



**BUILDING 788 CLUSTER RCRA CLOSURE PROJECT  
DEMOLITION PLAN**

**For**

**Architect/Engineering, Direct Hire Construction, Construction  
Management and Design-Build Services at The Rocky Flats  
Environmental Technology Site**

**Revision 2.0**

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**Approved by:**

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Date 3/30/99

**Responsible  
Organization:**

Foster Wheeler AE/CCM  
Project Management

Prepared for  
**Rocky Mountain Remediation Services, LLC**  
Prepared by  
**Foster Wheeler Environmental Corporation**

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**ACROYNMS**

ACM	Asbestos-Containing Material
AE/CCM	Architect/Engineering, Construction, Construction Management
AHA	Activity Hazard Analysis
ALARA	As Low As Reasonably Achievable
AQM	Air Quality Management
BMP	Best Management Practices
CCR	Code of Colorado regulations
CFR	Code of Federal Regulations
D&D	Decommissioning and Decontamination
DOE	Department of Energy
DP	Demolition Plan
H&S	Health and Safety
HSP	Health and Safety Practices
IDC	Item Description Code
IMC	Integrating Management Contractor
ISMS	Integrated Safety Management System
ITS	Interceptor Trench System
IWCP	Integrated Work Control Package
JHA	Job Hazard Analysis
K-H	Kaiser-Hill, L L C
LLM	Low-Level Mixed Waste
LLW	Low-Level Waste
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NTS	Nevada Test Site
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
PSHP	Project Safety and Health Plan
PU&D	Property Utilization and Disposal
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
RAAMP	Radioactive Ambient Air Monitoring Program
RCRA	Resource Conservation and Recovery Act
RCT	Radiation Control Technician
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services
RWP	Radiation Work Permit
SCO	Surface-Contaminated Object
TCLP	Toxicity Characteristic Leaching Procedure
WAC	Waste Acceptance Criteria
WFC	Waste Form Code
WGI	Waste Generating Instructions
WMP	Waste Management Plan
WSRIC	Waste Stream Residue Identification and Characterization

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## BUILDING 788 CLUSTER RCRA CLOSURE PROJECT DEMOLITION PLAN

### 1 INTRODUCTION

The Building 788 Cluster Demolition includes Building 788 (B788), the clarifier tank, Building 308A, miscellaneous structures, and equipment within the immediate vicinity of these structures and the Solar Ponds (207A, B, and C) In general, the project will begin with the rerouting of new power, followed by building strip-out (including waste management and removal), and building demolition This Demolition Plan (DP) does not include remediation of underlying soils or the solar ponds themselves, only the structures, equipment and associated piping Exhibit 1 1-1 presents the Building 788 Cluster Plan view

### 2. FACILITY DESCRIPTION, CHARACTERIZATION, STATUS

#### 2.1. Facility Description

Building 788 is a permitted Resource Conservation and Recovery Act (RCRA) container storage facility (Unit 21) which consists of a single-story steel-framed structure on a concrete slab The building is 220ft long, 20ft wide at the south end and 25ft wide at the north end, with an eave height at 12ft The building has two layers of metal siding with fiberglass insulation sandwiched between A contamination control room (47ft long by 10ft wide) is located inside the building

Trailer T788A sits on the eastside of Building 788 and is approximately 40ft long by 10ft wide and 15ft high

The Clarifier, Pug Mill and related equipment were used to process sludge from the ponds. The Clarifier has a 30,000gallon capacity open-top, cylindrical tank with a cone shaped bottom A wooden shed encloses the bottom of the tank and the equipment used for processing the tank water and sludge A concrete ramp, utility poles, and a steel structure are located adjacent to the pug mill

The 207A and B Ponds are located to the east, and the 207 C Pond is west of Building 788 All of the ponds were emptied of sludge and water The 207 B ponds are interconnected with transfer pipes and hand operated valves for isolation The ponds have miscellaneous equipment including piping, valve boxes, electrical disconnect racks, and a heater unit The 308 A Pump house is a metal shelter installed on a concrete foundation, and is located between Ponds 207 A and 207 B North

#### 2.2. Facility Characterization

The Building 788 Cluster RCRA Closure Project characterization phase has been completed with background documentation contained in the *Site Hazard Assessment Report for Buildings 788 and 207A Clarifier* (RF/RMRS-98-299 UN, dated February 1999)

The characterization data has been reviewed and used to plan demolition activities and to provide protection of demolition workers The following are characterizations regarding the Building 788 Demolition effort

- Non-Friable asbestos-containing material (ACM) has been identified as being present in the Trailer 788A porch roof in the form of Brown Tar Roof Shingles The quantity of this material is estimated to be well below the regulatory threshold triggering asbestos abatement notification, permits, and training, consequently this project and project employees are exempt from Colorado Regulation 8 requirements
- All painted surfaces are assumed to contain lead, consequently no torching, grinding, or abrasive cutting methods will be used on painted surfaces of structures and/or equipment

- Polychlorinated biphenyl's (PCB) may be present in fluorescent lighting ballast's The light ballast's will be removed, inspected, and managed appropriately prior to demolition
- Hazardous waste expected to be generated during demolition work includes
  - ◆ Fluorescent Light Tubes (D009 – Mercury)
  - ◆ Incandescent Lights – (D008 – Lead)
  - ◆ Sodium Vapor Lights – (D008 and D009 – Lead and Mercury)
- Low-Level Waste has been identified at the Building 788 Cluster Demolition site and consists of dry combustibles (wood, Personal Protective Equipment (PPE), rubber, plastic, and metals)
- Low-Level Mixed Waste also has been identified at the Building 788 Cluster Demolition site and consists of dry combustibles (i.e., wood and plastic), rubber hoses, portions of the pugmill and mixer, heater unit, and metal piping

Waste characterization is the responsibility of Rocky Mountain Remediation Services, L L C (RMRS) - the Contractor

