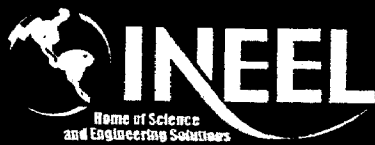


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Idaho Operations Office

Operations and Maintenance Plan for Operable Units 6-05 and 10-04, Phase II



Idaho National Engineering and Environmental Laboratory

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Operations and Maintenance Plan for Operable Units 6-05 and 10-04, Phase II

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**Prepared for the
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ABSTRACT

This Operations and Maintenance Plan describes the long-term remedial design/remedial action activities for Phase II of the Waste Area Groups 6 and 10 Operable Unit 10-04 remediation at the Idaho National Engineering and Environmental Laboratory. The Operable Unit 10-04 remediation activities are divided into four phases. Phase I involves implementing institutional controls for Operable Unit 10-04 sites and implementing an Idaho National Engineering and Environmental Laboratory Sitewide institutional controls plan and a long-term ecological monitoring plan. Phase II provides for the remediation of sites contaminated with trinitrotoluene and Royal Demolition Explosive. Phase III is directed at remediation of the Security Training Facility-02 gun range for which lead contamination is the concern. Phase IV remediation sites are those areas that have unexploded ordnance present, requiring removal and disposal.

The Phase II operations and maintenance activities consist of the monitoring and maintenance of institutional controls established at the five sites contaminated with trinitrotoluene and Royal Demolition Explosive. These sites include the following:

- Fire Station II Zone and Range Fire Burn Area
- Experimental Field Station
- Land Mine Fuze Burn Area
- National Oceanic and Atmospheric Administration
- Naval Ordnance Disposal Area.

Institutional controls will be established in accordance with approved plans.

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ACRONYMS

BORAX	Boiling Water Reactor Experiment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	<i>Code of Federal Regulations</i>
DOE	U.S. Department of Energy
EBR-I	Experimental Breeder Reactor I
INEEL	Idaho National Engineering and Environmental Laboratory
NOAA	National Oceanic and Atmospheric Administration
NODA	Naval Ordnance Disposal Area
O&M	operation and maintenance
OU	operable unit
RDX	Royal Demolition Explosive
TNT	trinitrotoluene
USC	United States Code
UXO	unexploded ordnance
WAG	waste area group

Operations and Maintenance Plan for Operable Units 6-05 and 10-04, Phase II

1. INTRODUCTION

Remediation for Operable Units (OU) 6-05 and 10-04, hereinafter referred to as OU 10-04, at the Idaho National Engineering and Environmental Laboratory (INEEL) is divided into four phases:

- Phase I consists of developing and implementing institutional controls at OU 10-04 sites and developing and implementing an INEEL Sitewide institutional controls plan and long-term ecological monitoring plan
- Phase II will remediate sites contaminated with trinitrotoluene (TNT) and Royal Demolition Explosive (RDX)
- Phase III will remediate lead contamination at the Security Training Facility-02 gun range
- Phase IV will address hazards from unexploded ordnance (UXO).

Separate remedial design/remedial action work plans and operation and maintenance (O&M) plans will be submitted for each phase of remediation. The scope and schedule for implementing these remediation phases are presented in the scope of work entitled *Operable Units 6-05 and 10-04, Experimental Breeder Reactor-I/Boiling Water Reactor Experiment Area and Miscellaneous Sites, Remedial Design/Remedial Action Scope of Work* (DOE-ID 2003).

This site-specific O&M Plan describes the long-term activities and procedures that will be done to satisfy requirements for the *Record of Decision, Experimental Breeder Reactor-I/Boiling Water Reactor Experiment Area and Miscellaneous Sites, Operable Units 6-05 and 10-04* (DOE-ID 2002) and the *Operable Units 6-05 and 10-04, Experimental Breeder Reactor-I/Boiling Water Reactor Experiment Area and Miscellaneous Sites, Remedial Design/Remedial Action Scope of Work* (DOE-ID 2003). These activities and procedures will make up the Phase II remediation efforts for the TNT and RDX contaminated soil sites, which include the following areas:

- Fire Station II Zone and Range Fire Burn Area
- Experimental Field Station
- Land Mine Fuze Burn Area
- National Oceanic and Atmospheric Administration (NOAA)
- Naval Ordnance Disposal Area (NODA).

