Attachment 1

Construction Specification
Construction Specification

PROJECT NO. 23368

Remediation of the STF-02 Gun Range

The Idaho Cleanup Project is operated for the U.S. Department of Energy by CH2M \* WG Idaho, LLC
**Document Identifier:** SPC-646  
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**Comments:**

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REMEDIATION OF THE STF-02 GUN RANGE

The following Sections of this Specification were prepared under the direction of the Registered Professional Engineer as indicated by the seal and signature provided on this page. The Professional Engineer is registered in the State of Idaho to practice Civil Engineering.

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SECTION 01005--SUMMARY OF WORK

PART 1--GENERAL

SUMMARY:

Remediation of the STF-02 Gun Range site is required in accordance with the DOE/NE-ID-11202 Remedial Design/Remedial Action Work Plan for Operable Units 6-05 and 10-04, Phase III. Remediation will require the removal of lead and treatment and disposal of the lead contaminated soil, which exceed the 400-mg/kg remediation goal, found within the STF-02 Gun Range that was deposited due to spent ammunition rounds.

The Subcontractor shall furnish plant, labor, material, equipment, and supplies (except Government-furnished materials and/or equipment) and perform work and operations necessary to remediate the lead contaminated soil site to remediation action goals, in accordance with the construction drawings and these specifications.

Section Includes, but is not limited to:

Activities for the remediation for the STF-02 Gun Range site include:

STF-02 Gun Range Site

- Excavate the lead contaminated soil at the locations and to the depths as outlined on the construction drawings. Stockpile the estimated 1100-cy of removed soil at the designated collection area beside the STF-02 Gun Range.
- Demolish and remove the wood Shoot House structure. Package and transport the estimated 96 creosote-contaminated railroad ties that make up the Shoot House interior walls and foundation. Collect the sand that is contained within the two interior Shoot House walls. Stockpile the estimated 3.5-cy of sand at the designated collection area beside the STF-02 Gun Range.
- Remove, package, and transport the estimated 10 creosote-contaminated railroad ties that comprise the shooting targets.
- Demolish and remove the perimeter fencing.
- Isolate, demolish, and remove the above ground electrical circuits and components. Remove the buried electrical circuits, if encountered during general demolition or soil removal.
- Demolish and remove the estimated 2900-sf of asphalt pads.
- Perform sampling of the remaining soils within the STF-02 Gun Range facility as directed by the Contractor. Remove and stockpile any additional soils as identified by the Contractor.
- Grade the remaining berms to emulate the surrounding topography.
- Survey the graded STF-02 Gun Range site.
- Revegetate the disturbed area.
Stockpiled Lead Contaminated Soil:

- Perform screening of the collected soils and sand to sieve out the bullet fragments.
- Segregate the collected lead and debris for disposal by the Contractor.
- Perform on-site soil washing, or equivalent cleansing method, as required to reduce the lead concentration to below the RCRA characteristic level of 5-mg/L.
- Package the remediated soils/sands that still exceed the toxicity characteristic concentration of 5-mg/L for lead.
- Transport the remediated soil to the on-site ICDF disposal facility for disposal and/or SSSTF for additional treatment (if necessary) by the Contractor.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein.

CODE OF FEDERAL REGULATIONS (CFR)

- 29 CFR 1910 OSHA Occupational Safety and Health Standards
- 29 CFR 1926 OSHA Health and Safety Standards for Construction

IDAHO NATIONAL LABORATORY (INL)

- DOE/NE-ID-11202 Remedial Design/Remedial Action Work Plan for Operable Units 6-05 and 10-04, Phase III
- PROC-185 General Provisions for Fixed Price Construction Subcontracts
- SRM Subcontractor Requirements Manual

Unless otherwise specified, references in these specifications, codes, standards or manuals that are part of these specifications, but not included herein, shall be the latest edition, including any amendments and revisions, in effect as of the date of this Specification.

SUBMITTALS:

Submittals include, but are not limited to the following:

Hazardous Chemicals and Substances: Subcontractor shall submit a list of hazardous chemicals and substances in accordance with General Provisions for mandatory approval. Chemicals and substances not previously approved for use will require the submittal of MSDS for mandatory approval.

QUALITY ASSURANCE:

Quality Assurance Program requirements shall exist to assure that work performed is in conformance with the requirements established by the drawings and this specification. QA
Program criteria applicable to this scope of work is addressed in the Special Conditions, Subcontractor Requirements Manual, General Provisions, and these specifications.

SAFETY, HEALTH AND ENVIRONMENT:

In general work shall be in compliance with the applicable sections of 29 CFR 1910, 29 CFR 1926 and the Subcontractor Requirements Manual.

END OF SECTION 01005
SECTION 01051--CONSTRUCTION SURVEYING AND STAKING

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

The Subcontractor shall furnish all materials, labor, tools and equipment to perform all surveying necessary to lay out and control the construction work. The Subcontractor shall perform surveying to establish excavation boundaries as set forth in these specifications, the construction drawings, and the DOE/NE-ID-11202 Remedial Design/Remedial Action Work Plan for the Operable Units 6-05 and 10-04, Phase III. The Contractor will provide survey coordinates for the excavation boundary. See Section 02200 for definition of excavation terms.

SUBMITTALS:

Submittals include but are not limited to the following:

Certification: Submit certification that the land surveyor is a registered professional in the State of Idaho.

Topographical Surveys: Electronic data shall be reduced and plotted by the Subcontractor in standard ASCII and AutoCAD 14 format. Electronic data shall be submitted on electronic media such as CD or Zip Disk. Legible notes, drawings, and electronic data files (including point number, northing, easting, elevation, and point description) shall be submitted to the Contractor for approval. Each topographical survey shall include a topographical map of the area with a contour interval of 1-foot. At a minimum the survey shall include all breaks in grade, swales, and other natural features with sufficient detail to accurately model the surface. In areas where the terrain is relatively flat, a grid of no greater than 50-ft in all directions shall be used. All surveys shall be conducted using the established project datum. Required surveys shall consist of:

1) Topographical survey of the original topography prior to disturbance.
2) Topographical survey of the berm areas, after contaminated soil removal, to determine quantities of material for grading.
3) Topographical survey of the final graded surface prior to revegetation. The survey shall include a boundary line showing the limits of revegetation.

The topographic surveys will be used to calculate compacted in-place graded quantities as well as revegetation areas.

See Section 01300, Submittal and Vendor Data Schedule for additional requirements.
QUALITY CONTROL:

Qualifications: Construction surveying and staking shall be accomplished under the direction of a registered professional land surveyor.

PART 2--PRODUCTS

Stakes: Identification stakes and hubs shall be of sufficient length, width and depth to provide a solid set in the ground and to provide space for marking above ground when applicable. The top 2-in. of all stakes shall be painted or marked with plastic flagging.

