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PROGRAM**

**Bear Creek Valley Floodplain Hot Spot
Removal Action Project Plan,
Oak Ridge Y-12 Plant,
Oak Ridge, Tennessee**

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FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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**Bear Creek Valley Floodplain Hot Spot
Removal Action Project Plan,
Oak Ridge Y-12 Plant,
Oak Ridge, Tennessee**

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Environmental Management Activities at the
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managed by
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
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PREFACE

The *Bear Creek Valley Floodplain Hot Spot Removal Action Project Plan, Oak Ridge Y-12 Plant, Oak Ridge, Tennessee (Y/ER-301)* was prepared (1) to safely, cost-effectively, and efficiently evaluate the environmental impact of solid material in the two debris areas in the context of industrial land uses (as defined in the Bear Creek Valley Feasibility Study) to support the Engineering Evaluation/Cost Assessment and (2) to evaluate, define, and implement the actions to mitigate these impacts. This work was performed under Work Breakdown Structure 1.x.01.20.01.08.

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ABBREVIATIONS

AM	Action Memorandum
BCV	Bear Creek Valley
BMPP	Best Management Practices Plan
CA	Characterization Area
CDBA	Creekside Debris Burial Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DMP	Data Management Plan
DOE	U.S. Department of Energy
DQO	Data Quality Objective
EE/CA	Engineering Evaluation/Cost Assessment
Energy Systems	Lockheed Martin Energy Systems, Inc.
FS	Feasibility Study
HSP	Health and Safety Plan
ORR	Oak Ridge Reservation
QAPjP	Quality Assurance Project Plan
RDBA	Roadside Debris Burial Area
RI	remedial investigation
RmAR	Removal Action Report
RmAWP	Removal Action Work Plan
SAP	Sampling and Analysis Plan
WBS	work breakdown structure
WMP	Waste Management Plan

contamination, evaluate the risks to public health and the environment, and determine the goals for an FS of potential remedial actions.

The need to complete the RI/FS process in a timely manner resulted in the establishment of watershed Characterization Areas (CAs) on the ORR, one of which is the Bear Creek Valley (BCV) CA at the Y-12 Plant. The BCV CA consists of the area west of the Y-12 Plant defined by the watershed of Bear Creek. The watershed CA approach examines all the waste areas, groundwater, and surface water in a watershed and coordinates remediation activities in the context of managing the watershed as a single entity. The BCV CA is an operationally and hydrogeologically complex area that contains numerous contaminants and contaminant sources.

Characterization work for the BCV CA RI identified three areas of soil contamination or debris disposal on the Bear Creek floodplain outside of the Y-12 Plant boundary that may pose potential risk to future industrial workers (Fig. 1). Two of these areas are located at the east end of the BCV watershed—the Roadside Debris Burial Area (RDBA) and the Creekside Debris Burial Area (CDBA)—and are both areas where contaminated debris has been disposed. A third area is located in the middle of BCV at the confluence between the tributary draining the Bear Creek Burial Grounds and Bear Creek (referred to as the NT8 area). Soil contamination at the NT8 area is derived from downgradient migration of contaminated sediment from the Bear Creek Burial Grounds. Risks posed by contamination in each of these three areas are marginal for industrial land use (between 1×10^{-6} and 1×10^{-4}); however, for the RDBA and CDBA, risk assessment is based on limited environmental data.

2.2 PROJECT OBJECTIVE

Each alternative action described in the BCV FS includes remediation of soil contamination on the Bear Creek Floodplain. Data for the RDBA and CDBA are limited and do not allow evaluation of the preferred remedial action for the floodplain in the FS. Data available for the NT-8 area in the RI is sufficient to define the nature and extent of contamination at this area. The objective of this project is to better characterize the RDBA and CDBA and to evaluate a preferred removal alternative for the two remaining contaminated areas on the floodplain. When the preferred remedial action is selected, this project will implement the remedial action.

