**Department of Energy**
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

9202729

APR 3 1992


92-ERB-049

Mr. Paul T. Day
Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352

Mr. David B. Jansen, P.E.
Hanford Project Manager
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600



Dear Messrs. Day and Jansen:

EXPEDITED RESPONSE ACTION (ERA) PLANNING PROPOSALS

In response to your letter of March 4, 1991, enclosed are the ERA Planning Proposals for the following past practices sites: 1) 100 Area Pipelines, 2) 618-11 Burial Ground, 3) Sodium Dichromate Barrel Disposal Site, and 4) Hanford Site North Slope. Copies of the four proposals are being transmitted simultaneously although we were requested to provide them separately at short intervals. We hope that this is not too much of an inconvenience and will help facilitate your review. We would appreciate responses on individual proposals as early as possible so that planning for the ERAs can begin. To facilitate your review, copies of the enclosed proposals were provided to the U.S. Environmental Protection Agency and the State of Washington Department of Ecology representatives attending the weekly ERA Weekly Meeting on March 30, 1992. Each of these proposals is briefly described below.

The 100 Area Pipelines consist of 16 pipelines originating from the B, C, D, DR, F, H, K, and N Reactors in the 100 Area. Reactor cooling water was discharged via these lines until operations were discontinued at each of the associated reactors. Previous characterization efforts have determined that residual contamination is present in the pipelines. The length of the pipelines vary from 300 to 1850 feet; diameters range from 42 to 102 inches. A majority of the pipelines are exposed to the rapid current from the Columbia River, and one pipeline, from the F Reactor, has already started to disintegrate. The ERA for the 100 Area Pipelines proposes stabilizing or removing and disposing of the contaminated pipelines.

The 618-11 Burial Ground is located within the 300-IU-1 Operable Unit (OU) and is believed to contain high-activity, low-level radioactive waste. The burial ground consists of three trenches, two caissons, and 54 pipe storage units. It is believed that only solid waste was disposed in the burial ground. The ERA for the 618-11 Burial Ground proposes removing the waste and temporarily storing the high-activity, low-level waste in the Separations Area on the Hanford Site until such time as permanent storage or disposal becomes available.

The Sodium Dichromate Barrel Disposal Site is located within the 100-IU-4 OU and was used to dispose of construction debris, and barrels which contained residual sodium dichromate. The sodium dichromate was used in the 100-K Area for water treatment purposes. The site was originally backfilled; however, visual inspection indicates the waste material is still exposed. There is no evidence at the burial site which indicates that radioactive material was disposed. The ERA for the Sodium Dichromate Barrel Disposal Site proposes removing the debris and potentially contaminated barrels from the area. In addition, the action would provide for stabilization of the site.

The Hanford Site North Slope refers to approximately 190 square miles of land north of the Columbia River on the Hanford Site. The land was not used for nuclear production activities; however, it was initially homesteaded before being utilized by Hanford for military activities. As a result of these activities, numerous hazards are present. The ERA for the North Slope proposes elimination of these hazards.



The U.S. Department of Energy, Richland Field Office requests comments and or proposed regulatory direction for each of the individual proposals by April 30, 1992. Additionally, we would appreciate prioritization of the proposals among the six candidates which have been discussed recently at the ERA weekly meetings (the four enclosed, plus "River Railroad Wash Station," and "Pickling Acid Cribs." Proposals for the latter two will be provided in two to three weeks). Based on your responses we will assess funds available and implement specific projects as mutually agreed.

If you have any questions, please contact me on (509) 376-6798, or Mr. R. K. Stewart on (509) 376-6192.

Sincerely,

K. Michael Thompson for

Steven H. Wisness
Hanford Project Manager

ERD:RKS

Enclosures: As Stated

cc w/encls:
M. Harmon, EM-442

cc w/o encls:
W. L. Johnson, WHC
R. E. Lerch, WHC
T. M. Wintczak WHC
T. B. Veneziano, WHC
Administrative Record, H4-22

# 100 AREA PIPELINES

## CONTENTS


1.0 INTRODUCTION . . . . . 1
1.1 PURPOSE . . . . . 1
1.2 BACKGROUND . . . . . 1

2.0 SITE DESCRIPTION . . . . . 1
2.1 SITE LOCATION . . . . . 1
2.2 REACTOR EFFLUENT SYSTEMS . . . . . 3
2.3 PHYSICAL DESCRIPTION . . . . . 3
2.3.1 B and C Reactor . . . . . 4
2.3.2 D and DR Reactor . . . . . 6
2.3.3 F Reactor . . . . . 6
2.3.4 H Reactor . . . . . 6
2.3.5 K Reactor . . . . . 6
2.3.6 N Reactor . . . . . 11
2.4 SUMMARY OF 1984 CHARACTERIZATION REPORT . . . . . 11

3.0 BENEFIT OF THE EXPEDITED RESPONSE ACTION . . . . . 11

4.0 CONCEPT OF THE EXPEDITED RESPONSE ACTION . . . . . 12
4.1 GOAL . . . . . 12
4.2 MEASURE OF SUCCESS . . . . . 12
4.3 NET RESULT . . . . . 12
4.4 IMPLEMENTATION . . . . . 12
4.4.1 Project Plan . . . . . 13
4.4.2 Site Evaluation . . . . . 13
4.4.3 Proposal and Action Memorandum . . . . . 13
4.4.4 Design and Implementation . . . . . 13
4.4.5 Reporting . . . . . 13
4.5 ERA SELECTION WORKSHEET . . . . . 14
4.6 COST AND SCHEDULE SUMMARY . . . . . 14

5.0 REFERENCES . . . . . 14


### APPENDICES


A AGREEMENT IN PRINCIPLE . . . . . A-1
B PROJECT PLAN OUTLINE . . . . . B-1
C ANNOTATED ERA PROPOSAL OUTLINE . . . . . C-1
D ERA SELECTION WORKSHEET . . . . . D-1
E 100 AREA PIPELINES ERA COST ESTIMATE . . . . . E-1
F ERA SCHEDULE . . . . . F-1


### FIGURES


1 Location Map of 100 Areas . . . . . 2
2 Reactor Retention Basin System, B and C Reactors . . . . . 5
3 Effluent System, D and DR Reactors . . . . . 7
4 Effluent System, F Reactor . . . . . 8
5 Effluent System, H Reactor . . . . . 9
6 Reactor Retention Basin System, K Reactors . . . . . 10

## CONTENTS (cont)

**TABLES**

1 River Discharge Line Operating Histories . . . . . 3
2 River Discharge Line Physical Data . . . . . 4

# 1.0 INTRODUCTION

## 1.1 PURPOSE

This document provides information on the proposed expedited response action (ERA) for the 100 Area River Pipelines project. The pipelines in the 100 Area, which are under or on the river bed, need to be stabilized or removed. The pipelines are no longer in use and current information indicates the pipe's structural integrity may be questionable. Should the pipes become mobile they could pose a safety hazard to the general public who use the Columbia River for recreational activities. In addition, residual contamination is present inside the pipelines.

This information is presented to the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Ecology (Ecology) to provide a general understanding of the proposed project, which will lead to a decision regarding the continuance of the ERA process for the pipelines. Should the 100 Area Pipelines project be selected for an ERA, a comprehensive ERA proposal will be prepared as a "Primary Document", per the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology 1991). This will allow for public involvement and regulatory approval of the ERA before actual implementation of the proposed response action.



## 1.2 BACKGROUND

On October 18, 1990, an Agreement in Principle between the U.S. Department of Energy (DOE), EPA, and Ecology was signed (Appendix A). The agreement stated that three candidate projects would be considered for ERAs.

In fiscal year (FY) 1991 ERAs were conducted for the 618-9 Burial Ground, 300 Area Process Trenches, and the 200 West Area Carbon Tetrachloride Plume. It has been proposed that the 100 Area Pipelines be considered for an ERA because of the existing condition of the pipelines and residual contamination.

# 2.0 SITE DESCRIPTION

## 2.1 SITE LOCATION

The 100 Areas are located along the Columbia River at the northern end of the Hanford Site (Figure 1). The river discharge lines were constructed as part of each reactor area process effluent system and operated until the associated reactor was shut down. Table 1 gives the startup and shutdown dates for the areas addressed.

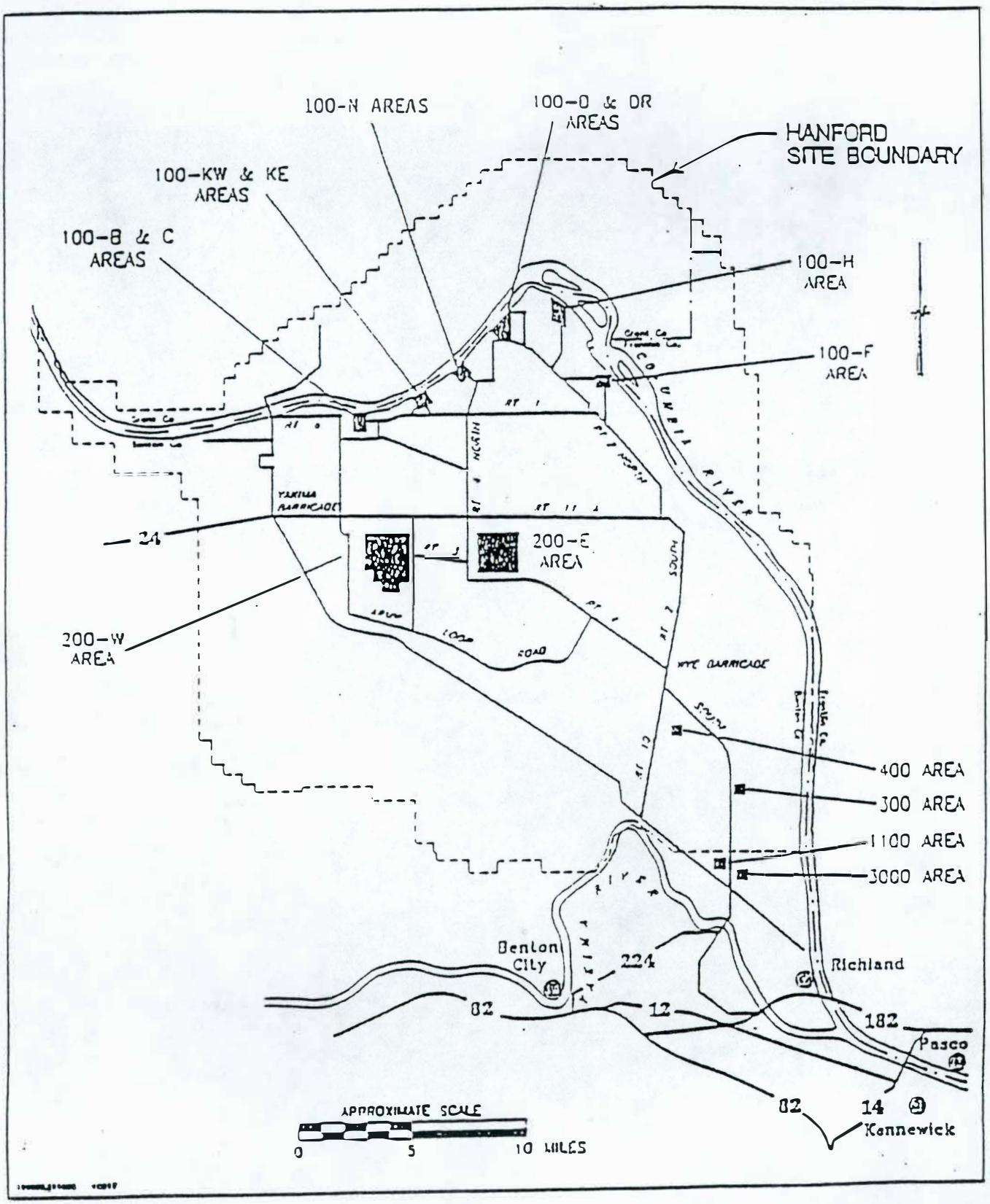



**Figure 1.** Location Map of 100 Areas.

Table 1. River Discharge Line Operating Histories.

| Reactor area | Initial startup date | Final shutdown date | Years operated |
|---|---|---|---|
| 100-B | 09/44 | 02/68 | 23 |
| 100-C | 11/52 | 04/69 | 16 |
| 100-D | 12/44 | 06/67 | 13 |
| 100-DR | 10/50 | 12/64 | 14 |
| 100-F | 02/45 | 06/65 | 20 |
| 100-H | 10/49 | 04/65 | 15 |
| 100-KW | 01/55 | 02/70 | 15 |
| 100-KE | 04/55 | 01/71 | 16 |
| 100-N | 12/63 | 02/88 | 25 |



## 2.2 REACTOR EFFLUENT SYSTEMS

The river discharge lines are part of the reactor effluent systems. Each line extends from an outfall structure to the main channel of the Columbia River. Outfalls are open, reinforced-concrete structures that directed the water through the river discharge lines or the spillways. The spillways (concrete flumes) were used when the river lines were blocked, damaged, or undergoing maintenance. The effluent pipe system was located underground to provide shielding protection from short-lived gamma radiation.

Reactor cooling water was released and held in a retention basin located between the reactor building and the river. The water was retained to permit the decay of short-lived radioisotopes before discharging to the river. As the reactor production increased, the hold-up period was decreased. The basins also served to hold-up flow of effluent with high radioactive isotope concentrations, resulting from fuel element failure. This effluent was then isolated and diverted (by gravity or pumping) to an open pond area or crib and then filtered through the ground.

## 2.3 PHYSICAL DESCRIPTION

The individual reactor area effluent lines are described based on best available information, drawings, and communication with Westinghouse Hanford employees associated with the reactor areas. Pipeline data is summarized in Table 2. The following pipelines are proposed to be stabilized or removed:

- 100-B and 100-C River Lines (4)
- 100-D and 100-DR River Lines (3)
- 100-F River Lines (4)
- 100-H River Lines (2)
- 100-K River Lines (2)
- 100-N River Line (1).

Table 2. River Discharge Line Physical Data.

| Area | Pipe diameter (in.) | Number of lines | Total length (ft) |
|---|---|---|---|
| 100-B | 42 | 1 | 750 |
| 100-B | 66 | 1 | 690 |
| 100-C | 54 | 2 | 500 |
| 100-D | 42 | 2 | 1,850 |
| 100-DR | 60 | 1 | 1,800 |
| 100-F | 42 | 2 | 300 |
| 100-F | 42 | 2 | 450 |
| 100-H | 60 | 2 | 825 |
| 100-K | 84 | 2 | 1,300 |
| 100-N | 102 | 1 | 1,050 |

* At low water on the island



### 2.3.1 B and C Reactors

The B and C Reactors effluent piping schematic is shown in Figure 2. Three outfall structures (116-B-7, 116-B-8, 132-C-2) that feed the four discharge lines to the river are depicted. From outfall structure 116-B-7 the effluent is discharged underwater at the center of the river through a 42-in. diameter by 1/2-in. thick wall, welded carbon-steel pipe line. The discharge line from the 116-B-8 outfall is a 66-in. diameter by 1/2-in. thick wall, carbon-steel line.

The 66-in. diameter pipeline is stabilized in the river by four anchors, which are approximately 150 ft apart. The end of one pipeline and anchor is covered by riprap. The anchored stabilization system used on this pipeline is probably typical for all the 100 Area river effluent lines.

The C Reactor effluent system takes the effluent from the 132-C-2 outfall through two 54-in. diameter by 1/2-in. wall thickness, steel lines to the river. Both pipelines and their anchors are fully exposed and subject to lateral loading, scouring, and undermining by the river currents.

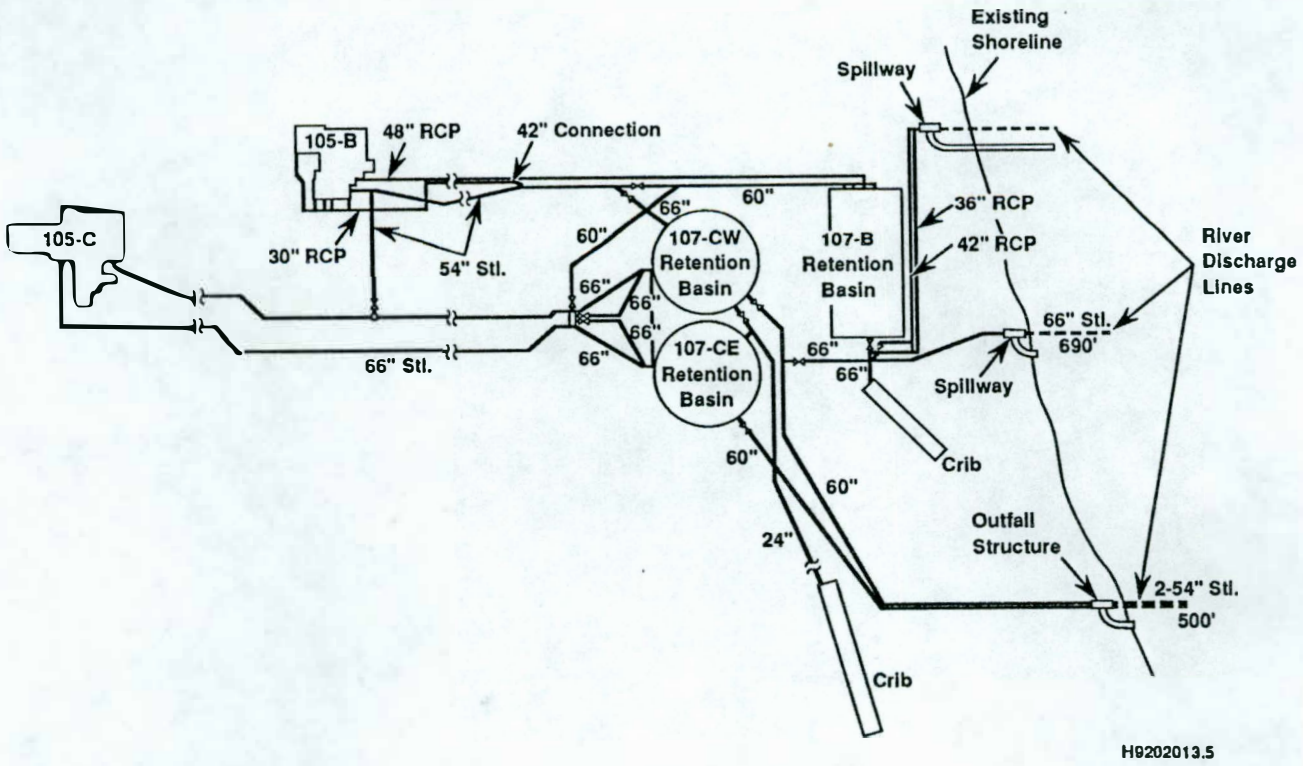



Figure 2. Reactor Retention Basin System, B and C Reactors.

### 2.3.2 D and DR Reactor

The D and DR Reactors effluent piping schematic is shown in Figure 3. Two outfall structures (116-D5 and 116-DR5) that feed the three discharge lines to the river are shown in the figure. The effluent is discharged under water from outfall structure 116-D5 through two 42-in. diameter reinforced concrete/steel pipes. The wall thickness of the steel pipe is 1/2-in. The pipelines pass through the 100-D island and discharge into the main river channel. The discharge line from outfall structure 116-DR5 is a 66-in. diameter by 1/2-in. thick wall, carbon-steel line that continues to the main channel of the river, passing through the 100-D island.

The 100-DR pipelines are anchored by three concrete anchors before they reach the island. There is one concrete anchor each, on both edges of the island. Beyond the island the pipelines are anchored by one concrete anchor and the end of the pipelines are anchored by one anchor each and covered with heavy riprap.



The 100-DR pipeline cover is sporadic from the shoreline to the island and in several areas the pipeline is exposed down to springline. As the pipeline approaches the island it again becomes buried and reaches a maximum depth of 16 ft under the island. From the island to approximately 50 linear ft inshore of the terminating structure the pipe remains buried under 2 to 3 ft of cover.

