



## Department of Energy

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Mail Stop PV-11  
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Dear Messrs. Day and Nord:

SUBMITTAL OF DRAFT CHAPTER 1.0 - 200 AGGREGATE AREA MANAGEMENT STUDY (AAMS)  
REPORT

The recent Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Change Package (M-12-90-4) requires that the methodology and format for the 200 AAMS reports be submitted to the U.S. Environmental Protection Agency and Washington State Department of Ecology by June 30, 1991. The subject letter report is intended to serve as an introductory chapter for all 200 AAMS reports. This chapter defines the methodology for implementing the AAMS approach, based on the "Hanford Past Practice Investigation Strategy" in the 200 Areas. The three parties have agreed to finalize this methodology by July 31, 1991.

This submittal meets the recent Tri-Party Agreement Change Package milestone M-27-01. If you have any questions or need further information, please contact Mr. Allan Harris on (509) 376-4339.

Sincerely,

Steven H. Wisness  
Hanford Project Manager

ERD:KMT

Enclosure:  
200 AAMS Report, Chapter 1.0

cc w/o encl:  
R. E. Lerch, WHIC  
T. B. Veneziano, WHIC

## AGGREGATE AREA MANAGEMENT STUDY REPORT

### 1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA), in November 1989, included the 200 Areas of the Hanford Site on the National Priorities List (NPL) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. Inclusion on the NPL initiates the Remedial Investigation (RI) and Feasibility Study (FS) process for characterizing the nature and extent of contamination, assessing risks to human health and the environment, and selection of remedial actions.

This report presents the results of an aggregate area management study (AAMS) for the -Plant aggregate area located in the 200 Area of the DOE Hanford Site in Washington State. The study will provide the basis for initiating RI/FS under CERCLA or Facility Investigations (RFI) and Corrective Measures Studies (CMS) under the Resource Conservation and Recovery Act (RCRA). This report also integrates RCRA treatment, storage or disposal (TSD) closure activities with CERCLA and RCRA past practice investigations.

This chapter describes the overall AAMS approach for the 200 Area, defines the purpose, objectives and scope of the AAMS, and summarizes the quality assurance (QA) program and contents of the report.

#### 1.1 OVERVIEW

The Hanford Site is organized into numerically designated operational areas including the 100, 200, 300, 400, 600, and 1100 Areas (Figure 1). The 100, 200, 300, and 1100 Areas have been listed on the EPA's NPL. The 200 Area, located near the center of the Hanford Site, encompasses the 200 West, East and North Areas which contain reactor fuel processing and waste management facilities.

Under the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), the 200 NPL Site is divided into 8 waste area groups largely corresponding to the major processing plants (e.g., B-Plant and T-Plant), and a number of isolated operable units located in the surrounding 600 Area. Each waste area group is further subdivided into one or more operable units based on waste disposal information, location, facility type, and other site characteristics. The 200 NPL site includes a total of 44 operable units including 20 in the 200 East Area, 17 in the 200 West Area, 1 in the 200 North Area, and 6 isolated operable units. The intent of defining operable units was to group associated waste management units together, such that they could be effectively characterized and remediated under one work plan.

The Tri-Party Agreement also defines approximately 25 RCRA TSD groups within the 200 Area which will be closed or permitted (for operation or postclosure care) in accordance with the Washington State Dangerous Waste Regulations (WAC 173-303). TSD facilities are often associated with an operable unit and are required to be addressed concurrently with past-practice activities.