PART 3--EXECUTION

SURVEY REQUIREMENT:

Control: Use existing controls as required. The coordinates of the existing controls will be provided by the Contractor. Prior to commencement of construction work, the Subcontractor shall establish survey controls inside the work area.

Project Datum: Horizontal coordinates are based on NAD27 Idaho East Zone State Plane. All surveying for the project construction shall be based on this datum. Vertical datum shall be NGVD29.

Monuments of Property Boundaries or Surveys of Other Agencies: If property boundary or survey monuments, or survey markers of other agencies, are found within or adjacent to the construction limits, the Subcontractor shall immediately notify the Contractor's Representative. These monuments shall not be disturbed.

METHOD OF MEASUREMENT:

Surveying: Surveying will not be measured.

BASIS OF PAYMENT:

Surveying: Payment for surveying shall be included in the contract unit price for excavation.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 01051
SECTION 01300--SUBMITTALS

PART 1--GENERAL

SUMMARY:

This section specifies the administrative, technical and quality requirements for vendor data submittals. Vendor data requirements are specified in individual specification sections or on the drawings, and tabularized on a Vendor Data Schedule. In the event of conflicting requirements, the submittal requirements prescribed in the individual specification section shall take top priority, the drawings second and the vendor data schedule last.

The Subcontractor shall submit data, drawings, and other submittals specified. If the Contractor determines the Subcontractor’s submittal to be incomplete or unacceptable, the Subcontractor shall make a complete and acceptable submittal to the Contractor by the second submission of a submittal item.

The Subcontractor shall be responsible for providing submittals in accordance with the Subcontract General Provisions Document, providing submittals with adequate time for review and resubmittal, and advising the Contractor of any submittal that may be delayed and which might, if further delayed, extend completion of the project.

Section Includes, but is not limited to:

- The preparation, transmittal and delivery of documents by the Subcontractor to the Contractor as required in the "Submittals" subdivision of the specification sections and as provided on the Vendor Data Schedule.

Related Sections: General Provisions, Subcontractor Requirements Manual, Special Conditions, Drawings, Vendor Data Schedule, and other sections of these specifications apply to this section.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein:

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Y14.1 Drawing Sheet Size and Format

SUBMITTALS:

General Procedures: Vendor data, whether prepared by the Subcontractor or Subcontractor’s sub tier or supplier, shall be submitted as instruments of the Subcontractor. Therefore, prior to submittal, the Subcontractor shall ascertain that material and equipment covered by the
submit and the contents of the submittal itself, meet all the requirements of the subcontract specifications, drawings, or other contract documents.

Each submittal shall contain identification for each separable and separate piece of material or equipment, and literature with respect to the information provided in the specification and on the Vendor Data Schedule. Submittals shall be numbered consecutively for each different submittal.

Vendor Data Schedule: Vendor data required by the specification sections or the drawings to support design, construction, and operation of the project is identified on a Vendor Data Schedule. The Vendor Data Schedule provides a tabular listing by item number, drawing or specification reference, and description of the item or service. The type of submittal is identified by a “Vendor Data Code”, and the time required to submit the item is identified by a “When to Submit” code. An “Approval” code specifies whether the submittal is for Mandatory Approval or for Information Only. One copy of routine paper or electronic file submittals are required; additional copies may be required by the Vendor Data Schedule. Electronic file submittals are preferred. Submittals that cannot be scanned or provided electronically, such as large shop drawings, will require 6 copies for Mandatory Approval and 4 copies for Information Only. Material or color samples will require 2 sets for Mandatory Approval and 1 set for Information Only.

Or Equal Material or Equipment Submittals: All “or equal” materials, equipment or systems shall be identified and submitted for approval as required by the Subcontractor Requirements Manual.

An “or equal” submittal shall contain as a minimum all operating and physical parameters necessary to show that the material or equipment is equivalent to the specified material or equipment. All parameters shall be specifically identified by the submitter in the proposal. Exceptions or differences between the specified item and the “or equal” item shall also be identified.

If an “or equal” material, equipment or system is approved, the Subcontractor shall be responsible for backup material necessary to include the material, equipment or system in the technical documents.

Vendor Data Transmittal and Disposition Form 431.13: All vendor data shall be submitted to the Contractor using the Vendor Data Transmittal and Disposition Form. The form provides the Subcontractor a method to submit vendor data and provides the Contractor a means of dispositioning the submittal. The Subcontractor shall list the Vendor Data Schedule item number, a Vendor Data Transmittal tracking number (if applicable), the drawing or specification number reference, a Tag Number (if applicable), the submittal status (e.g., Mandatory Approval, Information Only, Re-submittal, or Or-equal), the Revision Level, and the item description. The description should be complete enough that a person unfamiliar with the project can determine what the submittal includes.
Disposition by the Contractor: The Contractor’s comments and required action by the Subcontractor will be indicated by a disposition code on the submittal. The disposition codes will be classed as follows:

(A) “Work May Proceed.” Submittals so noted will generally be classed as data that appears to be satisfactory without corrections.

(B) “Work May Proceed with Comments Incorporated. Revise Affected Sections and Resubmit Entire Submittal.” This category will cover data that, with the correction of comments noted or marked on the submittal, appear to be satisfactory and require no further review by the Contractor prior to construction.

(C) “Work May NOT Proceed. Revise and Resubmit.” Submittals so dispositioned will require a corrected resubmittal for one of the following reasons:

1) Submittal requires corrections, per comments, prior to final review
2) Submittal data incomplete and requires more detailed information prior to final review
3) Submittal data does not meet Subcontract document requirements.

(D) “Received for Information Only.” Submittals so dispositioned will generally be classified as Information Only for as-specified material and equipment.

Mandatory Approval coded vendor data will be reviewed by the Contractor and receive an A, B, or C disposition. The Contractor may provide internal review of Information Only submittals. In the event that comments are generated on an Information Only submittal, the submittal may be dispositioned B or C and returned to the Subcontractor for appropriate action. Information Only submittals without comments will receive a D disposition.

All submittals will be returned to the Subcontractor. Acknowledgment of receipt of dispositioned vendor data by the Subcontractor will not be required.

The Contractor will return dispositioned submittals with reasonable promptness. The Subcontractor shall note that a prompt review is dependent on timely and complete submittals in strict accordance with these instructions.

END OF SECTION 01300
SECTION 02062--DEMOLITION AND REPAIRS

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

- Demolition of the STF-02 Shoot House structure in its entirety
- Demolition of the railroad tie shooting targets
- Demolition of the approximate 2900-sf of asphalt pads
- Demolition of the perimeter fencing
- Isolation of the electrical circuits and demolition of the power poles, line, and boxes
- Removal and disposal of the burn barrel and test stand from the EOCR Leach Pond

SUBMITTALS:

No submittals required.

PROJECT/SITE CONDITIONS:

Condition of Structures or Facilities: Conditions existing at the time of inspection for bidding purposes will be maintained insofar as practicable. Actual conditions may vary slightly due to operations which may occur prior to start of demolition work.