### 2.3.3 F Reactor

The F Reactor effluent system is shown in Figure 4. The discharge from the 116-F-8 outfall structure to the main river channel is through two 42-in. diameter reinforced concrete/steel pipe lines. The wall thickness of the steel pipes is 1/2-in. The pipelines are stabilized with concrete anchors. Both lines are exposed and subject to lateral loading, scouring, and undermining by the river.

### 2.3.4 H Reactor

The H Reactor effluent system is shown in Figure 5. The discharge piping to the main channel of the river from the 116-H-5 outfall structure is two 60-in diameter by 1/2-in. wall thickness, carbon-steel lines. In the early 1960's, the 100-H Area lines were re-anchored and reburied after trapped air had floated them out of place. The pipelines are stabilized with typical concrete anchors similar to those used for 100-B Reactor lines. The pipelines are completely covered with river sediments along it's entire length to an average of 3 to 5 ft.

### 2.3.5 K Reactors

The layout of the effluent systems of K Reactors is shown in Figure 6. The combined effluent flow from outfall structure 116-K-3 discharges into two, welded, 84-in. diameter by 1/2-in. wall thickness carbon-steel lines, which in turn discharge under water in the main channel of the river. The pipelines are covered with river sediments along it's length to an average of 2 ft.

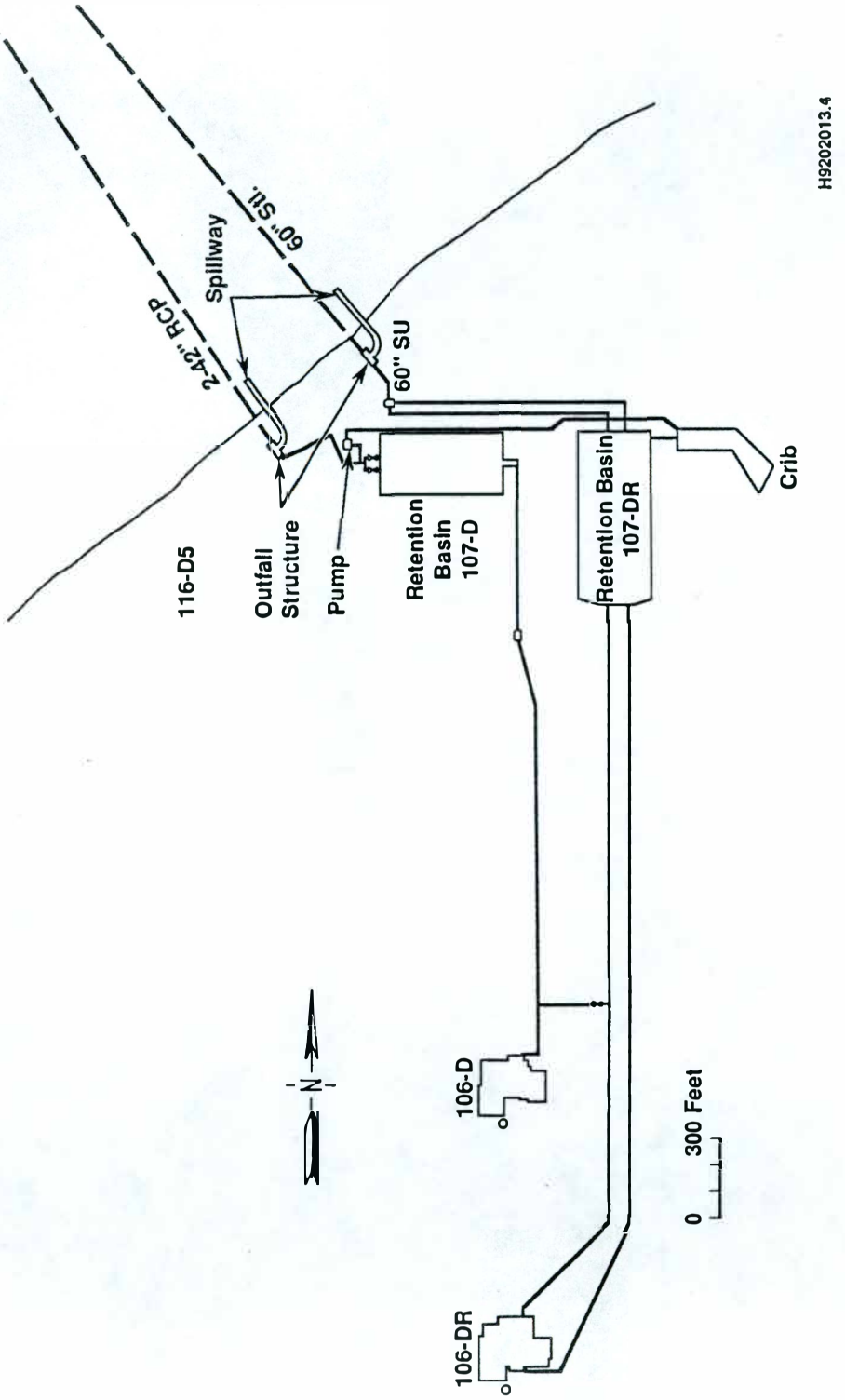



**Figure 3.** Effluent System, D and DR Reactors.

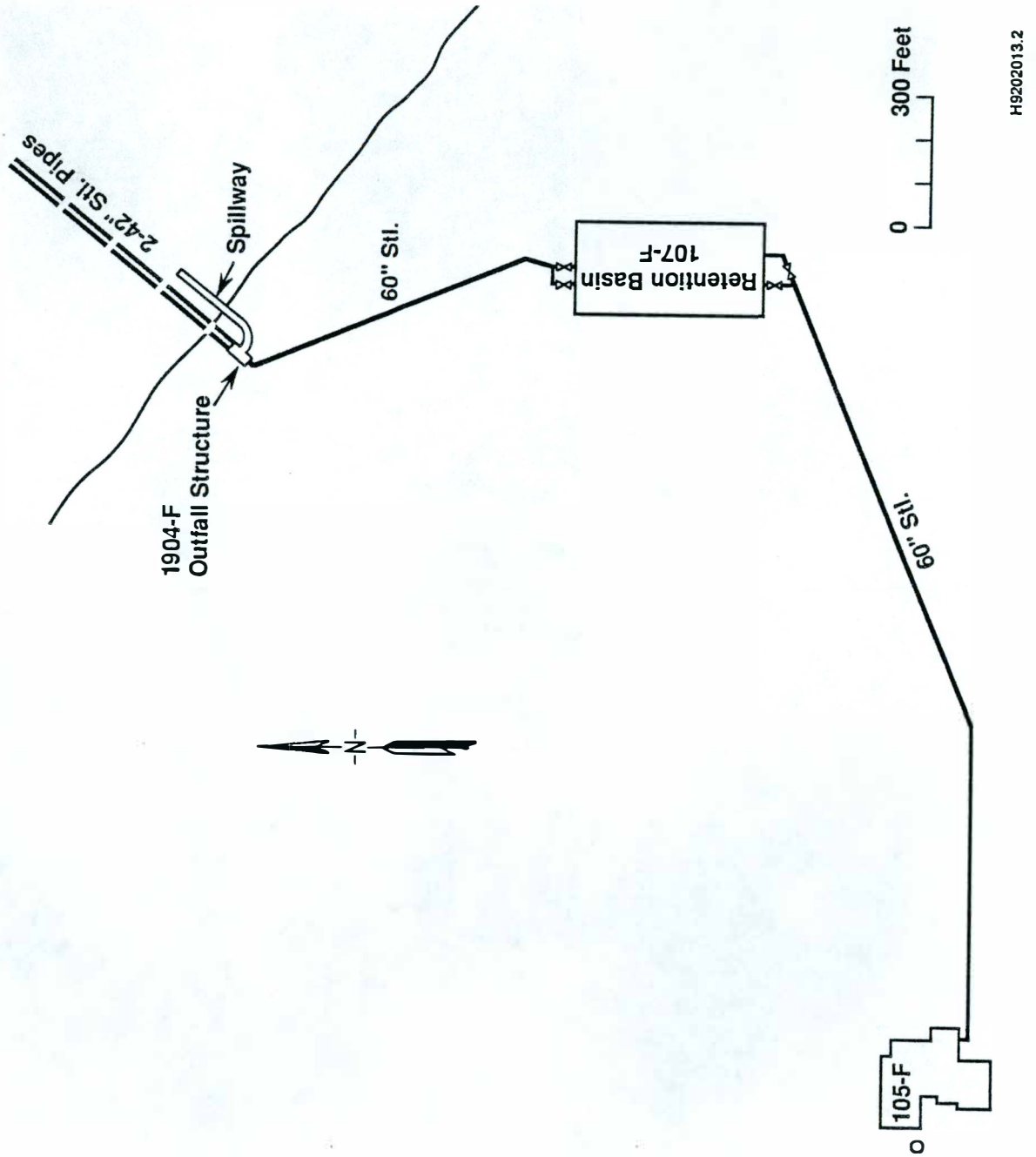



**Figure 4.** Effluent System, F Reactor.

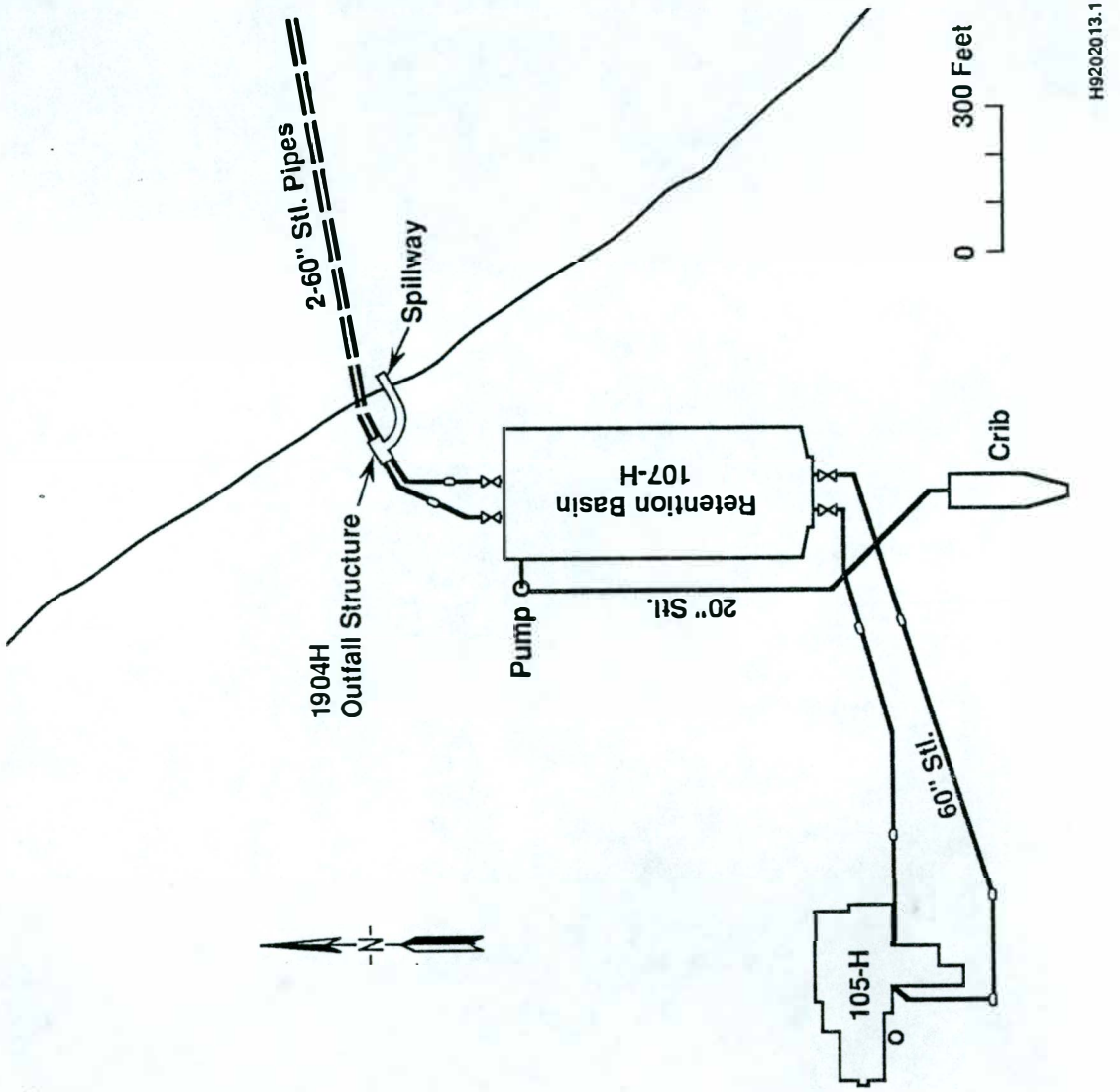



**Figure 5.** Effluent System, H Reactor.

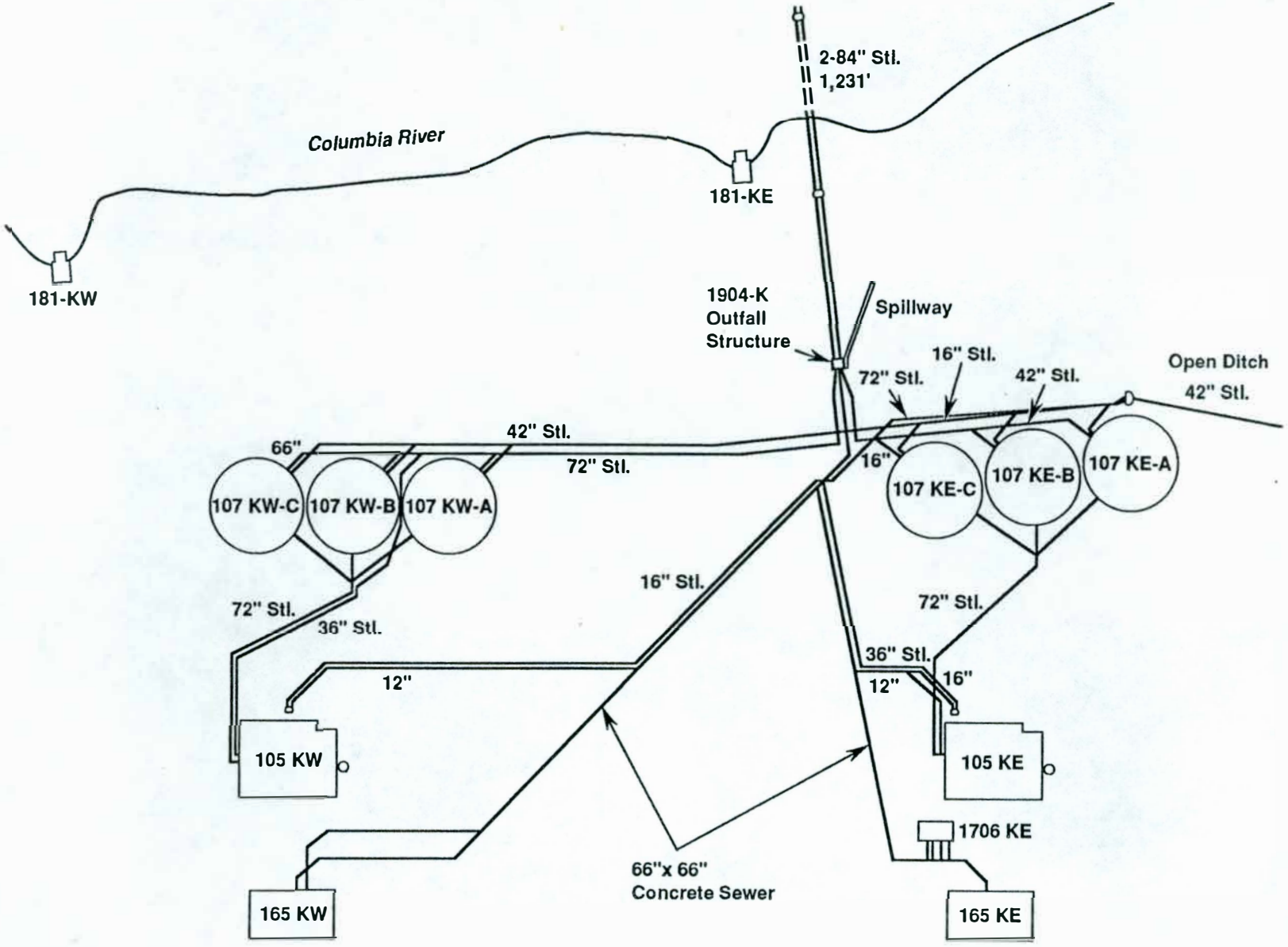



Figure 6. Reactor Retention Basin System, K Reactors.

### 2.3.6 N Reactor

The 102-in. Outfall Line is a discharge point (outfall number 009), which disposed raw river water used to cool the secondary cooling water for the N Reactor. The discharge line extends approximately 400 ft into the Columbia River and turns upward where water is discharged through a 13-ft port. The pipeline is covered with river sediments to an average of 6 to 8 ft. There are at least four air risers, approximately 50 ft apart, in the pipe.

## 2.4 SUMMARY OF 1984 CHARACTERIZATION REPORT

During early spring 1984, the deactivated effluent water discharge lines (river lines) for the 100-C, 100-DR, 100-F, and 100-H areas were radiologically and physically characterized by United Nuclear Inc., Decommissioning Services and Suboceanic Consultants, Inc.



The subcontractors located the lines, verified the size, number and position, assessed the condition, and helped provide pipe sections and sediment samples. It was found that pipe segments were missing from the 100-F pipelines. These pipelines were later discovered, in an effort separate from the characterization activities, further down the riverbank.

Decommissioning Health Physics surveyed pipes and analyzed sediment and scraping samples to determine radionuclides inventory, concentration, and activity. The predominate isotopes in the lines were europium-152 and -154. Higher concentrations were found from scrapings inside pipe samples. For each sample tested, the isotopic concentrations in the sediment were less than in the scrapings. Most of the activity seemed to be fixed within the rust on the interior pipe surface from which the scrapings were collected. The contact dose rate on the outside of the pipe surface was zero. The contact dose rate on the interior surface was less than 1 mrem/h.

# 3.0 BENEFIT OF THE EXPEDITED RESPONSE ACTION

Under the current Tri-Party Agreement schedule, the 100 Area Operable Unit work plans are in the process of being written. It may be many years before the river pipelines are removed as part of each operable unit clean-up activity using the current work plan approval process.

Based on conditions found by the subcontractor during the 1984 pipeline characterization work for 100-C, -DR, -F, and -H Areas, the river discharge lines pose no immediate hazard from a radiological or an industrial safety standpoint. However, according to subcontractor findings in 1984, the condition of the anchors and loss of cover from the majority of the lines indicated that some type of removal action must be considered.

With the exception of 100-H Area, which was repaired, reanchored and covered, all the lines and anchors are suffering from the continuing action of the river undermining the anchors and piping. The river action will eventually destroy the stability of the lines, as apparently happened at the

100-F Area (a segment of a pipe was found to be missing for 100-F Area during the characterization work). Should a section of piping be dislodged, it could pose a navigational hazard. Additionally, it could pose a slight radiological hazard should someone unfamiliar with its radiological condition try to move the structure.

Based on a diver's observation during the 1984 characterization work, it is difficult to determine how long the lines will remain stable. It is possible to say that eventually the action of the river will totally undermine the piping and supports, losing their structural integrity.

## 4.0 CONCEPT OF THE EXPEDITED RESPONSE ACTION

### 4.1 GOAL

The goal of the ERA is to stabilize or remove and dispose of the contaminated effluent pipelines in the 100 Area. The remaining area would then be stabilized. The overall result would reduce any potential for the general public to come into contact with the potentially contaminated pipelines.



### 4.2 MEASURE OF SUCCESS

Success of the ERA will be measured in terms of stabilization or removal and subsequent disposal of the pipelines. Success will also be measured in terms of stabilization of the affected areas.

### 4.3 NET RESULT

Implementation of the proposed action would result in permanently removing the threat to the general public from the pipelines. Advantages of implementing the proposal include removing the safety and possible radiological hazards that could arise should the pipelines further disintegrate. The disadvantages to implementing the proposal are the complex regulatory issues associated with disturbing and/or excavating the rivershore.