### **2.3. Facility Status**

The Building 788 Cluster structures have been "cleaned" out however the utilities still remain intact and "energized." All sludge has been removed from the clarifier (1998) resulting in its "clean closure" per RCRA requirements

The anticipated condition of Building 788 prior to demolition is as follows

- The building will be isolated from all Site Utilities
- All piping and electrical distribution systems will have been removed
- Contaminated surfaces will be decontaminated or sprayed with a fixative.
- The building has been fully characterized and does not contain any hazardous substances. Analysis of the paint for RCRA metals was performed using EPA's Toxicity Characteristic Leaching Procedure (TCLP) No RCRA metals were detected above regulated levels
- All below grade openings have been plugged, capped, blind flanged or covered with an appropriate covering

## **3. RCRA CLOSURE ACTIVITIES**

This section describes the activities required to perform the Building 788 Cluster Demolition at Rocky Flats Environmental Technology Site (RFETS) The Integrated Work Control Program (IWCP) provides directions for performing work at the site and contains specific controls and requirements to assure protection of workers, the public, and the environment DOE and the Integrating Contractor Management will conduct a management review of the project's procedures and personnel prior to the start of demolition Upon approval, demolition activities may proceed

Demolition work will be achieved, while worker safety is ensured through implementation of

- As Low As Reasonably Achievable (ALARA) principles
- Activity Hazard Analysis (AHA) reviews
- Integrated Safety Management System (ISMS)
- Site-specific safety and health plan
- Prevention of hazardous and/or radiological material releases to the environment through a project-specific Demolition Plan

- Engineered controls (as necessary)
- Maximum use of existing procedures to perform demolition work
- Apply RMRS's *Safety and Environmental Stewardship Directive* (OPS-DIR-001, Revision 2, dated 8/15/97) and Foster Wheeler's *EHS Policy* (dated February 1998)

The significant activities required for the Building 788 Cluster Demolition are listed below (and are not necessarily in order nor all inclusive)

- Mobilize supervision, craft, trailer and required equipment to site
- Establish designated materials storage, disposal, recycling, and loading areas
- Install 5 new power poles and electric lines to provide an alternate feed for the Intercept Lift and Modular Storage Tanks
- Re-route security lighting power to provide an alternate feed for the security lights west of Pond 207C
- Remove transformers from pole #B6-503, then remove all original power lines and cut original power poles at ground level as designated by engineer's drawings
- Place an earthen ramp for heavy equipment over the ITS pipeline
- Lock-out/Tag-out, then verify de-energization of all utilities to Building 788, 788A, 308A and other appurtenances prior to removal
  - ◆ Utility isolation
  - ◆ Disconnect power to Building 788
  - ◆ Disconnect water to Building 788
- Wrap and remove the roof of the porch attached to Trailer T788A and place in waste container for on-site disposition
- Relocate Trailer T788A to another location inside the Protected Area at RFETS
- Strip-out and demolish south half of Building 788
- Strip-out and demolish the Clarifier Tank and surrounding wood structure.
- Strip-out and demolish pugmill and loading rack equipment
- Remove ancillary equipment from around Solar Ponds 207A, 207B (north, middle, and south), and 207C, including heating unit, electrical control stations, conduits, and piping
- Strip-out and demolish north half of Building 788
- Demolish the 308A Pumphouse and backfill depressed area immediately south and adjacent to Pumphouse
- Remove equipment from the exterior of Building 788 including the cement mixer, concrete ramp, propane tank, and associated utilities
- Demobilize

### 3.1. Mobilization

A trailer will be moved onsite. The trailer will provide space for a lunchroom. The trailer setup will be in accordance with RFETS requirements for such trailers. The T340 trailer will be utilized as a site office for this project. Site barricades will be placed across the existing site roadway located to the south and west of the project site. These barricades will isolate the project site, and allow for isolation of the demolition activities. The placement of barricades will result in minimal soil disturbances.

Fuel powered generator(s) will be brought in to power light stations and hand tools. The Site's Air Quality Management Group will be notified prior to bringing in generators. The information will include serial numbers and the number and type of generators being brought on site. Fuel usage for the generator(s) will also be tracked for the Air Quality Management Group (AQM) and will be provided to the Contractor at the completion of the project.

During mobilization activities necessary equipment will be transported to the project site, and all craft labor and supervisory staff will be given any required training. In addition, designated WM areas will be established during mobilization activities.

### **3.2. Equipment Ramping Installation**

An ITS pipeline crosses the southern site access road. An earthen ramp (RMRS approved) will be constructed over this pipeline to allow heavy equipment to travel over this route without damaging this pipeline.

### **3.3. Lock-Out/Tag-Out**

Prior to commencing demolition activities, building services and utilities for all Buildings (788, 788A, T788, and 308A) will be locked out and tagged out in accordance with RFETS requirements. The demolition project personnel in turn are required to verify that all required lock-out/tag-out activities have been performed by physically verifying that all locks and tags are in place and systems are de-energized. Skilled crafts will perform this work.

### **3.4. Utility Isolation and Electrical Installation**

Prior to work on a building system all sources of energy (electrical, pressure, gas, and water) will be isolated, verified, and disconnected. New electrical power supply will be installed and tested per the design package requirements (13.8 KVA and 440 V lines). Disconnected electrical power system will then be demolished. Power required for demolition activities will be supplied through the use of temporary generator(s).

### **3.5. Remove and Package Roof Shingles**

The roof shingles on the Trailer T788A porch are non-friable ACM. The porch roof will first be wetted then wrapped with plastic and the shingles and plywood porch roof will be removed as contiguous units. The removed roof shall be further double wrapped in 6 mil polyethylene. This waste shall be managed per the Building 788 Waste Management Plan (WMP).

### **3.6. Relocate Trailer T788A**

Trailer T788A will be relocated to the location indicated in Project Drawing #51613-X005 for use as a job trailer by RFETS personnel during Building 788 Cluster Demolition activities. The trailer will be anchored and power supplied in accordance with RFETS requirements. Upon completion of demolition work, during project demobilization, Trailer T788A will be relocated again to an area designated by RFETS personnel within the Protected Area at RFETS.