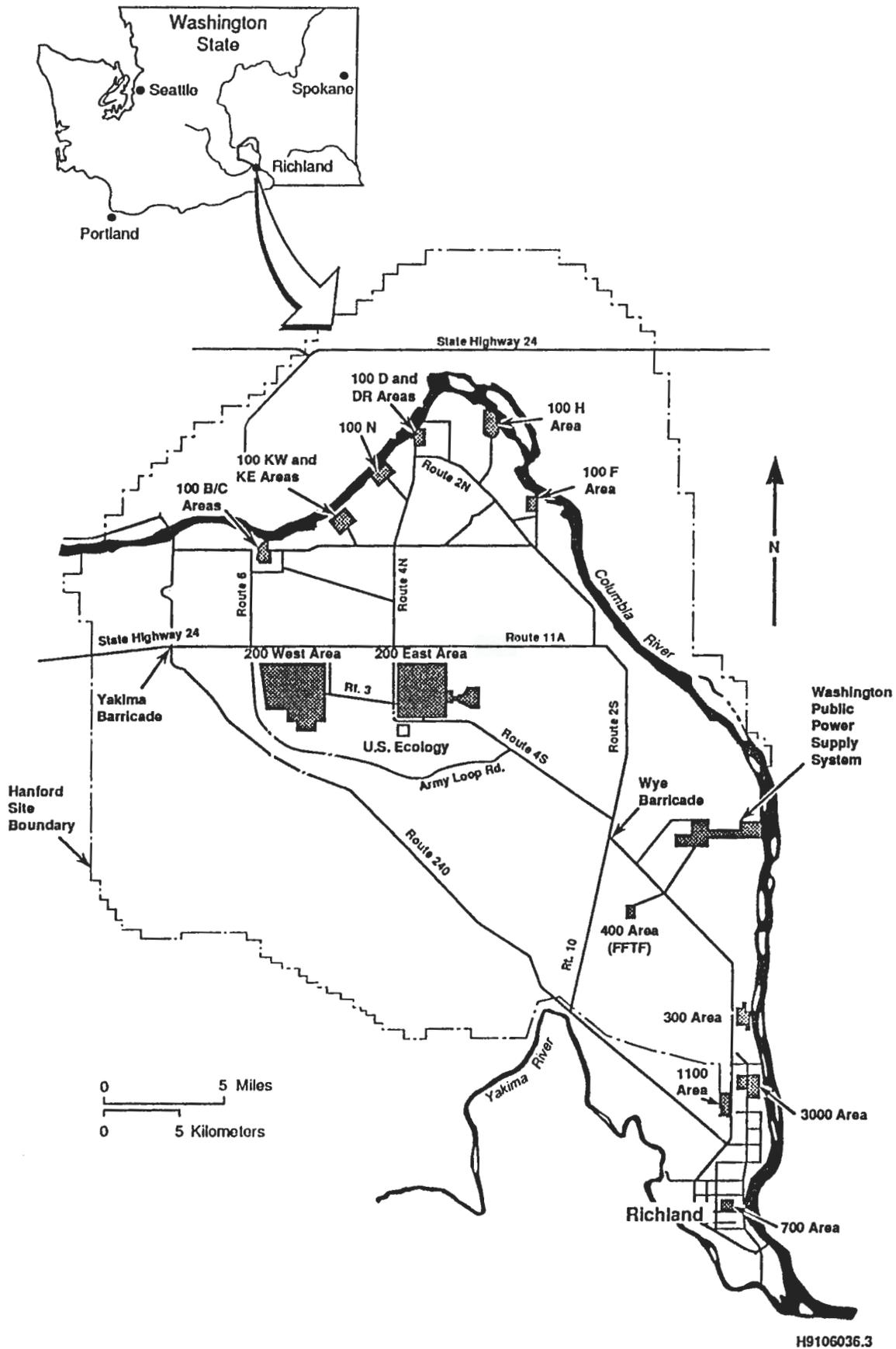


Figure 1. Hanford Site Map

This AAMS is one of 10 studies that will provide the basis for past practice activities for operable units in the 200 Area. In addition, the AAMS's will be collectively used in the initial development of an area-wide groundwater model, and conduct of an initial site-wide risk assessment. The Tri-Party Agreement and "Hanford Past Practice Investigation Strategy" (HPPIS) document establishes the need and provides the framework for conducting AAMS in the 200 Area.

#### 1.1.1 Tri-Party Agreement

The Tri-Party Agreement was developed and signed by representatives from the EPA, Ecology, and DOE in May 1989 and revised in 1990 and 1991. The scope of the agreement covers all CERCLA past practice, RCRA past practice and RCRA TSD activities on the Hanford Site. The purpose of the Tri-Party Agreement is to ensure that the environmental impacts of past and present activities are investigated and appropriately remediated to protect human health and the environment. To accomplish this, the Tri-Party Agreement provides a framework and schedule for developing, prioritizing, implementing and monitoring appropriate response actions.

Recent revisions to the Tri-Party Agreement require that an aggregate area approach be implemented in the 200 Area based on the HPPIS. This strategy requires the conduct of aggregate area management studies which are similar in nature to an RI/FS scoping study. The Tri-Party Agreement currently specifies that 10 Aggregate Area Management Study Reports (AAMSR) be conducted for the 200 Area.

#### 1.1.2 Hanford Site Past Practice Investigation Strategy

The HPPIS was developed between Ecology, EPA, and DOE to streamline the existing RI/FS and RFI/CMS processes. A primary objective of this strategy was to develop a process to meet the statutory requirements and integrate CERCLA RI/FS and RCRA Past Practice RFI/CMS guidance into a singular process for the Hanford Site that ensures protection of human health and welfare and the environment. The HPPIS refines the existing past practice decision-making process as defined in the Tri-Party Agreement. The fundamental principle of the strategy is a "bias for action" by maximizing the use of existing data, integrating past practice with RCRA TSD closure investigations, limiting and focusing the RI/FS process, and conducting expedited and interim actions where appropriate. The preferred path of the HPPIS is to achieve records of decisions through interim remedial actions for the initial stages of Hanford cleanup. The ultimate goal being the successful cleanup or closure of contaminated areas at the earliest possible date in the most effective manner.

The first step in the HPPIS is the initiation of AAMS. This step is to be accomplished via the 1991 revised Tri-Party Agreement (Change Control Form M-12-90-5, May 13, 1991) which defines aggregate areas and prioritizes the preparation of AAMSR (major milestone M-27-00) in the 200 Area. Further definition of aggregate areas and the AAMS approach is provided in Sections 1.2 and 1.3.

