Site Closure Plan/Post-Removal Site Control and Implementation Plan

For:

Camp Minden M6 Destruction

Camp Minden
1600 Java Road
Minden, Louisiana 71055-7924

Preparation Date: 01 Jun 2017

Revision 1: 7 November 2017

Revision 2: 16 January 2018

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

Closure Plan

Acronym	Description
ARAR	Applicable, Relevant, and Appropriate Requirements
BGS	Below Ground Surface
CBC	Contained Burn Chamber
CBI	Clean Burning Ignitor
CBS	Contained Burn System
CEMS	Continuous Emission Monitoring System
EPA	Environmental Protection Agency
EWI	Explosives Waste Incinerator
FIBC	Flexible Intermediate Bulk Container
HCOC	Hazardous Constituents of Concern
LAAP	Louisiana Army Ammunition Plant
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LMD	Louisiana Military Department
MSA	Material Staging Area
P&A	Plugging and Abandoment
PAS	Pollution Abatement System
PQL	Project Quantitation Limit
RCRA	Resource Conservation and Recovery Act
RECAP	Risk Evaluation/Corrective Action Program
RSL	Regional Screening Level
SCR	Selective Catalytic Reduction
TTC	Thermal Treatment Chamber
QAQC	Quality Assurance/Quality Control

1.0 EXECUTIVE SUMMARY

This *Site Closure Plan/Post-Removal Site Control and Implementation Plan*, hereafter referred to as "Closure Plan", has been developed to include procedures for closure of the M-6 Destruction Project at the Camp Minden National Guard Training Site (site) in Webster and Bossier Parishes, Louisiana. Figure 1 shows the location of the site within the State of Louisiana. Figure 2 presents the Camp Minden – Area I – Destruction Site and the significant features. This plan addresses Items 6, 7, and 8 of the 08 June 2015 list of Applicable, Relevant, and Appropriate Requirements (ARAR) for the site and was prepared in accordance with the requirements of 40 CFR 264.111. As described in the following sections, the site will be closed in a manner that minimizes the need for further maintenance by removal of all waste residues generated during operation. Also, post-closure escape of hazardous waste or hazardous constituents is being eliminated by removal of contaminated materials prior to closure. If the facility is unable to attain "clean closure", an amended Closure and Post-Closure Plan will be submitted for approval.

Sampling methods, detection methods, analytical methods, and disposal methods are several items included in this Closure Plan provided to be consistent with plans previously approved by the Environmental Protection Agency (EPA) and/or Louisiana Department of Environmental Quality (LDEQ). These plans include the Quality Assurance Project Plan (QAPP) and the Waste Management Plan (WMP) dated November 2015. These plans are included as Attachment A and Attachment B, respectively. The QAPP includes the Quality Assurance Sample Plan for Soil and Water (Soil/Water QASP) dated September 2015 as Appendix A and the Initial Acceptance Testing and Post-Acceptance Air QASP (Air QASP) dated October 2015 as Appendix C.

2.0 BACKGROUND

2.1 LOCATION

Camp Minden is formerly known as the Louisiana Army Ammunition Plant (LAAP). LAAP was established in 1942; the primary function was to load, assemble, and pack munitions, and manufacture ammunition metal parts. The Camp Minden Property is now under the control of the Louisiana Military Department (LMD) and serves as a training base of the LMD and Louisiana National Guard.

2.2 FACILITY DESCRIPTION

The project involved removal of the hazardous materials at or in connection with the abandoned Explo Systems, Inc. site (Explo Site). These hazardous materials included approximately 15,687,247 pounds of M6 propellant and approximately 320,890 pounds of Clean Burning Ignitor (CBI) that were abandoned at the Explo Site. Ninety (90) magazines were filled with M6 propellant and other explosive materials. A magazine is an earth covered structure built to store ammunition and explosives. The propellant and other explosive materials were stored or packaged in cardboard boxes, fiber drums, and flexible intermediate bulk containers (FIBC, also known as supersacks).

Project activities included removal of propellant materials (M6 and CBI) from the magazines, on-site destruction of the materials by thermal treatment in a Contained Burn System (CBS), and off-site disposal or recycle/reuse of any remaining inert residual ash materials and inert related packaging materials.