### **3.7. Building 788 Demolition**

Demolition of Building 788 will involve a verification of a thorough building strip-out, removal of utilities (lights), removal of all remaining piping and ancillary equipment, and demolition of the building. Strip-out will include removal of fluorescent lighting fixture and tubes, propane heating units, battery chargers, etc.

Prior to commencement of demolition activities a walk-through will be conducted with the Contractor to identify all RCRA piping and ancillary equipment (including the sludge heater unit). No liquids/sludge is expected to be present in either the piping or sludge heater unit. However, prior to dismantlement of equipment and structure(s), there will be verification that no liquids or sludge are present in any of the identified piping or ancillary equipment (i.e., sludge heater unit) by visual and/or auditory means. In the event that the piping contains liquid and/or sludge the piping will be managed in such a fashion as to prevent any releases and to comply with applicable Radiation Work Permit (RWP) and AHA's as necessary. For example, plastic catch pans or liners will be placed under pipes during cutting to catch and contain any contained

liquid All anchors, reinforcement or other projecting items shall be cut off flush with the existing concrete slab, and all penetrations into the slab shall be sealed Upon removal of identified RCRA piping and ancillary equipment, the Contractor shall be notified to verify the removal was performed properly

If removable contamination is encountered, preventative actions (e.g. application of fixatives, encapsulation, or wrapping) will be employed, along with appropriate personnel protective equipment The Contractor will apply fixative to the interior of the Contamination Control Room prior to demolition work

Demolition of the building structure will be achieved through the use of specialty excavators equipped with shears and/or grapple attachments This equipment (or equipment of similar ability) will be used to first remove the metal siding on the building After removal of the metal siding within the span of one bay, the cable supports and structural steel columns and rafters shall be cut utilizing the excavator with shear attachment Upon removal of any non-metallic debris, all metal will be cut into manageable sizes and placed into provided containers for transportation and recycling at the GTS Duratek Oak Ridge, TN, facility (hereinafter referred to as GTS Duratek) Any non-metallic debris will be segregated based on characterization as low-level waste (LLW), low-level mixed waste (LLM), or sanitary waste and then placed into waste containers provided by the Contractor for removal and disposal by the Contractor An IT-28 Integrated Tool Carrier and an additional excavator with grapple will be utilized in handling waste materials

Demolition will continue to be sequenced in this manner bay to bay throughout both halves of Building 788, beginning with the smaller south half of the building Once the south half is complete, demolition and removal of the clarifier tank, pugmill and ancillary equipment will be performed Then the north half of Building 788 will be demolished.

### **3.8. Demolition of the Clarifier Tank and Surrounding Wood Structure**

Demolition of the Clarifier Tank will be performed in the same manner as demolition of Building 788 First, the existing wood structure will be removed from the area and will be packaged for disposal in containers provided by the Contractor Removal of the wood structure adjacent to Pond 207A will be performed with heavy equipment to minimize the possibility of having debris fall within the Contaminated Area of Pond 207A The wood structure will not be treated with a fixative as historical radiological data has shown that there is no contamination present, and the wood will be managed as LLW The exterior of the Clarifier Tank will not be sprayed with a fixative on the basis of existing radiological characterization surveys of the adjacent building, Building 788 exterior walls, which did not indicate any radiological contamination The Demolition Subcontractor will apply fixative to the inside of the Clarifier Upon completion of removal of the wood structure the Clarifier Tank will be demolished using the excavators with the shear and grapple attachments All metal will be cut into manageable sizes and placed into containers for transportation and recycling Any non-metallic debris and sanitary waste will be placed into waste containers provided by the Contractor for removal and disposal by the Contractor per the Building 788 WMP The support ring will also be size reduced using the shear

### **3.9. Demolition of the 308A Pumphouse and Building 788 Ancillary Equipment and Miscellaneous Items**

The 308A Pumphouse shall have all ancillary equipment and piping removed by the appropriate skilled craft personnel, and placed into containers for removal by the Contractor The Demolition Subcontractor will apply fixative to the interior/exterior wall surfaces of 308A to minimize the spread of contamination during demolition and size reduction activities Upon removal of all ancillary equipment and piping, the building structure shall be demolished in the same manner

as Building 788 Excavators equipped with shears and grapplers shall dismantle the 308A Pumphouse and cut all structural pieces into appropriate sizes for containerization. Non-metallic and non-ferrous debris shall be containerized for removal by the Contractor, and ferrous debris shall be placed into containers, and transported to the GTS facility for recycling per the Building 788 WMP. The depressed area immediately to the south and adjacent will be backfilled with approved backfill material to maintain drainage, prevent personnel from falling into the depressed area, and to provide a level work surface for demolition work. Fill material to be used for backfill purposes will be brought on-site from a Contractor approved off-site location.

The mixing unit to the pugmill is to be separately removed due to contamination and will be disposed of as LLM. The cement mixer contains LLM (i.e., sludge/Pondcrete) and will therefore be managed as LLM and packaged as a unit in a special size waste container by the Contractor. Where sludge/cement is not present, shears will be used on the pug mill structure for size-reduction to fit into the appropriate waste container(s).

The propane tank is to be emptied by running the building heaters. The tank will then be locked-out followed by verification of no-flow prior to disconnection of the line. The Contractor will be responsible for removal of the tank from the site, by making arrangements with the tank vendor.

Simultaneously with the demolition of Building 788 and the Clarifier Tank all designated equipment, electrical control stations, conduits, and piping will be removed from the Solar Ponds 207A, 207B (north, middle, and south) and 207C area. After verification of Lock-out/Tag-out and system de-energization, skilled craft shall begin to breakdown and containerize equipment from around the Solar Ponds which is designated for removal. Also, after Lock-out/Tag-out verification, skilled craft will begin removal of designated piping, electrical conduit, electric control stations from the Solar Ponds in accordance with the IWCP. These materials designated for removal shall be broken down and segregated according to waste type/size for handling and placement into containers that are to be supplied by the Contractor. The Contractor will then remove all containerized materials from the project site per the Building 788 WMP.