# Hanford Past Practice Investigation Strategy

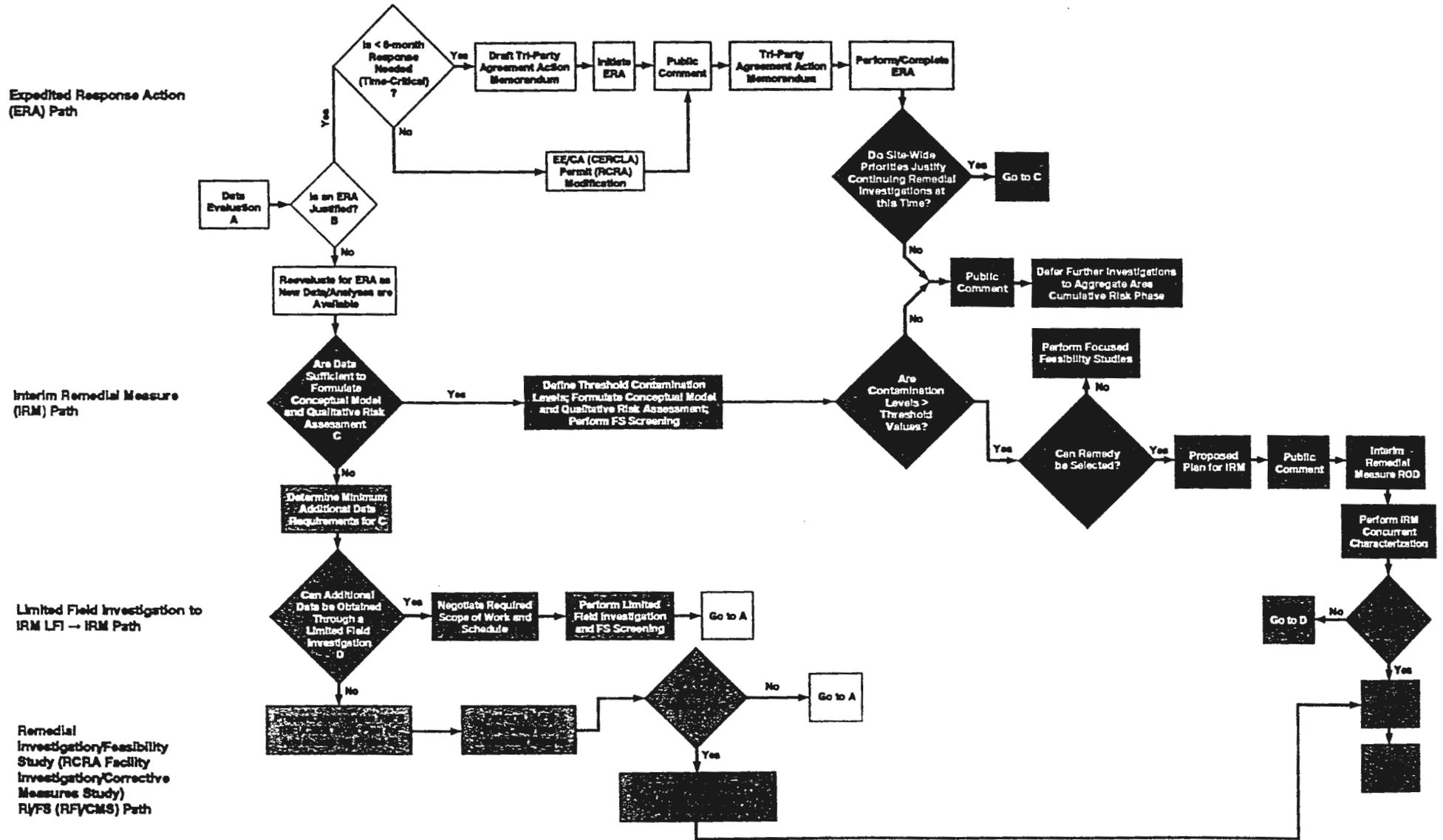


Figure 2. Hanford Past Practice Investigation Strategy flow chart.

## 1.2 200 NPL SITE AGGREGATE AREA MANAGEMENT STUDY PROGRAM

The overall approach and scope of the 200 Area AAMS program is based on the 1991 revision to the Tri-Party Agreement and the HPPIS.

### 1.2.1 Overall Approach

As defined in the Tri-party Agreement, the AAMS program for the 200 Area consists of conducting a series of 10 AAMS for 8 source and 2 ground water aggregate areas delineated in the 200 East, West and North Areas (Figures 3 and 4). Table 1 lists the aggregate areas, the type of study, and associated operable units. With the exception of 200-IU-6, isolated operable units associated with the 200 NPL site (Figure 5) are not included in the AAMS program. Generally, the quantity of existing information associated with isolated operable units is not considered sufficient to require study on an aggregate area basis prior to work plan development. Operable unit 200-IU-6 will be addressed as part of the B Plant AAMS because of similarities in waste management units (i.e., ponds).

