach Changes This Period**                      None

<b>IAG Milestone Accomplishments</b>	Submit draft Phase I RFI/RI Work Plan	26 Jun 92
	Submit final Phase I RFI/RI Work Plan	19 Oct 92

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Schedule</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	20 Dec 94		13 Feb 01
Submit final Phase I RFI/RI Report	23 May 95		22 Oct 01

**April Work Activity Status**

Work continues on the tasks necessary for the OU 14 Readiness Review. A soil disturbance permit is also under preparation so that the surficial soil samples can be taken.

The rebaselining of the OU 14 schedule is 90 percent complete. This effort will include the substitution of geostatistical data analysis of all existing data for the entire Industrial Area instead of preparation of the first two TMs, which are present in the OU 13 and 14 Work Plans. At this point, some of the nonintrusive studies for this OU have been pushed into FY95. In order to preserve the schedule as much as possible, more sampling crews may be placed in the field. In addition, new equipment may allow the soil gas collection and analysis to proceed much faster than originally planned.

**Technical Memoranda**

The current Five-Year Plan indicates that two TMs, *Human Health Risk Assessment-Exposure Assessment* and *Human Health Risk Assessment-Modeling*, were scheduled for completion in March 1994. These tasks require rescheduling because of the integration of OUs 8, 9, 10, 12, 13, and 14. A new schedule was developed. Currently, only nonintrusive/limited RI field work is scheduled for OU 14 in FY94.

A nonintrusive TM will be prepared in FY95 summarizing the nonintrusive field work and recommending Stage II activities for the RI intrusive field work.

**Planned Work for May**

- Review Field Sampling Plan and determine if there are better ways to accomplish sampling.

**Problems**

The removal of material stored in the IHSSs continues to be unresolved.

**Open Items**

The removal of material stored in the IHSSs for all of the Industrial Area OUs was turned over to the Accelerated Cleanup Group for implementation.

**2.15 OU 15 - INSIDE BUILDING CLOSURES**

OU 15 was originally comprised of eight IHSSs:

- IHSS 178, Building 881 - Drum Storage Area
- IHSS 179, Building 865 - Drum Storage Area
- IHSS 180, Building 883 - Drum Storage Area
- IHSS 204, RCRA Unit 45, Building 447 - Original Uranium Chip Roaster
- IHSS 211, RCRA Unit 26, Building 881 - Drum Storage Area
- IHSS 212, RCRA Unit 63, Building 374- Drum Storage Area
- IHSS 215, Unit 55, 12 - Tank T - 40
- IHSS 217, RCRA Unit 32, Building 881 - Cyanide Bench Scale Treatment

During April 1992, IHSS 215, Unit 55.13 - Tank T - 40, was deleted from OU 15 and added to OU 9 as part of an IHSS realignment pursuant to Part 32, Paragraph 191 (Additional Work or Modification to Work) of the IAG. This change was recommended by DOE in the OU 9 Phase I RFI/RI Work Plan approved by CDH and EPA in April 1992. Also, IHSS 212, RCRA Unit 63, Building 374 Drum Storage Area was removed from the OU 15 RFI/RI process since it is currently active as a Drum Storage Area and was included in the Rocky Flats Plant RCRA Part B Transuranic Mixed Waste permit application. The remaining six IHSSs currently have interim status under RCRA.

Closure Plans for the IHSSs were submitted to CDH during 1988 and 1989. The IHSSs were also included within the IAG. During scoping meetings in April 1992 for the Phase I RFI/RI Work Plan, EPA, CDH, and DOE agreed to combine the Closure Plan and RFI/RI processes. In effect, the Clean Closure Performance Standard (5 CCR 1007-3 Part 265.111) will serve as the Applicable or Relevant and Appropriate Requirements (ARARs) for the OU 15 RFI/RI inside buildings and Closure Plans will no longer be prepared. The public comment period required for the Closure Plan process will be fulfilled through the IM/IRA process of the IAG.

Drums containing solids and liquids were stored at the OU 15 IHSSs. Types of waste included oils, coolants, and solvents containing chlorinated hydrocarbons (RCRA F001 and F002 wastes) and waste paints and metals contaminated with solvents. Hazardous constituents include chlorinated solvents, beryllium, and uranium. No known spills or releases occurred. The characterization of contamination associated with the OU 15 IHSSs indicate that Contaminants of Concern were almost nonexistent inside buildings.