### **3.10. Demobilization**

Upon completion of the Building 788 Cluster Demolition activities the T788A trailer will be relocated to a designated location within the Protected Area at RFETS, and the ramp over the ITS pipeline shall be removed and used as fill material at the site. The project job trailer and project equipment shall be removed from the site.

## **4. PROGRAM MANAGEMENT**

### **4.1. Project Organization**

Foster Wheeler's Building 788 Cluster RCRA Closure Project Organization (Exhibit 4 1-1), as described below, will be used to manage the Building 788 demolition activity.

The resources and expertise of many organizations will be brought to bear in the execution, control and completion of the Building 788 Cluster Demolition. Each organization has a specified scope and will work with the other organizations and/or contractors in an integrated and cooperative manner to achieve the objectives of Kaiser-Hill Company, L L C (K-H) and to successfully accomplish work activities relating to the project.

Kaiser-Hill, L L C - Site and Building Manager: Kaiser-Hill, L L C as the Integrating-Management Contractor (IMC) is responsible for overall management of the project ensuring that all environmental and regulatory requirements are complied with.

Rocky Mountain Remediation Services, L L C - Project Manager: RMRS is the Project Manager for the Building 788 RCRA Closure Project as assigned by K-H. RMRS is responsible for

overall management of the project ensuring that environmental and regulatory requirements are complied with and met. RMRS is responsible for performing radiological surveys and identifying radiological hazards and preparing RWP's prior to Foster Wheeler starting work. In addition, RMRS will designate waste collection/storage areas for anticipated waste(s) that will be generated during construction. RMRS is also responsible for inspecting waste management areas, transporting waste off of the project site and for the subsequent recycling, salvage, or disposal of materials and wastes generated during project activities except that Foster Wheeler will be responsible for LLW metals recycled at GTS Duratek.

**Foster Wheeler AE/CCM Project Team - Demolition Subcontractor** Foster Wheeler, as an Architect/Engineering, Construction, Construction Management (AE/CCM) Subcontractor, and is the Contractor for the Building 788 RCRA Closure Project. Foster Wheeler is accountable for the safe performance of work on this project. Foster Wheeler will be responsible for day-to-day field demolition activities and for the proper packaging of waste and/or materials until removed from the project site by RMRS.

#### **4.2. Foster Wheeler Organization**

Foster Wheeler's project organization for the Building 788 Demolition provides only those personnel that are essential for the management, administration, and execution of the project. The emphasis is on effective execution of the project by applying the level of management, technical services, and support functions required for the safe, compliant, and efficient execution and control of project tasks.

The Foster Wheeler project organization, is structured to have a single point of authority while allowing functional managers and leads to be matrixed to and have direct interface with their K-H counterparts. Mr. John Snelgrove, Foster Wheeler AE/CCM Program Manager controls and directs overall contract activities, while day-to-day communications with RMRS and technical and administrative control for the Building 788 Demolition is the responsibility of the Project Manager. Exhibit 4-1.1 depicts the Foster Wheeler AE/CCM organization.

The Project Manager is responsible for the technical and administrative aspects of the project (including planning, scheduling, cost estimating, resource loading and project execution). The Project Manager will work closely with the Foster Wheeler Engineering Manager, Construction Supervisor and other principals to ensure that appropriate levels of technical resources, craft labor, and other support resources are assigned to the project. Other primary project personnel who provide required resources and necessary support to the Project Manager include:

- The **Health and Safety Manager** who ensures personnel have the proper safety and waste management training and ensures compliance with relevant regulatory, RFETS, and Foster Wheeler procedures and standards.
- The **Quality Assurance Manager** who provides project support for the implementation of Quality Assurance/Quality Control (QA/QC) Programs and compliance with RFETS and Foster Wheeler standards and procedures.
- The **Environmental/Regulatory Compliance Manager** provides waste management supervision for the project and ensures that all required permits are obtained and complied with during project field activities.
- The **Field Superintendent** ensures that field activities are completed as directed and on schedule, coordinates personnel involved in tasks, and maintains logistics, and ensures that only properly trained personnel are used for project activities.
- The **Project Engineer** provides engineering support/resources, reviews drawing design and specifications for adequacy and that they meet Site requirements.