This project plan addresses the technical objectives, system requirements, regulatory strategy, work breakdown structure (WBS), schedule, and documentation for completion of the BCV Floodplain Hot Spot Project.

2.3 PROJECT SCOPE

2.3.1 Project Planning

2.3.1.1 Project Plan

The scope of the BCV Floodplain Hot Spot Removal Early Action was determined at the Project Scoping meeting held on October 22, 1997. The Project Plan is based on the meeting minutes, which outline the scope for this early action and define the project team, roles and

Fig. 1. Location of the soil contamination "hot spots" on the Bear Creek Floodplain.

responsibilities for the project team, the project schedule, key milestones, and regulatory requirements for the BCV Floodplain Hot Spot Project.

2.3.1.2 DQO meeting

Sampling for the characterization phase of this project will be optimized through the use of the seven step DQO process (U.S. Environmental Protection Agency 1993). The project team will meet to define the DQOs for this action. The DQOs will define the requirements for sampling and analysis at the hot spots that will satisfy the need to make decisions concerning selection of a remedial alternative.

2.3.2 Characterization

2.3.2.1 DQO meeting minutes/SAP

The meeting minutes from the DQO meeting will constitute a SAP for the characterization phase. This document will define the number of samples, their locations and sample procedures, analyte lists, detection limits, and accuracy requirements for the characterization effort.

The Y-12 Waste Management Checklist and Health and Safety Checklist will be completed. These will constitute the characterization phase Waste Management Plan (WMP) and Health and Safety Plan (HSP). In addition, a Quality Assurance Project Plan (QAPjP) and Data Management Plan (DMP) will be completed.

2.3.2.2 Characterization field work

Characterization field work will be conducted following the SAP and according to the HSP and QAPjP. Field work may include walkover radiological surveys, detailed site description, sampling and analysis of soils and subsoils, surveying, and characterization of debris (Resource Conservation and Recovery Act, radiological). Any waste produced from characterization (e.g., personal protective equipment, unused samples) will be disposed of according to the WMP. Analytical results and field observations will be managed following the DMP.

2.3.2.3 Preliminary characterization data interpretation meeting

The project team will meet to define the results of the evaluation of characterization data. The objective of this meeting will be to provide the EE/CA team with an evaluation of the data that is consistent with the final characterization report. At this meeting, a preliminary evaluation of potential contaminants of concern and the volume of debris/contaminated soil will be provided to the EE/CA team.

2.3.2.4 Characterization report

The characterization report will include an evaluation of the characterization data. The document will be produced in a preliminary draft form for review by DOE and the project team. The document will be issued as an appendix to the EE/CA in the D1 and D2 submittals of that document.

2.3.3 EE/CA

The EE/CA will contain a detailed analysis of a limited number of alternative remedial actions identified in the BCV FS covering the range of remedial alternatives. For each alternative, the EE/CA will include review of compliance with applicable or relevant and appropriate requirements, a determination of waste disposition, and an estimate of cost. The document will be produced in a preliminary draft form for review by DOE and the project team. The document will be issued for DOE and regulatory approval in the form of D1 and D2 submittals. The D1 draft of the EE/CA will be submitted to the regulators on April 15, 1998. Between submitting the D1 draft and completing the D2 draft, the project will also conduct a public meeting, if necessary, and incorporate public review comments into the D2 draft.

2.3.4 AM

After DOE has selected the preferred alternative, the project will develop the AM that will contain an abbreviated removal action analysis and the recommended removal action. The document will be produced in a preliminary draft form for review by DOE and the project team. The document will be issued for DOE and regulatory approval in the form of D1 and D2 submittals. The D1 draft of the AM will be submitted to the regulators on August 14, 1998.

2.3.5 RmAWP

The RmAWP will be prepared as specified in the AM. The RmAWP will include the following supporting documentation: WMP, QAPjP, Environmental Monitoring Plan, DMP, Best Management Practices Plan (BMPP), and HSP. The document will be produced in a preliminary draft form for review by DOE and the project team. The document will be issued for DOE and regulatory approval in the form of D1 and D2 submittals. The D1 draft of the RmAWP will be submitted to the regulators on October 30, 1998.