### 4.4 IMPLEMENTATION

The process for implementing an ERA for the 100 Area pipelines would follow the format outlined in the Tri-Party Agreement, and 40 CFR 300. The ERA is considered to be non-time critical, such that a planning period of at least 6 months would occur before initiation of the activity. Implementation of a non-time critical ERA requires an Engineering Evaluation/Cost Analysis (EE/CA) report to be conducted and submitted to the lead regulatory agency for each pipeline. The EE/CA would be contained in an ERA proposal that would provide the additional details necessary for implementing the alternative chosen in the EE/CA. An example of alternatives being considered for the EE/CA include in situ stabilization of the pipelines and removal of part or

all of the pipelines. The outline of the ERA implementation work flow is briefly described in the following sections.

### 4.4.1 Project Plan

Initially, a brief ERA Project Plan will be prepared that outlines how each phase of the ERA is implemented (Appendix B). The project plan identifies each of the remediation alternatives (that will be considered in the EE/CA) and the site evaluation tasks necessary to evaluate the alternatives. This plan is considered to be a secondary document as defined in the Tri-Party Agreement.

### 4.4.2 Site Evaluation

The principle purpose of the site evaluation is to refine the conceptual model of the nature and extent of contaminants, and the physical characteristics of each site necessary to complete the ERA evaluation. In addition, the data will be used to assess worker health and safety. Site evaluation will be completed by reviewing existing data and nonintrusive surveys.



### 4.4.3 Proposal and Action Memorandum

The ERA proposal includes an analysis of the various remediation alternatives. The EE/CA provides refinement and specification of the alternatives, followed by a detailed analysis based on: (1) public health, welfare, and environmental impacts, (2) technical feasibility, (3) institutional considerations, and (4) cost. Appendix C provides an annotated outline for the ERA proposals.

The EE/CA is documented in the ERA proposal and will be submitted for concurrent review by DOE, EPA, and Ecology. The document will undergo public review. Following approval, an ERA Action Memorandum will be issued.

### 4.4.4 Design and Implementation

Following approval of the ERA proposal, the chosen alternative will be designed if necessary. Implementation of the project will be conducted when impacts to the river would be anticipated minimal.

### 4.4.5 Reporting

There will be a need to prepare and provide periodic status reports concerning the progress of the ERA for distribution to the concerned parties. Upon completion of the ERA, a final report assessing and evaluating the ERA will be prepared for distribution.

### 4.5 ERA SELECTION WORKSHEET

A selection worksheet has been completed for the project and is provided in Appendix D.

### 4.6 COST AND SCHEDULE SUMMARY

The preliminary schedule and cost estimate for the ERA are provided in Appendices E and F, respectively. The preliminary estimates for the schedule and costs are based on removal actions.

## 5.0 REFERENCES

Ecology, 1991, *Hanford Federal Facility Agreement and Consent Order*, U.S. Department of Energy, U.S. Environmental Protection Agency, and State of Washington Department of Ecology, Olympia, Washington.

# APPENDIX A

# AGREEMENT IN PRINCIPLE

# AGREEMENT IN PRINCIPLE
Between the United States Department of Energy,
the United States Environmental Protection Agency,
and the State of Washington

THIS AGREEMENT is entered into between the United States Department of Energy (DOE), the United States Environmental Protection Agency (EPA), and the State of Washington.

WHEREAS, the parties to this AGREEMENT have previously entered into the Hanford Federal Facility Agreement and Consent Order on May 15, 1989, (Tri-Party Agreement) to provide for the coordinated efforts of all parties to assure compliance of DOE Hanford Site activities with requirements of the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), including corrective actions and remedial actions required by those Acts, and applicable state law; and



WHEREAS, the parties have pursuant to RCRA, CERCLA and the Tri-Party Agreement instituted the process of conducting CERCLA remedial investigations and feasibility studies (RI/FS) and RCRA facility assessments and corrective measures studies (RFI/CMS) of operable units on the Hanford Site; and

WHEREAS, the parties are desirous of taking immediate steps to accelerate the physical restoration of the Hanford Site prior to completion of RI/FS and RFI activities through performance of expedited response actions;

NOW, THEREFORE, DOE, EPA, and the State of Washington agree as follows:

1. That each party reaffirms its commitment to the Tri-Party Agreement.

2. That USDOE reaffirms its obligations and commitment to seek sufficient funding from Congress to meet all existing milestones in the Tri-Party Agreement and future new milestones or revised milestones established by agreement of the parties in accordance with Article XL of the Tri-Party Agreement.

3. DOE has identified a list of potential Hanford Site projects which may be considered for expedited response actions. Candidate projects under consideration for expedited response actions. include, but are not limited to:

   a. 618-9 Burial Ground Remediation
   b. 300 Area Process Trenches Sediment Removal
   c. 200 West Area Carbon Tetrachloride Treatment.

4. DOE will propose the selected projects to Ecology and EPA for their review of the technical basis, costs and feasibility for these projects. The three parties will jointly propose to the public those projects if they meet regulatory approval. The three parties will follow the public involvement procedures of the Tri-Party Agreement and the CERCLA National Contingency Plan.

5. Following regulatory and public review, DOE commits to implementing these three candidate projects, or other appropriate projects from the list, pursuant to a schedule agreed upon by the three parties. DOE commits to the implementation of these projects as additions to the Tri-Party Agreement and without an impact on the existing milestones of the Tri-Party Agreement.

6. In order to understand the total activities under consideration and to establish a baseline for the activity which can be used as a basis for decisions and against which progress can be measured, the initial step for each of the potential projects is the development of a detailed cost estimate based upon that plan.

7. These activities will be conducted in a manner consistent with prudent management and will serve as a model for future activities in the Environmental Restoration and Waste Management Program.

8. The parties will use their best efforts to complete the steps identified in the foregoing paragraphs as soon as practical.

NOW, THEREFORE, the parties hereto have signed this AGREEMENT in recognition of their pledge of mutual best efforts to achieve through cooperation and negotiation, in good faith, the understandings as set forth above on this 18th day of October, 1990.

James D. Watkins
Secretary of Energy

William Reilly, Administrator
U. S. Environmental Protection Agency

Honorable Booth Gardner, Governor
State of Washington

# APPENDIX B

# PROJECT PLAN OUTLINE

# ERA Project Plan

1.0 INTRODUCTION

- 1.1 PURPOSE
- 1.2 BACKGROUND
- 1.3 ORGANIZATION

2.0 SITE CHARACTERIZATION

- 2.1 REVIEW OF EXISTING DOCUMENTATION
- 2.2 IDENTIFY DATA NEEDS

3.0 PRELIMINARY SCREENING OF ACTIVITIES

4.0 SITE EVALUATION TASKS

5.0 ERA PROPOSAL TASKS

6.0 ERA DESIGN AND IMPLEMENTATION TASKS

7.0 PROJECT SCHEDULE

8.0 REFERENCES

ATTACHMENTS

1 Data Management Plan
2 Community Relations Plan
3 Memos, Letters

# APPENDIX C

# ANNOTATED EXPEDITED RESPONSE ACTION PROPOSAL OUTLINE

## 1.0 INTRODUCTION

The introduction will define the purpose and scope of the ERA proposal. The discussion will include the various reasons and requirements for performing the ERA. The relationship between the ERA and the ongoing Remedial Investigation/Feasibility Study activities will also be described.

## 2.0 SITE DESCRIPTION

This section will provide a brief description of the site being considered for an ERA. A summary of the information that is pertinent to the selection of the preferred alternative will be included. This information will be provide in a site characterization report.



## 3.0 DESCRIPTION OF THE ERA ALTERNATIVES

This section will develop the various ERA alternatives being considered. This section does not attempt to evaluate the ERA alternatives. Below is an outline of the contents of this section.

### 3.1 ERA ALTERNATIVE NAME

- 3.1.1 Description of Alternative
- 3.1.2 Requirements for Implementing Alternatives
- 3.1.3 Impact on Future Restoration Activities
- 3.1.4 Maintenance Requirements
- 3.1.5 Cost Estimates

## 4.0 EVALUATION CRITERIA

Each of the criteria that is to be used to evaluate the ERA alternatives described in Section 3.0 are identified in this section. The method of scoring the alternatives against these criteria will also be explained. The types of evaluation criteria utilized will be based on EPA's "Nine criteria for evaluation" as listed in 40 CFR Part 300.430, which are as follows:

1) Overall protection of human health and the environment;
2) Compliance with applicable or relevant and appropriate requirements;
3) Long-term effectiveness and performance;
4) Reduction of toxicity, mobility or volume through treatment;
5) Short-term effectiveness;
6) Implementability;

7) Cost;
8) Regulatory Acceptance;
9) Community Acceptance.

## 5.0 SELECTION OF ALTERNATIVES

The purpose of this section is to select the preferred ERA alternative. Each alternative developed in Section 3.0 will be evaluated for implementation using the criteria listed in Section 4.0.

## 6.0 PREFERRED ERA ALTERNATIVES IMPLEMENTATION

This section will provide a discussion detailing the implementation of the preferred ERA alternative chosen in Section 5.0. All procedures that will be used, or that need development will be identified. All permits, such as excavation permits and Hazardous Waste Operators Permits will also be mentioned. Health and Safety, waste management, waste minimization, and environmental monitoring will be discussed herein.



## 7.0 PROJECT MANAGEMENT PLAN

Each of the organizations that will participate in the implementation of the ERA and their roles will be identified in this section. A flow chart showing the management structure, a detailed schedule for implementation, and cost estimates for implementing the ERA activity will also be provided.

# APPENDIX D

# ERA SELECTION WORKSHEET

**Project Name:** 100 Area Pipelines Removal

**Project Description:** The proposed project would consist of removing and decontaminating pipelines which are located in the 100 Area and previously discharged to the Columbia River.

**ERA Category:** Time Critical __ Non-Time Critical X

## Evaluation Checklist

**Time Critical ERAs:**

Actual Exposure/Release: Yes__ No X

Imminent Exposure/Release: Yes__ No X

Rationale:

**Non-Time Critical ERAs:**

1. Potential Exposure: Yes X No __

   Rationale: Historical documentation shows that elevated concentrations of Europium-152 and-154 are found to be present inside pipe samples. Should the pipes become dislodged, persons (i.e. general public) unfamiliar with the piping could potentially be exposed to radiation.

2. Potential Increased Degradation: Yes __ No X

   Rationale: No increase in environmental degradation will occur if the pipelines are not removed; however, the human health hazard will continue to exist.

3. Implementability: Yes X No __

   Rationale: Given the required amount of funding and staffing, implementation of this project is possible and highly favored.

4. Short-Term Effectiveness: Yes X No __

   Rationale: Since the project would permanently remove any human health hazard, it would be effective in the short-term.

5. Reduction of Toxicity, Volume, Migration: Yes X No __

   Rationale: Since the project would permanently remove any human health hazard, it would result in a reduction of toxicity.

6. Cost Effectiveness: Yes __ No X

Rationale: Implementation of this project immediately would not result in any significant reduction in cost.

7. Long-Term Effectiveness: Yes X No __

Rationale: Since the project would permanently remove any human health hazard, it would be effective in the long-term.

8. Consistent with Final Remedy: Yes X No __

Rationale: Implementation of this project would be consistent with the final remedy for the operable unit.

9. Compliance with ARARs: Yes X No __

Rationale: Since this project would result in permanent removal of the pipeline, selection of removal alternatives would strive to be consistent with final ARARs for the operable unit.

10. Information for RI/FS or Remedial Design: Yes __ No X

Rationale:

11. Demonstrate Technologies: Yes X No __

Rationale: If the project were to be chosen as an ERA, final results of the project would help support future remediation work that may need to be conducted underwater.

12. Community Acceptance: Yes X No __

Rationale: Currently, potential exists for the general public to receive higher than normal exposure to radiation. Implementation of the project would improve relations with nearby communities.

# APPENDIX E

## 100 AREA PIPELINES ERA COST ESTIMATE

The attached cost estimate for the proposed ERA is preliminary and should be considered rough order-of-magnitude. The cost estimate was based on removal actions for all 16 pipelines. A definitive cost estimate will be provided in the EE/CA report for the selected removal alternative.

## PROPOSAL COST ESTIMATE

| | | | |
|---|---|---|---|
| **1. Project Management (3.4 yr)** | | | **$680,000** |
| o Project Manager | 0.10 | FTE/yr @ 3.4 yr | 34,000 |
| o Project Engineer | 1.0 | FTE/yr @ 3.4 yr | 340,000 |
| o Clerk/Typist | 0.10 | FTE/yr @ 3.4 yr | 34,000 |
| o Quality Assurance | 0.125 | FTE/yr @ 3.4 yr | 42,500 |
| o Health/Safety | 0.125 | FTE/yr @ 1.5 yr | 18,750 |
| o Community Relation | 0.125 | FTE/yr @ 3.4 yr | 42,500 |
| o Facility Safety | 1.0 | FTE/yr @ 1.5 yr | 150,000 |
| o Other Permits | 0.125 | FTE/yr @ 1.0 yr | 12,500 |
| | | Subtotal | 674,250 |
| **2. ERA Scoping Activities (9 wk)** | | | **$20,000** |
| o Alternative Identification | 1.0 | FTE @ 4 wk | $7,700 |
| o ERA Project Plan | 1.0 | FTE @ 9 wk | 17,300 |
| | | Subtotal | 25,000 |
| **3. Site Evaluation (4 wk)** | | | **$10,000** |
| o Review of Existing Documentation | 1.0 | FTE @ 3 wk | $5,770 |
| o Identify Data Needs | 1.0 | FTE @ 1 wk | 1,920 |
| | | Subtotal | 7,690 |
| **4. ERA Proposal (34 wk)** | | | **$30,000** |
| o Development of Proposal | .5 | FTE @ 12 wk | $11,538 |
| Review/Approval | .5 | FTE @ 22 wk | 21,154 |
| | | Subtotal | $32,692 |

| | | | |
|---|---|---|---|
| **5. ERA Implementation (131 wk)** | | | **$ 9,780,000** |
| o Preexcavation Activities | 1.5 FTE @ 40 wk | | $115,385 |
| o Excavate Pipelines | | | |
| 2 divers/1 tender/wk = | 4.0 FTE @ 32 wk | | 246,154 |
| site personnel = | 8.0 FTE @ 32 wk | | 492,308 |
| equipment | | | 400,000 |
| o Pipeline Storage | .10 FTE @ 32 wk | | 6,154 |
| o Pipeline Characterization | | | |
| 42 samples @ $10,000/samples (35 wk) | | | 420,000 |
| o Pipeline Disposal (13 wk) | | | 7,500,000[1] |
| o Project Closeout (43 wk) | | | 600,000 |
| Subtotal | | | $9,780,000 |

Project Total Approximately $13,680,000



* 1 FTE/yr = $100,000

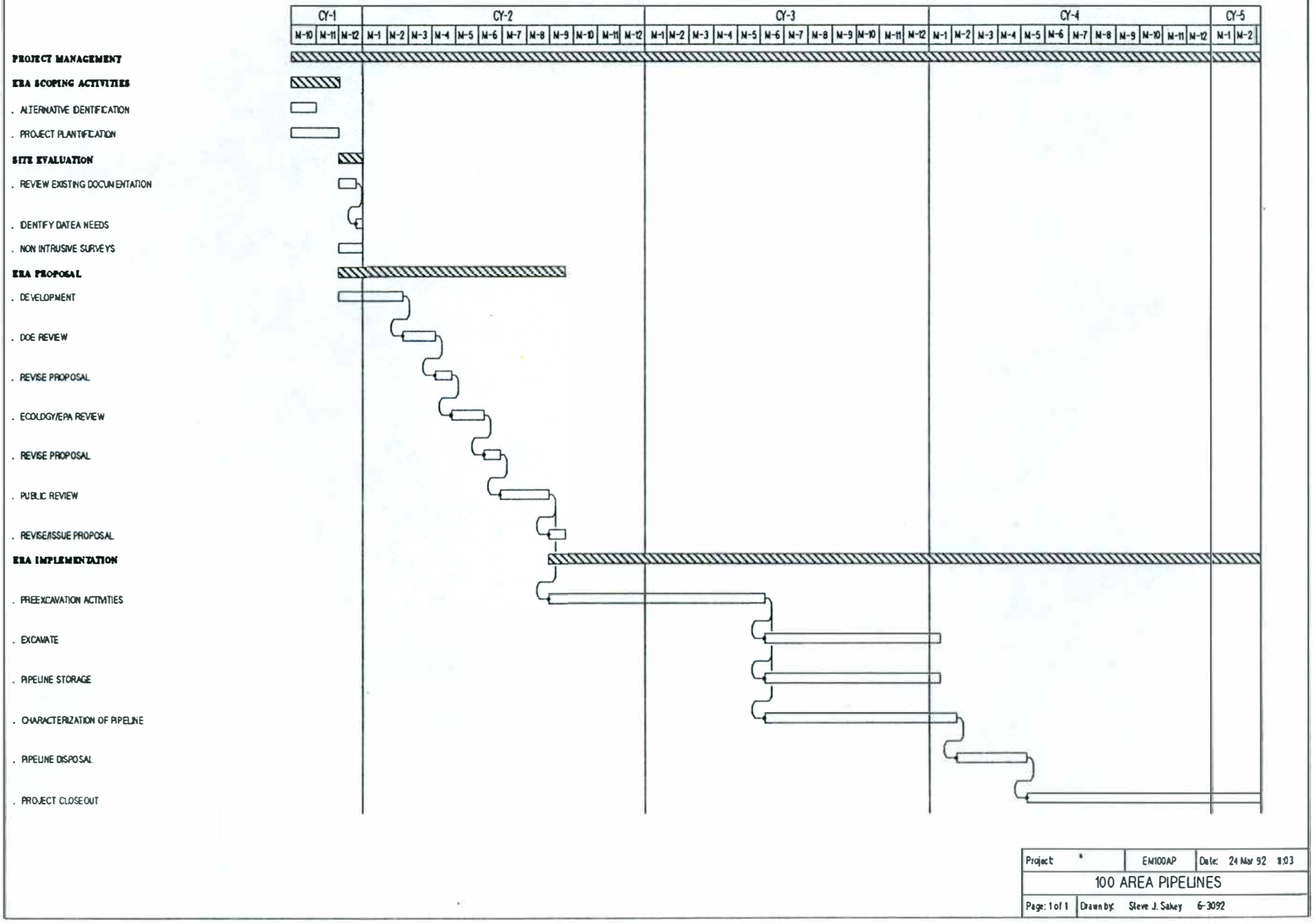
[1]Cost estimate based on pipelines being disposed as low-level radioactive waste.

# APPENDIX F

## ERA SCHEDULE

The attached schedule for the proposed ERA is preliminary. Additional data about the pipeline conditions and health and safety requirements are required to produce an accurate schedule. A final schedule will be provided in the EE/CA report.

# 100 AREA PIPELINES



9251881D
ATTACHMENT 2



# 618-11 BURIAL GROUND

CONTENTS


1.0 INTRODUCTION . . . . . 1
1.1 PURPOSE . . . . . 1
1.2 BACKGROUND . . . . . 1

2.0 SITE DESCRIPTION . . . . . 1

3.0 BENEFIT OF THE ERA . . . . . 4

4.0 ERA CONCEPT . . . . . 5
4.1 GOAL . . . . . 5
4.2 MEASURE OF SUCCESS . . . . . 5
4.3 ADVANTAGES AND DISADVANTAGES OF IMPLEMENTING AN ERA . . . . . 5
4.4 ERA IMPLEMENTATION . . . . . 5
4.5 ERA SELECTION WORKSHEET . . . . . 7
4.6 COST AND SCHEDULE SUMMARY . . . . . 7


FIGURES:


1. 618-11 Burial Grounds on the Hanford Site . . . . . 2
2. Waste Disposal Units in 618-11 Burial Grounds . . . . . 3


ATTACHMENTS


A AGREEMENT IN PRINCIPLE . . . . . A-1
B PROJECT PLAN OUTLINE . . . . . B-1
C ANNOTATED ERA PROPOSAL OUTLINE . . . . . C-1
D ERA SELECTION WORKSHEET . . . . . D-1
E 618-11 BURIAL GROUNDS ERA COST ESTIMATE . . . . . E-1
F ERA SCHEDULE . . . . . F-1

# 1.0 INTRODUCTION

## 1.1 PURPOSE

This document provides information on the proposed expedited response action (ERA) for the 618-11 Burial Ground. The information is presented to the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Ecology (Ecology) to provide a general understanding of the proposed project, which will lead to a decision regarding the continuance of this ERA process.