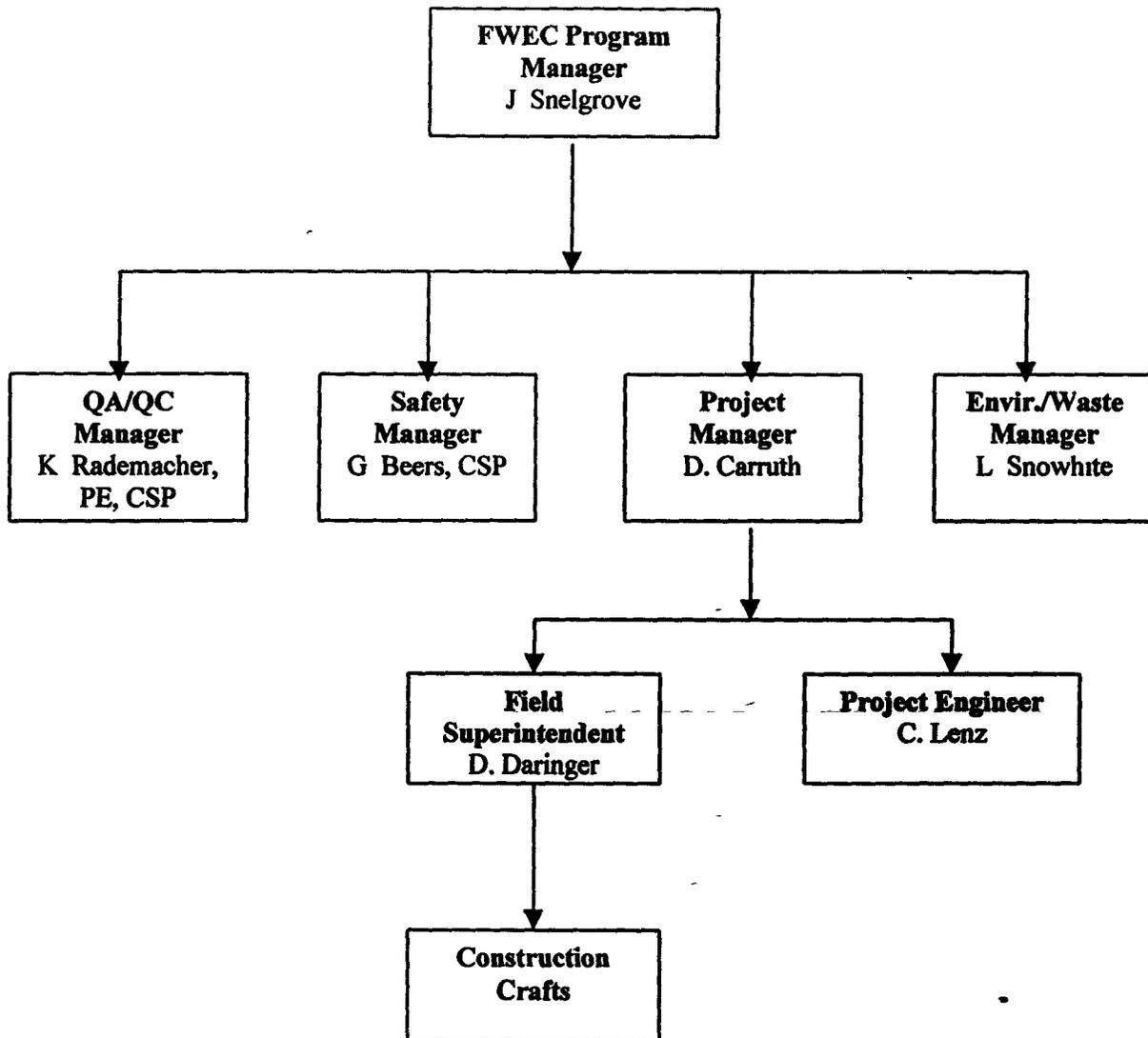


Exhibit 4.1-1. Building 788 Cluster RCRA Closure Project Organization – Foster Wheeler AE/CCM

Foster Wheeler Environmental will staff the project with the appropriate personnel pursuant to the requirements of the RFETS AE/CCM subcontract and as deemed necessary to successfully execute the work

#### **4.3. Training**

Training is an important component of safety in completing the Building 788 Cluster demolition. A minimum set of training requirements based on a task-oriented approach has been established for project personnel based on the anticipated work activities in the Building 788 Cluster Demolition Project. Training requirements are specified in the Project Safety and Health Plan (PSHP). With regard to RCRA training requirements, workers will be trained pursuant to the RFETS Hazardous Waste Permit's requirements as indicated in Training Section (Part IX). The Demolition Subcontractor will provide the Contractor with documentation verifying that project-specified training requirements by Demolition Subcontractor personnel have been met. Personnel will be required to meet the training requirements prior to work commencing.

Personnel are trained to a level of awareness in these areas to allow them to understand and recognize the hazardous nature of these contaminants if they are encountered. Note that not all workers in a specific-work class need to meet all of the indicated training but only the training required for the work task they are assigned.

Additional training in the form of AHA, pre-job briefings, weekly "tool-box" safety meetings, and continuing/refresher training is tracked. As new training requirements are identified, these will be evaluated against the work being performed, and, if necessary, will be added to the PSHP training requirements. Training requirements can be reviewed by the Foster Wheeler Health and Safety (H&S) Manager at any time during project implementation and, based on job and activity hazards, may be revised with RMRS approval.

During the demolition work, if significant levels of radiological or chemical contamination are encountered, project personnel are trained to stop work until project management and appropriate health and safety personnel have assessed the situation. Additional training and controls will be established as appropriate, to allow work to continue safely.

#### **4.4. Quality Assurance**

The project team for the demolition of the Building 788 Cluster will operate under approved Quality Assurance Programs and implementing procedures. Demolition activities will be in compliance with Foster Wheeler's Quality Assurance Program as described in the approved Quality Assurance Implementation Plan. The Department of Energy's (DOE) Nuclear Safety Rules (Title 10 Code of Federal Regulations (CFR) Section 830.120, Quality Assurance, and 10 CFR Part 835, Occupational Radiation Protection) will apply to the demolition of Building 788.

Appropriate planning for Quality Assurance (QA) purposes will be documented within the IWCP and Foster Wheeler's QA/QC Plan as a part of the planning for the work activities.

#### **4.5. Physical Security**

Security for this project will follow the RFETS Security Manual requirements. Escorts will be required from Portal 1 for uncleared personnel during project activities. All project activities that involve movement of equipment and material into and out of the site will have appropriate security measures incorporated into their work plans.

#### **4.6. Authorization Basis and Work Procedures**

Demolition activities will not impact the Authorization Basis. This is also indicated in the *Safety Analysis for the Building 788 Cluster Decommissioning Project* (NSTR-017-98, dated 12/18/98) document.

## **5. WORKER AND ENVIRONMENTAL PROTECTION**

This section of the Demolition Plan discusses the activities and efforts required for worker protection and to protect the environment from undue effects resulting from the demolition of Building 788. The first section details the radiological protection program activities for the project, and the second section describes the ALARA aspects of the project. The third section discusses the occupational safety and health program instituted for this project, followed by the fire prevention and protection program. The last element in this section covers the environmental protection aspects of the project.