**Scope of Work Changes  
This Period**

See below

**Technical Approach  
Changes This Period**

A change in work package scope and technical approach was initiated by EG&G and was approved by the Environmental Restoration Change Control Board on April 28, 1994. This change will go before the Plant Change Control Board on May 13, 1994, and approval is anticipated. The work package technical scope was changed to accomplish verification sample during FY94 and to delete Stage III, outside building sampling. This

change was prompted by CDH comments pertinent to draft TM #1. Draft TM #1 identified the fact that Contaminants of Concern were below minimal detectable levels in most cases and that RCRA clean closure could be achieved sooner by accomplishing verification sampling and obtaining better equipment blanks. With the deletion of Stage III sampling, the final TM #2 (Human Health Risk Assessment) will not be required.

**IAG Milestone Accomplishments**

Submit draft Phase I RFI/RI Work Plan	01 Jun 92
Submit final Phase I RFI/RI Work Plan	26 Oct 92

**Future IAG Milestones Through FY95**

<u>Milestone Name</u>	<u>IAG Date Scheduled</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Submit draft Phase I RFI/RI Report	01 Aug 94		01 Aug 94
Submit final Phase I RFI/RI Report	04 Jan 95		04 Jan 95

**April Work Activity Status**

Comments on draft TM #1 for OU 15 were received from DOE/HQ, DOE/RFFO, and CDH. As of April 30, 1994, EPA had not provided formal comments on draft TM #1; however, EPA has stated that comments will be forthcoming. The internal milestone for submittal of the final TM #1 was rescheduled to May 11, 1994, in order to incorporate equipment blank sample information.

Preparation was initiated in response to CDH's comments for obtaining equipment blank samples and verification samples. Work is currently being scheduled to complete verification sampling as requested by CDH comments to ensure that the August 1, 1994, IAG Milestone for submittal of the draft Phase I RFI/RI Report is met. Chemical analysis of equipment blank analytical results will be expedited for inclusion within the final TM #1. Collection of verification samples is expected to be initiated during May 1994. Verification sampling chemical analysis results must be received prior to June 28, 1994, in order for the results to be included within the draft Phase I RFI/RI Report for OU 15.

**Technical Memoranda**

TM #1	
TM Title	Field Sampling Plan, draft
TM Status	When preparation is concluded or is estimated to be concluded:

Projected date of submittal to EPA/CDH: 28 Feb 94  
Actual date of submittal: 28 Feb 94  
Date when comments were received: preliminary  
17 Mar 94 (formal 07 Apr 94)  
Field Sampling Plan, final  
Projected date fo submittal to EPA/CDH: 11 May 94

TM #2  
TM Title  
TM Status

Human Health and Risk Assessment, draft  
When preparation is concluded or is estimated to be concluded:  
Projected date of final submittal to EPA/CDH: TBD - may not be necessary unless Stage III field work is performed.  
Actual date of draft submittal: 28 Feb 94  
Date when comments were received: preliminary  
17 Mar 94 (formal 07 Apr 94\*)  
Note: Due to the findings of sampling conducted, Stage III outside building sampling will not be accomplished and the final TM #2 will be deleted.

\* Excluded formal comments from the EPA.

**Planned Work for May**

- Conduct verification sampling; complete and submit the final TM #1 to the regulatory agencies.

**Problems**

Verification sampling cannot begin until the baseline change proposal initiated during April 1994 is approved by the Plant Change Control Board. This approval is anticipated May 13, 1994.

**Open Items**

Comments from the EPA on draft TM #1 are pending.



**2.16 OU 16 - LOW PRIORITY SITES**

This assessment activity consists of preparing a No Further Action Justification Document for seven IHSSs: Solvent Spill, Antifreeze Discharge, Steam Condensate Leaks (400 and 700 Areas), Nickel Carbonyl Disposal, Water Treatment Plant Backwash Pond, and Scrap Metal Sites. The No Further Action Justification Document was approved by the regulatory agencies and the Record of Decision process was initiated to close OU 16 as an operable unit at Rocky Flats.

**Scope of Work Changes This Period**            None

**Technical Approach Changes This Period**            None

<b>IAG Milestone Accomplishments</b>	Submit draft No Further Action Justification Document	04 Mar 92
	Submit final No Further Action Justification Document	30 July 92
	Submit Revised final No Further Action Justification Document	16 Oct 92

**Future IAG Milestones Through FY95**            None

**April Work Activity Status**            The draft Record of Decision including the final Responsiveness Summary on the Proposed Plan/draft Modification of the RCRA Permit, was received by DOE during March 1994. DOE/HQ and DOE/RFFO comments were received on time. DOE/RFFO Legal responded with comments on April 18, 1994. These comments were incorporated into the draft Record of Decision prior to submitting the draft Record of Decision to the regulatory agencies on April 29, 1994.