Protection: Ensure safe passage of persons in the vicinity of the demolition area. Conduct operations to prevent injury to adjacent buildings, structures, other facilities and persons. Provide and erect any necessary temporary enclosures, barricades, walkways, shoring, bracing, etc., to ensure that safe conditions will exist.

Burning: The use of burning at the project site for the disposal of refuse and debris will not be permitted.

Use of Explosives: Use of explosives will not be permitted.

PART 2--PRODUCTS

MATERIALS:

Disposition of Removed Equipment and Materials: The Government will retain title to all equipment and materials removed from the work. Materials designated as scrap shall be promptly disposed of as directed by the Special Conditions. Surplus material shall be disposed of as directed in the Special Conditions.
PART 3--EXECUTION

GENERAL:

All demolition and repair work shall be done in a neat and orderly manner without any damage to existing facilities not directly involved under this Subcontract. The Subcontractor shall be responsible for all damage to existing buildings or facilities caused by his operations under this Subcontract.

Dust Control: The amount of dust resulting from demolition shall be controlled to prevent the spread of dust to occupied portions of the construction site and the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as ice, flooding and pollution.

EXISTING STRUCTURES:

General: The existing Shoot House structure shall be removed in its entirety as indicated on the drawings.

- Package and transport the estimated 96 creosote-contaminated railroad ties that make up the Shoot House interior walls and foundation.
- Collect the sand that is contained within the two interior Shoot House walls.
- Stockpile the estimated 3.34-cy of lead contaminated sand at the designated collection area beside the STF-02 Gun Range.
- Demolish and dispose of the wood framing structure, sheathing, and roofing.

CLEAN UP:

Debris and rubbish shall be removed from the demolition areas. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Hauling and disposal shall comply with the Special Conditions.

METHOD OF MEASUREMENT:

Dust Control: Dust control will not be measured for separate payment.

Asphalt Removal: Asphalt removal shall be measured by the square yard of removed materials.

Shoot House: The shoot house demolition shall be measured by the complete job.

Creosote Railroad Ties: The removal of the estimated 96 railroad ties comprising the shoot house foundation and inner walls, along with the 10 target railroad ties shall be measured by the complete job.
Perimeter Fencing: The perimeter fencing removal shall be measured by the complete job.

Electrical Circuits and Components: The electrical circuits and component isolation and removal shall be measured by the complete job.

**BASIS OF PAYMENT**

Dust Control: No separate payment will be made for dust control. It shall be included in the unit price for excavation.

Asphalt Removal: Asphalt removal will be paid for at the contract unit price per square yard of removal asphalt materials. The cost shall include demolition, loading, and hauling to an on-site disposal facility as designated by the Contractor.

Shoot House: The shoot house demolition and removal will be paid for at the contract unit price for the complete job. The cost shall include demolition, loading, and hauling to an on-site disposal facility as designated by the Contractor.

Creosote Railroad Ties: The railroad tie removal will be paid for at the contract unit price for the complete job. The cost shall include demolition, packaging, loading, and hauling to an on-site disposal facility as designated by the Contractor.

Perimeter Fencing: The perimeter fencing removal will be paid for at the contract unit price for the complete job. The cost shall include demolition, loading, and hauling to an on-site disposal facility as designated by the Contractor.

Electrical Circuits and Components: The electrical circuits and component removal will be paid for at the contract unit price for the complete job. The cost shall include isolation, removal, loading, and hauling to an on-site disposal facility as designated by the Contractor.

**FIELD QUALITY CONTROL:**

Surveillance will be performed by Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 02062
SECTION 02151—SOIL WASHING FOR LEAD REMOVAL

PART 1--GENERAL

SUMMARY:

Section Includes, but is not limited to:

- Perform screening of the collected soils and sand to remove lead fragments.
- Segregate the collected lead and debris for packaging and disposal by the Contractor.
- Perform on-site soil washing, with water only, as required to achieve a lead concentration below the RCRA characteristic level of 5-mg/L for a minimum of 90% of all identified contaminated soils.
- Packaging of the remediated soils/sands.
- Soils that still exceed the toxicity characteristic concentration of 5-mg/L for lead will be segregated for stabilization.
- Transportation of the segregated soil to the on-site SSSTF disposal facility for disposal.

SUBMITTALS:

Soil Washing Work Plan: The work plan shall be submitted to the Contractor for review. The Subcontractor shall allow 30-days in the schedule for the Contractor review and approval of the Work Plan. The Work Plan shall address the technical requirements listed in this section. The Work Plan shall include, but is not limited to, the following:

a. Schedule: The schedule shall specify dates for the start and completion of the treatability studies, mobilization, installation, field demonstrations, treatment of contaminated materials, disposal of wastes, and demobilization. The schedule shall include details such as intended hours of operation, scheduled downtime, and routine maintenance downtime.

b. Project Organization: A project organization shall be proposed for carrying out the remediation of contaminated materials by soil washing treatment. An organization chart including subcontractors shall be provided. The responsibilities of each individual in the organization shall be clearly defined in terms of project activities including, but not limited to: project management and coordination; scheduling and schedule control; quality control; sampling, measurement, analysis, and data management; and operation and maintenance of the treatment plant. In addition, the previous experience of each individual in the project organization shall also be submitted for review and approval. Credentials of new operators, quality control personnel, and supervisory engineering and technical staff shall be furnished to the Contractor for approval prior to such personnel assuming duties onsite.
c. **Principles of Operation:** A detailed description of the proposed treatment plant shall be provided. The description shall include treatment systems and corresponding unit operations, treatment capacity, preparation of feed material, soil handling and feed systems, quality of washwater, properties and handling of reagents/additives, mechanism of contaminant removal, characteristics and stockpiling of the treated materials, and wastes generation and disposal. Post treatment criteria and disposal criteria shall be presented based on the proposed treatment plant and the site conditions.

d. **Equipment:** Treatment system equipment shall be described completely. The description shall include, but not be limited to, equipment identification, manufacture make and model, physical size, operating conditions, and materials of construction.

e. **Drawings:** The drawings provided shall include, but not be limited to: layout of the treatment plant including feed material stockpiles, including a drainage and leachate collection plan for the area, treated material stockpiles, and solid waste stockpiles; piping and instrumentation diagrams; and process flow diagrams.

f. **Quality Control:** A site-specific quality control program shall be provided to detail the procedures for inspection, testing, and correction of deficiencies. This program shall ensure that the Subcontractor's operations comply with the requirements of the contract plans and specifications with respect to quality of materials, workmanship, construction, finish, functional performance, and accuracy of data.

g. **Process Material Tracking Schedule:** A proposed Process Material Tracking Schedule for recording and managing the quantities of the contaminated materials processed shall be included.

h. **Mobilization and Demobilization:** A mobilization and demobilization plan shall be included.