### **5.1. Radiological Protection Program**

All work will be coordinated with the Contractor's Radiological Engineer and Supervisor for the Building 788 Demolition to ensure that appropriate radiation protection controls are provided in the Building 788 demolition activities. The basis for and nature of these radiological protection programmatic controls are the surveys performed for the project and the historical operating and radiological data.

The overall approach for radiological protection will be to comply, in a consistent manner, with all applicable laws and regulations and DOE's radiological protection program, as implemented through RFETS radiological protection program-specific requirements, standards, and best practices during all demolition activities. Any occupational exposure of workers to ionizing radiation shall not be incurred without the expectation of an anticipated and accepted risk reduction benefit from the activity producing the exposure. The continued goal of the program will be to demonstrate that radiation exposures are well below regulatory limits, contamination is minimal, radioactivity is well controlled, and spills/uncontrolled releases are prevented.

Radiological safety control for contaminated equipment (i.e., facilities, clarifier, pug mill and ancillary equipment) will be achieved through administrative controls and engineered design features. Programmatic control objectives include:

- Minimization of radiation exposure to demolition workers (i.e., the use of shears for cutting and placement of waste into packaging whenever possible).
- Minimization of contamination and buildup in equipment
- Use of support facilities for donning and doffing protective clothing
- Use of fixative to control removable and fixed contamination, and
- PPE, and personnel and airborne monitoring (and locations) per RFETS RWP requirements

The adequacy of the Building 788 Demolition work radiological protection will be verified by inspections, reviews, investigations, and self-assessments conducted by the Contractor RADCON Manager.

Radiological protection practices will be used to control exposure to radiological hazards and may involve special personnel protective equipment; equipment and facility design, physical and engineered features, and administrative controls. In general, radiological practices used to control exposure will include on-going monitoring, posting radiological areas, monitoring airborne radiological activity, controlling activities within the radiological areas, and ensuring entry and exit control.

### **5.2. ALARA Practices**

Radiation exposures associated with the Building 788 demolition activities will be controlled to ensure that releases of radioactive-contamination to the environment are maintained below regulatory limits. Dedicated efforts shall also be taken to further reduce exposures and releases. To comply with this policy, the RMRS project team shall be accountable for radiological protection performance. The responsibility for compliance with the radiological protection

requirements and for minimizing personnel radiation exposure will begin at the worker level and broaden as it progresses upward through the line organization. Line managers will be responsible for taking all necessary actions to ensure that radiological protection requirements are implemented and that performance is monitored and corrected as necessary. Contractor Radiological Control Technicians (RCT) will assist the project team by routinely evaluating and monitoring all radiological conditions. RCTs will routinely be on site to oversee activities and RWP compliance to ensure that project personnel take all reasonable precautions.

The ALARA process is integrated throughout RFETS and uses administrative controls, employee training, engineering design, proper work practices and procedures, and emergency response measures to achieve the desired results. The primary responsibility for keeping personnel exposures ALARA rests with each individual worker. The Demolition Subcontractor will follow the RMRS direction for radiation control and ALARA.

### **5.3. Occupational Safety and Health Program**

The primary document used to control safety and health on this project is the Demolition Subcontractor's PSHP. The purpose of the PSHP is to define mechanisms and procedures to identify, mitigate, and control or eliminate potential safety and health hazards associated with the demolition of Building 788. The PSHP and associated AHA or Job Hazard Analyses (JHA) address specific hazards associated with the demolition activities outlined in Section 3. These hazards include known and potential chemical, physical, and radiological hazards.

When these hazards are encountered, they are addressed in the PSHP. The PSHP incorporates appropriate procedures and standards as required by the following:

- DOE orders and manuals (e.g., DOE Hoisting and Rigging Manual)
- Contractor documents (from applicable Health and Safety Practices and/or Occupational Safety & Industrial Hygiene Program Manual requirements), and
- OSHA standards contained in 29 CFR Parts 1910 and 1926, to ensure worker protection.

No tasks (excluding walkdowns, general work tasks, surveillance, inspections, and other tasks specified by the project safety manager) will be performed until an AHA and/or a JHA has been written and approved. The AHA and/or a JHA is task specific and addresses the hazards for each task step, controls to be used, special equipment needs, training, and any necessary monitoring.

The project safety manager, together with RFETS safety personnel will assess the need for employee personnel and area monitoring. Such monitoring may include noise, heat stress, and chemical hazards.

**Known Hazards:** It is expected that the primary hazards associated with this project will be physical hazards (e.g., noise, muscles strains, cuts/abrasions, electrical shock, slips/trips, dropped loads, and falls from elevated surfaces). These hazards are associated with removing equipment from walls and floors, working with portable hand tools, working from aerial lifts, and using heavy machinery. The PSHP and associated AHA/JHAs address methods to control these hazards. Specifically, a lift plan may be developed, if needed, to govern crane-lifting activities.

Trailer 788A contains non-friable asbestos in the form of brown tar roof shingles over stairway covers (see Section 5.5).

Lead paint has been used on the various surfaces of Building 788 and associated structures (see Section 5.6).

**Potential Hazards:** Prior to demolition activities, Building 788 will be de-energized and isolated from all utilities. It is recognized that the failure to properly lock-out all energy sources will result

in significant risk to the workers and the project. Verification of energy isolation is therefore necessary prior to performance of work. Any oversights discovered will be brought to the attention of the Contractor. Recognizing that after the roof enclosures are removed this building will be free of asbestos-containing material. The S&HP and associated AHA/JHAs address precautions, procedures, and controls to minimize and prevent worker and environmental risk when removing equipment.

Work activities will be stopped if any unanticipated hazard is discovered or a known or potential hazard is present at a level exceeding established control limits. Appropriate notifications and mitigation of the hazard encountered will be pursued. The *Safety and Environmental Stewardship Directive* will be followed during demolition work.