M6 propellant and CBI are Hazard Division 1.3 materials and are classified as toxic through dermal absorption, ingestion, and inhalation. The M6 propellant is a mixture of nitrocellulose, dinitrotoluene, dibutylphthalate, and diphenylamine. This mixture, primarily due to the nitrocellulose, is extremely reactive and is characteristic hazardous waste, D003, as defined by LAC 33:V.4903.D. Dinitrotoluene and dibutylphthalate are listed as hazardous substances with reportable quantities for unauthorized discharges (40 CFR 302.4, incorporated by reference in LAC 33:I.3927).

Activities were initiated on 13 May 2016 and concluded on 12 April 2017 with a total of 15,682,874 pounds of explosive materials successfully destroyed.

2.3 OPERATION

Explosive materials were placed within the contained burn chamber (CBC), also designated as the thermal treatment chamber (TTC), on burn trays and combusted at temperatures >1900^{o}F for complete destruction. Exhaust gases from the TTC were drawn through the pollution abatement system (PAS) and out the stack by an induced draft fan. Maximum throughput of propellant waste was approximately 2,649 lb/hr or 63,360 lb/day. A process flow diagram is included as Figure 3.

2.4 WASTE STREAMS

During operation of the facility, several waste streams were generated. As described below, all waste materials were properly characterized for disposal. No hazardous wastes were generated during the active life of the facility. Further details (including manifests, bills of lading, quantity and types) will be included in the final project report to be submitted in conformance with 40 CFR 300.165 by the LMD contractor.

2.4.1 Pollution Abatement System Ash

In accordance with the WMP, all ash collected from the PAS (Figure 3) was collected into appropriate containers for subsequent characterization and disposal. Ash was collected from the after burner, cyclone separator and associated ductwork, and the bag house. All ash from the PAS was sampled, analyzed, characterized as industrial solid waste (Attachment C), and properly transported off-site for disposal/recycle/reuse at White Oak's Landfill in West Monroe.

2.4.2 Containers

The propellant and other explosive materials were stored or packaged in cardboard boxes, fiber drums, and flexible intermediate bulk containers (FIBC, also known as supersacks). During operations, all wastes were removed from the containers in compliance with LAC 33:V.109 and 49 CFR 171.8 such that the containers were considered "empty" and could therefore be disposed as industrial solid waste. Details of the container handling were included in Section 5.0 of the WMP.. A letter of authorization, dated 15 April 2016, was submitted by the Environmental Protection Agency (EPA) to Republic Services confirming that the empty containers could be disposed as industrial solid waste (Attachment D).

All containers were emptied, profiled as industrial solid waste, and disposed off-site at the Republic Landfill in Webster Parish and White Oak's Landfill in West Monroe. No containers remain on-site.

2.4.3 Stormwater

During operation, stormwater in the sump near the CBC was visually inspected for sheen and suspended solids. If no sheen or suspended solids were present, the stormwater was pumped to the onsite ditch;

otherwise, the stormwater was containerized and sent offsite. During operation, no contamination in the stormwater was present and all stormwater was pumped to the onsite ditch.

3.0 WASTE STREAMS GENERATED OR HANDLED DURING CLOSURE

During closure, several additional waste streams are anticipated to be generated and/or handled. These wastes will be sampled and properly characterized for disposal as discussed below. Any analytical results will be included in the Final Closure Report. If any unexpected waste streams are generated, they will be handled in accordance with the WMP and included in the Final Closure Report.

3.1 THERMAL TREATMENT CHAMBER ASH

M6 and CBI propellant were destroyed on-site by thermal treatment in the CBC. In accordance with the WMP, a sample of ash from the CBC was collected and analyzed for hazardous waste characterization. All results were below regulatory limits (Attachment E). The ash will be placed in appropriate containers for off-site disposal/recycle/reuse as an industrial solid waste. Based on analysis, the ash is intended to be profiled for disposal as industrial solid waste at a properly permitted landfill such as White Oak's Landfill in West Monroe. Details of the final disposition of the ash will be included in the Final Closure Report.

3.2 COOLING WATER

A closed-loop cooling water system was used to lower the temperature of the shelf prior to placement of a loaded burn tray of propellant entering the TTC. This water shall be analyzed for hazardous waste characterization and properly disposed. A representative sample will be tested for all contaminants listed in LAC 33:V.Chapter 49.Table 5 in accordance with LAC 33:V.4903.E.1 and the results compared to the corresponding regulatory level. Should the sample contain any contaminants at the concentration equal to or greater than the respective value, the water shall be deemed hazardous. Based on the results, the water will be properly disposed. Analyses of the cooling water and a description of final disposal will be included in the Final Closure Report.