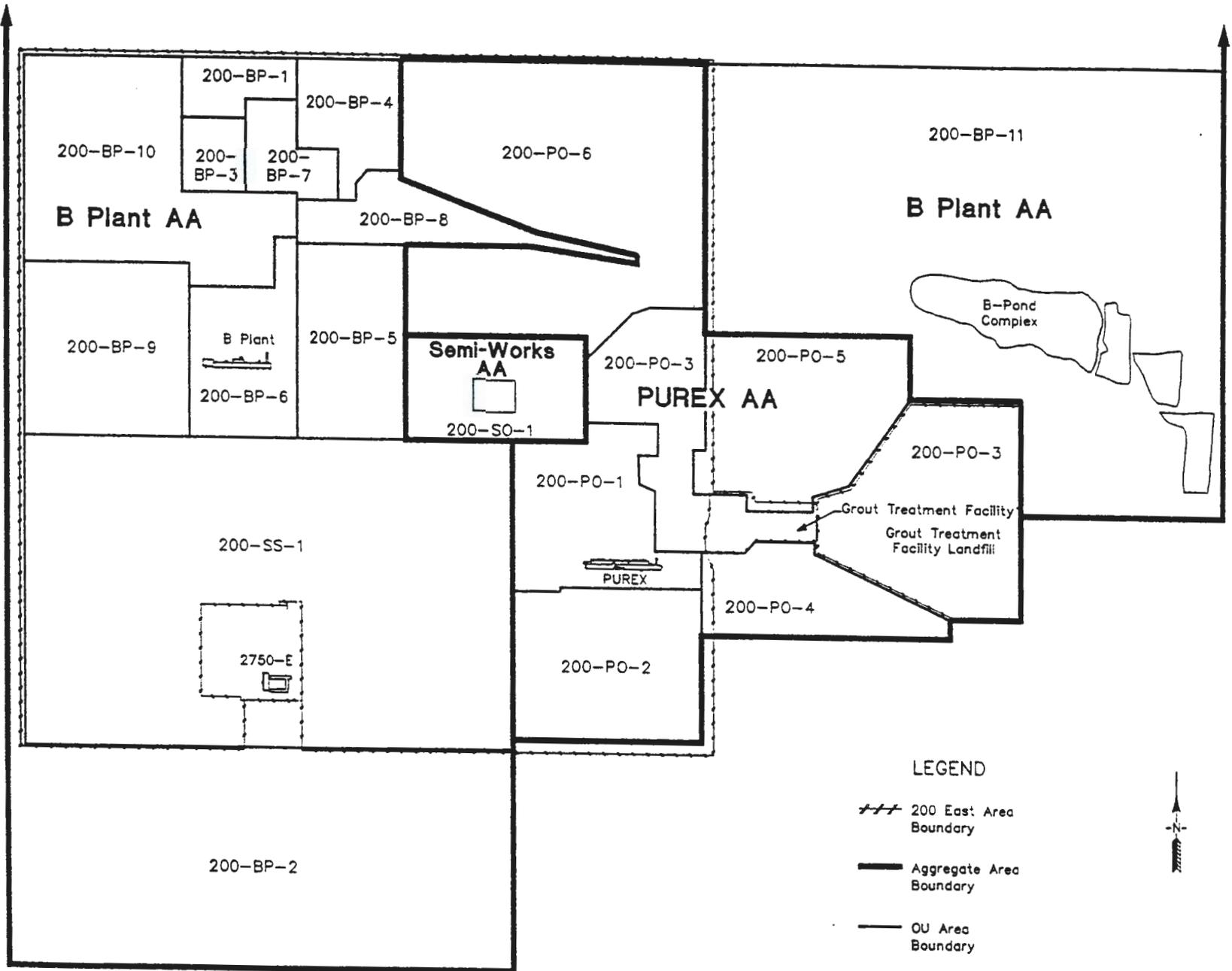
Source AAMS are designed to evaluate source terms on a plant-wide scale. Source AAMS will be conducted for the following aggregate areas (waste area groups) which largely correspond to the major processing plants including the following:

- T-Plant
- Z-Plant
- U-Plant
- S-Plant
- B-Plant
- PUREX
- Semi-Works
- 200 North

The ground water beneath the 200 Areas will be investigated under 2 ground water AAMS on an Area-wide scale (i.e., 200 West and 200 East Areas). Ground water aggregate areas were delineated to encompass the geography necessary to define and understand the local hydrologic regime, and the distribution, migration and interaction of contaminants emanating from source terms which is considered an appropriate scale for developing conceptual and numerical ground water models.

The Department of Energy, Richland Operations Office (DOE-RL) functions as the "lead Agency" for the 200 AAMS program. Depending on the specific AAMS, EPA and/or Ecology function as the "Lead Regulatory Agency" (Table 1). Through periodic (monthly) meetings information is transferred and regulators are informed of the progress of the AAMS such that decisions established under the HPPIS (e.g., is an expedited response action justified?) (Figure 2) can be quickly and collectively made between the three parties. These meeting will continually refine the scope of AAMS as new information is evaluated, decisions are made and actions taken. Completion milestone for AAMS are defined in the Tri-Party Agreement and duplicated in Table 1. All AAMS will be submitted as secondary documents.

Figure 3. 200 East Aggregate Areas.