**Emissions and Dust Control Plan:** This plan shall include, but not be limited to, expected quantity of emissions, sources of emissions, proposed emissions control. If an air pathway analysis indicates monitoring is required, backup calculations, and regulatory information substantiating decisions proposed by the Contractor shall be provided in addition to types and locations of monitoring devices.

**Permits and Certifications:** The Subcontractor shall obtain the permits, certifications, and/or substantive regulatory requirements necessary for the configuration, installation, operation, and closure of the treatment plant/equipment. The required permits, certifications, and/or substantive regulatory requirements shall be provided along with the Work Plan.

**SYSTEM DESCRIPTION**

**Soil Washing Treatment Process:** Washwater shall consist of water only.
Soil Washing Treatment Plant: The treatment plant shall be configured based on the contaminated material characteristics data. The treatment plant shall be transportable. The materials, components, accessories, and equipment used to fabricate the treatment plant shall meet their functional requirements, and shall be compatible with the contaminants of concern, the reagents/additives used in the treatment processes, and the operating conditions of each unit operation. The Subcontractor may propose a treatment plant different from the treatment plant for which specific requirements are provided in this section, in which case the proposed treatment plant capable of providing equivalent performance shall be addressed in detail in the Subcontractor's proposal and in the Work Plan. The Subcontractor shall provide a safe and reliable soil washing treatment plant in compliance with the applicable codes, regulations, and specified requirements; the Subcontractor shall submit Permits and Certifications as specified in the Submittals paragraph. The treatment plant shall consist of the following major systems:

Soil Preparation and Feed System: Soil preparation and feed system shall include, but not be limited to, feed oversize separation, blending and/or separation of different materials (if needed), stockpiling of feed oversize and feed materials, conveying, feeding, treatment and/or disposal of feed oversize, dust/emission controls, and measurement of feed oversize and feed materials. The capacity of this system shall be sized based on the downstream treatment system operations.

Soil Washing and Separation System: Soil washing and separation system shall include mixing, washing, dewatering, stockpiling of treated materials, and measurement of process parameters and treated materials. Treated materials are the feed materials having been washed and separated by the soil washing and separation system. Treated clean materials are the treated materials which meet the post treatment criteria. The system shall be equipped with direct means for controlling the washwater settings. The mixing and washing equipment shall have the capability to dissociate the contaminated fine particles from the coarse particles and/or to solubilize the contaminants into the washwater so that the post treatment criteria can be achieved. Magnetic separation of ferrous material shall be done using electromagnets, if required. The dewatering equipment shall have the capability of lowering the moisture content to less than 15 percent as required for the backfilling operation. The treated materials shall be separately stockpiled on a daily basis.

Spent Washwater Treatment System: Spent washwater is washwater that has been in contact with contaminated feed materials or other contaminated surfaces, consisting of a mixture of contaminated fine particles and/or dissolved contaminants, washwater, and run off water from storage and treatment areas. Spent washwater treatment system (if required) shall include physical, chemical, and/or biological treatment of spent washwater; dissolved and/or suspended solids removal; process sludge dewatering; recycle, reuse, and/or discharge of treated washwater; stockpiling, treatment and/or disposal of process sludge; and measurement of treatment parameters and dewatered and/or treated process sludge. Process sludge is the sludge resulting from the removal of dissolved contaminants and/or the contaminated fine particles in the spent washwater. The treated washwater shall meet the quality limits
for reuse, discharge, and/or disposal. The process sludge shall be treated and/or disposed of according to its characteristics and regulatory requirements.

**Plant Supporting System:** The plant supporting system shall include facilities for water storage and distribution, reagents/additives storage and distribution, steam generation and distribution, and fire safety. These supporting facilities shall have adequate capacities to provide water, reagents/additives, power, steam, and fire protection necessary for operation of the soil preparation and feed system, soil washing and separation system, and spent washwater treatment system. Reagents/Additives used in the treatment plant shall be stored in tanks, drums or other containers which are made of compatible materials. The feeding equipment for each reagent/additive shall consist of a feed tank and mixer for preparing feed stock, and a metering pump for controlled feeding.

Performance Requirements: A treatment plant capable of processing contaminated materials at an average expected rate factoring in downtime, startup time, and shutdown time shall be provided. The concentrations of the contaminants in the treated material and in the TCLP extract of the treated material shall not exceed, respectively, the cleanup level of 5-mg/L.

Installation Requirements: The treatment plant shall be installed in accordance with applicable action-specific and location-specific federal, state, and local regulations. If the technical specifications overlook and/or conflict with the applicable codes, standards, and/or regulations, the Contractor shall be informed and consulted for interpretation.

Utilities: The Subcontractor shall provide the utilities associated with the installation and operation of the treatment plant including, but not limited to: telephone and steam. The electricity, water, sanitary and solid waste facilities can be made available at the site.

Spent Washwater Treatment and Disposal Requirements: The Subcontractor shall characterize the spent washwater. The spent washwater shall be recycled and/or treated for reuse whenever possible, to minimize the amount of wastewater requiring treatment and disposal. The spent washwater shall meet the criteria for disposal/discharge of 5-mg/L. If the washwater lead content exceeds the 5-mg/L limit, then the washwater shall be classified as hazardous wastewater. The hazardous wastewater shall be treated obtaining a lead level less than 0.69-mg/L. The Subcontractor shall address in the Work Plan any additional requirements such as changes to spent washwater characteristics requiring additional treatment or a change in the disposal and discharge criteria.

Solid Waste Treatment and Disposal Requirements: The solid wastes shall be characterized. The feed oversize removed from the raw contaminated materials, process sludge generated from treatment of spent washwater, and spent process treatment material from installation, operation and closure of the treatment plant shall be properly treated and/or disposed of. Spent process treatment material is the process treatment material for which the capacity to remove contaminants from the contaminated medium in a treatment process has been used or exhausted. Solid waste disposal shall meet the concentration level in treated solid waste of 5-
Emissions and Dust Control: The monitoring requirements for emissions and dust control shall be developed in accordance with the environmental compliance required by the regulatory agencies and the health and safety requirements. They shall be implemented during the installation and operation of the treatment plant to ensure compliance.

Sampling, Monitoring, and Control Requirements: The treatment plant shall have the appropriate sampling and monitoring equipment for controlling the performance of the treatment processes and for complying with design and regulatory requirements. The monitoring and control equipment for the treatment processes shall have the necessary accuracy and sensitivity to measure and control the operating ranges for system parameters such as materials feed rate, washwater flow rate, pH, contact time, and cut size so that the treatment plant can perform to its designed capacity, efficiency, and reliability.

Contaminated Material Measurement Accuracy Requirements: Scales, meters, and volumetric measuring devices for measuring feed oversize, feed materials, reagents, and water shall have an accuracy of plus or minus 0.5 percent of the quantity being measured. Current scale calibration shall be required.