This plan outlines the O&M activities that will be conducted and documented in the O&M report at the completion of the remedial action activities required for the five sites listed above. After remediation actions at these sites are complete, this O&M plan may be modified based on results of the final confirmation sampling. The institutional control requirements are based on provisions in the *INEEL Sitewide Institutional Controls Plan for CERCLA Response Actions* (DOE-ID 2004a), which was included as Attachment 1 to the *Remedial Design/Remedial Action Work Plan for Operable Units 6-05 and 10-04, Phase I* (DOE-ID 2004b).

As remediation in Phases II through IV are completed for OU 10-04 sites, the O&M requirements will be modified based on the residual levels of contamination. Considering the available state-of-the-art explosive detection and removal technologies, it is usually not possible to confirm that all (100%) explosives have been identified and, therefore, removed from a site at the completion of remediation. For this reason, it is expected that institutional controls will be required after remediation of the TNT/RDX contaminated soil sites, since undetected subsurface TNT/RDX fragments could remain.

The basic elements of this O&M Plan are organized as follows:

- **Section 2**—This section provides background information on the nature of contamination at each site and a description of the current controls
- **Section 3**—This section describes the requirements for institutional controls, environmental monitoring, site-specific operations and maintenance, and 5-year reviews
- **Section 4**—This section describes operations and maintenance implementation, including organization, responsibilities, and requirements for conducting monitoring, maintenance, and inspections
- **Section 5**—This section summarizes the reporting requirements for institutional controls, environmental monitoring, site-specific operations and maintenance, and 5-year reviews
- **Section 6**—This section lists the references cited in this report.

In accordance with the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (DOE-ID 1991), the U.S. Department of Energy (DOE) Idaho Operations Office will submit an O&M report to the U.S. Environmental Protection Agency and the Idaho Department of Environmental Quality (hereinafter referred to as the Agencies) once the O&M activities have been completed. In accordance with the Phase I Remedial Design/Remedial Action Work Plan (DOE-ID 2004b), a draft O&M report will be submitted to the Agencies by May 31, 2008.

2. BACKGROUND

Between the 1950s and 1980s, research activities at the INEEL left behind contaminants that pose risks to human health and the environment. A comprehensive remedial investigation/feasibility study was performed to determine the nature and extent of contamination at the Waste Area Group (WAG) 6, OU 6-05 Experimental Breeder Reactor (EBR) -I/Boiling Water Reactor Experiment (BORAX) and WAG 10, OU 10-04 Miscellaneous Sites (see Figure 1). The investigation is detailed in the *Comprehensive Remedial Investigation/Feasibility Study for Waste Area Groups 6 and 10 Operable Unit 10-04* (DOE-ID 2001).

Waste Area Group 10 and OU 10-04 include miscellaneous INEEL sites outside the other WAGs at the INEEL (WAGs 1–9). Operable Unit 10-08 also is included in WAG 10. Operable Unit 10-08 was added to evaluate INEEL-wide groundwater concerns and new sites that are passed to WAG 10 by other WAGs and to prepare the OU 10-08 Comprehensive Remedial Investigation/Feasibility Study and Record of Decision (pending). Therefore, OU 10-04 will not address INEEL-wide groundwater issues and potential new sites. Figure 2 shows the INEEL with the WAG 10, OU 10-04 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) TNT/RDX contaminated soil sites.