LEGEND

- 200 East Area Boundary
- Aggregate Area Boundary
- OU Area Boundary

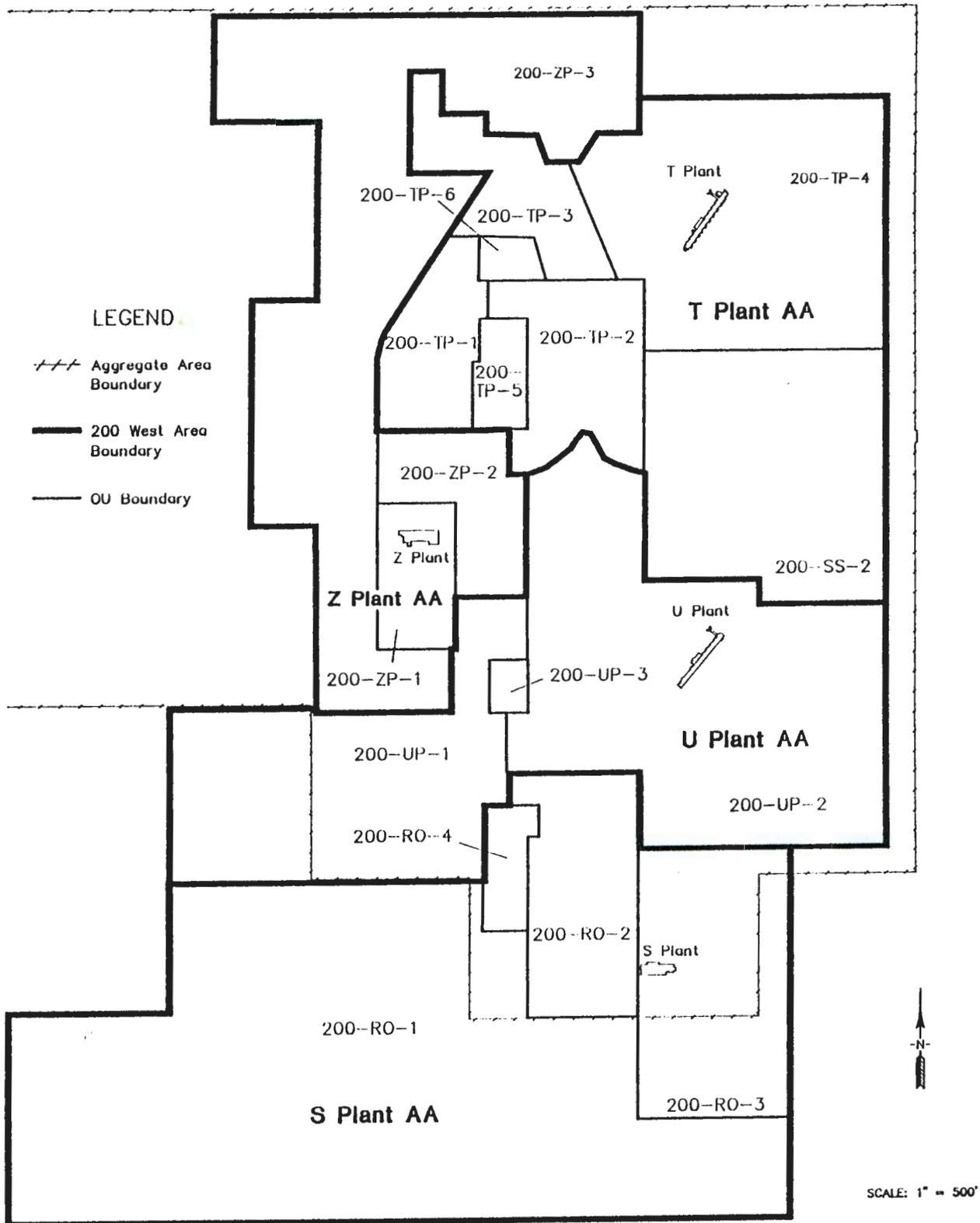


Figure 4. 200 West Aggregate Areas.