Mobilization: The treatment plant shall not mobilize to the site until the Work Plan has been approved by the Contractor and the Subcontractor has received written confirmation. The Subcontractor's mobilization plan shall include, but not be limited to, preparation, arranging, and/or transportation of personnel, material, and equipment; and connecting supporting utilities for installation and operation of the treatment plant. Delays caused by the Subcontractor's failure to meet regulatory requirements shall result in no additional cost to the Contractor. The equipment which is rented and/or previously used for other site remediation shall be decontaminated and tested for contaminants of concern before being brought to the site.

Demobilization: Demobilization shall begin only after the contaminated materials, spent washwater, and solid wastes have been treated and disposed of in accordance with the post treatment criteria, the disposal/discharge criteria, and the disposal criteria. Demobilization shall include disconnecting and removal of utility service lines, decontamination of equipment and the treatment plant area, disposal of decontamination wastes, disposal of spent washwater left from operation of the treatment plant, removal of the unused reagents/additives and the equipment associated with the treatment plant. Post treatment testing shall also be performed after demobilization to verify that the area associated with soil washing treatment operations is not contaminated. The soils in the area shall meet the post treatment criteria of 5-mg/L.

QUALIFICATIONS

The Subcontractor shall demonstrate capabilities and experience adequate to configure, install, and operate a soil washing treatment plant to remediate the contaminated materials. The Subcontractor shall demonstrate a minimum of 3 years of experience in the field of soil
washing for lead clean-up sites and/or the successful completion of at least 1 soil washing project of comparable size and scope, at least 3 soil washing pilot scale treatability studies, demonstration studies, and/or full scale remediation projects that required handling and transportation of soils contaminated with RCRA hazardous wastes and CERCLA hazardous material. The Subcontractor shall provide a field team (consisting of soil washing unit operators, quality control personnel, health and safety personnel, supervisory engineering, and technical staff) qualified to install and operate the treatment plant.

DELIVERY, STORAGE, AND HANDLING

The equipment, raw materials (including reagents/additives), contaminated materials, and treated materials shall be safely transported, stored, and handled. Packaging and shipping of these items shall be in compliance with United States Department of Transportation (USDOT) requirements. Storage and handling of these items onsite shall be in accordance with the manufacturer's recommendations and in compliance with applicable regulatory requirements.

SITE CONDITIONS

The site investigation data presented is representative of surface and subsurface conditions at a specific location; variations in the contaminated materials could occur.

Environmental Requirements: The treatment plant shall not be operated during periods when temperatures reach freezing or below unless operated in a structure. Soil washing shall not be performed during periods of heavy rainfall if this will interfere with the effective operation of the treatment plant. The main control center shall have the necessary provisions for heating, ventilation, and air conditioning for proper operation of the instruments, controls, and electronic data storage system. The treatment plant shall be equipped with sufficient lighting for security purposes and for treatment plant operation during inadequate daylight or at night.

Existing Conditions: The existing site conditions are presented on the construction drawings. These include physical configuration, topography, and land uses. The contaminants of concern and the estimated volume of contaminated materials are provided in these specifications.

PART 2--PRODUCTS

MATERIALS

Water Supply: Water shall not contain oils, acids, salts, alkalis, organic matter, solids or other substances that could be detrimental to the successful treatment of the contaminated materials; the Subcontractor shall submit a Water Supply Analysis as specified in the Submittals paragraph.

Reagent/Additive Certificates of Analyses: The treatment plant may not use reagents/additives for formulation of washwater or treatment of spent washwater. Approved
reagents/additive may be used for the control of air emissions and treatment of solid wastes.

The parameters for each reagent/additive to be provided shall include, but are not limited to,
chemical formula, grade/purity, form, strength, and typical supplier. The residuals of these
reagents/additives in the treated materials or the solid, liquid and gaseous wastes from the
treatment plant shall not cause secondary contamination to the environment. A certificate of
analysis for each of the reagents/additives shall be supplied by the vendor and shall
accompany each shipment. Reagents/additives shall be shipped in properly labeled containers
with instructions for handling and storage.

MIXES

The composition of washwater and the quantity ratios of washwater to feed materials shall be
determined for the mixing and washing operations to achieve the required treatment results.

PART 3--EXECUTION

EXAMINATION

A pre-installation examination of the treatment plant equipment for any damage, defect, and
dilapidation shall be conducted. The results of the pre-installation examination shall be
documented and submitted to the Contractor for review and information. Upon completion of
the treatment plant installation, a pre-operational test of the equipment and controls shall be
performed under operating conditions using clean water to check for leaks and continuity.
The Contractor’s Representative will conduct an independent examination to ascertain the
condition and functionality of the equipment. Based on this examination, the Contractor has
the right to reject the entire system or any damaged, defective or dilapidated equipment. The
cost associated with equipment or control replacement or repair, and delays caused by the
rejection shall be borne by the Subcontractor.

PREPARATION

Stockpiles of Contaminated Materials: The clearing and grubbing as well as excavation shall
be performed in accordance with Section 02200 EARTHWORK. Stockpile storage areas for
feed oversize, feed materials, treated materials, and process sludge shall be constructed. One
composite surface background sample shall be taken from the stockpile areas prior to their
construction to document the level of contamination present at the onset of construction.
Contamination under stockpile areas resulting from remedial action activities shall be
cleaned up to action levels at the Subcontractor's expense. The following minimum
requirements shall be incorporated in the stockpile design.

Liner: A geomembrane liner shall be used under the stockpiles to prevent the release of
contaminated leachate to the environment. The construction and installation of the liner shall
conform to the manufacturer's requirements. The minimum thickness of the liner shall be 40
mils.
Cover: A geomembrane (reinforced ultra-violet stabilized polyethylene) cover shall be used to prevent precipitation from entering a stockpile and volatile emissions and dust from escaping. Control measures such as wetting the stockpile surfaces shall be employed to suppress dust. The minimum thickness of the cover shall be 10 mils.

Diversion Measures: Berms and/or other suitable diversion measures (such as drainage swale) shall be constructed around the stockpiles to prevent run on and run off.

Washwater Reuse: The Subcontractor shall characterize the leachate collected from the stockpiles to determine the need for treatment prior to reuse in the soil washing process. The Subcontractor shall not discharge the leachate to the environment, or transport it offsite for disposal prior to analyzing for and meeting the discharge requirements in paragraph SPENT WASHWATER TREATMENT AND DISPOSAL REQUIREMENTS. The vessel, impoundment and storing the leachate shall be tested prior to emptying that storage facility. No leachate shall be added to a storage facility after a sampling event until the unit is emptied. For discharge or offsite disposal, the applicable Federal, state, and local regulatory requirements shall be met.

Foundations: Suitable foundations (ranging from a simple foundation consisting of synthetic liner, sand and or gravel, to an asphalt or a concrete slab) shall be constructed to support and accommodate the treatment plant. The area around the soil washing equipment shall be graded so that the water drains away from the work area adjacent to the treatment area. Water collected shall be recycled or properly treated for disposal.