If the ERA process is continued, a comprehensive ERA proposal will be prepared as a primary document per the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology et al. 1989). This will allow for public involvement and regulatory approval of the ERA prior to actual implementation of the proposed response action.



## 1.2 BACKGROUND

On October 18, 1990, an Agreement in Principle between the U.S. Department of Energy (DOE), EPA, and Ecology was signed (Attachment A). This agreement stated that where possible ERAs should be pursued to accelerate remediation of the Hanford Site. In FY 91, ERA were conducted for the 618-9 Burial Grounds, 300 Area process trenches, and the 200 West Area carbon tetrachloride disposal sites. It has been proposed that the 618-11 Burial Grounds be considered for an ERA due to (1) the high levels of radioactivity associated with the burial grounds, (2) the potential for contamination of the underlying vadose zone and groundwater with radionuclides, and (3) its proximity to Site workers, visitors, and the city of Richland. Figure 1 depicts the location of the 618-11 Burial Ground on the Hanford Site.

# 2.0 SITE DESCRIPTION

Throughout Hanford Site history and before legislation regarding disposal of chemical products, laboratory waste was typically disposed of in trenches and cribs. This waste consisted of low-level laboratory wastes (e.g. gloves, contaminated instruments, etc.) and various high-level and transuranic waste resulting from research and development processes. Data concerning the specific nature and constituents of the waste was often unavailable due to the nature of the records keeping system associated with the work done at Hanford prior to the 1970's. The 618-11 Burial Grounds, also known as the Wye Burial Grounds, is one site for which the above conditions apply.

The 618-11 Burial Ground is located in the 300-IU-1 Operable Unit. The site dimensions are 1,000 by 375 ft. To date, data concerning the 618-11 Burial Grounds indicate that the site consists of three burial trenches (50 by 900 ft), 54 pipe storage units (22-in. diameter by 15 ft depth), and two storage caissons (8-ft diameter by 10 ft depth). Figure 2 depicts the waste disposal units in the burial ground. The pipe storage units consist of five 55-gal drums welded together end to end and buried vertically. The storage caissons are buried 15 ft below grade and are connected to the surface by an offset 3-ft-diameter pipe connected to a dome cap.

Figure 1. 618-11 Burial Grounds on the Hanford Site.

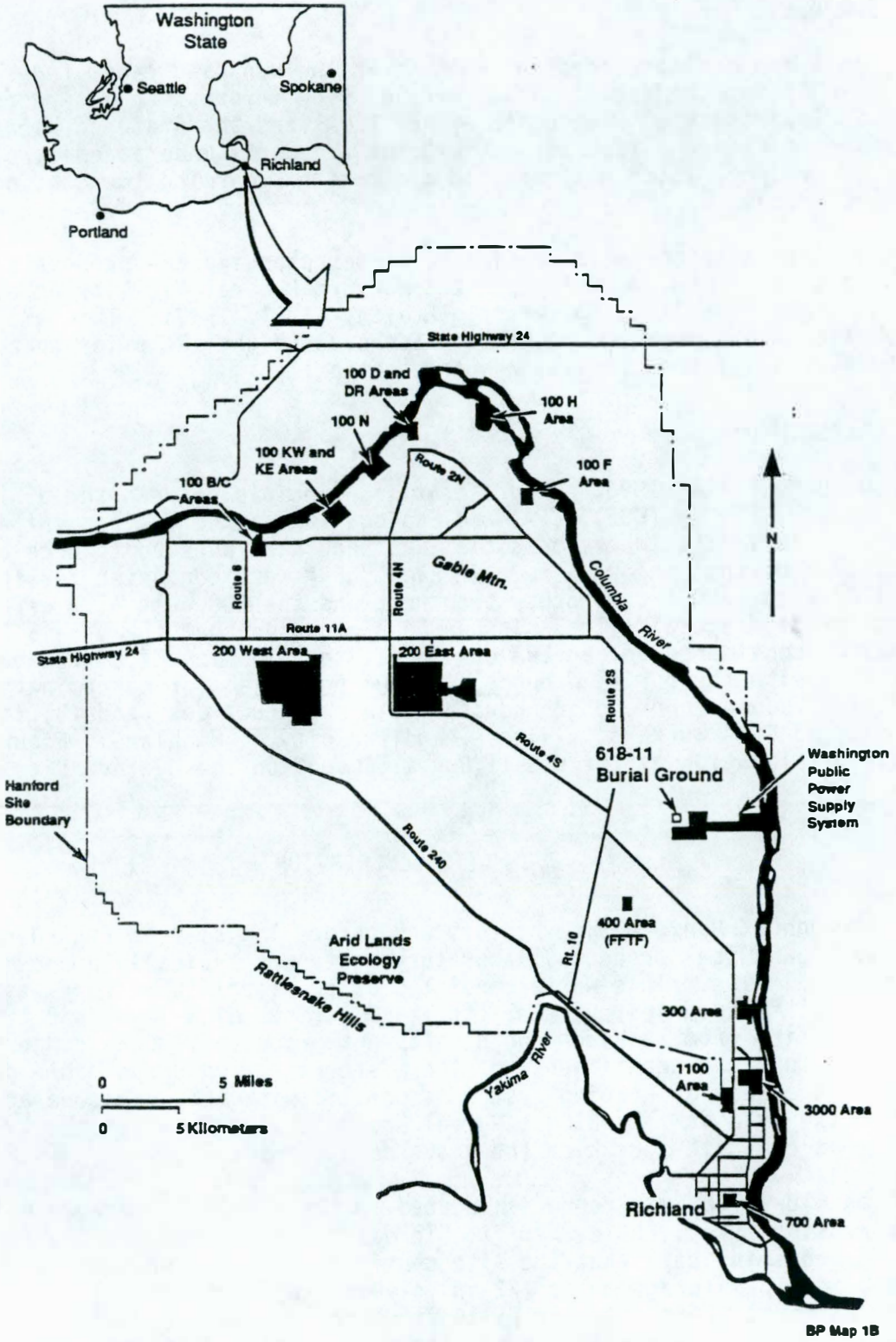
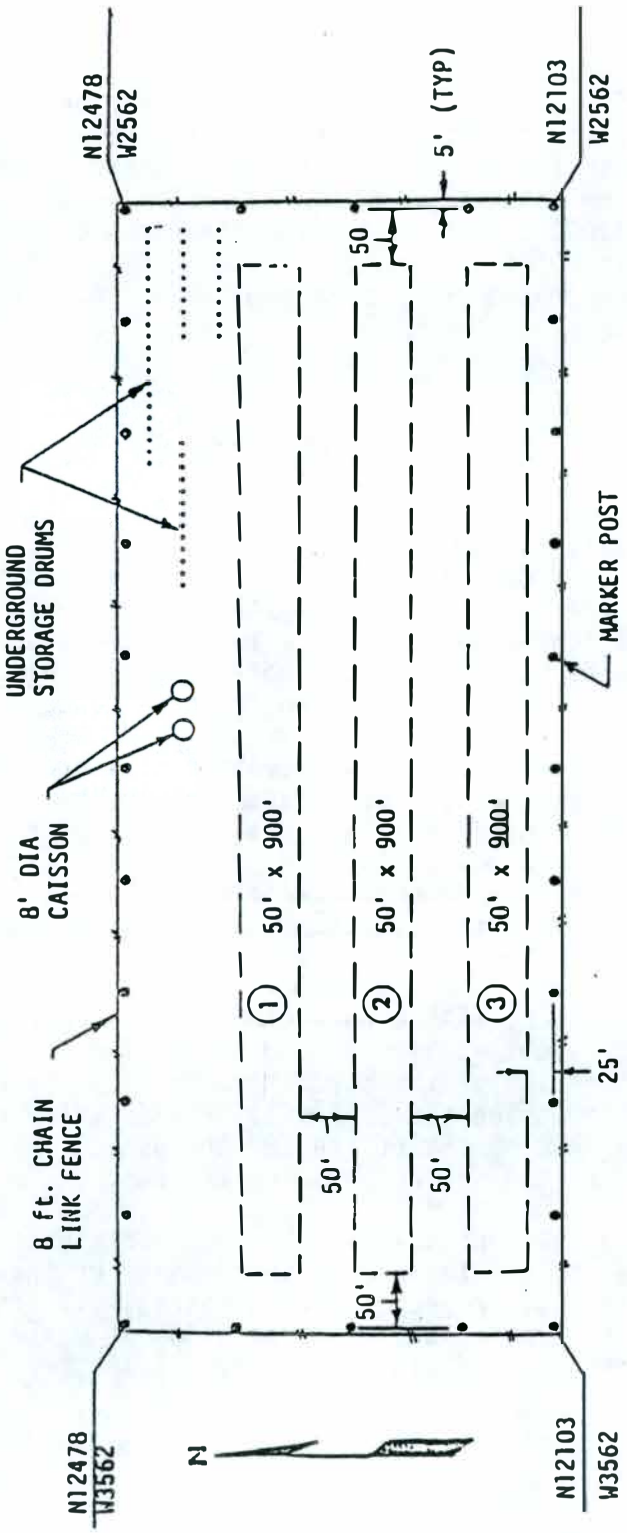


Figure 2. Waste Disposal Units in 618-11 Burial Grounds.



The site was active from March 1962 through December 1967. The trenches contain boxes or drums of miscellaneous waste, such as rubber gloves, wipes, and equipment. Some high activity waste may have been buried in concreted drums within the trenches. The caissons contain cardboard cartons and metal cans containing high activity waste. The vertical pipe storage units contain metal cans of high activity wastes enclosed in concrete within the pipes. Oral interviews with personnel employed in the 300 Area during the 1960's have indicated that some of the metal cans did rupture when being deposited in the pipe storage units. Data indicate that waste was received from the 308, 325, and the 327 buildings in the 300 Area. It has been estimated that approximately 1 kg of plutonium is in the burial grounds. The estimated beta activity in 1982 was 2,000 Ci, the estimated transuranic activity was 96 Ci. Depth to groundwater is 50 ft. There are no groundwater monitoring wells located near the burial ground that would provide an indication of groundwater contamination.



## 3.0 BENEFIT OF ERA

The recent increase in public awareness of activities that influence the environment has drawn considerable attention to the Hanford Site. Many of the concerns expressed by the public concerning the Hanford Site address the issue of offsite exposure of contaminants. Since the trenches and storage units in the 618-11 Burial Grounds may represent a potential exposure situation, completion of the ERA effort would further reduce these concerns.

Removal of wastes from the area in question will prevent the possible migration of radionuclides through the vadose zone to the groundwater. Currently, there is insufficient information available to determine whether the waste has contaminated surrounding soil and groundwater. In addition, implementation of this project will demonstrate in situ characterization of radionuclides in transuranic waste and removal technologies for high activity waste.

It is proposed that the ERA be conducted in three phases that will eventually end with the stabilization of the site. The first phase will be the preliminary investigation of the burial ground. The purpose of Phase I is to gather information about the 618-11 Burial Grounds which could have a significant bearing on development of the ERA proposal. The development of the ERA proposal would be the second phase of the ERA.

The result of the ERA proposal will be the determination of the preferred action to be implemented as the third phase of the ERA. The final phase of the ERA (Phase III, Project Implementation) will involve equipment design and construction, excavation, transportation of wastes to the disposal site, sampling and analysis, and finally project closeout.

# 4.0 ERA CONCEPT

## 4.1 GOAL

The goal of the ERA is to remove the waste from the trenches and to remove the pipe storage units and caissons. Contaminated soils will also be removed and designated as the appropriate waste (low-level or mixed). The remaining area will then be stabilized. The overall result is to remove the potential threat to the vadose zone and underlying groundwater, thus preventing the possible migration of contaminants.

## 4.2 MEASURE OF SUCCESS

Success of the ERA will be measured in terms of removal of waste and subsequent storage and/or treatment of low-level radioactively contaminated soil. Implementation of the action at the burial ground would result in the immediate reduction in the quantity of available contaminants that may cause continued contamination of the vadose zone and potentially the groundwater. The ERA will lead to a reduction in potential dose to the environment and the public. In addition, implementation of the ERA will demonstrate in situ characterization of radionuclides in transuranic waste and removal technologies for high activity waste.



## 4.3 ADVANTAGES AND DISADVANTAGES OF IMPLEMENTING AN ERA

Advantages of implementing the proposal include removal of high-activity, low-level radioactive waste from a burial ground located in close proximity to the Washington Public Power Supply System #2 and demonstrating innovative technologies. Disadvantages to implementation of the proposal include the potentially high costs associated with disposing of the excavated waste, the lack of available storage that may be required, and the potential technical and safety issues associated with the excavation activities.

## 4.4 ERA IMPLEMENTATION

The process for implementing an ERA at the 618-11 Burial Grounds would follow the format outlined in the Tri-Party Agreement, and the Hanford Site Past-Practice Investigation Strategy (DOE-RL 1991, Draft, October 1990). The ERA is considered to be non-time critical because there is no indication that the contamination has spread to areas that could immediately be dangerous to human health and the environment. A planning period of at least 6 mo will occur prior to initiation of the activity. Implementation of a non-time critical ERA requires an engineering evaluation/cost assessment (EE/CA) to be conducted and submitted to the lead regulatory agency (EPA). The EE/CA will be contained in an ERA Proposal which will provide the additional details necessary for implementing the alternative chosen in the EE/CA. The outline of the ERA implementation work flow is briefly described below.

### 4.4.1 ERA Project Plan

Initially, a brief ERA project plan will be prepared that outlines how each phase of the ERA is implemented. The project plan identifies each of the remediation alternatives (that will be considered by the EE/CA) and the site evaluation tasks necessary to evaluate the alternatives. Attachment B contains an outline of a typical project plan. This plan is considered to be a secondary document as defined in the Tri-Party Agreement.

### 4.4.2 Site Evaluation

The principle purpose of the site evaluation is the determination of possible waste constituents and the determination if waste leachate has penetrated the underlying soil. Prior to excavation, all possible information regarding the site will be reviewed. In addition, data are used to assess worker health and safety. Activities that are proposed to be performed in support of Phase I of the ERA include, but are not limited to, historical research, ground-penetrating radar, in situ characterization of the caissons and pipe storage units, and test pits in the low level waste trenches.



### 4.4.3 ERA Proposal and ERA Action Memorandum

The ERA proposal includes an analysis of the various remediation alternatives. The EE/CA provides refinement and specification of the alternatives, followed by a detailed analysis based on: (1) public health, welfare and environmental impacts, (2) technical feasibility, (3) institutional considerations, and (4) cost. Attachment C provides an annotated outline for the ERA proposal. Excavation and subsequent storage of the waste is the alternative which is the basis for planning purposes.

The EE/CA report is documented in the ERA proposal, and undergoes a concurrent DOE, EPA, and Ecology review. The public will also review the document. As specified in the Tri-Party Agreement, the EPA will ultimately be responsible for selecting a remediation alternative for implementation by issuing an ERA Action Memorandum.

### 4.4.4 Design and Implementation

Following approval of the ERA proposal, the chosen alternative will be designed and implemented.

### 4.4.5 Reporting

There will be a need to prepare and provide periodic status reports concerning the progress of the ERA for distribution to the concerned parties. On completion of the ERA, a final report assessing and evaluating the ERA will be prepared for distribution.

## 4.5 ERA SELECTION WORKSHEET

An ERA selection worksheet has been completed for the project and provided in Attachment D.

## 4.6 COST AND SCHEDULE SUMMARY

The preliminary schedule and estimated cost for the ERA are provided in Attachments E and F, respectively. It should be noted that due to the size of the burial ground and the suspected levels of contamination, costs associated with disposal of the waste were not included in the preliminary cost estimate.

# ATTACHMENT A

# AGREEMENT IN PRINCIPLE

AGREEMENT IN PRINCIPLE
Between the United States Department of Energy,
the United States Environmental Protection Agency,
and the State of Washington

THIS AGREEMENT is entered into between the United States Department of Energy (DOE), the United States Environmental Protection Agency (EPA), and the State of Washington.

WHEREAS, the parties to this AGREEMENT have previously entered into the Hanford Federal Facility Agreement and Consent Order on May 15, 1989, (Tri-Party Agreement) to provide for the coordinated efforts of all parties to assure compliance of DOE Hanford Site activities with requirements of the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), including corrective actions and remedial actions required by those Acts, and applicable state law; and

WHEREAS, the parties have pursuant to RCRA, CERCLA and the Tri-Party Agreement instituted the process of conducting CERCLA remedial investigations and feasibility studies (RI/FS) and RCRA facility assessments and corrective measures studies (RFI/CMS) of operable units on the Hanford Site; and

WHEREAS, the parties are desirous of taking immediate steps to accelerate the physical restoration of the Hanford Site prior to completion of RI/FS and RFI activities through performance of expedited response actions;

NOW, THEREFORE, DOE, EPA, and the State of Washington agree as follows:

1. That each party reaffirms its commitment to the Tri-Party Agreement.

2. That USDOE reaffirms its obligations and commitment to seek sufficient funding from Congress to meet all existing milestones in the Tri-Party Agreement and future new milestones or revised milestones established by agreement of the parties in accordance with Article XL of the Tri-Party Agreement.

3. DOE has identified a list of potential Hanford Site projects which may be considered for expedited response actions. Candidate projects under consideration for expedited response actions. include, but are not limited to:

   a. 618-9 Burial Ground Remediation
   b. 300 Area Process Trenches Sediment Removal
   c. 200 West Area Carbon Tetrachloride Treatment.

4. DOE will propose the selected projects to Ecology and EPA for their review of the technical basis, costs and feasibility for these projects. The three parties will jointly propose to the public those projects if they meet regulatory approval. The three parties will follow the public involvement procedures of the Tri-Party Agreement and the CERCLA National Contingency Plan.

5. Following regulatory and public review, DOE commits to implementing these three candidate projects, or other appropriate projects from the list, pursuant to a schedule agreed upon by the three parties. DOE commits to the implementation of these projects as additions to the Tri-Party Agreement and without an impact on the existing milestones of the Tri-Party Agreement.

6. In order to understand the total activities under consideration and to establish a baseline for the activity which can be used as a basis for decisions and against which progress can be measured, the initial step for each of the potential projects is the development of a detailed cost estimate based upon that plan.

7. These activities will be conducted in a manner consistent with prudent management and will serve as a model for future activities in the Environmental Restoration and Waste Management Program.

8. The parties will use their best efforts to complete the steps identified in the foregoing paragraphs as soon as practical.

NOW, THEREFORE, the parties hereto have signed this AGREEMENT in recognition of their pledge of mutual best efforts to achieve through cooperation and negotiation, in good faith, the understandings as set forth above on this 18th day of October, 1990.

James D. Watkins
Secretary of Energy

William Reilly, Administrator
U. S. Environmental Protection Agency

Honorable Booth Gardner, Governor
State of Washington

# ATTACHMENT B

# PROJECT PLAN OUTLINE

## CONTENTS

1.0 INTRODUCTION
- 1.1 PURPOSE
- 1.2 BACKGROUND
- 1.3 ORGANIZATION

2.0 SITE CHARACTERIZATION
- 2.1 REVIEW OF EXISTING DOCUMENTATION
- 2.2 IDENTIFY DATA NEEDS

3.0 PRELIMINARY SCREENING OF ALTERNATIVES

4.0 SITE EVALUATION TASKS

5.0 ERA PROPOSAL TASKS

6.0 ERA DESIGN AND IMPLEMENTATION TASKS

7.0 PROJECT SCHEDULE

8.0 REFERENCES

ATTACHMENTS

1 Data Management Plan
2 Community Relations Plan
3 Memos, Letters

# ATTACHMENT C

# ANNOTATED ERA PROPOSAL OUTLINE

## 1.0 INTRODUCTION

The introduction defines the purpose and scope of the ERA proposal. The discussion includes the various reasons and requirements for performing the ERA. The relationship between the ERA and the ongoing remedial investigation/ feasibility study activities will also be described.