Before the Record of Decision can be signed by the regulatory agencies, the Administrative Record for OU 16 must be completed. There is a concern that the Administrative Record for OU 16 will not be complete by the milestone date of May 2, 1994, thus delaying the approval of the Record of Decision or invalidating any approval that is made.

**Technical Memoranda**            None

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**Planned Work for May**

- Schedule meeting with the regulatory agencies to discuss the draft Record of Decision; the regulatory agencies will review the Record of Decision in May 1994.

**Problems**

There is a concern that the Administrative Record for OU 16 will not be complete by the signing of the Record of Decision, thus delaying the approval of the Record of Decision or invalidating any approval that is made.

**Open Items**

None

## 2.17 SITEWIDE ACTIVITIES

Sitewide activities include several tasks that encompass a wide variety of plans, procedures, reports, studies, and activities required by the IAG and that apply to RF environmental restoration activities in general. Activities include, but are not limited to: Health Safety Plan, Sampling and Analysis Plan, Treatability Study deliverables, Background Study Plan, Groundwater Geochemistry, Risk Assessment, Industrial Area IM/IRA, hydrological characterization, Background Soils Study Plan, Decontamination Facilities, ER Waste handling facilities, ground water monitoring, Decontamination & Decommissioning , and Program Management Support activities.

**Scope of Work Changes  
This Period**                      None

**Technical Approach  
Changes This Period**                      None

<b>IAG Milestone Accomplishments</b>	Submit draft Background Study Report (Water)	15 Dec 89
	Submit draft Background Study Report (Soils)	15 Dec 89
	Submit draft Community Survey Plan	23 Jan 90
	Submit final Community Survey Plan	22 Mar 90
	Submit draft Health and Safety Plan	15 Aug 90
	Submit draft Quality Assurance Project Plan	29 Aug 90
	Submit draft Standard Operating Procedures	29 Aug 90
	Submit draft Plan for Prevention of Contaminant Dispersion	19 Sep 90
	Submit draft Treatability Study Plan	21 Sep 90
	Submit draft Community Relations Plan	01 Nov 90
	Submit final Health and Safety Plan	12 Nov 90
	Submit Revised Background Study Report	21 Dec 90
	Submit final Community Relations Plan	22 Jan 91
	Submit final Quality Assurance Project Plan	01 Mar 91
	Submit final Standard Operating Procedures	01 Mar 91
	Submit draft Radionuclides Discharge Limits Plan	05 Apr 91
	Submit Community Relations Plan Responsiveness Summary	21 Jun 91
Submit final Treatability Study Plan	03 Jun 91	
Submit final Plan for Prevention of Contaminant Dispersion	22 Jul 91	

Submit final Plan Discharge Limits Radionuclide	16 Sep 91
Submit final Plan for Prevention of Contaminant Dispersion and Responsiveness Summary	25 Nov 91
Submit draft Historical Release Report	08 Jan 92
Submit Responsiveness Summary for Discharge Limits Plan Radionuclides	31 Jan 92
Submit final Historical Release Report	03 Jun 92
Submit Annual Treatability Study Report	08 Mar 93
Submit Sitewide Annual Treatability Study	14 Mar 94

**Future Milestones Through FY95**

<u>Milestone Name</u>	<u>JAG Date Schedule</u>	<u>Extension Status</u>	<u>Planned Accomplishment Date</u>
Sitewide Annual Treatability Study	14 Mar 95		14 Mar 95

**April Work Activity Status Sitewide Activities**

**Sitewide Treatability Studies**

**Bioremediation** - Revision of the Bioremediation Work Plan is continuing. Comments were received from EPA on April 18, 1994. Installation of the purge-and-trap system began. All equipment necessary to begin Phase I and Phase II of the Bioremediation Treatability Study was received. However, concerning the equipment for Phase II of the Bioremediation Treatability Study, it has become apparent that the planned method of headspace analysis for monitoring biological activity in the cultures for Phase II will logistically interfere with the analysis of chlorinated solvents on the gas chromatograph mass spectroscopy during Phase II (due to the need for changing columns, reestablishing the equipment for several days, and revalidating the methods for each column change). Therefore, alternate methods for analyzing the headspace gases including carbon dioxide, methane, nitrous oxide (and/or nitrogen gas), and hydrogen sulfide will be required. Equipment needs will be evaluated and additional supplies will be procured as soon as possible.