ERECITION, INSTALLATION, AND DEMOBILIZATION

The treatment plant shall be erected and installed on a temporary basis and shall be removed from the site after completion of the contract work. The erection and installation shall be performed such that there is minimal damage to the existing site environment.

OPERATION

Different Types of Contamination and Materials: Different types of contamination, materials, and resulting waste streams shall be treated separately if the testing results indicate that different operating conditions of the treatment plant have to be implemented in order to achieve effective treatment of these materials.

Stockpile Management: The different materials generated by the treatment plant shall be stockpiled separately as specified below. The wastewater, solid wastes, and dust generated during stockpile management shall be handled as specified in Paragraph SYSTEM DESCRIPTION. The stockpiles shall be managed so no contaminants or fine particles are released into the environment. Run on and run off water shall be controlled in the stockpile areas. The rainfall run off and any leachate material from the stockpile areas shall be collected and treated for discharge/disposal or used for make up water in the treatment plant.
Feed Oversize: The feed oversize stockpiles shall be treated (if required) and disposed of according to their waste classification and accumulated quantities.

Feed Material: The feed material stockpiles shall be limited to a quantity capable of sustaining 5 days operation of the treatment plant.

Treated Materials: Treated materials shall be segregated into units (stockpiles) on a daily basis for post treatment testing. If the test results indicate the treated materials of a stockpile meet the post treatment criteria, this stockpile of treated materials shall be combined with the stockpile of previously treated clean materials awaiting backfilling. Treated materials that do not meet the post treatment criteria shall be reprocessed by the treatment plant.

Process Sludge: The process sludge stockpiles shall be treated and disposed of according to their waste classification and quantities accumulated.

Auxiliary Requirements for System Operations: All required spare, auxiliary, and support equipment, such as a portable generator to provide emergency power for lighting, controls, and computer system operation shall be provided.

Management of Reagents/Additives: Sufficient quantities of the required reagents/additives shall be stored in the plant area to support the operation of the treatment plant. The reagents/additives shall be stored in accordance with manufacturer's instructions and regulatory requirements. The reagent/additive holding times shall not be exceeded.

Change of Operating Conditions: The following two requirements shall be met in order to be considered for change of operating conditions: (1) the physical and chemical characteristics of the contaminated materials are significantly different from the originally defined characteristics, and (2) the treatment requirements cannot be met under the current treatment plant mix design and related operating conditions. When change of operating condition is necessary, the Subcontractor shall notify the Contractor before changes are made to the mix design and related operating conditions. The Contractor may require the Subcontractor to perform a field demonstration for significant changes made to the mix design and related operating conditions in accordance with paragraph DEMONSTRATION, for approval. Changes to mix design and associated time and costs shall be accomplished at no additional cost to the Contractor.

Management of Treatment Plant Wastewater: The wastewater generated by the unit operations of the soil washing treatment plant shall be recycled and/or reused to the maximum extent for plant operations in order to minimize the need for new makeup water and limit the treatment, discharge, and/or offsite disposal of wastewater. If a wastewater treatment system (including the Spent Washwater Treatment System) is provided, it shall have the capacity and capability to treat the wastewater (including collected rainfall run offs) for recycle or reuse. Wastewater discharged to the environment, or sent to an offsite treatment facility shall comply with the requirements identified in paragraph SPENT.
WASHWATER TREATMENT AND DISPOSAL REQUIREMENTS.

Equipment Inspection and Maintenance: The equipment shall be properly and routinely inspected and maintained to provide the operation of the treatment plant as required by the contract schedule. Any schedule delay and cost associated with power failure, line plugging, improper functioning of equipment and controls, unavailability of labor and materials, etc., shall be the responsibility of the Subcontractor. The Subcontractor is also responsible for providing alternate/auxiliary power source if sufficiently reliable source is not available.

TESTS

Post Treatment Testing: A minimum of one composite sample shall be collected from each stockpile for each 50 CY of feed material treated and the process sludge generated. One composite sample shall be collected for each 50 CY of sludge generated. The samples shall be sent to the laboratory for analysis via overnight shipment. The laboratory shall analyze the samples within 1 week. The results of the analysis shall be relayed to the Subcontractor. The Subcontractor shall report the results to the Contractor within 1 day after receipt of the results. The treated material samples shall be analyzed for the parameters listed under post treatment criteria. The process sludge samples shall be analyzed.

Reprocessing: Reprocessing and retesting shall be performed on the treated materials that do not meet the post treatment criteria. The treated material which needs to be reprocessed shall be done at no additional cost to the Contractor. Treated materials that do not meet the post treatment criteria shall be immediately reprocessed and retested or stored separately while waiting for reprocessing and retesting.

CONTRACTOR INSPECTION

The Contractor will conduct inspection of the system installation and perform periodic inspections during the plant operation to verify that the project activities are performed in accordance with the approved plans, specifications, and the regulatory requirements. Inspection findings shall be addressed immediately and resolved to the Contractor’s satisfaction.

PROCESS MATERIALS MANAGEMENT

Process materials tracking shall be performed during the operation of the treatment plant. The schedules for process materials tracking shall provide data and information to identify locations and quantities of materials at any given time. The tracking shall be performed on materials including, but not limited to, contaminated materials, feed oversize, feed materials, treated materials, treated clean materials, and process sludge. Tracking of each material shall start from the original source, continue through various stages of handling and treatment, and end at the ultimate disposal. The Subcontractor shall use a schedule approved by the Contractor to perform the material tracking during operation. A tracking schedule shall be filled out for each material and each of the locations where this material is stockpiled or
temporarily stored, including Stockpile Number. The completed tracking schedules shall be submitted to the Contractor as part of the Daily Operations Report.

METHOD OF MEASUREMENT:

Field Screening and Sampling: Any field screening, sampling, and removal of additional soils at the STF-02 site, after the initial removal of the INL designated lead contaminated soils, shall be measured by the cubic yard.

Feed Materials Treatment: Feed materials treatment shall be based upon the cubic yard of contaminated soil.

BASIS OF PAYMENT

Field Screening and Sampling: Payment shall be made at the contract unit price per cubic yard of any additional screened, sampled, and removed soils. The cost shall include the screening, sampling, excavation, treatment, packaging, and transportation of the soils to an on-site facility as directed by the Contractor.

Feed Materials Treatment: Payment for soil washing treatment of the feed materials will be based on the contract unit price schedule for each cubic yard of the previously untreated feed materials entering the treatment plant following removal of feed oversize material. This unit price will include costs for materials, labor, processing and treatment, testing and analyzing, operation and maintenance, and wastes (solid, liquid and/or gaseous) treatment and/or disposal.