## 2.0 SITE DESCRIPTION

This section provides a brief description of the site being considered for an ERA. A summary of the information that is pertinent to the selection of the preferred alternative is included.



## 3.0 SITE EVALUATION ACTIVITIES

This section describes the activities conducted for characterization of the site. Information gathered during those activities are also included, evaluated, and summarized.

## 4.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This section identifies applicable or relevant and appropriate requirements to be considered in the engineering evaluation/cost analysis.

## 5.0 IDENTIFICATION OF RESPONSE TECHNOLOGIES

Response technologies that could achieve the objectives of the ERA are evaluated. A summary of the evaluation process is provided.

## 6.0 ANALYSIS OF RESPONSE ACTION ALTERNATIVES

Various response action alternatives are assembled and evaluated. Those alternatives warranting further evaluation are summarized.

## 7.0 ENGINEERING EVALUATION/COST ANALYSIS

Each criterion to be used to evaluate the ERA alternatives summarized in Chapter 6 is identified in this section. The method of scoring the alternatives against these criteria is also explained. The alternatives are first screened against the two following criteria: (1) timeliness, and (2) protection of the environment and public health. Those alternatives that meet the screening criteria are further evaluated against the following criteria: (1) reliability/technical feasibility; (2) administrative/managerial feasibility, and (3) reasonable cost.

## 8.0 IMPLEMENTATION OF PREFERRED ERA ALTERNATIVE

This section provides a discussion detailing the implementation of the preferred ERA alternative chosen in Chapter 7. All procedures that will be used or that need development will be identified. All permits, such as excavation permits and Hazardous Waste Operators Permits, will also be mentioned. Health and safety, waste management, waste minimization, and environmental monitoring will be discussed.



## 9.0 PROJECT MANAGEMENT PLAN

Each of the organizations that will participate in the implementation of the ERA and their roles is identified in this section. A flow chart showing the management structure, a detailed schedule for implementation, and cost estimates for implementing the ERA activity are provided.

# ATTACHMENT D

# ERA SELECTION WORKSHEET

## SELECTION WORKSHEET

Project Name: 618-11 Burial Ground

Project Description: The project would consist of removing high activity, low-level radioactive waste from the burial ground.

ERA Category: Time Critical __ Non-Time Critical X

Evaluation Checklist

Time Critical ERAs:

Actual Exposure/Release Yes__ No X

Imminent Exposure/Release Yes__ No X

Rationale:

Non-Time Critical ERAs:

1. Potential Exposure: Yes X No __

   Rationale: Due to the location of the burial ground, potentially contaminated groundwater could migrate to the Columbia River.

2. Potential Increased Degradation: Yes X No __

   Rationale: Through various discussions with personnel working in the 300 Area at the time the burial grounds were operating, it has been indicated that bottoms do not exist for the caisson and pipe disposal units. If that is the case, the potential exists for any liquid waste that may have been buried to migrate.

3. Implementability: Yes X No __

   Rationale: Due to the potential high radioactive levels of the waste that may have been buried in the burial ground, implementation of the project has its advantages and disadvantages. A major issue with implementation of the project is maintaining occupational exposure to radiation as low as reasonably achievable (ALARA). If the technology exists for conducting the ERA using remote equipment, implementation of the project is possible.

4. Short-Term Effectiveness: Yes X No __

Rationale: Since implementation of this project would result in permanent removal of the waste from the burial ground the project would be effective in the short-term.

5. Reduction of Toxicity, Volume, Migration: Yes X No __

Rationale: Implementation of this project would eliminate toxicological and migratory hazards.

6. Cost Effectiveness: Yes __ No __

Rationale: In determining cost effectiveness of the proposal, several factors must be considered. Removal of the waste from the burial ground today would decrease the migration of any contamination. However, due to the high activity of the waste, it would have to be stored temporarily until the technology is available to reduce radioactivity levels. Should implementation of the proposal be postponed until appropriate technology is available, the potential for contamination to migrate increases.

7. Long-Term Effectiveness: Yes X No __

Rationale: Implementation of this project would result in permanent elimination of any human health and environmental hazards that currently exist at the burial ground.

8. Consistent with Final Remedy: Yes X No __

Rationale: Removal of the radioactive waste is consistent with final remediation of the 300-IU-1 Operable Unit.

9. Compliance with ARARs: Yes X No __

Rationale: Since the project would result in permanent removal of the radioactive waste, it would strive to be consistent with final ARARs for the operable unit.

10. Information for RI/FS or Remedial Design: Yes X No __

Rationale: The project would provide additional information for use in future radioactive and remotely designed remediation projects.

11. Demonstrate Technologies: Yes X No __

Rationale: Implementation of the project would support future use of remote equipment in remediation activities and in situ characterization of radionuclides in transuranic wastes.

12. Community Acceptance: Yes X No __

Rationale: Positive acceptance of this project by the community is anticipated due to the current location and radioactivity levels at the burial ground.

## ATTACHMENT E

## 618-11 BURIAL GROUNDS ERA COST ESTIMATE

The attached cost estimate for the proposed ERA is preliminary and should be considered rough order-of-magnitude. Due to the size of the burial ground and the suspected levels of contamination, costs associated with the final disposal of the waste were not included in the cost estimate. The basis for many of the costs was primarily from costs associated with the 316-5 Process Trenches and the 618-9 Burial Ground ERA. Costs associated with design of the equipment was based on best professional judgement. A 30% contingency cost factor was included in the estimate. A definitive cost estimate will be provided in the ERA proposal (EE/CA) for the selected remediation alternative. Assumptions used for developing the cost estimate include the following:

- trenches contain low level radioactive (possible mixed) waste
- caissons and pipe storage units contain high-activity/transuranic waste
- in situ characterization work will be funded by the Office of Technology Development
- waste is removed from the burial ground
- high activity waste can be temporarily stored in a canyon building on the Hanford Site.

## PROPOSAL COST ESTIMATE

| | | | |
|---|---|---|---|
| **Project Management** | | | **$1,160,080** |
| Project Manager | 0.10 FTE/yr. @ 5.9y | = | 59,000 |
| Project Engineer | 1.0 FTE/yr. @ 5.9y | = | 590,000 |
| Clerk/Typist | 0.10 FTE/yr. @ 5.9y | = | 59,000 |
| Quality Assurance | 0.125 FTE/yr. @ 5.9y | = | 73,750 |
| Health/Safety | 0.125 FTE/yr. @ 2.5y | = | 23,250 |
| Community Relation | 0.125 FTE/yr. @ 5.9y | = | 73,750 |
| Facility Safety | 1.0 FTE/yr. @ 2.5y | = | 250,000 |
| Other Permits | 0.125 FTE/yr. @ 2.0y | = | 25,000 |
| | Subtotal | | 1,162,750 |

| | | |
|---|---|---|
| **Phase I Preliminary Investigation** | | **$ 470,000** |
| Extensive Historical Research | 1.0 FTE @ 3 mo | $ 25,000 |
| Geophysical Surveys | 3.0 FTE @ 3 mo | 75,000 |
| Landfill Test Pits | 11.0 FTE @ 3 mo | 275,000 |
| Characterization Demonstration for Caissons and Pipe Storage Units | 4.0 FTE @ 3 mo | 100,000 |
| | Subtotal | 475,000 |

| | |
|---|---|
| **Phase II ERA Proposal** | **$ 70,000** |
| Development and Issuance of Proposal | 1.0 FTE @ 8.0 mo 66,667 |

**Phase III Project Implementation** **$12,210,000**

A. Radioactive Containment Equipment Design/Construct

| | |
|---|---|
| Containment for Pipe Storage Units | $5,500,000 |
| Containment for Caissons | 1,100,000 |
| Remote Cutters for Caissons | 50,000 |
| Subtotal | 6,650,000 |

B. Excavation Characterization of Radioactive Waste and Disposal Site

| | | |
|---|---|---|
| Pipe Units | 20 FTE @ 6 mo | $1,000,000 |
| Caissons | 20 FTE @ 3 mo | 500,000 |
| Burial Trenches | 15 FTE @ 12 mo | 1,500,000 |
| Characterization of site and waste | $7,500/sample @ 60 samples | 450,000 |
| | Subtotal | 3,450,000 |

## PROPOSAL COST ESTIMATE (Cont)

| | | | |
|---|---|---|---|
| C. | Transportation | | $1,000,000 |
| D. | Project Closeout Development and Issuance of Final Report | 1.0 FTE @ 7 mo | 58,300 |
| | Stabilize Site | 3.0 FTE @ 2 mo | 50,000 |
| | | Subtotal | 108,333 |
| E. | Waste Storage at Canyon Building | | $1,000,000 |

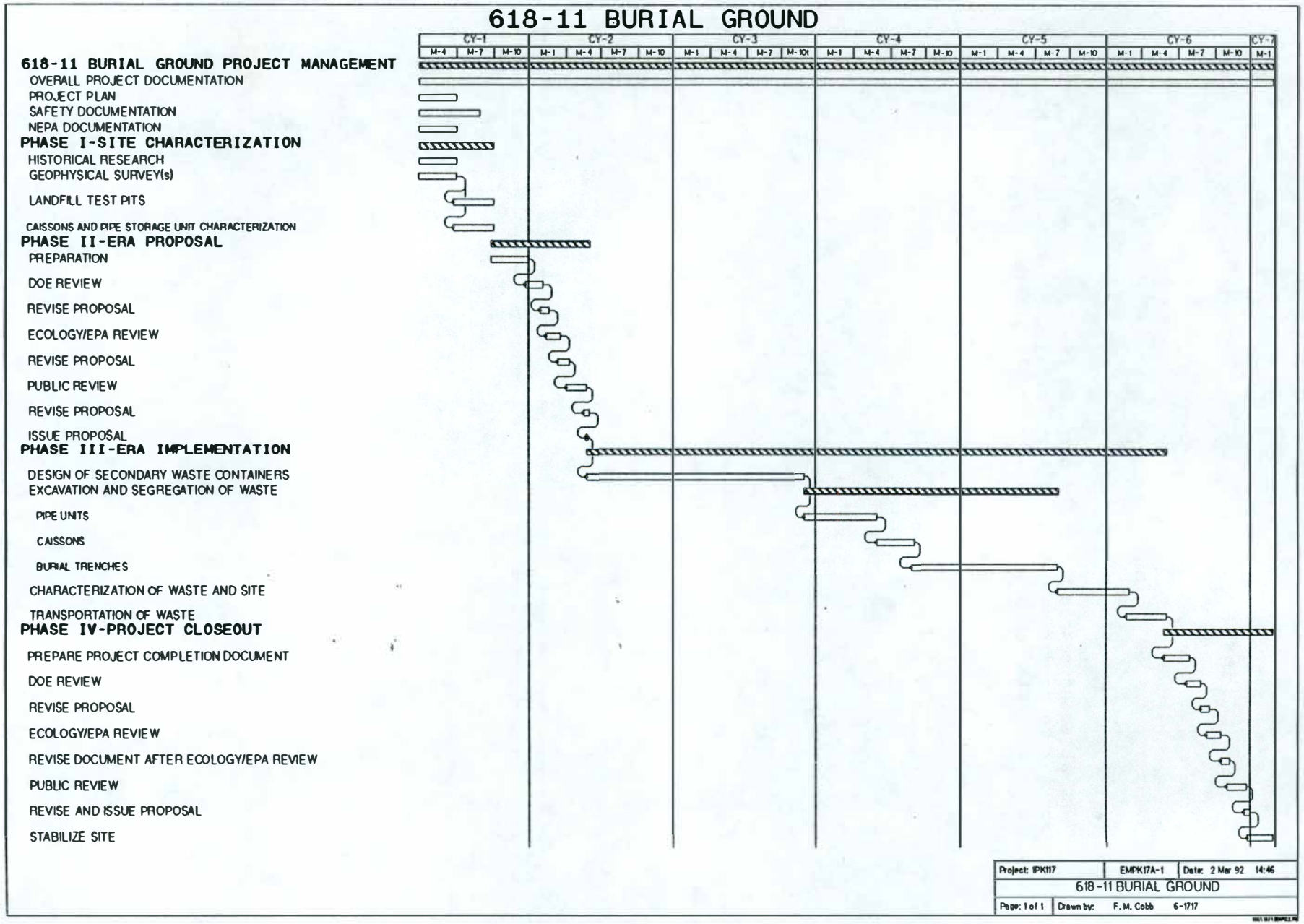
**Total Project Cost Approximately $18,100,000**

1 FTE/yr. = $100,000

# ATTACHMENT F

## ERA SCHEDULE

The attached schedule for the proposed ERA is preliminary. Additional data about site conditions and health and safety requirements are required to produce an accurate schedule. A final schedule will be provided in the ERA proposal.



9251881D
ATTACHMENT 3



# SODIUM DICHROMATE DISPOSAL SITE

## CONTENTS


1.0 INTRODUCTION . . . . . 1
1.1 PURPOSE . . . . . 1
1.2 BACKGROUND . . . . . 1

2.0 SITE DESCRIPTION AND BACKGROUND . . . . . 1

3.0 BENEFIT OF THE EXPEDITED RESPONSE ACTION . . . . . 3

4.0 CONCEPT OF THE ERA . . . . . 3
4.1 GOAL OF THE ERA . . . . . 3
4.2 MEASURE OF SUCCESS . . . . . 3
4.3 ERA IMPLEMENTATION . . . . . 3
4.4 ERA SELECTION WORKSHEET . . . . . 5
4.5 COST AND SCHEDULE SUMMARY . . . . . 5

5.0 REFERENCES . . . . . 5

FIGURE:

1. Map of Hanford Site and the Sodium Dichromate Disposal Facility . . 2

ATTACHMENTS

A AGREEMENT IN PRINCIPLE . . . . . A-1
B PROJECT PLAN OUTLINE . . . . . B-1
C ANNOTATED ERA PROPOSAL OUTLINE . . . . . C-1
D ERA SELECTION WORKSHEET . . . . . D-1
E SODIUM DICHROMATE BARREL DISPOSAL SITE . . . . . E-1
F ERA SCHEDULE . . . . . F-1

# 1.0 INTRODUCTION

## 1.1 PURPOSE

This document provides information on the proposed expedited response action (ERA) for the Sodium Dichromate Barrel Disposal Site. The information is presented to the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Ecology (Ecology) to provide a general understanding of the proposed project, which will lead to a decision regarding the continuance of this ERA process.

If the ERA process is continued, a comprehensive ERA proposal will be prepared as a primary document per the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology et al. 1989). This will allow for public involvement and regulatory approval of the ERA prior to actual implementation of the proposed response action.



## 1.2 BACKGROUND

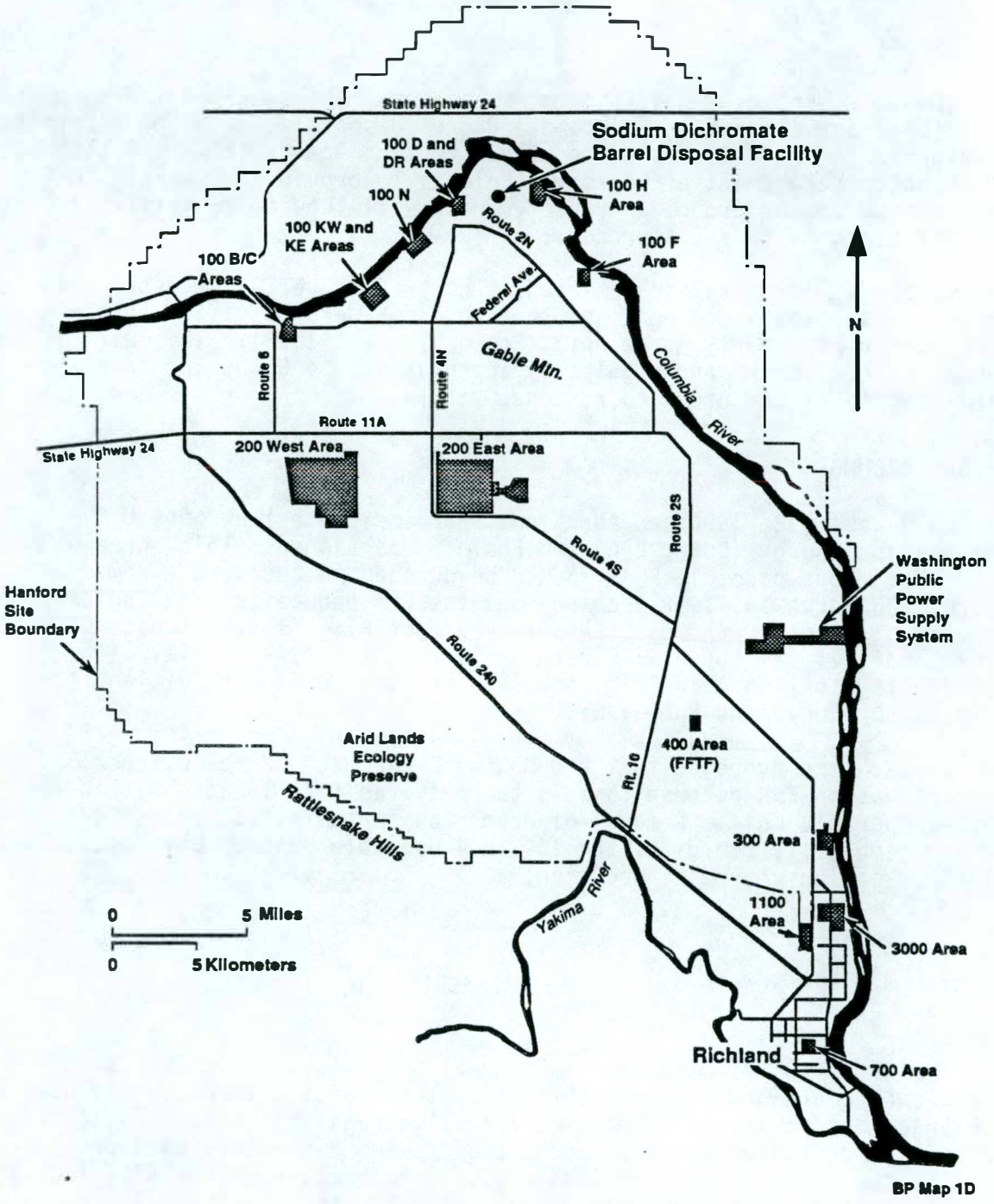
On October 18, 1990, an Agreement in Principle between the U.S. Department of Energy (DOE), EPA, and Ecology was signed. This agreement stated that where possible ERAs should be pursued to accelerate remediation of Hanford. On March 14, 1992, Ecology and the EPA requested planning proposals be prepared for four candidate ERAs (Attachment A): (1) the Sodium Dichromate Barrel Landfill; (2) the U.S. Bureau of Reclamation 2,4-D Burial Site; (3) the White Bluffs Pickling Acid Crib; and (4) the River Rail Wash Pit and the 600 Area Army Munitions Burial Site.

It has been proposed that the Sodium Dichromate Barrel Disposal Site be considered as an ERA because this is the only facility located within the 100-IU-4 Operable Unit. Removal of drums and contaminated sediments from this site may completely remediate the 100-IU-4 Operable Unit or may result in a no-further-action record of decision.

# 2.0 SITE DESCRIPTION

The Sodium Dichromate Barrel Disposal Site was used to dispose of barrels that contained sodium dichromate. The sodium dichromate was used for water treatment in the 100 Areas. Information received to date indicates that barrels that contained residual amounts of sodium dichromate were crushed and buried at the disposal site in 1945. Visual inspection of the site indicates that construction debris was also buried at the disposal site. The disposal site was backfilled; however, some debris is still exposed at the surface. No evidence exists to suggest that radioactive materials were buried. The site dimensions are 100 by 50 by 10 ft. There are no monitoring wells located in close proximity to the disposal site for providing an indication as to whether the drums have leaked. Depth to groundwater at the disposal site is approximately 50 ft.

Figure 1. Map of Hanford Site and Sodium Dichromate Barrel Disposal Site.