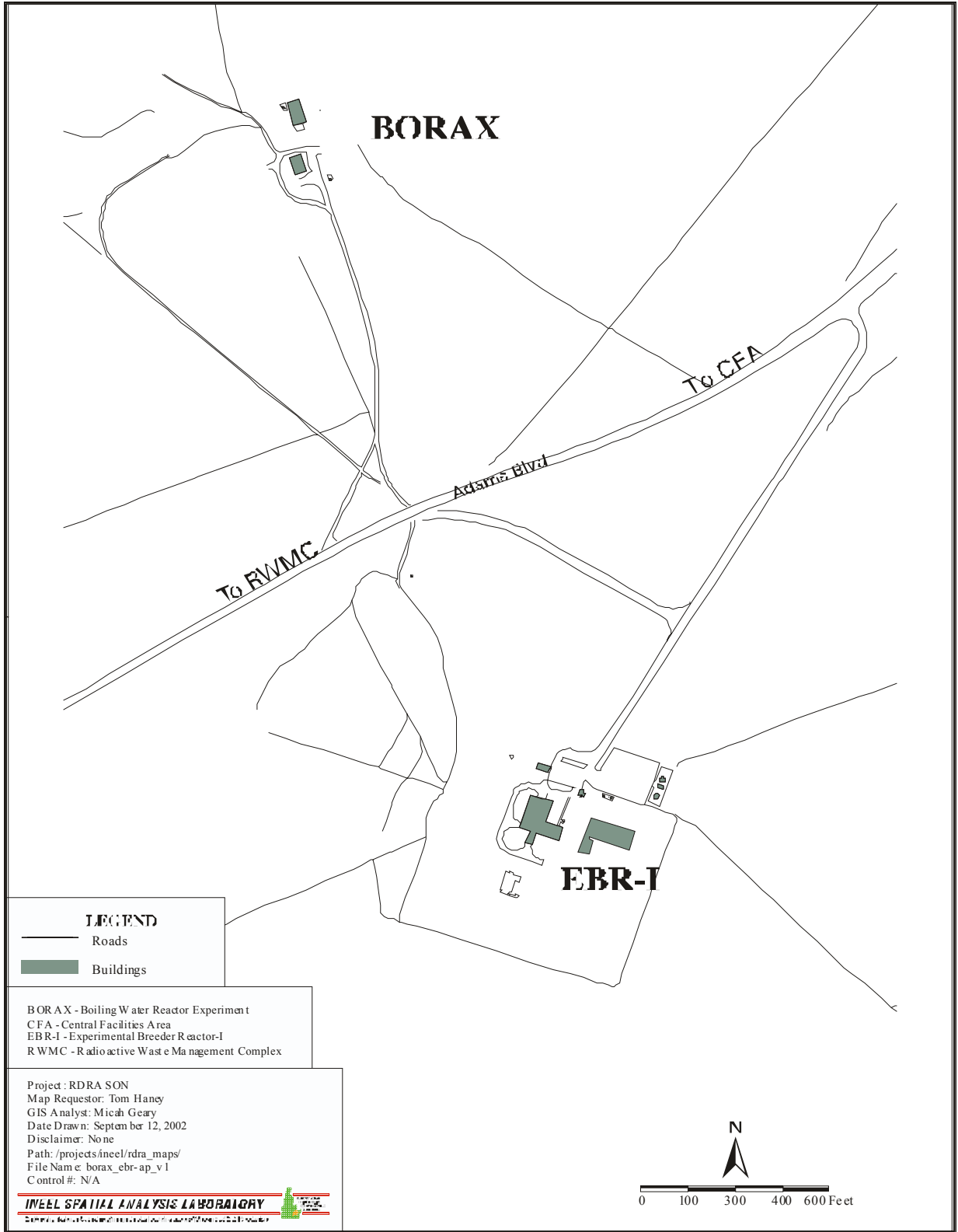


Figure 1. Location of Waste Area Group 6 at the Idaho National Engineering and Environmental Laboratory.

The following sections provide a historical synopsis of the TNT/RDX contaminated sites, including O&M requirements where applicable. Detailed descriptions of each site are provided in the Record of Decision (DOE-ID 2002).

2.1 Trinitrotoluene/Royal Demolition Explosive Contaminated Soil Sites

2.1.1 History

The five TNT/RDX contaminated soil sites (Field Station, Fire Station, Land Mine Disposal Area, NOAA, and NODA) are contaminated by chemical compounds remaining from military ordnance testing involving low-order detonations.

2.1.2 Contaminants of Concern

Trinitrotoluene, RDX, and 1,3-dinitrobenzene were identified as contaminants of concern based on results of human health and ecological risk assessments (DOE-ID 2001). Contamination consists of (a) larger fragments of TNT and RDX that could pose an explosives hazard and (b) TNT and RDX that have dissolved into the soil, resulting in an unacceptable risk from ingestion and dermal exposure to the 100-year future resident and current/future worker, or a hazard quotient greater than 10 to ecological receptors.