**Solvent Extraction** - Preparation of a Statement of Work for a Solvent Extraction Treatability Study was completed and submitted to Procurement on March 28, 1994. A team was assembled to resolve soils field sampling issues. Soil sampling is tentatively scheduled for May 1994.

**Potassium Ferrate Process (TRU/Clear)** - Review copies of the Potassium Ferrate Treatability Study Work Plan were submitted for parallel review within EG&G. Comments have been received and will be incorporated into the Work Plan. Test work will begin in the Building 881 laboratories as soon as sample ground waters are chosen.

**Solar Detoxification Process** - DOE received a request from EG&G to put the Solar Detoxification project on hold. The reasons for requesting the hold are as follows: 1) The capabilities of the Solar Detoxification unit are the same as the unit currently at OU 1 and the Solar Detoxification vendor was requested to provide capital, operation and maintenance cost to compare with those from OU 1; and 2) Project costs have grown. EG&G feels that these funds may be more appropriate in the support of Plutonium in Soils and in Radionuclides and Metals in Ground Water studies.

**Adsorption Process** - The data evaluation and sample analysis of RF ground water are complete. The results of the data evaluation for the Adsorption Process showed that filtration of the ground water samples at 0.45 uranium removed plutonium, americium, and perhaps heavy metal values. On this basis, it was suggested that uranium 238 should be the analyte of interest for the adsorption test work. DOE will receive a memorandum summarizing the recommendations for future test work.

**Ion Exchange Process** - The data evaluation and sample analysis of RF ground waters are complete. It was recommended that uranium 238 serve as the analyte of interest.

#### Other Sitewide Operations

**Ground Water Protection** - A meeting was conducted among CDH, DOE, EG&G, and the City of Broomfield to present the proposed action in response to plutonium detections in ground water from the Indiana Street Boundary Wells. A site tour of the proposed well locations was then conducted. Two downgradient well locations were agreed to by all parties. Formal agreements among all parties will be prepared and transmitted.

**Ground water Monitoring** - A computer program to assist the ground water project with tracking and labeling the required samples from each ground water well is being finalized. This will result in improved compliance with required sampling schedules for wells in the program.

**Mineralogical and Petrographic Characterization**

**Studies** - Approximately two-thirds of the total number of samples to be analyzed were collected and submitted for mineralogical and petrographic analyses. Analytical results will support stratigraphic correlation, ground water modeling, and hydrogeologic characterization efforts.

**Background Soils Characterization Project** - The draft Work Plan for Background Soils Characterization Project was completed. The Work Plan is currently being reviewed by EG&G.

**Decontamination and Decommissioning** - Scopes, schedules, and cost estimates for six decontamination and decommissioning subprojects were developed. A baseline change proposal for implementation was presented to and approved by the DOE Environmental Restoration Change Control Board on April 12, 1994.

DOE received for comment an annotated outline of the Decontamination and Decommissioning Program Guidance Manual.

**Community Relations** - Community Relations worked with DOE on the IAG renegotiation including public meetings, public involvement, and comment periods. Meetings were held with the Public Participation Focus Group to discuss the development of a public involvement plan for the IAG renegotiation.

Community Relations began drafting information for the EPA Headquarters. EPA is currently developing a regulation that will prescribe a cleanup standard for radioactively contaminated sites. RF was chosen as one of 22 reference sites to be part of the regulatory impact analysis being conducted.

Community Relations is working on the June 1994 Environmental Quarterly Information meeting. CDH will be moderating. Topics will include the following: the FY94 budget, the Industrial Area IM/IRA, and an update on IAG renegotiations.

**Industrial Area Interim Measure/Interim Remedial Action Plan**- A meeting was held with the regulatory agencies regarding their comments concerning the Industrial Area IM/IRAP draft Decision Document. There are some issues that require more integration and support from DOE. Primarily, the IM/IRA document must

propose actions that DOE can commit to, and an implementation schedule must be developed to support these commitments. The impact that the Industrial Area IM/IRA may have on several of the RF Environmental Restoration Management and Environmental Protection programs is an issue that is being discussed.