## 3.0 BENEFIT OF ERA

The recent increase in public awareness of activities that influence the environment has drawn considerable attention to the Hanford Site. Many of the concerns expressed by the public concerning the Hanford Site address the issue of offsite exposure of contaminants. The Sodium Dichromate Barrel Disposal Site is located approximately 1.5 mi from the Columbia River. Currently, there is a chromium plume under the 100-D and 100-H Areas that has slowly migrated into the Columbia River. Implementation of the ERA would reduce the potential for an additional amount of chromium to migrate into the Columbia River. Remediation of the disposal site today, could be more cost effective than postponing cleanup and allowing possible migration of the contaminants. In addition, removal of the drums and potentially contaminated sediments from this site may completely remediate the 100-IU-4 Operable Unit or may result in a no-further-action record of decision.

## 4.0 ERA CONCEPT

### 4.1 GOAL

The goal of the ERA is to remove barrels and associated debris from the disposal site. The overall result is to remove the potential threat to the vadose zone and underlying groundwater, thus preventing the possible migration of contaminants. The ultimate goal of the ERA is to complete all remediation activities in the 100-IU-4 Operable Unit.

### 4.2 MEASURE OF SUCCESS

Success of the ERA will be measured in terms of removal of the debris and barrels that may have contaminated the environment. Implementation of the action at the disposal site would result in the immediate reduction in the quantity of available contaminants that may cause continued contamination of the environment.

### 4.3 ERA IMPLEMENTATION

The process for implementing an ERA at the Sodium Dichromate Barrel Disposal Sites would follow the format outlined in the Tri-Party Agreement, and the Hanford Site Past-Practice Strategy (DOE-RL 1991, Draft, October 1990). The ERA is considered to be non-time critical, such that a planning period of at least 6 mo will occur prior to initiation of the activity. Implementation of a non-time critical ERA requires an engineering evaluation/cost assessment (EE/CA) to be conducted and submitted to the lead regulatory agency (EPA). The EE/CA will be contained in an ERA proposal which will provide the additional details necessary for implementing the alternative chosen in the EE/CA. The outline of the ERA implementation work flow is briefly described in the following paragraphs.

### 4.3.1 ERA Project Plan

A brief ERA project plan will be prepared that outlines how each phase of the ERA will be implemented (Attachment B). The project plan identifies each of the remediation alternatives (that will be considered by the EE/CA) and the site evaluation tasks necessary to evaluate the alternatives. This plan is considered to be a secondary document as defined in the Tri-Party Agreement.

### 4.3.2 Site Evaluation

The principle purpose of the site evaluation is to determine the nature and configuration of the disposal site. Prior to excavation, all possible information regarding the site will be reviewed. In addition, data are used to assess worker health and safety. Activities that are proposed to be performed in support of the ERA include, but are not limited to, historical research and geophysical surveys.



### 4.3.3 ERA Proposal and ERA Action Memorandum

The ERA proposal includes an analysis of the various remediation alternatives. The EE/CA provides refinement and specification of the alternatives, followed by a detailed analysis based on: (1) public health, welfare, and environmental impacts; (2) technical feasibility; (3) institutional considerations; and (4) cost. Attachment C provides an annotated outline for the ERA proposal. Excavation and subsequent disposal of the waste in compliance with federal and state regulations is the alternative which is the basis for planning purposes.

The EE/CA report is documented in the ERA proposal, and will undergo review by the DOE, followed by a second review by the EPA and Ecology. The public will also review the document. As specified in the Tri-Party Agreement, the EPA will ultimately be responsible for selecting a remediation alternative for implementation by issuing an ERA Action Memorandum. The lead agency for implementation of the ERA would be Ecology since the past practice site is within the 100-IU-4 Operable Unit.

### 4.3.4 Design and Implementation

Following approval of the ERA proposal, the chosen alternative will be developed for implementation.

### 4.3.5 Reporting

A final report assessing and evaluating the ERA will be prepared on completion of the ERA. This information will be used in making a final decision on the operable unit.

### 4.4 ERA SELECTION WORKSHEET

An ERA selection worksheet has been completed for the project and provided in Attachment D.

### 4.5 COST AND SCHEDULE SUMMARY

The estimated cost and preliminary schedule for the ERA are provided in Attachments E and F, respectively. Should the proposal be accepted, a final cost estimate will be defined in the formal ERA proposal.

## 5.0 REFERENCES

Ecology et al., 1989, *Hanford Federal Facility Agreement and Consent Order*, State of Washington Department of Ecology, U.S. Environmental Protection Agency, and the U.S. Department of Energy, Olympia, Washington.

DOE-RL, 1991, *Hanford Site Past-Practice Strategy*, DOE-RL-91-40, Draft A, U.S. Department of Energy, Richland Operations, Richland, Washington.

# ATTACHMENT A

# LETTER FROM ECOLOGY AND EPA

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

March 4, 1992

Mr. Steven H. Wisness
Hanford Project Manager
U.S. Department of Energy
P.O. Box, 550 A5-19
Richland, WA 99352



**Re: Expedited Responses Action Planning Proposals and Implementation**

Dear Mr. Wisness:

On January 22, 1992, a meeting was held to discuss the selection of new Expedited Response Actions (ERA). The Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) assumed the task of identifying candidate sites for planning proposal preparation, and identification of lead regulatory agency.

The primary reasons to perform ERAs are to minimize or eliminate the potential for release of hazardous substances and/or radionuclides in the environment and to initiate actions consistent with anticipated remedy selections. The final remedy selection would be made after completion of a Remedial Investigation/Feasibility Study (RI/FS) or a RCRA Facility Investigation/ Corrective Measures Study (RFI/CMS).

On December 12, 1991, a meeting was held to discuss selection of new ERAs. In this meeting, the U.S. Department of Energy (DOE) and Westinghouse Hanford Company (WHC) provided EPA and Ecology with a list of twenty-two (22) candidate sites. In addition, DOE and WHC were seeking approval to proceed with EE/CA preparation for the 300 Area Burial Grounds. Based on this meeting and a continuing dialogue between Ecology, EPA, DOE, and WHC, four (4) sites from the candidate list have been selected for planning proposal preparation. In addition, we request DOE submit planning proposals for two additional sites that were drafted previously for DOE, but as yet have not been submitted to Ecology and EPA.

Ecology and EPA prefer to delay initiation of an ERA on the 300 Area Burial Grounds. With the use of test pits in both the liquid disposal sites and the burial grounds, it appears the schedule for completion of RI/FS activities in 300-FF-1 may be accelerated. In addition, treatability tests planned for this year may identify appropriate means for remediating contaminated sediments from the liquid disposal sites as well as the burial grounds. Early completion of these investigations could result in a final Record of Decision for the 300-FF-1 Operable Unit earlier than projected. Ecology and EPA prefer

this course of action because it would potentially eliminate the need to handle waste from the burial grounds twice (once as part of the ERA and again as part of the final remedy).

Ecology and EPA have selected the following four sites for planning proposal preparations:

Sodium Dichromate Barrel Disposal Landfill in 100-IU-4 Operable Unit

The sodium dichromate barrel disposal site in the 100-IU-4 Operable Unit was selected in part due because this is the only facility located within the 100-IU-4 Operable Unit. Also, early remedial action at this operable unit may abate the potential of more extensive environmental degradation. Any ground water contamination from the sodium dichromate barrel site would be addressed as part of the 100-HR-3 Operable Unit. Removal of drums and contaminated sediments from this site may completely remediate the 100-IU-4 Operable Unit or may result in a no further action record of decision. This ERA would be designated as an Ecology lead site due to its location within the 100-HR-3 ground water operable unit for which Ecology is also the lead regulatory agency. An ERA at the sodium dichromate barrel disposal site should not require extensive planning or characterization prior to initiation and therefore field work should begin in fiscal year 1992.

U.S. Bureau of Reclamation 2,4-D Burial Site in 100-IU-3 Operable Unit

The U.S. Bureau of Reclamation 2,4-D burial site in the 100-IU-3 Operable Unit was also selected in part because it is the only documented hazardous waste disposal area located north of the Columbia River on the Hanford Site. In addition, this site is one of the few waste sites where DOE does not control access. Removal of drums and contaminated sediments from this site could eliminate the primary source of hazardous waste from this part of the Hanford Site and enhance public safety. The north slope area of the Hanford Site has been of particular interest to Ecology due to public access and the existing lease agreement between DOE and the Washington State Department of Fish and Wildlife. Ecology would be designated lead regulatory agency for both this ERA and the 100-IU-3 Operable Unit.

White Bluffs Pickling Acid Crib in 100-IU-5 Operable Unit

The White Bluffs pickling acid crib in the 100-IU-5 Operable Unit represents a significant source of acidic metal waste solution. This waste was generated from the final cleaning of reactor cooling pipes prior to installation in Hanford's eight single-pass reactors. These liquid disposal sites are located approximately one mile west of the 100-F Area near the old White Bluffs town site. Again, this site represents the primary source of contamination within the 100-IU-5 Operable Unit and a removal action at this facility will likely limit

the need for and extensive investigation through an RI/FS. Since little is known about the extent of contamination associated with the White Bluffs pickling acid crib, some degree of characterization will likely be required as part of an ERA at this site. Due to its location upgradient of 100-F Area, EPA would be designated as lead regulatory agency for both this ERA and the 100-IU-5 Operable Unit.

100-IU-1 River Rail Wash Pit and 600 Area Army Munitions Burial Site

The 100-IU-1 operable unit contains two units. The riverland railroad car wash pit was decontaminated in 1963, and subsequently released from radiation zone status. Site records indicate that all items were removed from the munitions burial site in 1986. These sites are both located west of Highway 240 and lack the access controls present at nearly all other past practice sites at Hanford. EPA will be lead agency for this ERA and the 100-IU-1 Operable Unit. This presents the potential opportunity to reach a decision to take no further action at an operable unit after performing a confirmatory investigation. We expect that the entire investigation could be done as part of the ERA. If that is the case, the ERA would be followed by administrative steps to reach a final ROD.

Planning proposals for two additional sites are already drafted, but not released. These are for the 100 Area river outfall pipes and the 618-11 burial ground. These planning proposals should be transmitted to Ecology and EPA without delay. The regulatory lead agency will be identified for these proposals in the notice to proceed with EE/CA preparation.

Should you have any questions about the selection of candidate sites for planning proposal preparation or implementation, please contact either Steve Cross of Ecology (206) 459-6675 or Doug Sherwood of EPA (509) 376-9529.

Sincerely,

Paul T. Day
Hanford Project Manager
EPA Region 10

for
David B. Jansen, P.E.
Hanford Project Manager
Washington State
Department of Ecology

cc: T. Veneziano, WHC

# ATTACHMENT B

# PROJECT PLAN OUTLINE

## CONTENTS

1.0 INTRODUCTION
- 1.1 PURPOSE
- 1.2 BACKGROUND
- 1.3 ORGANIZATION

2.0 SITE CHARACTERIZATION

3.0 PRELIMINARY SCREENING OF ALTERNATIVES

4.0 SITE EVALUATION TASKS

5.0 ERA PROPOSAL TASKS

6.0 ERA DESIGN AND IMPLEMENTATION TASKS

7.0 PROJECT SCHEDULE

8.0 REFERENCES

ATTACHMENTS

1. Data Management Plan
2. Community Relations Plan
3. Memos, Letters

# ATTACHMENT C

# ANNOTATED ERA PROPOSAL OUTLINE

## 1.0 INTRODUCTION

The introduction defines the purpose and scope of the expedited response action (ERA) proposal. The discussion includes the various reasons and requirements for performing the ERA. The relationship between the ERA and the ongoing remedial investigation/ feasibility study activities will also be described.

## 2.0 SITE DESCRIPTION

This section provides a brief description of the site being considered for an ERA. A summary of the information that is pertinent to the selection of the preferred alternative is included.



## 3.0 SITE EVALUATION ACTIVITIES

This section describes the activities conducted for characterization of the site. Information gathered during those activities are also included, evaluated, and summarized.

## 4.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This section identifies applicable or relevant and appropriate requirements to be considered in the engineering evaluation/cost analysis.

## 5.0 IDENTIFICATION OF RESPONSE TECHNOLOGIES

Response technologies that could achieve the objectives of the ERA are evaluated. A summary of the evaluation process is provided.

## 6.0 ANALYSIS OF RESPONSE ACTION ALTERNATIVES

Various response action alternatives are assembled and evaluated. Those alternatives warranting further evaluation are summarized.

## 7.0 ENGINEERING EVALUATION/COST ANALYSIS

Each criterion to be used to evaluate the ERA alternatives summarized in Chapter 6 is identified in this section. The method of scoring the alternatives against these criteria is also explained. The alternatives are first screened against the two following criteria: (1) timeliness, and (2) protection of the environment and public health. Those alternatives that meet the screening criteria are further evaluated against the following criteria: (1) reliability/technical feasibility; (2) administrative/managerial feasibility, and (3) reasonable cost.

## 8.0 IMPLEMENTATION OF PREFERRED ERA ALTERNATIVE

This section provides a discussion detailing the implementation of the preferred ERA alternative chosen in Chapter 7. All procedures that will be used or that need development will be identified. All permits, such as excavation permits and Hazardous Waste Operators Permits, will also be mentioned. Health and safety, waste management, waste minimization, and environmental monitoring will be discussed.



## 9.0 PROJECT MANAGEMENT PLAN

Each of the organizations that will participate in the implementation of the ERA and their roles is identified in this section. A flow chart showing the management structure, a detailed schedule for implementation, and cost estimates for implementing the ERA activity are provided.

# ATTACHMENT D

# ERA SITE SELECTION WORKSHEET

## SELECTION WORKSHEET

**Project Name:** Sodium Dichromate Barrel Disposal Facility

**Project Description:** The project would consist of removing crushed barrels which contained residual sodium dichromate. In addition, some additional debris may be present.

**ERA Category:** Time Critical __ Non-Time Critical X

Evaluation Checklist

**Time Critical ERAs:**

Actual Exposure/Release Yes__ No X

Imminent Exposure/Release Yes__ No X

Rationale:



**Non-Time Critical ERAs:**

1. Potential Exposure: Yes X No __

   Rationale: The drums have been allowed to degrade in the landfill since 1945. There was residual sodium dichromate present in the barrels, and as a result it may have migrated beyond the disposal facility.

2. Potential Increased Degradation: Yes X No __

   Rationale: Should the barrels be allowed to continue to degrade, the potential remains for residual contamination to migrate beyond the disposal facility.

3. Implementability: Yes X No __

   Rationale: The ERA is highly implementable since it is suspected that no radioactive materials were buried in the disposal facility. In addition, it is not expected that the contaminants have significantly migrated outside the disposal facility.

4. Short-Term Effectiveness: Yes X No __

   Rationale: Implementation of this project would result in permanent removal of potential waste from the disposal facility; therefore, the project would be effective in the short-term.

5. Reduction of Toxicity, Volume, Migration: Yes X No __

Rationale: Implementation of this project would eliminate toxicological and migratory hazards.

6. Cost Effectiveness: Yes X No __

Rationale: Removal of the waste in the near future would most likely be more cost effective than postponing removal activities and allowing the barrels to further degrade.

7. Long-Term Effectiveness: Yes X No __

Rationale: Implementation of this project would result in permanent elimination of any human health and environmental hazards that currently exist at the disposal facility.

8. Consistent with Final Remedy: Yes X No __

Rationale: Removal of the waste may be the final remedial action for the 100-IU-4 OU and will not preclude additional actions at the disposal site.

9. Compliance with ARARs: Yes X No __

Rationale: The goal of the ERA would strive to achieve final ARARs.

10. Information for RI/FS or Remedial Design: Yes X No __

Rationale: The project would provide additional information for use in future removal/remediation projects as well as support the final record of decision for the 100-IU-4 OU.

11. Demonstrate Technologies: Yes __ No X

Rationale: Implementation of the project will utilize proven technologies.

12. Community Acceptance: Yes X No __

Rationale: Positive acceptance of this project by the community is anticipated since removal actions are being taken in the near future at a past practice site. In addition, this project will support the final record of decision for the 100-IU-4 OU.

# ATTACHMENT E

## SODIUM DICHROMATE DISPOSAL SITE ERA COST ESTIMATE

The attached cost estimate for the proposed ERA is preliminary and should be considered rough order-of-magnitude. The basis for many of the costs was primarily from costs associated with the 316-5 Process Trenches and the 618-9 Burial Ground ERA. A 30% contingency cost factor was included in the estimate. A definitive cost estimate will be provided in the ERA proposal for the selected remediation alternative.

# PROPOSAL COST ESTIMATE

| | | | | |
|---|---|---|---|---|
| **Project Management** | | | | $440,000 |
| Project Manager | 0.10 FTE/yr. @ 2.5y | = | 25,000 | |
| Project Engineer | 1.0 FTE/yr. @ 2.5y | = | 250,000 | |
| Clerk/Typist | 0.10 FTE/yr. @ 2.5y | = | 25,000 | |
| Quality Assurance | 0.125 FTE/yr. @ 2.5y | = | 31,250 | |
| Health/Safety | 0.125 FTE/yr. @ 1.0y | = | 12,500 | |
| Community Relation | 0.125 FTE/yr. @ 2.5y | = | 31,250 | |
| Facility Safety | 1.0 FTE/yr. @ .5y | = | 50,000 | |
| Other Permits | 0.125 FTE/yr. @ 1.0y | = | 12,500 | |
| | Subtotal | | 437,500 | |
| **Preliminary Investigation** | | | | $30,000 |
| Historical Research | 0.5 FTE @ 2 mo | | | $ 8,333 |
| Geophysical Survey | 3.0 FTE @ 4 wk | | | 25,000 |
| | | Subtotal | | 33,333 |
| **ERA Proposal** | | | | $30,000 |
| Development of the Proposal | 0.5 FTE @ 7.0 mo | | | 29,166 |
| **Project Implementation** | | | | $1,080,000 |
| o Site Preparation/Waste Excavation and Segregation | 8.0 FTE @ 4 mo | | | 266,667 |
| o Waste and Disposal Site Characterization | $5,000/sample @ 30 samples | | | 150,000 |
| o Data Validation | $2,000/sample @ 30 samples | | | 60,000 |
| o Waste Disposal | | | | 500,000(1) |
| o Project Closeout | | | | |
| Develop and Issue Report | 1.0 FTE @ 7 mo | | | 58,333 |
| Site Stabilization | 3.0 FTE @ 2 mo | | | 50,000 |
| | | Subtotal | | 1,085,000 |

Total Project Cost $2,050,000

(1) cost estimate based on disposing 2% as hazardous waste

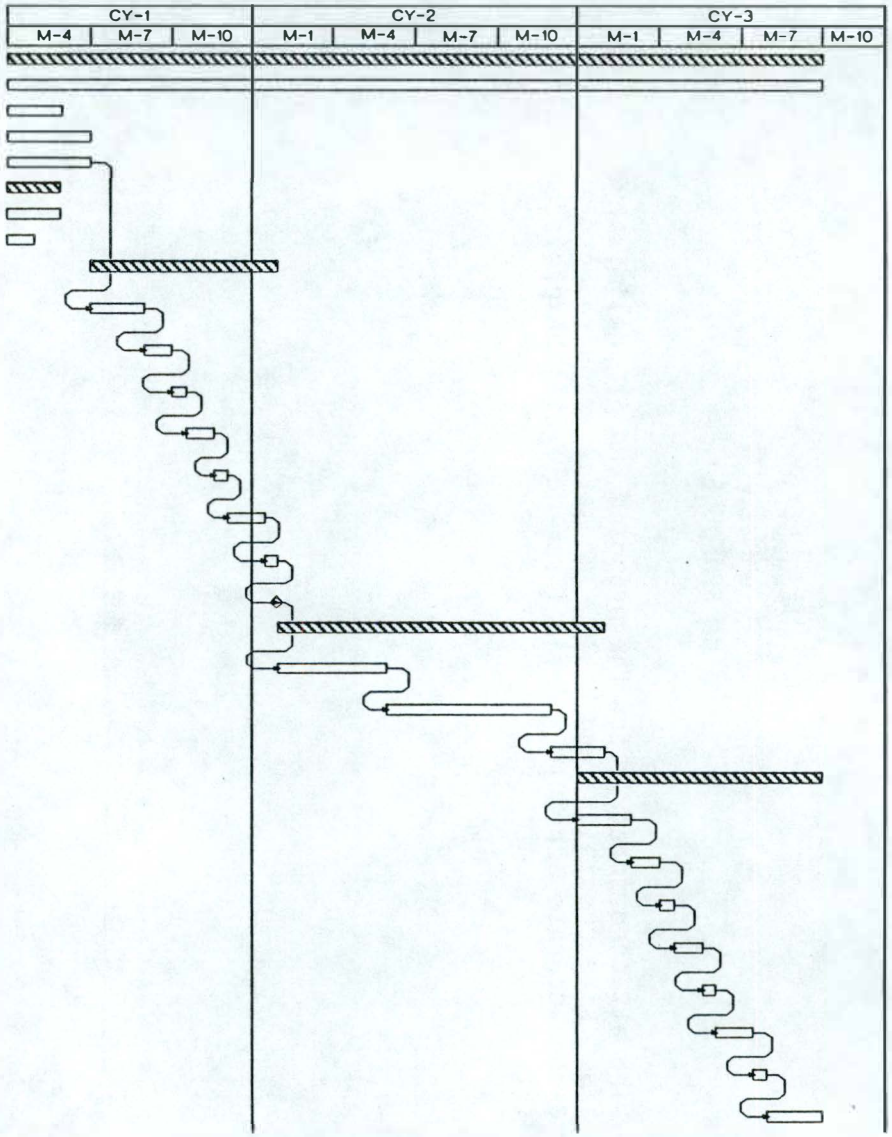
1 FTE/yr. = $100,000.