2.1.3 Record of Decision Requirements

The Record of Decision (DOE-ID 2002) requires restricted land use to prevent exposure to TNT/RDX contaminated soil and to shield from physical hazards associated with fragments of TNT and RDX until remediation is implemented. Following completion of remedial action, land use controls will be reevaluated based on residual risk.

3. DESCRIPTION OF OPERATIONS AND MAINTENANCE

3.1 Institutional Controls

The U.S. Department of Energy Idaho Operations Office will implement and maintain institutional controls at CERCLA sites at the INEEL where contamination precludes unrestricted use. The DOE Idaho ensures that institutional controls will be in effect over the next 100 years or more, unless a 5-year review concludes that unrestricted land use is allowable and institutional controls are no longer required. Institutional controls will not be required if (a) all contaminant media are removed, (b) contamination concentrations are comparable to local background values, or (c) residual concentrations allow unrestricted use.

All institutional control requirements for OU 10-04 sites—including implementation, maintenance, inspection, monitoring, enforcement, and reporting—are addressed in the Sitewide Institutional Controls Plan (DOE-ID 2004a), which is included as Attachment 1 of the Phase I Remedial Design/Remedial Action Work Plan (DOE-ID 2004b). The Sitewide Institutional Controls Plan is the principal document governing establishment, implementation, enforcement, and monitoring of institutional controls at all INEEL sites requiring institutional controls under CERCLA (42 USC § 9601 et seq.). The Sitewide Institutional Controls Plan was developed in accordance with the Record of Decision requirements (DOE-ID 2002). Institutional controls for all OU 10-04 sites include a CERCLA sign; some sites also require physical access restrictions.