3.3 HEPA FILTERS

HEPA filters, located downstream of the bag house, will be removed from the PAS. The filters contain residue of PAS ash which has been analyzed and characterized as industrial solid waste. The filters will be properly transported off-site for disposal as industrial solid waste at a properly permitted landfill such as White Oak's Landfill in West Monroe. Details of the final disposition of the HEPA filters will be included in the Final Closure Report.

3.4 STORMWATER

Any stormwater at the site and/or generated during closure will be visually inspected for sheen and suspended solids. If no sheen or suspended solids are present, the stormwater will be pumped to the onsite ditch; otherwise, the stormwater will be containerized for offsite disposal.

3.5 DECONTAMINATION WATER AND RINSATE

Water used for decontamination and rinsate during the closure process will be collected. Upon completion of closure activities, a representative sample will be tested for ignitability, reactivity, and corrosivity. Also, the representative sample will be analyzed for all contaminants listed in LAC 33:V.Chapter 49.Table 5 in accordance with LAC 33:V.4903.E.1 and the results compared to the corresponding regulatory level. Should the sample contain any contaminants at the concentration equal to or greater than the respective value, the water shall be deemed hazardous. Based on the results, the water will be properly disposed.

3.6 AQUA AMMONIA

Aqua ammonia was stored on-site in a 10,000 gallon tank for use in the PAS. The ammonia was used for selective catalytic reduction (SCR) of the CBC vent stream prior to venting to the atmosphere. Approximately 4,000 gallons of ammonia remain on-site at the conclusion of the destruction activities. Upon removal from the tank, the ammonia will be handled in accordance with LAC 33:V.1103-1107 as a hazardous waste (D002). The ammonia will be transported by an EPA-approved transporter, accompanied by a RCRA manifest, to an EPA-approved disposal facility.

4.0 FACILITY CLOSURE

In accordance with 40 CFR 264.112 and 40 CFR 264.178, facilities which came into direct contact with explosive materials will be properly decontaminated to remove hazardous waste residues, or removed from the site. Equipment will be inspected prior to shipment offsite to confirm that it is free of process residuals and suitable for transport.

4.1 PROPERTY RESTORATION AND SYSTEM REMOVAL

During operation, rigorous procedures were put in place to ensure that there were no spills of explosive materials during handling. The materials were stored in the Material Staging Area (MSA) prior to being transported to the CBS for destruction. The MSA and CBS are covered areas with impervious (concrete) surfaces and no spills of explosive materials were recorded. Camp Minden Training Site would use the concrete and crushed rock areas as future training areas, storage, and maintenance areas. After all equipment has been removed, confirmation sampling of the MSA slab, CBS slab, and CBC sump will be used to determine whether the areas are clean. First, the areas will be visually inspected for contamination. Thereafter, the MSA slab, CBS slab, and CBC sump will be cleaned using a pressure washer. On the MSA slab, berms will be used to channel the water from the slab to a collection area. A sample of the water will be collected for analysis. At the CBS slab, the water from the slab will be directed to the trolley trench and a sample collected for analysis. The CBC sump will also be cleaned and a sample collected of the water. The three (3) samples will be analyzed in accordance with Section 4.3.4. Areas that do not meet the clean standards will be subjected to decontamination until the applicable standard is met.

The CBS components, including the TTC, PAS, CBC sump, and trolley trench, will be visually inspected for contamination. All equipment that handled CBC ash or PAS ash will be decontaminated by removing ash residue. Since all CBC and PAS ash residue is non-hazardous, collection of rinsate sample for verification of decontamination is not necessary. If explosive materials are identified during visual inspection, decontamination of the aforementioned areas and/or equipment will be conducted as described in Section 4.3.

All decontamination efforts will be documented in the Final Closure Report. Facility closure has been designed to ensure that all hazardous wastes and hazardous waste residues will be removed from the site.

The following will be removed from the site by LMD or its transferee:

- Equipment and appurtenances of the CBS (including TTC, autoclave door, trolley loading system, PAS, spare parts, burn trays, instrumentation, continuous emission monitoring system (CEMS), and wiring);
- Temporary control room trailer; and
- Vertical sump wall around aqueous ammonia tank (after ammonia has been removed).