# ATTACHMENT F

## ERA SCHEDULE

The attached schedule for the proposed ERA is preliminary. Additional data about site conditions and health and safety requirements are required to produce an accurate schedule. A final schedule will be provided in the ERA proposal.

# SODIUM DICHROMATE BARREL DISPOSAL SITE




| | | |
|---|---|---|
| Project: | EMPK17A | Date: 28 Feb 92 13:50 |
| SODIUM DICHROMATE BARREL DISPOSAL SITE | | |
| Page: 1 of 1 | Drawn by: F. M. Cobb | 6-1717 |

019999

9251881D
ATTACHMENT 4



HANFORD NORTH SLOPE

## CONTENTS


1.0 INTRODUCTION . . . . . 1
1.1 PURPOSE . . . . . 1
1.2 BACKGROUND . . . . . 1

2.0 SITE DESCRIPTION . . . . . 3

3.0 BENEFIT OF THE EXPEDITED RESPONSE ACTION . . . . . 4

4.0 CONCEPT OF THE ERA . . . . . 4
4.1 GOAL OF THE ERA . . . . . 4
4.2 NET RESULT OF THE ERA . . . . . 4
4.3 ERA IMPLEMENTATION . . . . . 4
4.3.1 ERA Project Plan . . . . . 5
4.3.2 Site Evaluation . . . . . 5
4.3.3 ERA Proposal and Action Memorandum . . . . . 5
4.3.4 Project Implementation . . . . . 6
4.3.5 Reporting . . . . . 6
4.4 ERA SITE SELECTION WORKSHEET . . . . . 6
4.5 COST AND SCHEDULE SUMMARY . . . . . 6

5.0 REFERENCES . . . . . 6




## ATTACHMENTS


1 Request For Proposals . . . . . 1-1

2 Project Plan Outline . . . . . 2-1

3 Annotated ERA Proposal Outline . . . . . 3-1

4 ERA Site Prioritization Worksheet . . . . . 4-1

5 ERA Schedule and Cost Estimates. . . . . 5-1


## FIGURES


1. Location of Hanford's North Slope. . . . . 2

# 1.0 INTRODUCTION

## 1.1 PURPOSE

This document provides information for a proposed Expedited Response Action (ERA) at the Hanford Sites "North Slope". The North Slope is located on the northern and eastern borders of the Hanford Site across the Columbia River from the inactive production reactors located in the 100 Area of the Hanford Site. This information provides the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Ecology (Ecology) a general understanding of the proposed project.

If the ERA process is continued, a comprehensive ERA proposal will be prepared in accordance with the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) (Ecology et al. 1991). This will allow for public involvement and regulatory approval of the ERA prior to actual implementation of the proposed response action.



## 1.2 BACKGROUND

The Hanford Site includes approximately 190 $mi^2$ of land, located north of the Columbia River, commonly referred to as the "North Slope" (Figure 1). This land was not used for nuclear production activities, however, physical evidence remains of use prior to government control and from early Hanford military activities. As a result of these activities, the area has been included in the 100-IU-3 Operable Unit to be remediated in accordance with the Tri-Party Agreement (Ecology et al. 1991).

History of the North Slope area since settlement involves homesteading from the late 1800's until government control of the area in the early 1940's. After government acquisition of the land, the area was used for military defense of the Hanford Site. Defensive positions on the North Slope area consisted of seven anti-aircraft gun positions. These were replaced in the 1950's with three NIKE Missile positions. Since approximately 1960 the military has not had a permanent installation at the Hanford Site. However, the area has been used periodically for military training maneuvers.

The area remained unused and closed to public access until the mid 1970's. At that time the area was permitted by the DOE to the Washington State Department of Wildlife, and the US Fish and Wildlife Service. As a result of the use permit to Washington Department of Wildlife, much of the land has been open to public access as a recreation area. The remainder of the North Slope is permitted to the US Fish and Wildlife Service, and has limited public access. This area is used as a wildlife refuge.

This ERA proposal is being prepared at the request of the EPA and Ecology (Attachment 1).

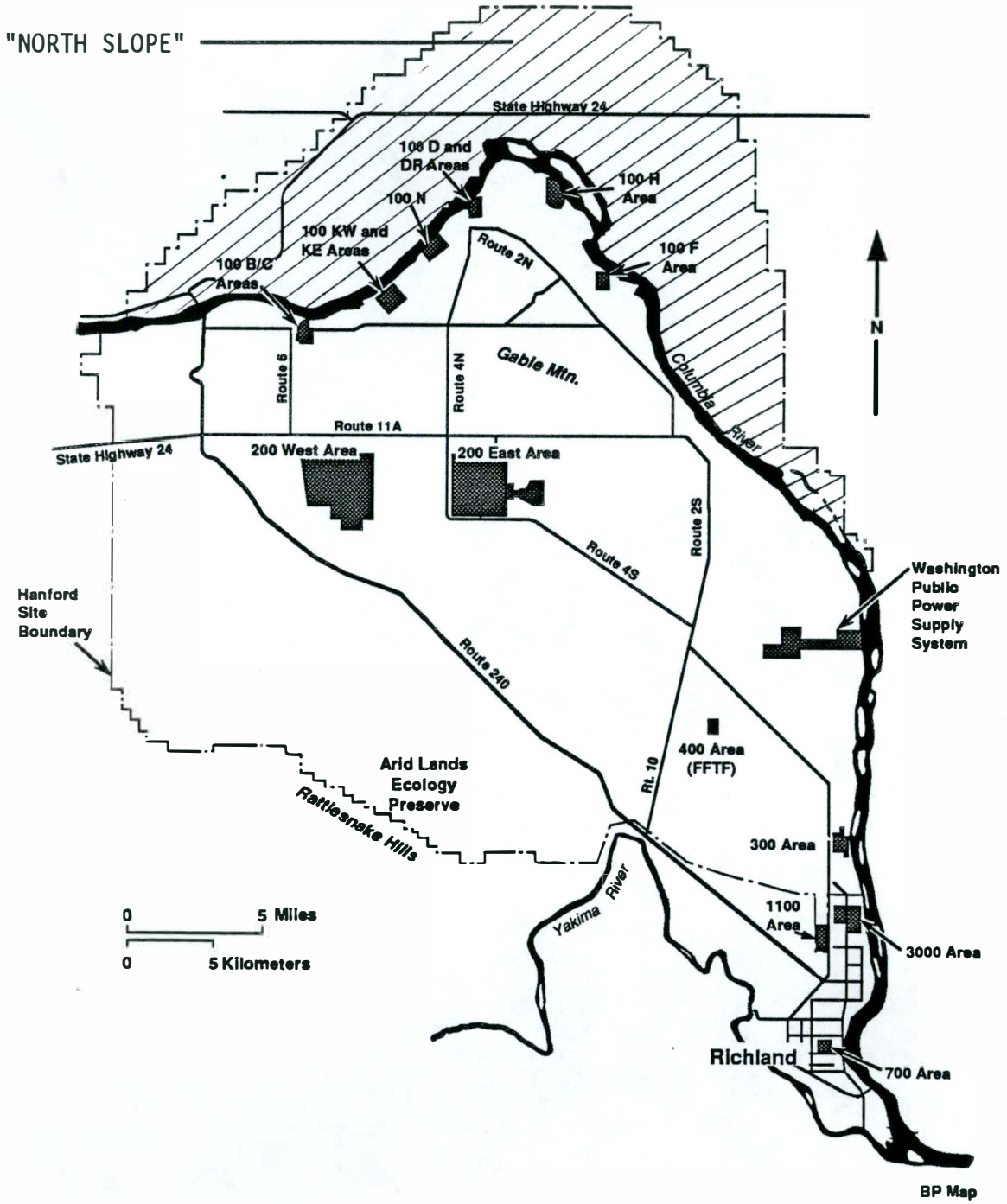



FIGURE 1

## 2.0 SITE DESCRIPTION

In the 1950's and early 1960's, the U.S. Army's role of onsite defense was diminished. As defense sites on the North Slope were abandoned, they were decommissioned in a manner considered appropriate by mutual agreement of the Atomic Energy Commission and US Department of Defense. At that time, most buildings and structures were sold for salvage. Any remaining structures were demolished. The ammunition storage bunkers were left in place as it was determined that they had potential value. Consequently, these structures were locked or welded shut to prevent access.

In the mid 1970's, remaining structures on the North Slope were demolished. At this time, demolition included the ammunition storage bunkers and several wells. In both the original decommissioning, and the effort in the 1970's, structures were knocked down and pushed into an excavated trench at the building site or a short distance away. Several decommissioning trenches have been tentatively identified.



In 1990, a survey of the North Slope was completed (Roos 1990). The purpose was to inventory all potential hazards created by man on the North Slope. The inventory includes the following:

- Remains of 3 NIKE Missile sites
- Remains of 7 anti-aircraft sites
- Remains of 3 unidentified sites (probable military origin)
- Remains of several homestead sites
- 2,4-D burial site (well documented)
- Military type firing range (no known explosives)
- Miscellaneous sites of minor importance.

Hazards identified in the 1990 North Slope survey were categorized as physical or environmental. Physical hazards include tripping hazards such as open cisterns from homesteads and concrete foundations with exposed reinforcing steel from military sites. Environmental hazards identified in the 1990 survey include the 2,4-D disposal site as well as military landfills. The chemical 2,4-D is subject to biotic decomposition and it is expected that since emplacement approximately 25 years ago, the chemical has since degraded. Significant environmental hazards were not noted based on surface observation at the military sites. However, the potential for limited hazards such as small quantities of solvents could not be eliminated at the military landfills.

Previously unidentified planning maps of several of the NIKE related sites were recently located. These drawings identify several potential environmental concerns at the sites. These concerns include:

- underground storage tanks
- acid neutralization pits
- electrical transformers.

## 3.0 BENEFIT OF THE EXPEDITED RESPONSE ACTION

Recent increase in public awareness of activities that influence the environment has drawn considerable attention to the Hanford Site. Many of the concerns expressed by the public regarding the Hanford Site address the issue of offsite exposure of contaminants. Since much of the North Slope area is open to the public, representing the potential for both physical injuries and environmental exposures, completion of the expedited response effort would reduce or eliminate these concerns. Implementing this expedited response prior to eventual remediation as required by the Tri-Party Agreement (Ecology et al. 1991), could eliminate the potential for personal injuries and exposure to occur in the interim. This ERA would also benefit all parties concerned (regulatory agencies, the public, DOE) by demonstrating the DOE's commitment to a bias for action.



## 4.0 CONCEPT OF THE ERA

### 4.1 GOAL OF THE ERA

The goal of the North Slope ERA is to eliminate the physical and environmental hazards from the area, leaving it safe for public use. Wastes removed from the area will be disposed in accordance with current Hanford and regulatory requirements. The overall result of the ERA is to conduct early remedial actions in an area accessible to the public prior to the occurrence of an injury or exposure to potentially hazardous wastes. In addition, these actions would likely lead to the issuance of a Record of Decision for the 100-IU-3 Operable Unit, thus "removing" 190 $mi^2$ of the Hanford Site from further cleanup actions mandated by the Tri-Party Agreement (Ecology et al. 1991).

### 4.2 NET RESULT OF THE ERA

Success of the ERA will be measured in terms of elimination of the physical and environmental hazards identified during the focused site investigation activities.

### 4.3 ERA IMPLEMENTATION

The process for implementing an ERA at the North Slope would follow the format outlined in the Tri-Party Agreement (Ecology et al. 1991). The ERA is considered to be non-time critical, such that a planning period of at least 6 months could occur prior to initiation of the activity. Implementation of a

non-time critical ERA requires an engineering evaluation/cost assessment (EE/CA) be conducted and results submitted to the lead regulatory agency. The EE/CA will be contained in an ERA proposal that will provide the additional details necessary for implementing the alternative chosen by the EE/CA. The outline of the ERA implementation process is briefly described in the following sections.

### 4.3.1 ERA Project Plan

An ERA project plan will be prepared that outlines how the ERA will be implemented (Attachment 2 provides an outline for the project plan). The project plan will identify each of the alternatives to be considered by the EE/CA and the site evaluation tasks necessary to evaluate the alternatives. This plan is a secondary document as defined by the Tri-Party Agreement (Ecology et al. 1991).



### 4.3.2 Site Evaluation

The primary purpose of the site evaluation is to identify each of the physical as well as any environmental hazards associated with the site. Information necessary for the demolition/stabilization of physical hazards will be obtained. Samples will be taken from areas believed to possibly contain hazardous wastes. In addition, a cone penetrometer survey will be conducted at the landfill areas as necessary for determining if they contain hazardous wastes. The information obtained by the site evaluation is essential for completing the EE/CA in which the restoration alternative is chosen. In addition, the data will be useful in assessing worker health and safety requirements while implementing the ERA. The results of all site evaluation activities will be documented in the ERA proposal.

### 4.3.3 ERA Proposal and Action Memorandum

The ERA proposal includes the results of the EE/CA, which evaluates the various alternatives considered with recommendations based on that evaluation. The EE/CA provides refinement and specification of the alternatives, followed by a detailed analysis based on; 1) public health and welfare, and environmental impacts, 2) technical feasibility, 3) institutional considerations, and 4) cost.

Also included in the ERA proposal is a schedule for implementation of the recommended alternative as well as a project management/implementation plan. Attachment 3 provides an annotated outline suggested for the ERA proposal.

The ERA proposal will undergo a DOE, EPA, and Ecology review. The public will also be allowed to review the document. As specified in the Tri-Party Agreement (Ecology et al. 1991), the EPA will ultimately be responsible for issuing an ERA Action Memorandum, providing the direction to proceed with the activities proposed in the ERA proposal.

### 4.3.4 Project Implementation

Following approval of the ERA proposal and issuance of the ERA Action Memorandum, the chosen alternative will be implemented.

### 4.3.5 Reporting

Upon completion of the ERA, a final report assessing and evaluating the ERA will be prepared for distribution.

## 4.4 ERA SITE SELECTION WORKSHEET

A site selection worksheet has been completed for the North Slope ERA and is provided in Attachment 4.

## 4.5 COST AND SCHEDULE SUMMARY

A preliminary cost estimate and schedule for implementing the North Slope ERA is provided in Attachment 5. It should be noted that the cost and schedule estimates reflect the assumption of no radiological and minimal hazardous wastes. Final cost estimates, based on the results of the site evaluation tasks, will be included in the ERA proposal.



## 5.0 REFERENCES

Ecology, EPA, and DOE, 1991, *Hanford Federal Facility Agreement and Consent Order*, Washington Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

Roos, Richard C., 1990, *North Slope Investigation Report*, WHC-EP-0359, Westinghouse Hanford Company, Richland Washington.

# ATTACHMENT 1
# REQUEST FOR PROPOSALS

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

*Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000*

March 4, 1992

Mr. Steven H. Wisness
Hanford Project Manager
U.S. Department of Energy
P.O. Box, 550 A5-19
Richland, WA 99352



Re: Expedited Responses Action Planning Proposals and Implementation

Dear Mr. Wisness:

On January 22, 1992, a meeting was held to discuss the selection of new Expedited Response Actions (ERA). The Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) assumed the task of identifying candidate sites for planning proposal preparation, and identification of lead regulatory agency.

The primary reasons to perform ERAs are to minimize or eliminate the potential for release of hazardous substances and/or radionuclides in the environment and to initiate actions consistent with anticipated remedy selections. The final remedy selection would be made after completion of a Remedial Investigation/Feasibility Study (RI/FS) or a RCRA Facility Investigation/ Corrective Measures Study (RFI/CMS).

On December 12, 1991, a meeting was held to discuss selection of new ERAs. In this meeting, the U.S. Department of Energy (DOE) and Westinghouse Hanford Company (WHC) provided EPA and Ecology with a list of twenty-two (22) candidate sites. In addition, DOE and WHC were seeking approval to proceed with EE/CA preparation for the 300 Area Burial Grounds. Based on this meeting and a continuing dialogue between Ecology, EPA, DOE, and WHC, four (4) sites from the candidate list have been selected for planning proposal preparation. In addition, we request DOE submit planning proposals for two additional sites that were drafted previously for DOE, but as yet have not been submitted to Ecology and EPA.

Ecology and EPA prefer to delay initiation of an ERA on the 300 Area Burial Grounds. With the use of test pits in both the liquid disposal sites and the burial grounds, it appears the schedule for completion of RI/FS activities in 300-FF-1 may be accelerated. In addition, treatability tests planned for this year may identify appropriate means for remediating contaminated sediments from the liquid disposal sites as well as the burial grounds. Early completion of these investigations could result in a final Record of Decision for the 300-FF-1 Operable Unit earlier than projected. Ecology and EPA prefer

this course of action because it would potentially eliminate the need to handle waste from the burial grounds twice (once as part of the ERA and again as part of the final remedy).

Ecology and EPA have selected the following four sites for planning proposal preparations:

Sodium Dichromate Barrel Disposal Landfill in 100-IU-4 Operable Unit

The sodium dichromate barrel disposal site in the 100-IU-4 Operable Unit was selected in part due because this is the only facility located within the 100-IU-4 Operable Unit. Also, early remedial action at this operable unit may abate the potential of more extensive environmental degradation. Any ground water contamination from the sodium dichromate barrel site would be addressed as part of the 100-HR-3 Operable Unit. Removal of drums and contaminated sediments from this site may completely remediate the 100-IU-4 Operable Unit or may result in a no further action record of decision. This ERA would be designated as an Ecology lead site due to its location within the 100-HR-3 ground water operable unit for which Ecology is also the lead regulatory agency. An ERA at the sodium dichromate barrel disposal site should not require extensive planning or characterization prior to initiation and therefore field work should begin in fiscal year 1992.

U.S. Bureau of Reclamation 2,4-D Burial Site in 100-IU-3 Operable Unit

The U.S. Bureau of Reclamation 2,4-D burial site in the 100-IU-3 Operable Unit was also selected in part because it is the only documented hazardous waste disposal area located north of the Columbia River on the Hanford Site. In addition, this site is one of the few waste sites where DOE does not control access. Removal of drums and contaminated sediments from this site could eliminate the primary source of hazardous waste from this part of the Hanford Site and enhance public safety. The north slope area of the Hanford Site has been of particular interest to Ecology due to public access and the existing lease agreement between DOE and the Washington State Department of Fish and Wildlife. Ecology would be designated lead regulatory agency for both this ERA and the 100-IU-3 Operable Unit.