Other Work Items: Payment for other work items not included in the above paragraphs will be included in the payment for the base bid for remediation of the contaminated materials. The other work items include submittals related to operation of the treatment plant, soil washing mobilization and demobilization, site preparation in the treatment plant area, configuration and installation of the treatment plant, manufacturers' field services, environmental compliance monitoring, health and safety monitoring and controls, and utilities required for the soil washing operation if approved by the Contractor as necessary for the project.

Reprocessing: The Subcontractor will not be paid for reprocessing the contaminated materials not meeting the post treatment criteria outlined in this section. Contaminated materials requiring reprocessing shall be identified and deducted from the daily production quantity.

END OF SECTION 02151
SECTION 02200--EARTHWORK

PART 1--GENERAL

SUMMARY:

Section Includes, but is not limited to:

- Excavating all lead contaminated materials as directed by the Contractor
- Stockpiling of the lead contaminated materials
- Dust control
- Grading of the remaining soil berms
- Finish grading and grading for revegetation.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein.

CODE OF FEDERAL REGULATIONS

29 CFR 1926 OSHA Safety and Health Regulations for Construction, Subpart P

SUBMITTALS:

See Section 01300, Submittals and the Vendor Data Schedule for additional submittal requirements.

PART 2--PRODUCTS

MATERIALS AND EQUIPMENT:

Topsoil: Clean topsoil free from any toxic minerals, noxious weeds or other objectionable material. Top soil can be obtained from the on-site CFA landfill (Contact Brenda Pace 526-0916 – Borrow Source Coordinator).

Equipment: All equipment and tools used by the Subcontractor to perform the work shall be subject to inspection by the Contractor before the work is started and shall be maintained in satisfactory working conditions at all times. The Subcontractor’s equipment shall have the capability to perform the indicated work specified herein.

Due to the potential for lead contamination, all equipment brought to the site slated for work in the contamination zone shall be identified to the Contractor prior to delivery and shall be clean and free of grease and oil spots where applicable, tires will be in a like-new condition,
free of slits, and cracks. The Contractor reserves the right to reject equipment not meeting these standards.

The Subcontractor shall ensure that all equipment used for clearing vegetation or earthwork is fitted with appropriate safety devices that comply with all applicable Federal laws and the Health and Safety Plan (HASP) for the Operable Units 6-05 and 10-04 Remedial Action III (ICP/EXT-04-00697) and adequately protect the operator and minimize exposure of workers and others to potentially contaminated material.

PART 3--EXECUTION

The Subcontractor shall be responsible for determining the method of excavation to be used for each of the areas identified on the drawings. The excavation method shall make every possible effort to remove the contaminated soil while controlling the depth of excavation and minimizing over excavation. Hand excavation may be required around site features such as fences, power poles, trees, etc. and where localized contamination does not require the use of mechanized excavation equipment.

The Subcontractor shall locate and mark existing monuments, monitoring wells, protection posts, and markers before construction operations commence and protect such items during construction. The Subcontractor shall restore or replace damaged items to original condition as required by the Contractor.

The Subcontractor shall clearly mark and post all laydown areas.

DUST CONTROL:

The Subcontractor shall minimize the creation and emission of dust per IDAPA Standards 58.01.01.650 and 58.01.01.651 during all work activities performed under this contract. This shall be accomplished by the use of water trucks and visual observation. Water based dust control additives may be used with the approval of the Contractor. The Subcontractor shall control the amount of water used so as not to create flowing water. Source of water for dust suppression is specified in the Special Conditions.

EXCAVATION:

Description: This work shall consist of authorized excavation of lead contaminated soils and staging of these contaminated soils as indicated in the Statement of Work and shown on the construction drawings.

General Soil Excavation Requirements: In all excavation locations, the Subcontractor shall contain excavation operations within the designated limits. If conditions encountered warrant modification to the designated limits, the Contractor shall be notified prior to work proceeding.
Unauthorized Excavation: Unauthorized excavation consists of removal of materials beyond indicated elevations or dimensions without specific direction by the Contractor. Unauthorized excavation shall be at the Subcontractor's expense.

Control of Water: The Subcontractor shall furnish, install and operate the equipment required to keep surface water contained inside the contaminated soil boundary shown on the drawings by constructing temporary ditches, berms or other appropriate means of control. Water shall be allowed to infiltrate into the soil or used for dust suppression.

Excavation: This activity includes, but is not necessarily limited to mobilization, surveying and marking excavation boundaries, excavation and stockpiling of lead contaminated soil, incidental dust control, control of storm water and demobilization. Excavations may include mechanical and manual methods. Estimated quantities are shown on the construction drawings.

The lead contaminated soil areas identified in Berm 2 & 3 and EOCR Leach Pond shall be excavated to a depth of 18-inches. Testing shall be performed by the Contractor to determine all of the contaminated soils have been removed from the sites. Additional soil removal may be required as directed by the Contractor.

GRADING:

General: The site shall be cleared of all trash and debris prior to grading. The remaining soil berms shall be graded to approximate the surrounding topography. Disturbed areas shall be backfilled with six inches of topsoil.

Any areas outside the STF-02 remediation area which are damaged or disturbed by the Subcontractor’s operations shall be revegetated by the Subcontractor at no cost to the Contractor. Revegetation shall be in accordance with Section 02486 of these specifications.

Placement: All material must be placed in uniform layers not to exceed 8-in. loose measurement and brought up simultaneously. No water shall be used for placing, settling or compacting backfill or fill except to obtain optimum moisture content.

Compaction: Unless otherwise indicated, compact all backfill using 3 to 4 passes by mechanical devices such as rollers, vibratory compactors or mechanical tampers. Each 8-in., maximum, loose measurement lift shall be compacted before the next lift is placed thereon.

TRANSPORTATION OF SOILS:

Liners: The Subcontractor shall contain and cover the soils during transport to the ICDF or other INL disposal facility by the use of liners and tarps. The liner system shall fully enclose the soil and protect the truck bed or roll-on/roll-off container on all side from contact with the soil. The liners shall be 6-mil, minimum black polyethylene with formed corners, and ignition no less than 650-degrees F, and flash point no less than 600-degrees F. Possible suppliers of liner system is Packaging Research & Design, 1-800-833-9364.
Liners shall be thermally sealed and securely covered with a tarp to fully contain the waste prior to exit from the construction/treatment site. If trucks are used, thereby limiting access to the top most surfaces of the loaded vehicle, a personnel platform shall be constructed by the Subcontractor for use during sealing of the liners. The platform shall allow for a stable, flat working surface constructed of timber, scaffolding, or similar. Scaffolding system shall be constructed in accordance with the requirements of PRD-2004, “Scaffolding” as identified in the Subcontractors Requirements Manual. The use of stepladders is not acceptable.

Testing: A pre-operational test is required to demonstrate the Subcontractor’s planned method of sealing and hauling of the soils.