#### **5.4. Fire Prevention and Protection**

The following approaches will be taken to minimize and prevent the risk of fire to Building 788, and other nearby facilities:

- The construction superintendent and project safety designee will identify and correct any potential fire hazards.
- Work will be performed in compliance with National Fire Protection Association (NFPA) 241 requirements.
- Combustibles, such as wooden waste crates, will be separated from Buildings 788 and other facilities by an appropriate distance based on evaluation by the project and Contractor health and safety and fire protection representatives (per NFPA 241 Table 2-1 1).
- Portable generators will not be allowed within Building 788 when operating nor will they be located near a building whereby exhaust may enter a building. Additionally, these engines are to be shut down and allowed to cool prior to refueling.
- All flammable and combustible liquids and gases will be stored in accordance with HSP 32 01. Fuel for equipment will be brought on site as necessary; no on-site fuel storage is anticipated.
- The work site will have a strict no smoking policy.
- The work site will have fire extinguishers suitable for the classes of fire expected both inside Building 788 and around the work site. Access to the work site by the RFETS Fire Department will be kept clear. Fire watch workers will be trained in fire extinguisher use.
- A Hot Work Permit per RFETS Health and Safety Practices (HSP) 31 10 will be required in all situations involving hot work.

#### **5.5. Asbestos**

Non-frable ACM will be encountered on this project. Roof shingles have been identified as containing ACM and will be removed from the T788A trailer porches prior to moving the trailer. The asbestos has been identified as brown roofing tar shingles approximately 100 ft<sup>2</sup>.

Removal shall be in compliance with 29 CFR 1926.1101. Work practices for siding and shingles do not permit cutting, abrading, or breaking. Spraying with amended water will be done prior to removal. The shingles will be left on the supporting plywood structure, and the panels will be lowered via hand if possible, or by forklift and immediately bagged/wrapped in two independent 6-mil poly liners. If necessary, for placement in the appropriate container, it may be necessary to cut the plywood structure (leaving the shingle material intact) and folding it over. Asbestos awareness training will be provided to personnel involved in T788A activities.

### **5.6. Lead Abatement**

Lead exposure above the permissible Exposure Limits (PEL) is not anticipated on this project, demolition will be performed with heavy equipment. No torch cutting, grinding, or welding on lead painted surfaces will occur without first stripping the paint off.

Demolition activities will be performed in accordance with 29 CFR 1926.62 requirements (Lead). Lead awareness training will be provided to all project personnel involved in demolition activities. Additional details regarding lead work are contained in the project SHP. Should employee lead exposure exceed PEL or demolition methods are used that could potentially result in lead exposure exceeding PEL, a Lead Abatement Plan will be developed for that activity.

If the Clarifier Ring can not be size reduced with the shear and mechanical cutting becomes necessary, an AHA will be conducted and paint removed from the unit.

### **5.7. Demolition Safety**

Demolition will be performed in compliance with 29 CFR 1926.850 – *Demolition*. After demolition on a building has started and prior to any personnel's re-entry into the demolition site, a competent person will perform an Engineering Survey. During demolition, continuing inspections by a competent person will be made to detect hazards resulting from weakened or deteriorated floors, walls, or lessened material. No employee will be permitted to work where hazards exist until corrected by shoring, bracing or other means.

All gas, electric, water, sewer, and other service lines will be shut off, capped or otherwise controlled outside the building line prior to starting demolition work. Workers will not be allowed into any demolition area that can be adversely impacted by demolition work. Only workers involved in demolition activities will be permitted into the demolition work area at any time.

## **6. REGULATORY AND ENVIRONMENTAL CONSIDERATIONS**

### **6.1. Regulatory Considerations**

The Building 788 Cluster RCRA Closure Project requires closure of both a RCRA permitted unit and a RCRA Interim Status Unit. The final closure of the affected RCRA units will be conducted per the requirements of the RFETS RCRA Permit (June 30, 1987) and the RCRA Closure Description Document for this facility.

#### **6.1.1. Demolition Notification**

Regulatory notification requirements for demolition notification will be met by submitting the required Colorado Demolition Notification approval form.

### **6.2. Environmental Considerations**

By following this DP, including the use of dust and stormwater run-on/run-off controls, impacts on the surrounding environmental setting will be limited. Decommissioning and decontamination (D&D) work is not likely to result in discernable adverse impacts on the surrounding environment and wildlife based on the Project's National Environmental Policy Act (NEPA) Checklist review. The site is not located within a floodplain and the work will not be affected by or in turn affect any floodplain(s) and no wild/scenic rivers are present.

#### **6.2.1. Fugitive Dust Control**

Fugitive dust emissions from operations or from natural causes will be stabilized and/or controlled by use of one or more of the following methods, as applicable and practical.

- Use of water for dust control Due to the presence of radiological contamination this method will be used minimally Surfactants may also be used to “crust” over earthen surface to minimize fugitive dust
- Curtailing dust-producing activities during high wind conditions (i.e., gusty wind conditions or when the wind speed equals or exceeds 35 mph)
- Cover loads of materials, debris, and waste materials stored at the job-site, and for transported loads
- Minimize material drop heights during dumping, loading, unloading, and material transfer operations
- Contaminated equipment/structure(s) will be either (1) removed and properly packaged or (2) treated using fixative as noted elsewhere in the DP to help control the release of contaminated dust during demolition activities
- Throughout the duration of project field activities, work areas will be monitored as needed to assess the need for increasing, adjusting or changing dust control measures

### 6.2.2. Stormwater Control

Any removable contamination detected will be decontaminated or sprayed with a fixative prior to demolition Fixed contamination will be controlled with a fixative to prevent it from becoming loose As previously indicated minimal amounts of water will be used to control fugitive dust during demolition, consequently no run-off from this source is expected Stormwater-related run-off will be controlled through the use of standard construction industry accepted Best Management Practices (BMP) that are applicable to the specific D&D activities anticipated for this project BMP, consisting of physical, structural, and/or managerial practices used singly or in combination, will be used in conjunction with demolition-, loading/unloading- and waste storage areas having the potential to contaminate stormwater. BMP's include