**SECTION 3.0 ROUTINE ENVIRONMENTAL MONITORING**

The following generalized sampling schedule for Routine Environmental Monitoring is provided as requested in Section 210 of the IAG. Detailed quarterly monitoring schedules are prepared in advance and are available to EPA and CDH upon request from the Environmental Management Department and EG&G Rocky Flats, Inc. The schedules are lengthy; therefore, they are not reproduced here. An EPA or State-authorized representative may make arrangements to observe fieldwork and to obtain split or duplicate samples.

**3.1 SURFACE WATER AND SEDIMENTS**

- Each of the Surface Water Stations (approximately 20 stations) are sampled quarterly.
- Each of the Sediment Stations (approximately ten stations) are sampled quarterly.
- Each surface water and sediment sample is analyzed for the following parameters:

CLP TCL Volatile Organic Analyte	Radionuclides
Metals CLP TAL & Non-TAL	Temperature
Field Parameters	Total Suspended Solids/TSS
Specific Conductivity	pH
Dissolved Oxygen (DO)	Nutrients
Major Anions	

- Additionally, sediment samples are analyzed for: CLP-Semi Volatile Organic Analytes, CLP-Pesticides/Polychlorinated biphenyls Herbicides-619

**3.2 SOILS**

Each of the Soil Stations (located at 1- and 2-mile radii from the plant center) are sampled annually.

Each soil sample is analyzed for plutonium and americium.

**3.3 GROUND WATER**

A total of 410 Groundwater Stations are sampled quarterly; this includes RCRA , CERCLA, Plant Protection Boundary wells. Approximately one third of the wells are monitored monthly for water levels. Each ground water sample is analyzed for the following parameters:

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Radiochemical Parameters

Gross Alpha  
Gross Beta  
Plutonium  
Americium  
Strontium  
Tritium  
Uranium  
Cesium

Inorganic Parameters

Nitrate/Nitrite  
Total Phosphorous  
Ortho-Phosphate  
Ammonia  
Total Suspended Solids  
Chlorine  
Fluorine  
Sulfate  
Carbonate  
Inorganic Parameter  
Bicarbonate  
TSS  
Dissolved CLP & additional metals  
Cyanide  
CLP Volatile Organic Constituents

Field Parameters

Specific Conductivity  
Temperature  
Turbidity  
pH

## SECTION 4. SUBCONTRACTOR IDENTIFICATION

Contractors and subcontractors being used on the RF ER Program and the work they are performing are identified on the following list as required by paragraph 13 of the IAG.

<u>OU</u>	<u>Project</u>	<u>Subcontractor</u>	<u>Sub-Subcontractor</u>	<u>Work Description</u>	<u>Start Date</u>
1	Assessment	Ebasco	Dames & Moore	CMS/FS Report	Jan 92
1	Assessment	Dames & Moore		Public Health Evaluation	Apr 93
1	Assessment	Roy F. Weston		Revise RI Report, respond to agency comments	Feb 93
1	Assessment	S.M. Stoller		Environmental Evaluation	Apr 93
1	Remediation	Resource Tech.		B-891 Treatment System Operations Group, Inc. (RTG)	
2	Assessment	Woodward-Clyde		OU 2 RFI/RI Work Plan (alluvial and bedrock) and RI field work (drilling, well completion/development)	Sep 90
2	Assessment	Ebasco	S.M. Stoller	Environmental Evaluation	Feb 91
	Assessment	Woodward-Clyde	Layne	OU 2 RFI/RI Work Plan (bedrock), surficial soils	Mar 93
2	Remediation	RT6		Installation and operation of the water treatment system for South Walnut Creek Phase of OU 2 IRA	Jan 91
3	Assessment	IT Corporation	CH2M Hill	OU 3 Field Work and RI Report	Apr 92
3	Assessment	MRI		Wind Tunnel/Soil Resuspension Study	Aug 92
4	Remediation	HNUS Services	Halliburton Spec	Demobilize	Sep 91
4	Assessment	Parsons/Eng Science	Rust I&E	Implement the Phase I RFI/RI Work Plan, includes drilling, sampling radiation surveys, etc.	Aug 92
4	Remediation	Parsons/ Eng Science		Development of IM/IRA Decision Document & conceptual design	
4	Remediation	ERM-Rocky Mountain	Geraghty & Miller	Post-closure monitoring plan	Nov 93