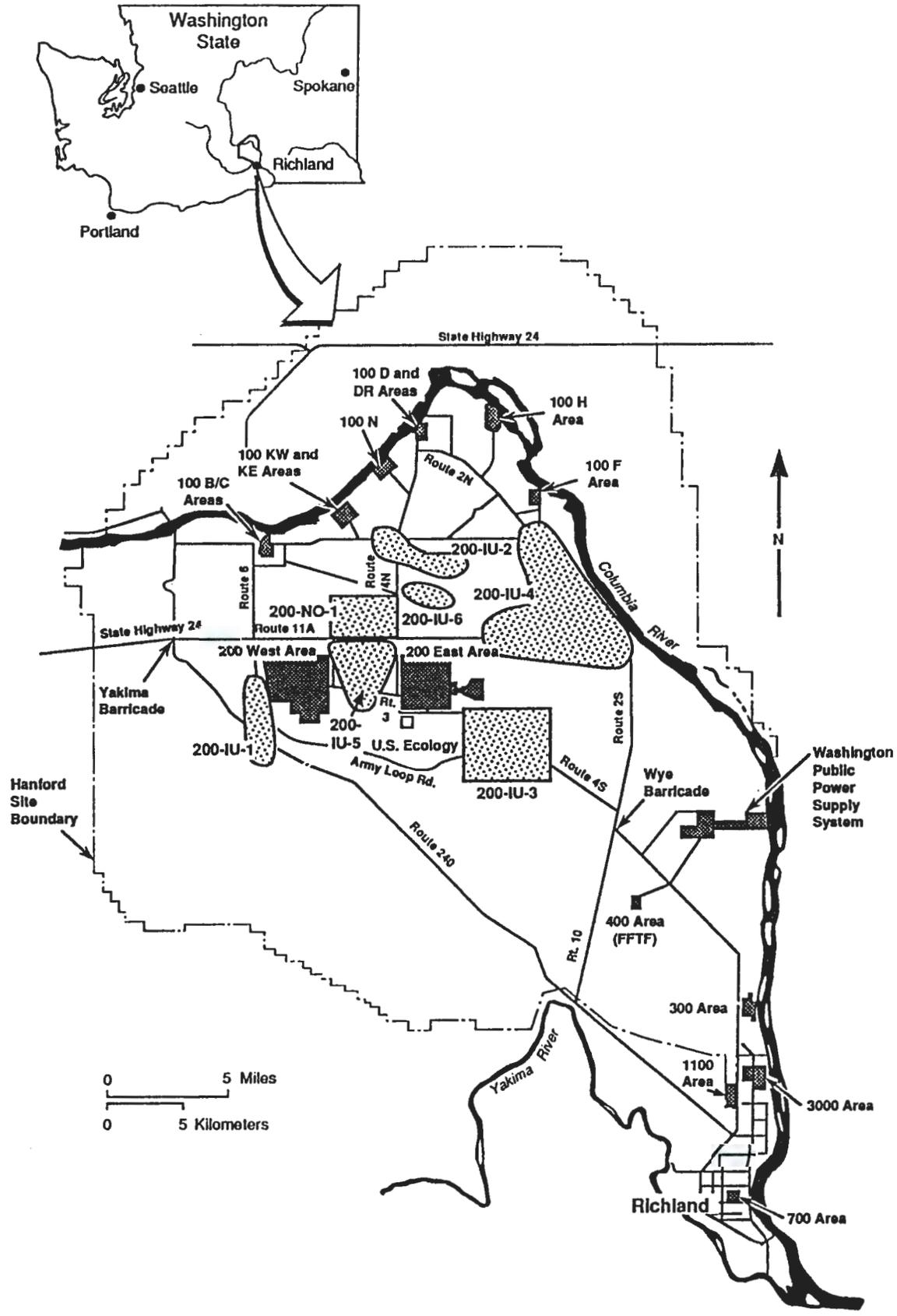


Figure 5. 200 NPL Site Isolated Operable Units.

Table 1. Aggregate Area Management Study (AAMS) Schedule for the 200 NPL Site				
AAMS Title	Operable Units	AAMS Type	Lead Regulatory Agency	Proposed Interim Milestones
T Plant	200-TP-1 200-TP-2 200-TP-3 200-TP-4 200-TP-5 200-TP-6 200-SS-2	Source	EPA	April 1992
Z Plant	200-ZP-1 200-ZP-2 200-ZP-3	Source	EPA	February 1992
U Plant	200-UP-1 200-UP-2 200-UP-3	Source	Ecology	January 1992
S Plant	200-RO-1 200-RO-2 200-RO-3 200-RO-4	Source	Ecology	March 1992
B Plant	200-BP-1 200-BP-2 200-BP-3 200-BP-4 200-BP-5 200-BP-6 200-BP-7 200-BP-8 200-BP-9 200-BP-10 200-BP-11 200-IU-6 200-SS-1	Source	EPA	June 1992
PUREX	200-PO-1 200-PO-2 200-PO-3 200-PO-4 200-PO-5 200-PO-6	Source	Ecology	May 1992
Semi-Works	200-SO-1	Source	Ecology	July 1992
200 North	200-NO-1	Source	EPA	August 1992
200 West	NA	Groundwater	EPA/Ecology	September 1992
200 East	NA	Groundwater	EPA/Ecology	September 1992

### 1.2.2 Process Overview

AAMS will be conducted in three steps; 1) the analysis of existing data and formulation of a conceptual model, 2) identification of data needs and evaluation of remedial technologies, and 3) conduct of limited field characterization activities and report preparation (Figure 7).

The first and primary task of the AAMS investigation process involves the search, compilation and evaluation of existing data. Information that will be collected include the following:

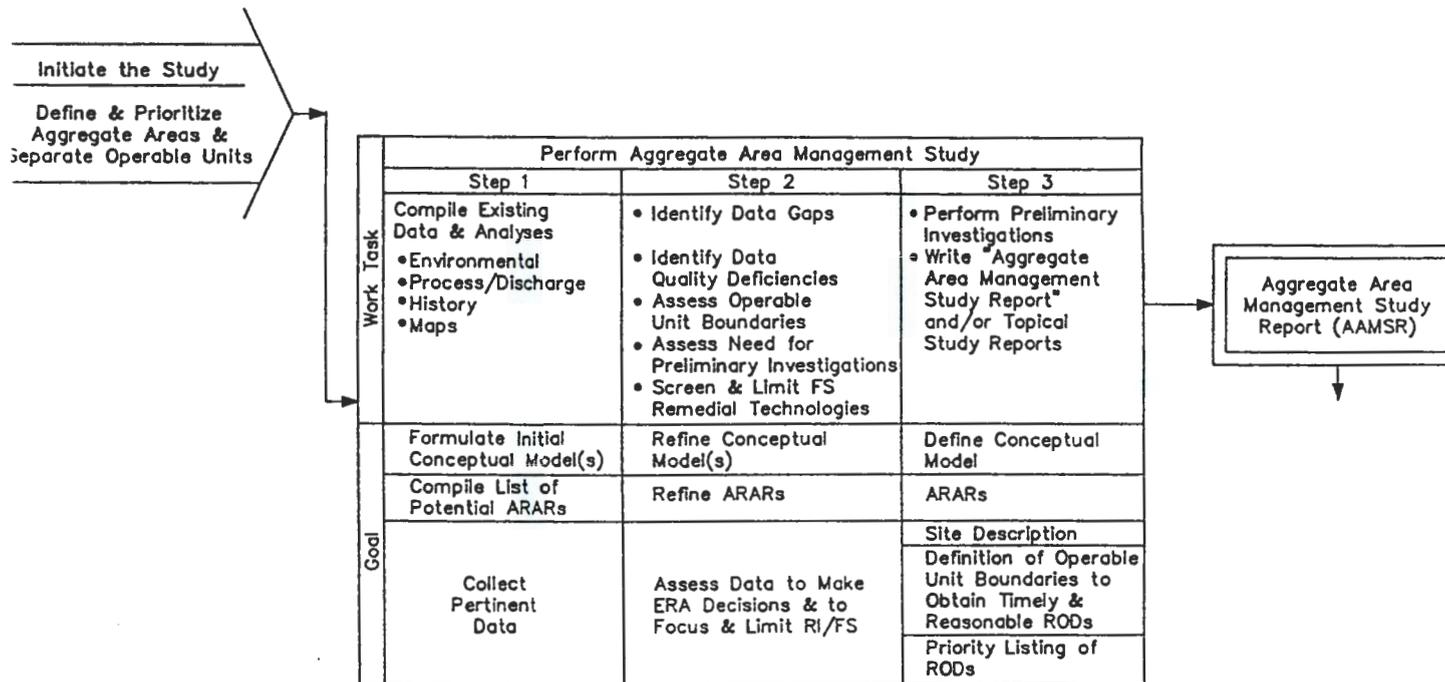
- facility and process descriptions and operational histories for waste sources
- waste disposal records defining dates of disposal, waste types and waste quantities
- sampling events of waste effluents and effected media
- site conditions including the site physiography, geology, hydrology, meteorology, ecology, demography, and archaeology
- environmental monitoring data for effected media including air, surface water, sediment, soil, ground water and biota

Collectively this information will be used to identify contaminants of concern, determine the scope of future characterization efforts, and to develop a conceptual model of the aggregate area. Although data collection objectives are similar, the types of information collected will depend on whether the study is a source or groundwater AAMS. The data collection step serves to avoid duplication of previous efforts and facilitates a more focused investigation by the identification of data gaps.

Topical reports referred to as Technical Baseline Reports will be initially prepared to summarize facility information. These reports will describe individual waste management units and unplanned releases contained in the aggregate area as identified in the Waste Information Data System (WIDS) (WHC 1990). The reports are based on review of current and historical Hanford Site reports, engineering drawings and photographs and is supplemented with site inspections and employee interviews. Information contained in the reports will be summarized in the AAMSR. Generally, other topical reports will be generated for environmental monitoring or sampling data which have not been previously compiled or summarized, or when existing reports are outdated or inadequate.

Information on waste sources, pathways, and receptors will be used to develop a conceptual model of the aggregate area. If the conceptual understanding of the site is considered inadequate, limited field characterization activities can be undertaken as part of the study. Field screening activities planned for the -Plant aggregate area including the following:

- expanded ground water monitoring programs (non CLP) at ~10 select existing wells to identify contaminants of concern and refine groundwater plume maps



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Figure 7. Aggregate Area Management Study flow chart

- in situ assaying of gamma-emitting radionuclides at ~10 selected existing vadose zone boreholes to develop radioelement concentration profiles in the vadose zone.

Wells, boreholes and analytes will be selected based on a review of existing environmental data which will be undertaken early in the AAMS process. Field characterization results will be presented in the AAMSR and/or topical reports.

After the conceptual model is developed, applicable or relevant and appropriate requirements (ARARs), and potential remedial technologies will be identified. In cases where the existing information is sufficient, the HPPIS, in a decision making pathway parallel to the AAMS, allows for limited FS or CMS to be initiated prior to the completion of the study.

Data needs will be identified by evaluating the sufficiency of existing data, and by determining what additional data are necessary to adequately characterize the aggregate area, refine the conceptual model and ARAR's, and/or narrow the range of remedial alternatives. Determinations will be made regarding the level of uncertainty associated with existing data and the need to verify or supplement the data. If additional data are needed, the intended data uses will be identified, data quality objectives established and data priorities set.

The AAMS will result in management recommendations for the aggregate area including the following:

- the need for expedited, interim or limited actions
- definition and prioritization operable units
- prioritization of work plan activities
- integration of RCRA TSD closure activities
- the conduct of field characterization activities
- the need for treatability studies

Based on the AAMSR, a decision is made on whether the study has provided sufficient information to forego further field investigations and prepare a FS. If further field investigations are required, a RI/FS work plan is developed and executed. When the quantity and quality of the data is considered sufficient, a final risk assessment and FS is prepared leading to a record of decision.

All 10 AAMS are scheduled to be completed by September 1992. This will facilitate a coordinated approach to prioritizing and implementing future past practice activities for the entire 200 Area.