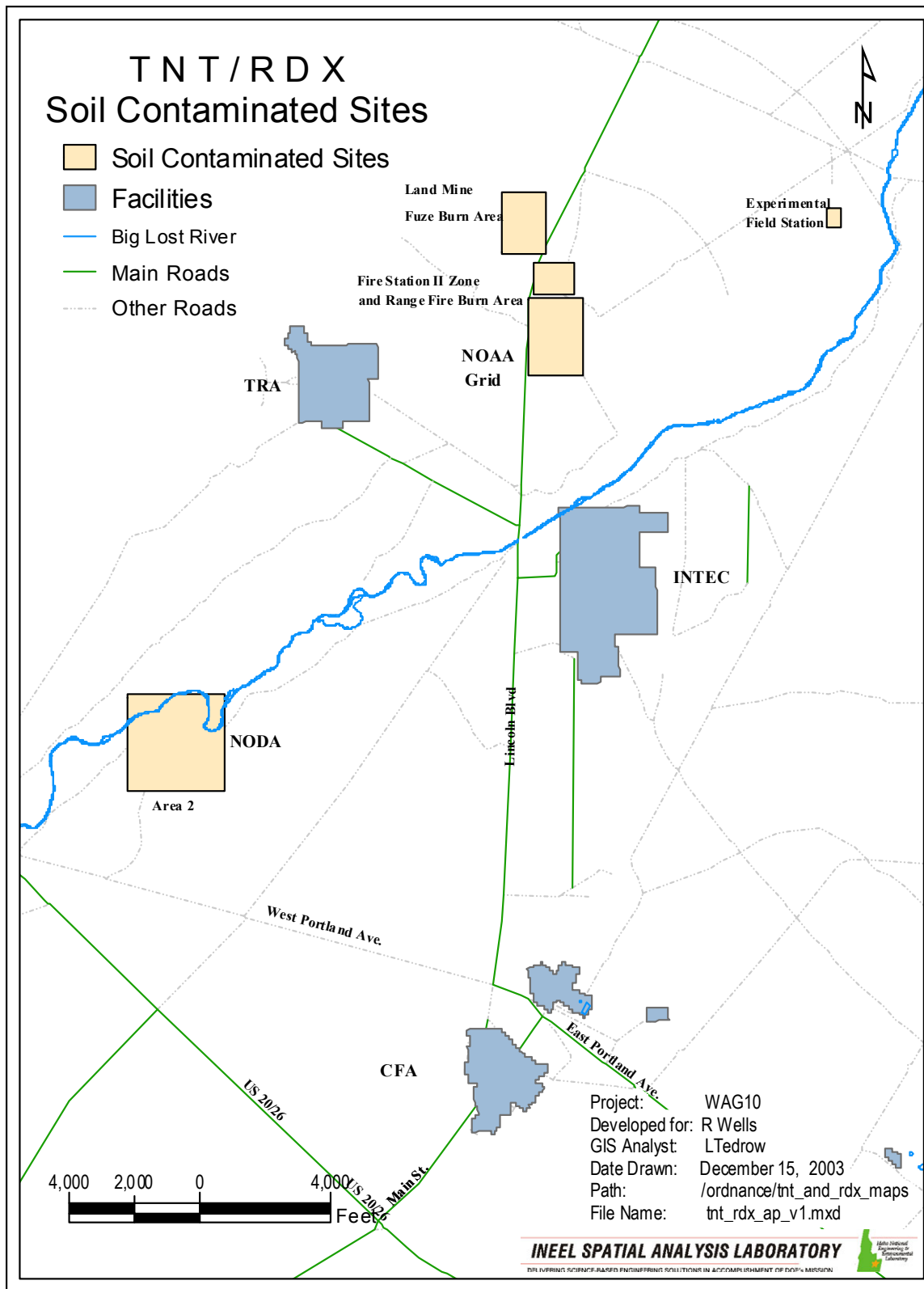


Figure 2. Location of the trinitrotoluene/Royal Demolition Explosive soil contaminated sites.

For access to the ordnance areas and TNT/RDX contaminated soil sites, permission from the WAG 10 remediation project manager must be obtained. Signs posted at logical points of entrance and at intervals along the perimeter of the areas identify the potential hazards, provide a point of contact, and stipulate that permission from the WAG 10 manager is required prior to entry. Other access controls include training and escort requirements and restrictions on land use. All personnel performing fieldwork at the INEEL must complete a training course on recognition of UXO, which also identifies areas at the INEEL with known or potential UXO. In order to conduct work within the ordnance areas and the TNT/RDX contaminated soil sites, workers must be trained to recognize ordnance and explosives, understand the hazards, and become familiar with the reporting requirements. An excavation permit is required for any work involving land disturbance, such as drilling or excavation, which must be approved by an Explosive Ordnance Disposal-qualified health and safety officer who is familiar with the UXO areas at the INEEL and will determine if a survey for UXO is required before fieldwork can commence.

3.2 Environmental Monitoring

Ecological monitoring is the only type of environmental monitoring to be conducted under OU 10-04 and will occur as part of the Phase I activities. In accordance with the provisions of the Record of Decision (DOE-ID 2002), a long-term ecological monitoring plan will be implemented to ensure protection of the INEEL's ecosystem. Ecological monitoring will be performed in accordance with the requirements delineated in the *Long-Term Ecological Monitoring Plan for the Idaho National Engineering and Environmental Laboratory* (VanHorn et al. 2004). The purpose of long-term ecological monitoring is to eliminate uncertainty in the INEEL-wide ecological risk assessment, allow coordination with ongoing environmental monitoring efforts, allow coordination with other agency activities, and address stakeholder concerns.

Ecological monitoring may be discontinued at any of the five sites after a 5-year review if the Agencies decide that monitoring is no longer required. The Agencies also may change the frequency of environmental monitoring in a 5-year review. As stated in the Record of Decision (DOE-ID 2002), OU 10-08 is responsible for groundwater monitoring; therefore, groundwater monitoring is not an activity for OU 10-04. Any postremediation monitoring required for the remediation sites will be determined once remedial action for Phases II–IV has been completed.

3.3 Operation and Maintenance

Five sites identified in the Record of Decision (DOE-ID 2002) require remedial action, which will be performed in this Phase II of the OU 10-04 remediation. Until remediation of these sites is performed, institutional controls to protect human health will be established and maintained. The institutional control requirements for the five sites are addressed in the Sitewide Institutional Controls Plan (DOE-ID 2004a), which is included as Attachment 1 of the Phase I Remedial Design/Remedial Action Work Plan (DOE-ID 2004b). The institutional controls will remain in place until it is determined either through submittal of and concurrence with a remedial action report or during a 5-year review that they are no longer necessary.