White Bluffs Pickling Acid Crib in 100-IU-5 Operable Unit

The White Bluffs pickling acid crib in the 100-IU-5 Operable Unit represents a significant source of acidic metal waste solution. This waste was generated from the final cleaning of reactor cooling pipes prior to installation in Hanford's eight single-pass reactors. These liquid disposal sites are located approximately one mile west of the 100-F Area near the old White Bluffs town site. Again, this site represents the primary source of contamination within the 100-IU-5 Operable Unit and a removal action at this facility will likely limit

the need for and extensive investigation through an RI/FS. Since little is known about the extent of contamination associated with the White Bluffs pickling acid crib, some degree of characterization will likely be required as part of an ERA at this site. Due to its location upgradient of 100-F Area, EPA would be designated as lead regulatory agency for both this ERA and the 100-IU-5 Operable Unit.

<u>100-IU-1 River Rail Wash Pit and 600 Area Army Munitions Burial Site</u>

The 100-IU-1 operable unit contains two units. The riverland railroad car wash pit was decontaminated in 1963, and subsequently released from radiation zone status. Site records indicate that all items were removed from the munitions burial site in 1986. These sites are both located west of Highway 240 and lack the access controls present at nearly all other past practice sites at Hanford. EPA will be lead agency for this ERA and the 100-IU-1 Operable Unit. This presents the potential opportunity to reach a decision to take no further action at an operable unit after performing a confirmatory investigation. We expect that the entire investigation could be done as part of the ERA. If that is the case, the ERA would be followed by administrative steps to reach a final ROD.

Planning proposals for two additional sites are already drafted, but not released. These are for the 100 Area river outfall pipes and the 618-11 burial ground. These planning proposals should be transmitted to Ecology and EPA without delay. The regulatory lead agency will be identified for these proposals in the notice to proceed with EE/CA preparation.

Should you have any questions about the selection of candidate sites for planning proposal preparation or implementation, please contact either Steve Cross of Ecology (206) 459-6675 or Doug Sherwood of EPA (509) 376-9529.

Sincerely,

Paul T. Day
Hanford Project Manager
EPA Region 10

David B. Jansen, P.E.
Hanford Project Manager
Washington State
Department of Ecology

cc: T. Veneziano, WHC

# ATTACHMENT 2
# PROJECT PLAN OUTLINE

**ERA Project Plan**

1.0 INTRODUCTION

1.1 Purpose
1.2 Background
1.3 Organization

2.0 SITE CHARACTERISTICS

2.1 Facilities/Structures
2.2 Geology/Soil
2.3 Hydrogeology

3.0 PRELIMINARY IDENTIFICATION AND SCREENING OF ALTERNATIVES

4.0 SITE EVALUATION TASKS

5.0 ERA PROPOSAL TASKS

6.0 ERA DESIGN AND IMPLEMENTATION TASKS

7.0 PROJECT SCHEDULE

8.0 REFERENCES

ATTACHMENTS

Attachment 1 Sampling and analysis plan
Attachment 2 Health and safety plan
Attachment 3 Project management plan

# ATTACHMENT 3
# ANNOTATED ERA PROPOSAL OUTLINE

## 1.0 INTRODUCTION

The introduction defines the purpose and scope of the ERA proposal. The discussion includes the various reasons and requirements for performing the ERA. The relationship between the ERA and the ongoing remedial investigation/ feasibility study activities will also be described.

## 2.0 SITE DESCRIPTION

This section provides a brief description of the site being considered for an ERA. A summary of the information that is pertinent to the selection of the preferred alternative is included.



## 3.0 SITE EVALUATION ACTIVITIES

This section describes the activities conducted for characterization of the site. Information gathered during those activities are also included, evaluated, and summarized.

## 4.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

This section identifies applicable or relevant and appropriate requirements to be considered in the engineering evaluation/cost analysis.

## 5.0 IDENTIFICATION OF RESPONSE TECHNOLOGIES

Response technologies that could achieve the objectives of the ERA are evaluated. A summary of the evaluation process is provided.

## 6.0 ANALYSIS OF RESPONSE ACTION ALTERNATIVES

Various response action alternatives are assemble and evaluated. Those alternative warranting further evaluation are summarized.

## 7.0 ENGINEERING EVALUATION/COST ANALYSIS

Each criterion to be used to evaluate the ERA alternatives summarized in Section 6.0 is identified in this section. The method of scoring the alternatives against these criteria is also explained.

## 8.0 IMPLEMENTATION OF PREFERRED ERA ALTERNATIVE

This section provides a discussion detailing the implementation of the preferred ERA alternative chosen in Section 7.0. All procedures that will be used or that need development will be identified. All permits, such as excavation permits and Hazardous Waste Operators Permits, will also be mentioned. Health and safety, waste management, waste minimization, and environmental monitoring will be discussed.



## 9.0 PROJECT MANAGEMENT PLAN

Each of the organizations that will participate in the implementation of the ERA and their roles is identified in this section. A flow chart showing the management structure, a detailed schedule for implementation, and cost estimates for implementing the ERA activity are provided.

# ATTACHMENT 4
# ERA SITE PRIORITIZATION WORKSHEET FOR THE HANFORD SITE'S NORTH SLOPE

## Site Selection Worksheet

**Project Name:** North Slope Military Installations and Waste Sites

**Project Description:** The scope of this project is to remove physical and environmental hazards resulting from past military and homesteading activities on the Hanford Site's "North Slope".

**ERA Category:** Time Critical __ Non-Time Critical X

### Evaluation Checklist

**Time Critical ERAs:**

Actual Exposure/Release Yes__ No X

Imminent Exposure/Release Yes__ No X

Rationale:

**Non-Time Critical ERAs:**

1. Potential Exposure: Yes X No __

   Rationale: Approximately two-thirds of the North Slope is currently available for public access. As a result, a significant potential exits for the public to become injured and/or exposed to hazardous substances left from past military and homesteading activities which occurred in the areas.__

2. Potential Increased Degradation: Yes X No __

   Rationale: Since the specific contents of the landfills associated with area are not known, the potential exists for the migration of hazardous substances from these facilities. There are also several acid disposal pits and a structure which appears to be a french drain which could be potential sources from which hazardous substances may migrate.

3. Implementability: Yes X No __

   Rationale: Implementation of this project is highly feasible given adequate funding.

4. Short-Term Effectiveness: Yes X No __

   Rationale: Since implementation of this project would result in the removal of physical hazards and the treatment and/or the reduction in any environmental threats, the project would be effective in the short-term.

5. Reduction of Toxicity, Volume, Migration: Yes X No __

Rationale: Implementation of this project would minimize or eliminate any toxicological and migratory hazards that may be present.

6. Cost Effectiveness: Yes X No __

Rationale: Implementation of this project could occur at a relatively minimal cost. It would be more advantageous to investigate and remove both the physical and possible environmental hazards present at this time as opposed to allowing for the opportunity for a member of the public to become injured and/or exposed resulting in potentially significant financial and medical restitution costs.

7. Long-Term Effectiveness: Yes X No __

Rationale: Implementation of this project would result in permanent elimination of the physical hazards that presently exist at the site. The threats posed by environmental hazards, if discovered, would also be removed and/or impacts minimized.

8. Consistent with Final Remedy: Yes X No __

Rationale: Removal of the physical and environmental hazards is consistent with final remediation of Hanford "North Slope" and does not prohibit any future action. Actions taken are likely to be the final remedial efforts needed in the area.

9. Compliance with ARARs: Yes X No __

Rationale: Since the project would result in removal of physical and environmental threats, it would strive to be consistent with final ARARs applicable for restoration of the area.

10. Information for RI/FS or Remedial Design: Yes X No __

Rationale: If significant environmental hazards are encountered, the data obtained from implementing the ERA would provide useful information to future restoration/remediation projects both on and off of the Hanford Reservation.

11. Demonstrate Technologies: Yes X No

Rationale: A Cone Penetrometer survey is proposed for use in evaluating the contents of the landfills located on the North Slope. If use of the system is successful at these sites, future use at significantly more hazardous landfills located at Hanford may result in safer and more cost effective environmental investigations.

12. Community Acceptance: Yes X No __

Rationale: Positive acceptance of this project by the community is anticipated due to the accessibility of the area to the public.

# ATTACHMENT 5
# NORTH SLOPE EXPEDITED RESPONSE ACTION
# SCHEDULE AND COST ESTIMATE

The following cost and schedule information are provided for conducting decommissioning/environmental cleanup activities associated with military installations and homestead sites on the North Slope of the Hanford Site. Limited knowledge of the sites is available and as a result, many of the proposed activities are of an investigative nature needed to support the decisions required for selecting the appropriate response actions.

The cost estimate and schedule should be considered rough order-of-magnitude. Assumptions have been made based on available data as what remedial actions are likely to result from these investigations. Additional data about site conditions and health and safety requirements are needed to produce more definitive estimates. A more conclusive cost estimate will be provided in the ERA proposal for the selected remediation alternative(s).

# NORTH SLOPE ERA PRELIMINARY COST AND SCHEDULE ESTIMATE

A list of the 30 areas identified as having potential safety and/ or environmental concerns during an investigation of the north slope area in 1989 and 90 are provided. The bulk of the information used in developing these costs was obtained from the "North Slope Investigation Report" (Roos, 1990).

| Site Name | | Hazard |
|---|---|---|
| 1) | Construction Dump | Exposed Construction Material |
| 2) | "Battery A" NIKE Site | Landfill, Underground Structure, Acid Pit and potential underground storage tanks |
| 3) | "Battery B" NIKE Site | Landfill, Underground Structure, Acid Pit and potential underground storage tanks |
| 4) | Radar Tower Site | Construction Debris |
| 5) | "Battery C" NIKE Site | Landfill, Underground Structure, Acid Pit and potential underground storage tanks |
| 6) | Anti-Aircraft Gunsite | Landfill |
| 7) | Anti-Aircraft Gunsite | Landfill |
| 8) | Anti-Aircraft Gunsite | Shallow Pit and landfill |
| 9) | Anti-Aircraft Gunsite | Landfill |
| 10) | Anti-Aircraft Gunsite | 3 Buried Wooden Boxes (4ft x 3ft x 2ft deep) |
| 11) | Anti-Aircraft Gunsite | Concrete Ramp |
| 12) | Radar Tower Site | Underground Rooms |
| 13) | Home Site Cistern | 5ft dia x 8ft deep |
| 14) | Clay Pit Cistern | 4ft dia x ? deep |
| 15) | Overlook Cistern | 10ft dia x 14ft deep |
| 16) | Power Line Cistern | 4ft dia x 6ft deep |
| 17) | Wagon Road Cistern | 8ft dia x 8ft deep |
| 18) | Wasteway Cistern | 8ft dia x 3ft deep |
| 19) | Asbestos Pipe Site | Pieces of Pipe |
| 20) | Washed out Road | ------ |

Assumed activities to be taken at these sites include performing preliminary sampling and analysis at locations that are suspected of being disposal sites of hazardous materials. These sites include the pits associated with the NIKE sites that may have been used to dispose solvent and other chemicals used in the maintenance of the equipment as well as a motor pool.

A cone penetrometer is proposed for use in evaluating the landfills. At this time, no hazardous wastes are anticipated to be encountered in the landfills and it is therefore assumed that no additional remedial effort will be needed other than cleanup of trash located on the surface of these waste sites.

The 2,4-D burial ground will also be evaluated utilizing the cone penetrometer. It is anticipated that the 2,4-D disposed at this site has degraded to an acceptable level based on information provided by Pacific Northwest Laboratory. This information will be confirmed with the data obtained from performing the cone penetrometer.

It is also assumed that no radiological contaminants are located on the North Slope and radiological controls/monitoring will not be necessary.

The cost breakdown is as follows:

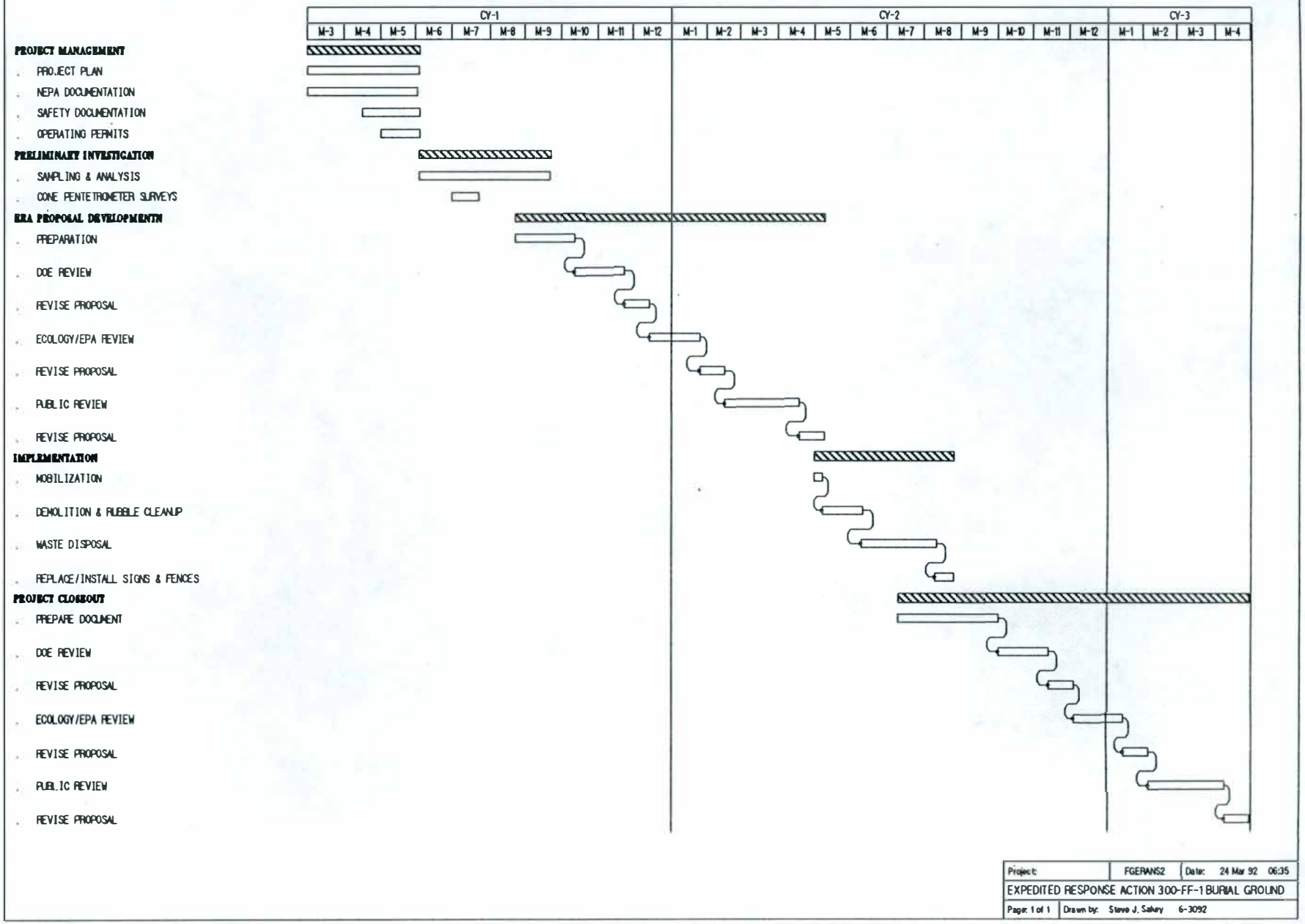
PROJECT MANAGEMENT COSTS:

| | | | |
|---|---|---|---|
| Project Manager | 0.1 FTE/yr @ 2 yr | 20,000 | |
| Project Engineer | 1.0 FTE/yr @ 2 yr | 200,000 | |
| Clerk/Typist | 0.1 FTE/yr @ 2 yr | 20,000 | |
| Quality Assurance | 0.125 FTE/yr @ 2 yr | 25,000 | |
| Health/Safety | 0.125 FTE/yr @ 2 yr | 25,000 | |
| Facility Safety | 0.5 FTE/yr @ 1 yr | 50,000 | |
| Permits (ie NEPA) | 0.125 FTE/yr @ 0.5 re | 6,250 | |
| Community Relations | 0.125 FTE/yr @ 2 yr | 25,000 | |
| PRELIMINARY INVESTIGATION | | | |
| Sampling and Analysis | | 150,000 | |
| Cone Penetrometer (21 cones) | | 45,000 | |
| ERA PROPOSAL DEVELOPMENT | | 58,000 | |
| PROJECT IMPLEMENTATION | | | |
| Mobilization | | 5,000 | |
| Demolition & rubble cleanup/disposal | | 30,000 | |
| Backfill holes and depressions | | 25,000 | |
| Replace/Install signs & fencing | | 25,000 | |
| Hazardous Waste Disposal | | | 20,000 |
| Sub total | | $729,250 | |
| Contingency (25%) | | 218,775 | |
| TOTAL | | $948,025 | |

(Note that these costs are rough order of magnitude and are subject to vary with the scope of work to be performed.)

The following schedule is based on tasks listed in the previous cost estimate. Revised schedules will be provided in the ERA project plan with emphasis on investigation activities and in the ERA proposal based on the selected remediation alternative.

# EXPEDITED RESPONSE ACTION - NORTH SLOPE



# CORRESPONDENCE DISTRIBUTION COVERSHEET

| Author | Addressee | Correspondence No. |
|---|---|---|
| S. H. Wisness, RL<br>(E. J. Millikin, WHC) | P. T. Day, EPA<br>D. B. Jansen, Ecology | Incoming 9202303<br>Xref 9251881D |

Subject: EXPEDITED RESPONSE ACTION (ERA) PLANNING PROPOSALS

## INTERNAL DISTRIBUTION

| Approval | Date | Name | Location | w/att |
|---|---|---|---|---|
| | | Correspondence Control | A3-01 | |
| | | M. R. Adams | H4-55 | |
| | | L. D. Arnold | B2-35 | |
| | | G. D. Carpenter | B2-16 | |
| | | C. K. DiSibio | B3-03 | |
| | | J. M. Frain | H4-55 | |
| | | F. W. Gustafson | H4-55 | |
| | | W. L. Johnson | H4-55 | |
| | | R. E. Lerch, Assignee | B2-35 | |
| | | P. J. Mackey | B3-15 | |
| | | H. E. McGuire, Level 1 | B3-65 | |
| | | E. J. Millikin | H4-55 | |
| | | T. B. Veneziano | B2-35 | |
| | | T. M. Wintczak | L4-92 | |
| | | R. D. Wojtasek | L4-92 | |
| | | EDMC | H4-22 | |

The enslosures are the same as outgoing letter #9251881D. ldp, 6-7049

*REISSUE

# CORRESPONDENCE DISTRIBUTION COVERSHEET

| Author | Addressee | Correspondence No. |
|---|---|---|
| S. H. Wisness, RL<br>(E. J. Millikin, WHC) | P. T. Day, EPA<br>D. B. Jansen, Ecology | Incoming 9202729<br>Xref 9251881D |

Subject: EXPEDITED RESPONSE ACTION (ERA) PLANNING PROPOSALS

## INTERNAL DISTRIBUTION

| Approval | Date | Name | Location | w/att |
|---|---|---|---|---|
| | | Correspondence Control | A3-01 | |
| | | M. R. Adams | H4-55 | |
| | | L. D. Arnold | B2-35 | |
| | | G. D. Carpenter | B2-16 | |
| | | C. K. DiSibio | B3-03 | |
| | | J. M. Frain | H4-55 | |
| | | F. W. Gustafson | H4-55 | |
| | | W. L. Johnson | H4-55 | |
| | | R. E. Lerch, Assignee | B2-35 | |
| | | P. J. Mackey | B3-15 | |
| | | H. E. McGuire, Level 1 | B3-65 | |
| | | E. J. Millikin | H4-55 | |
| | | T. B. Veneziano | B2-35 | |
| | | T. M. Wintczak | L4-92 | |
| | | R. D. Wojtasek | L4-92 | |
| | | EDMC | H4-22 | |

The enslosures are the same as outgoing letter #9251881D. ldp, 6-7049


20248

*Reissue of letter on 4/28/92 to show correct letter number. (9202303 is wrong.)