**DOE, Rocky Flats Plant**

<u>OU</u>	<u>Project</u>	<u>Subcontractor</u>	<u>Sub-Subcontractor</u>	<u>Work Description</u>	<u>Start Date</u>
5	Assessment	ASI Blackhawk Geo Walsh & Assoc. Layne Envir. Service S.M. Stoller Adv. Terra Testing	Dames & Moore  Utility Mgmt. Service	Implementation of OU 5 Work Plan (excluding Environmental Evaluation)	Jun 92
5	Assessment	S.M. Stoller		Implementation of Environmental Evaluation section of OU 5 Work Plan	Sep 92
6	Assessment	Woodward-Clyde	Lane, Ogden, Geo Envir	OU 6 RFI/RI Work Plan and Quality Assurance Addendum	Aug 92
6	Assessment	S.M. Stoller		Implementation of Environmental Evaluation section of OU 6 Work Plan	Sep 92
7	Assessment	S.M. Stoller	Walsh & Assoc.	OU 7 revised Work Plan Development and implementation. IM/IRA Decision Document Development.	Nov 92
8	Assessment	Jacobs Eng.	Walsh & Assoc.	Implement the Phase I RFI/RI Work Plan for nonintrusive field work for the Industrial Area OUs	Aug 93
9	Assessment	Jacobs Eng.	Walsh & Assoc.	Implement the Phase I RFI/RI Work Plan for nonintrusive field work for the Industrial Area OUs	Aug 93
10	Assessment	Jacobs Eng.	Walsh & Assoc.	Implement the Phase I RFI/RI Work Plan for nonintrusive field work for the Industrial Area OUs	Aug 93
11	Assessment	S. M. Stoller		Implement the RFI field work and report writing.	Jan 94
12	Assessment	Jacobs Eng.	Walsh & Assoc.	Implement the Phase I RFI/RI Work Plan for nonintrusive field work for the Industrial Area OUs	Aug 93
13	Assessment	Jacobs Eng.	Walsh & Assoc.	Implement the Phase I RFI/RI Work Plan for nonintrusive field work for the Industrial Area OUs	Aug 93
14	Assessment	Jacobs Eng.	Walsh & Assoc.	Implement the Phase I RFI/RI Work Plan for nonintrusive field work for the Industrial Area OUs	Aug 93
15	Assessment	ERM-Rocky Mtn.	G.S. Miller, Inc.	Implementation of the RFI/RI Work Plan	Mar 93
SW	HRR	IT Corporation	Doty & Assoc.	Prepare HRR	Feb 91
SW	Adm. Record	QuantaLex		Maintain IAG Administrative Record	Oct 90
SW	Geo. Char.	Jacobs Eng.		Well Abandonment and Replacement	Mar 93

*Subcontractor Identification*

<u>OU</u>	<u>Project</u>	<u>Subcontractor</u>	<u>Sub-Subcontractor</u>	<u>Work Description</u>	<u>Start Date</u>
SW	Geo. Char. University	Colorado State		Support M.S. thesis of Structural Geology, of Front Range Area Near RF	Nov 91
SW	Geo. Char.	S.M. Stoller		Prepare 1992 Annual RCRA Report and Addendum	Jan 93
SW	Geo. Char.	Colorado School of Mines		Masters level training program in ES and Engineering	Aug 92
SW	Geo. Char.	Woodward-Clyde		Support for the SSWMS	Feb 93
SW	Geo. Char.	Colorado State University		Sequential Extraction	April 92
SW	Geo. Char.	University of Colorado		Soil Monitoring Vadose Zone	Jun 92
SW	Geo. Char.	S.M. Stoller		Spatial Analysis/Computer Support	Mar 93
SW	Geo. Char.	Woodward Clyde	SAIC/Wright Water		Jan 93
SW	Monitoring	IT Corporation		Analytical Services for ground water, surface water, and sediment	Jul 90
SW	Quality Assurance	SAIC		Develop and implement Quality Assurance program and field operations oversight	Dec 90
PM	Support	S.M. Stoller		Program Management Support	Oct 92
PM	Quality Assurance Support	SAIC		Provide QA/QC support to ER Program	Nov 92



**ACRONYMS**

CDH	Colorado Department of Health
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMS	Corrective Measures Study
DOE	Department of Energy
EPA	Environmental Protection Agency
ER	Environmental Restoration
FS	Feasibility Study
IA	Industrial Area
IAG	Interagency Agreement
IHSS	Individual Hazardous Substance Site
IM	Interim Measure
IRA	Interim Remedial Action
IRAP	Interim Remedial Action Plan
OU	Operable Unit
RCRA	Resource Conservation and Recovery Act
RF	Rocky Flats
RFFO	Rocky Flats Field Office
RFI	RCRA Facilities Investigation
RI	Remedial Investigation
TM	Technical Memorandum