3.4 Five-Year Reviews

In accordance with the “National Oil and Hazardous Substances Pollution Contingency Plan” (40 CFR 300) for sites where contamination is left in place above risk-based levels for unrestricted use, a review of the selected remedy will be conducted every 5 years until it is determined by the Agencies to be unnecessary. During the 5-year review, the remedy is evaluated to determine if it remains protective of human health and the environment. The review also includes an evaluation of new data that could change

the monitoring or controls in place for the sites. It is the intent that a consolidated 5-year review will be performed for the four phases of the OU 10-04 remedial action. Once the OU 10-08 Record of Decision is completed, the OU 10-04 5-year review will incorporate aspects of the OU 10-08 and a single consolidated WAG 10 5-year review will be performed every 5 years until it is determined by the Agencies to be unnecessary.

4. OPERATIONS AND MAINTENANCE IMPLEMENTATION

This section summarizes the activities needed to implement the Phase II O&M requirements for OU 10-04. These activities include performing inspection, outlining the organizational practices that will drive the O&M activities, and specifying the individuals responsible for performing the activities. As described in Section 3, there are no planned operations or scheduled maintenance activities. However, it may be necessary to perform unscheduled maintenance and repairs if additional contamination is found.

4.1 Organization and Responsibilities

4.1.1 U.S. Department of Energy Idaho Operations Office Project Manager

The DOE Idaho WAG 6/10 remediation project manager is responsible for the following:

- Ensuring the O&M activities are performed in accordance with this approved plan
- Coordinating the activities of the INEEL contractor at WAG 6, OU 6-05 and WAG 10, OU 10-04.

4.1.2 Idaho National Engineering and Environmental Laboratory Management and Operations Contractor

As the point of contact for O&M activities, the INEEL contractor WAG 6/10 remediation project manager will be responsible for the following:

- Maintaining document control of inspection reports, including their placement in the project records file
- Administration of subcontracts for performing required activities
- Reporting activities to DOE Idaho.

4.2 Conducting Monitoring, Maintenance, and Inspections

The WAG 6/10 contractor will provide qualified personnel to perform the O&M activities for remedial actions under the OU 10-04 Record of Decision (DOE-ID 2002). Personnel will be trained on the requirements of the approved plan before performing O&M activities. The INEEL contractor WAG 6/10 project manager is responsible for inspection implementation and reporting.

Any additional TNT/RDX sites that are identified will be reported and addressed under the Phase I O&M activities on an as-needed basis.

4.2.1 Institutional Controls

Institutional controls will be implemented and maintained at the five TNT/RDX sites requiring remediation until remediation is completed and it is determined either through the submittal of and concurrence with a remedial action report or during a 5-year review that institutional controls are no longer required. Requirements and frequency for institutional control inspection and maintenance are addressed in the Sitewide Institutional Controls Plan (DOE-ID 2004a), included as Attachment 1 in the Phase I Remedial Design/Remedial Action Work Plan (DOE-ID 2004b). The inspections will address institutional control requirements for each site, such as identification and warning signs, visible access restrictions, administrative controls, and land-use restrictions.

4.2.2 Environmental Monitoring

Long-term ecological monitoring will be conducted as prescribed in the Record of Decision (DOE-ID 2002). Details of the ecological monitoring are described in the Long-Term Ecological Monitoring Plan (VanHorn et al. 2004), included as Attachment 2 of the Phase I Remedial Design/Remedial Action Work Plan (DOE-ID 2004b).

4.2.3 Operations and Maintenance

No routine maintenance is planned for the TNT/RDX contaminated sites. The only planned routine activities will involve inspections and maintenance of CERCLA signs, ordnance and explosive warning signs, and any existing physical access restrictions (e.g., fencing). Signs of unauthorized intrusion also will be monitored during the site inspections. These routine activities will be performed under the requirements delineated in the *Operations and Maintenance Plan for Operable Units 6-05 and 10-04, Phase I* (DOE-ID 2004c).