DECONTAMINATION:

The decontamination of all Subcontractor equipment or tools shall be the responsibility of the Subcontractor. Decontamination must occur within the STF-02 remediation area. Decontamination may not be performed at any other areas within the site, or at an off-site facility.

METHOD OF MEASUREMENT:

Dust Control: Dust control will not be measured for separate payment.

Clearing Vegetation: Clearing vegetation will not be measured for separate payment.

Excavation: Excavation will be measured by the cubic yard.

Grading: Grading of the STF-02 remediation area shall be measured by the cubic yard of moved material.

Transportation of Soils: The transportation of the contaminated/treated soils to the on-site ICDF or other INL facility shall be measured by the cubic yard of material.

BASIS OF PAYMENT

Dust Control: No separate payment will be made for dust control. It shall be included in the unit price for excavation.

Clearing Vegetation: No separate payment will be made for clearing vegetation. It shall be included in the unit price for excavation.

Excavation: Payment will be made at the contract unit price per ton of material removed. The payment shall be full compensation for all work associated therewith, including but not limited to, surveying of excavation boundaries and topography, clearing vegetation, excavation of soil and loose surface rock, loading, incidental dust control, and control of storm water.
Grading: Payment shall be made at the contract unit price per cubic yard of grading of the STF-02 remediation area. The cost shall include removal of debris and vegetation, grading of remaining soil berms, compaction, and hauling/placement/compaction of top soil for revegetation.

Transportation of Soils: Payment shall be made at the contract unity price per cubic yard of loaded and hauled soil materials from the soil staging/treatment site to the on-site ICDF or other INL disposal facility. The cost shall include the loading of the soils, the securing of the soils using a liner/tarp system, the hauling, and the unloading of the soils.

FIELD QUALITY CONTROL:

Topographic surveys may be conducted by the Contractor prior to the start and upon completion of the excavation work to verify quantities. The Subcontractor shall provide confirmatory final survey.

The Subcontractor shall be responsible to in-process inspection during execution of all work. Surveillance will be performed by the Contractors Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 02200
SECTION 02486--REVEGETATION

PART 1--GENERAL

SUMMARY:

Section Includes, but is not limited to preparing seedbeds, sowing grasses, applying fertilizer, and applying mulch to revegetate disturbed sites.

Related Work: Section 02200-Earthwork

SUBMITTALS:

Seed Mix Certification: The Subcontractor shall submit seed mix certification for approval by the Contractor 8-days prior to revegetation.

Soil Analysis: The Subcontractor shall submit results of the soil, fertilizer analysis for approval by the Contractor 8-days prior to revegetation.

PART 2--PRODUCTS

MATERIALS:

Topsoil: Clean topsoil free from any toxic minerals, noxious weeds or other objectionable material.

Seed and Seedling Mix: The table listed below provide the recommended seeding materials and planting rates for the Security Training Facility Gun Range area.

The seed should be planted using a Truax-type drill with no-till attachment. This planting shall be performed between October 1 and November 30 or February 1 and March 20. Caution should be taken to ensure the seed bed is not too soft for the drill to operate properly resulting in improper seeding depth. After planting, the areas shall be covered with wood chip mulch at a rate of 15-tons/acre. (Wood chips are available by contacting the INL CFA Landfill Operator.)

The following grass mix shall be used for all disturbed areas:

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>RATE OF APPLICATION (POUNDS PER ACRE PURE LIVE SEED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Rabbitbrush (C. viscidiflorus)</td>
<td>0.5</td>
</tr>
<tr>
<td>Indian Rice Grass &quot;Rimrock&quot; (A. hymenoides)</td>
<td>2</td>
</tr>
<tr>
<td>Thicksipe wheatgrass &quot;Bannock&quot;</td>
<td>2</td>
</tr>
</tbody>
</table>
Possible sources for seed include:

- Cedera Seed Inc., P.O. Box 97, Swan Valley, ID 83449, 208-483-3683  FAX 208-483-3684
- Idaho Grimm Growers Warehouse Corp., P.O. Box 276, Blackfoot, ID 83211-0276, 208-785-0830  FAX 208-785-0841
- Granite Seed, 1697 West 2100 North, Lehi, UT, 801-768-3967  FAX 801-768-3967

Fertilizer: The Subcontractor shall perform a soil analysis of the soils disturbed by excavation and also the identified borrow source for topsoil to determine the appropriate fertilizer mix and application rates for successful growth of the specified seed mix. The Subcontractor shall identify to the soil analysis laboratory that revegetation will be with native grasses. All costs associated with the soil analysis and fertilizer requirements shall be included in the subcontract price.

Mulch: Mulch shall be wood chip mulch at a rate of 15-tons/acre. (Wood chips are available by contacting the INL CFA Landfill Operator.)

EQUIPMENT:

- Seedbed Preparation: Truax-type drill with no-till attachment, or similar equipment.
- Seeding and Fertilizing: Brillion seeder, or other similar equipment.

PART 3--EXECUTION

Season of Work: Seeding shall be done between October 1 and November 30 or February 1 and March 20. Specific ideal seeding times within these windows shall be as required for proper seedbed preparation. Areas to be seeded shall be maintained reasonable free of weeds. Weeds shall be kept from going to seed.
Seedbed Preparation: Soil shall be tilled a minimum depth of 3-inches. The seedbed shall be firm below seeding depth and well pulverized and loose on top. It shall be free of clods and weeds. Seedbed preparation shall not be performed when soil conditions are not suitable for tilling: too dry, too wet, frozen, etc. Tillage shall produce cross-slope furrows on slopes.

On areas subject to severe erosion, the extent of seedbed preparation shall not exceed that which can be seeded in one day.

Fertilizing: Fertilizing shall closely follow seedbed preparation. Fertilizer shall not be mixed with seed. Fertilizer may be drilled or broadcast. Fertilizer shall be applied at a rate of determined by the soil analysis.

Seeding: Seeding shall closely follow fertilizing. If the seedbed has been disturbed, then the Subcontractor shall prepare the seedbed again. Seeding work shall not proceed until the seedbed has been inspected. Seeds shall be thoroughly mixed prior to application. Seeds shall be uniformly applied at the previously specified rate. Seeds shall be buried 0.25 to 0.75 inches. Seeding shall not be performed when weather conditions are unfavorable: high wind, heavy rain, etc.

Mulching: Mulch shall be spread uniformly at a rate of 15 ton per acre. Mulch shall be applied with no more than one pass of the equipment. Mulching shall not be performed when wind interferes with mulch placement.

Protection: Traffic over seeded area shall be prohibited by the Subcontractor during all work activities performed under this contract.

METHOD OF MEASUREMENT:

Revegetation: Revegetation will be measured by the acre using field survey.

BASIS OF PAYMENT:

Revegetation: The accepted quantities of revegetation will be paid for at the contract unit price per acre of revegetated area. This price shall include seedbed preparation, seeding, mulching, and fertilizing.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.