In conjunction with preparing the RmAWP, the Remedial Design Report will be prepared. This will include contractual binding drawings and specifications that will be used by the construction contractor to perform the work.

2.3.6 Removal Action

On the basis of the current preferred remedial action in the FS, this task includes excavation of 14,460 m³ (18,800 yd³) of contaminated soil at two sites on Bear Creek Floodplain: RDBA [13,000 m³ (16,900 yd³)] and CDBA [1,460 m³ (1,900 yd³)]. This component also includes backfill of the excavation with clean soil, monitoring of surface water in nearby Bear Creek, confirmatory sampling to ensure completeness, and transport and disposal of 14,460 m³ (18,800 yd³) of mixed waste at an off-site disposal facility. Wastewater derived from dewatering operations and decontamination of equipment will be collected and treated at the Y-12 Plant West End Treatment Facility. The removal action may change from that currently planned based on the results of characterization and alternative evaluation in the EE/CA.

The RmAR will be prepared upon completion of the removal action and will document compliance with, or deviation from, the RmAWP and the Removal Design Package.

2.4 REQUIREMENTS

The Project Team will comply with the requirements of applicable laws and regulations and applicable requirements of DOE orders. At the removal action stage, requirements and laws such as the National Environmental Policy Act, the National Pollution Discharge Elimination System, DOE orders, and industrial hygiene will be identified in a BMPP. The BMPP will also define the regulatory strategy for the removal action. The strategy for compliance with requirements at the characterization stage will be contained in the WMP, HSP, and the QAPjP for the characterization.

2.5 PROJECT PLAN

2.5.1 Project Schedule

The project schedule is shown in Fig. 2.

2.5.2 Work Breakdown Structure

The BCV Floodplain Hot Spots Early Action is a level-6 Project within a Project Baseline Summary (OR 42102) of Major System Acquisition-1, WBS element 01.20.01.08. The task has been further subdivided into WBS elements for project planning and management (01), characterization (02), the EE/CA (03), the AM (04), RmAWP and Removal Design (05), and the removal action and RmAR (06) (Fig. 3).

2.5.3 Method of Accomplishment

Primary roles and responsibilities within the BCV Floodplain Hot Spot Project are assigned by the WBS structure: Energy Systems is responsible for project planning and management (01), characterization (02), RmAWP and Remedial Design (05), and the removal action and RmAR (06); Jacobs Engineering is responsible for the EE/CA (03) and the AM (04). Energy Systems employs various subcontractors in roles that include planning and management, characterization, document preparation, and construction. In addition, the project team is composed of a multidisciplinary team representing various entities. Each team member plays a role in providing support to other team members for their primary responsibility.

2.5.4 Project Completion

This project will be completed when an appropriate removal action has been safely selected and implemented at the BCV Floodplain Hot Spot sites. The appropriate removal action will be selected using the EE/CA process and will be based on the additional characterization data obtained during this project. The appropriate removal action may range from excavation of contaminated soils to no action.

2.6 PUBLIC AND STAKEHOLDER INVOLVEMENT

The goal of the Environmental Management Community Relations Program is to involve local stakeholders in an open and accessible decision-making process that identifies issues and alternatives during the planning and development stages of projects. This involvement is expected

Fig. 2. Project schedule for the BCV Floodplain Hot Spot Removal Action.

Fig. 2 (continued)

Fig. 2 (continued)

Fig. 3. Work breakdown structure for the BCV Floodplain Hot Spot Removal Early Action.

to lead to a mutually agreed-upon action plan that addresses public values and concerns and is technically feasible, environmentally sound, and safety- and health-conscious.

3. REFERENCE

U.S. Environmental Protection Agency 1994. *Guidance for the Data Quality Objective Process*, EPA QA/G-4, U.S. Environmental Protection Agency Quality Assurance Management Staff, Washington, D.C.

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