5. REPORTING REQUIREMENTS

Reporting requirements related to institutional controls, environmental monitoring, operations and maintenance, and 5-year reviews are summarized in the following sections. The purpose of these reporting activities is to ensure that all activities are adequately documented and that related data and information are provided to the Agencies for review and decision-making. Although the following sections indicate separate reporting requirements and separate reports, the reporting requirements may be met by combining the information into a single annual report. The frequency of all the reporting identified in the following sections will be reviewed by the Agencies during the first 5-year review and may be adjusted to an alternative frequency. All reports will be submitted electronically to the INEEL Information Repository for records storage.

5.1 Institutional Control Reporting

Reporting requirements for institutional controls are specified in the Sitewide Institutional Controls Plan (DOE-ID 2004a), included in Attachment 1 of the Phase I Remedial Design/Remedial Action Work Plan (DOE-ID 2004b). An institutional control monitoring report will be prepared and submitted to the Agencies for information on an annual basis throughout the duration of a site's O&M activities.

5.2 Environmental Monitoring Reporting

The only environmental monitoring to be conducted by OU 10-04 is the long-term ecological monitoring. Data and results from the ecological monitoring will be compiled and presented in an annual monitoring report. This annual report will be prepared and submitted to the Agencies for information.

5.3 Operations and Maintenance Reporting

Data and results from annual inspections (e.g., information regarding site intrusions, warning signs, and physical access restrictions) will be compiled and presented in an annual report, which will be submitted to the Agencies for information. The report will contain documentation of scheduled inspections, follow-up and contingency inspections, and maintenance activities. It will include the following:

- General OU description and operational history
- A summary of the inspection
- A summary of maintenance activities to date
- An estimate of maintenance activities required in the next year
- A copy of the appropriate inspection report forms.

5.4 Five-Year Review Reporting

Data and results from the annual reports for institutional controls, environmental monitoring, and operations and maintenance will be summarized and addressed in a 5-year review report. Additional content requirements for the report will be developed and included in the next revision of this O&M Plan.

6. REFERENCES

- 40 CFR 300, 2004, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*, Office of the Federal Register, June 2004.
- 42 USC § 9601 et seq., 1980, "Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA/Superfund)," *United States Code*, December 11, 1980.
- DOE-ID, 1991, *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*, Administrative Docket No. 1088-06-29-120, U.S. Department of Energy Idaho Operations Office; U.S. Environmental Protection Agency, Region 10; Idaho Department of Health and Welfare, December 4, 1991.
- DOE-ID, 2001, *Comprehensive Remedial Investigation/Feasibility Study for Waste Area Groups 6 and 10 Operable Unit 10-04*, DOE/ID-10807, Rev. 0, U.S. Department of Energy Idaho Operations Office, August 2001.
- DOE-ID, 2002, *Record of Decision, Experimental Breeder Reactor-I/Boiling Water Reactor Experiment Area and Miscellaneous Sites, Operable Units 6-05 and 10-04*, DOE/ID-10980, Rev. 0, U.S. Department of Energy Idaho Operations Office, November 2002.
- DOE-ID, 2003, *Operable Units 6-05 and 10-04, Experimental Breeder Reactor-I/Boiling Water Reactor Experiment Area and Miscellaneous Sites, Remedial Design/Remedial Action Scope of Work*, DOE/ID-11035, Rev. 0, U.S. Department of Energy Idaho Operations Office, February 2003.
- DOE-ID, 2004a, *INEEL Sitewide Institutional Controls Plan for CERCLA Response Actions*, DOE/ID-11042, Rev. 1, U.S. Department of Energy Idaho Operations Office, June 2004.

DOE-ID, 2004b, *Remedial Design/Remedial Action Work Plan for Operable Units 6-05 and 10-04, Phase I*, DOE/ID-11101, Rev. 0, U.S. Department of Energy Idaho Operations Office, July 2004.

DOE-ID, 2004c, *Operations and Maintenance Plan for Operable Units 6-05 and 10-04, Phase I*, DOE/ID-11102, Rev. 1, U.S. Department of Energy Idaho Operations Office, February 2004.

VanHorn, Robin, Carolyn Fordham, and Thomas Haney, 2004, *Long-Term Ecological Monitoring Plan for the Idaho National Engineering and Environmental Laboratory*, INEEL/EXT-02-01191, Rev. 1, Idaho Completion Project, January 2004.