### 1.3 PURPOSE, SCOPE AND OBJECTIVES

The purpose of conducting an AAMS is to compile and evaluate the existing body of knowledge and conduct limited field characterization work to support the HPPIS decision making process for an aggregate area. The AAMS process is similar in nature to the RI/FS scoping process prior to work plan development and is intended to maximize the use of existing data to allow a more limited and focused RI/FS. Figure 7 identifies work tasks and goals for three steps in the study. Deliverables for an AAMS consist of the AAMSR and health and safety, project management, community relations and data management plans.

Specific objectives of the AAMS include the following:

- assemble and interpret existing data including operational and environmental data
- describe site conditions
- conduct limited new site characterization work if data or interpretation uncertainty could be reduced by the work
- develop a conceptual model
- identify contaminants of concern, and their distribution
- identify preliminary ARARs
- define preliminary remedial action objectives, screen potential remedial technologies, and if possible provide recommendations for limited expedited FS
- recommend treatability studies to support the evaluation of remedial action alternatives
- define data needs, establish data quality objectives and set data priorities
- provide recommendations for expedited, interim or limited actions
- refine and prioritize operable units boundaries
- define and prioritize work plan and other past practice activities with emphasis on supporting early cleanup actions and records of decisions
- integrate RCRA TSD closure activities with past practice activities.

Depending on whether an aggregate area is a source or ground water aggregate area, the scope of the AAMS will vary. Source AAMS focus on source terms and the environmental media of interest includes air, biota, surface water and soil, and the unsaturated subsurface soil. Accordingly, detailed descriptions of facilities and operational information is provided in the source AAMSR. In contrast, groundwater AAMS focus on the saturated subsurface and on ground water contamination data. Descriptions of facilities in the ground water AAMS is limited to liquid disposal facilities and reference is made to source AAMS for detailed descriptions. The description of site conditions in source AAMSR concentrate on site physiography, meteorology, surface water hydrology, vadose zone geology, ecology, and demography. Ground water AAMSR summarize regional geohydrologic conditions and contain detailed information regarding the local geohydrology on an Area-wide scale. Correspondingly, other sections of the AAMSR vary depending on the environmental media of concern.

#### 1.4 QUALITY ASSURANCE

A limited amount of field characterization work will be performed as part of the AAMS. To help ensure that data collected is of sufficient quality to support decisions, all work on the Hanford Site is subject to the requirements of DOE Order 5700.1A, Quality Assurance (DOE 1986), which establishes broadly applicable quality assurance (QA) program requirements in compliance with American National Standards Institute/American Society of Mechanical Engineers QA guidelines (ANSI/ASME 1989); the QA program requirements so defined apply to all types of project activities conducted on the Hanford Site.

To ensure that the objectives of the past practice activities are met in a manner consistent with DOE-RL Order 5700.1A (DOE 1983), all work will be performed in compliance with WHC's existing QA manual, WHC-CM-4-2 (WHC 1989) and with procedures outlined in the QA program plan, WHC-EP-0383 (WHC 1990) specific to CERCLA RI/FS activities. This QA program plan describes the various plans, procedures, and instructions that will be used by Westinghouse Hanford to implement the requirements of DOE-RL Order 5700.1A.

#### 1.5 ORGANIZATION OF REPORT

In addition to this introduction, the AAMSR consists of 10 sections as follows:

- Section 2.0, Facility/Process Descriptions and Operational History, describes the major facilities, waste management units and unplanned releases within the aggregate area. A chronology of waste disposal activities is established and waste generating processes are summarized.
- Section 3.0, Site Conditions, describes the physical, environmental, and sociological setting including, geology, hydrology, ecology, meteorology, and demography.
- Section 4.0, Preliminary Conceptual Model, summarizes the conceptual understanding of the aggregate area with respect to types and extent of contamination, exposure pathways and receptors.
- Section 5.0, Health and Environmental Concerns, identifies chemicals used or disposed within the aggregate area that could be of concern regarding public health and/or the environment.
- Section 6.0, Applicable or Relevant and Appropriate Requirements, identifies Federal and state standards, requirements, criteria, or limitations that may be considered potential ARARs.
- Section 7.0, Remedial Action Technologies, identifies and screens potential remedial technologies and establishes remedial action objectives for environmental media.

- Section 8.0, Data Quality Objectives, reviews QA criteria on existing data, identifies data gaps or deficiencies, and identifies broad data needs for field characterization and risk assessment. Data quality objectives and data priorities are established.
- Section 9.0, Recommendations, provides guidance for future past practice activities based on the results of the AAMS. Recommendations are provided for expedited response actions at problem sites, interim remedial measures, refining operable unit boundaries, prioritizing work plans, and conducting field investigations and treatability studies.
- Section 10.0, References, list reports and documents cited in the AAMSR.

The following plans are attached to the AAMSR and will be used to support past practice activities in the aggregate area:

- Attachment 1: Health and Safety Plan (HSP)
- Attachment 2: Project Management Plan (PMP)
- Attachment 3: Data Management Plan (DMP)
- Attachment 4: Community Relations Plan (CRP).

# CORRESPONDENCE DISTRIBUTION COVERSHEET

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Subject: SUBMITTAL OF DRAFT CHAPTER 1.0 - 200 AGGREGATE AREA MANAGEMENT STUDY REPORT

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The attachment is the same as outgoing letter #9154642D.