- Stormwater run-off control through the use of current stormwater control structures.
- Practice of erosion control through minimum soil disturbance practices and silt fencing
- Placing contaminated waste materials in appropriate waste containers (covered)
- Storing and managing construction materials in covered areas to prevent contact with stormwater (where feasible)

Monitoring of the subcontractor's equipment on the site will also be performed to ensure that equipment fluid leaks are detected as early as possible This will assure that there will be no significant spills for the duration of the project

### 6.2.3. Asbestos

An assessment of the site indicates the presence of a de minimis amount (approximately 100 ft<sup>2</sup>) of Category I Nonfriable ACM in the form of brown tar roof shingles on the porch of Trailer T788A The project is exempt from notification, permitting, and training requirements since the total nonfriable ACM is less than the regulated threshold quantity of asbestos-containing materials in any amount greater than 260 linear feet on pipes, 160 square feet on other surfaces, or the volume equivalent of one 55-gallon drum per Colorado Regulations 5 Code of Colorado Regulations (CCR) 1001-10, Section III(B)(1) and Section III(C)(1)(a)(i) A secondary exemption from asbestos regulation also exists for roofing materials consisting of tar impregnated roofing felts, asphalt tiles, asphalt's and mastics that are non-friable and will remain nonfriable during abatement per 5 CCR 1001-10 Section III(C)(3)(c)(i)

### 6.2.4. Radiation Monitoring

Based on AQM's evaluation of radionuclide contamination information and surface area measurements that were provided by Site personnel, the effective dose equivalent to the most

impacted member of the public resulting from radionuclide emissions from demolition was estimated to be  $2.7 \times 10^{-4}$  mrem per year. This value is below the 0.1 mrem per year monitoring threshold mandated in 40 CFR 61, Subpart H. AQM has determined the existing Site Radioactive Ambient Air Monitoring Program (RAAMP) sampler network will be sufficient for use for ambient air monitoring during the Building 788 demolition and enhanced radionuclide ambient air monitoring will not be necessary. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Thirty-one samplers comprise the RAAMP network. RAAMP monitors located at the Site perimeter and from one on-site sampler are collected and analyzed monthly for uranium, plutonium, and americium isotopes.

## 7. WASTE MANAGEMENT

The purpose of this section is to identify the projected types and amounts of material (both equipment and demolition waste) expected to be generated during Building 788 Cluster Demolition work. Anticipated wastes resulting from demolition work include radioactive, mixed, hazardous, and solid wastes. Detailed waste management practices including characterization, storage, and disposal requirements are provided in the Building 788 Cluster Demolition specific WMP dated December 1998. All wastes generated during project-related activities will be collected and stored in compliance with pertinent RFETS Waste Management Procedures, applicable Waste Acceptance Criteria (WAC), Waste Generating Instructions (WGI), and federal and state regulations as outlined in the Building 788 Cluster RCRA Closure WMP.

Waste management roles and responsibilities are specifically discussed in the Building 788 Cluster Demolition WMP. Waste characterization and temporary storage of waste is the responsibility of the Contractor. The Contractor also maintains the responsibility for arranging waste transportation, disposal, and for the preparation and signing of waste-related documentation (shipping manifests/papers, Property/Waste Release Evaluation forms, etc.). The Demolition Subcontractor is responsible for arranging transportation and treatment (recycling) of all LLW metal at the Contractor designated recycling facility - GTS Duratek. The Contractor retains the responsibility for signing manifests associated with this waste stream.

### 7.1. Management Strategy

The guiding principle for managing Building 788 Cluster Demolition waste is to evaluate the required generation and waste management practices on an area-by-area basis. Waste materials will generally be segregated at the time of generation. Existing RFETS Waste Management Program/Procedures will be followed to ensure that waste is generated, packaged, and surveyed to meet the final disposal sites WAC. Waste will be transferred to storage units on-site until it is certified. Waste profiles to the Nevada Test Site (NTS) are in place, and the profiles to Envirocare of Utah, Inc., are currently under development as secondary waste to the Pond Sludge and associated Debris Profiles.

Process knowledge, analytical data, and site hazard assessment characterization are the primary means used for the identification of these wastes and excess materials. The D&D WSRIC Book will be used to document characterization of project waste (i.e., Item Description Codes (IDC) and Waste Form Codes (WFC)) as this information is necessary for proper characterization and preparation for radioactive and hazardous waste packaging and certification. Project waste will be characterized and disposed of in accordance with the RCRA Closure Description Document. Characterization and sampling requirements are defined in the Building 788 Site Hazard Assessment Plan (RF/RMRS-98-249).

All waste will follow a similar flow for disposition. Before waste is generated, it must be identified and characterized using established methods and documentation. Whenever possible, waste material is segregated for reuse or recycle. The waste is then prepared for packaging.

**7.2. Building WSRIC**

The D&D Waste Stream Residue Identification and Characterization (WSRIC) Book will be used to document waste characterization during D&D work. The Book describes the waste streams and provides characterization information. The WSRIC Books are controlled under the WSRIC Characterization and Reverification Procedure (4-H19-WSRIC-001). At project completion, the Building 788 WSRIC Book will be revised by the Contractor to include Process 2. This process contains information on all waste generated during D&D. The Building 788 WSRIC Book will then be closed-out.

**7.3. Waste Minimization**

Waste minimization will be used in the planning, generation, and management of demolition-related waste generation. Waste minimization will be achieved through the use of standard segregation, reuse, and substitution practices that are incorporated into daily project activities. Elimination and reduction of waste generated as a result of demolition is of high priority. Standard decontamination practices will be evaluated for waste minimization potential, and suitable waste minimization techniques will be implemented during project activities. If the cost to decontaminate a particular item is greater than the cost to dispose of it, then it will be disposed of as a waste.

Opportunities for waste minimization through recycle metal melt will greatly reduce the quantity of waste being generated by the project. The majority of metal items that will be generated will be shipped to the GTS Duratek facility to be recycled as usable product.