The following will remain on site:

- MSA building and concrete pad;
- CBS concrete pad;
- Crushed concrete access roads;
- In-ground septic system;
- Lighting and poles;
- Power lines, transformers, breakers and any other power related equipment; and
- Natural gas line and meter.

The CBC sump (10’ x 30’) and trolley trench will be filled with dirt and covered with aggregate to grade by LMD or its transferee.

4.2 TANK REMOVAL

4.2.1 Aqua Ammonia Tank

Tank systems shall be closed in accordance with 40 CFR 264.197. After the ammonia is removed from the tank, the tank shall be triple rinsed and removed from the site. Rinsate will be containerized and handled as discussed in Section 3.5.

4.2.2 Fuel Tanks

Two (2) above ground storage tanks were used to store diesel and gasoline during operation. All fuel will be removed from the tanks during closure and the tanks will be subsequently removed from the site during closure.

4.3 DECONTAMINATION

4.3.1 Equipment

In accordance with 40 CFR 264.112 and 40 CFR 264.178, equipment which came into direct contact with explosive materials will be properly decontaminated to remove hazardous waste residues, or removed from the facility. These include:

- Tools (including rakes, scoops, shovels);
- Weighing scales; and
- Center-flow hoppers.

4.3.2 Decontamination Procedure

Equipment shall be sprayed with Liquinox (or equivalent solution) and triple rinsed to remove all residue. The equipment shall be decontaminated on an impervious surface such that washwaters and rinsewaters shall be collected. These waters will be combined and collected in appropriate containers for characterization and disposal. Verification of the decontamination process will be performed by rinsing the equipment with a minimum amount of deionized water, collecting the final rinsate, and sampling and testing the rinsate to determine whether the individual equipment meets the decontamination standards. Equipment that does not meet the decontamination standards will be subjected to additional decontamination until the equipment meets the decontamination standards.

4.3.3 Burn Trays

In addition to the above equipment, ten (10) burn trays were used for loading the explosive materials into the CBC for treatment. The explosive materials were completely combusted in the CBC, thus decontaminating the equipment. To verify that the burn trays meet decontamination standards, each tray shall be rinsed with a minimum amount of deionized water and the rinsate sampled and tested. Burn trays that do not meet the decontamination standards will be subjected to additional decontamination until it meets the decontamination standards. Thereafter, the burn trays will be removed from the site by LMD or its transferee.

4.3.4 Decontamination Standards

Rinsate samples will be analyzed for the following:

PARAMETER	MATRIX	METHOD
Nitroaromatics and Nitramines	Water	EPA8330B
RECAP VOCs	Water	EPA8260C
RECAP SVOCs (and di-n-butylpthalate, and diphenylamine)	Water	EPA8270D

All constituents shall be below non-detect at or below the Project Quantitation Limits (PQL) for surface water designated in Table 1. These PQLs are consistent with Tables 5 and 6 of the Soil/Water QASP which is included as Appendix A of the QAPP (Attachment A). If all other constituents are below the PQLs/non-detect, but the detection limit of one or more constituents is above the PQL, the contractor may propose, based on process knowledge, that the equipment has been properly decontaminated. All laboratories utilized to analyze samples required by this Closure Plan will be provided project quantitation limits PQLs and every effort will be made to meet the limits.

5.0 ENVIRONMENTAL ASSESSMENT

Prior to commencement of on-site activities, an environmental assessment was conducted to collect baseline data. To complete closure, an environmental assessment shall be conducted as discussed in the sections below to demonstrate restoration of the site to original conditions.

Field QA/QC samples will be collected by the field sampling team during the collection of soil and/or water samples to ensure QA/QC standards are attained. QA/QC samples will be collected in accordance with Section 6.0 of the Soil/Water QASP. Soil and water sample locations, collection methods, constituents, analytical methods, and screening levels will be consistent with the QAPP, Soil/Water QASP and LMD baseline assessments. Table 1 is a compilation of screening levels and PQLs from the Soil/Water QASP.

5.1 AIR MONITORING

During the active life of the facility, a CEMS monitored stack emissions from the PAS. Also, four (4) air stations were positioned to monitor emissions from the CBS within the community. Stations were located upwind of the system, downwind from the system, at the property boundary, and within the community. All air monitoring was conducted in accordance with the *Initial Acceptance Testing and Post-Acceptance Air QASP* (Air QASP) dated October 2015 (Appendix C of the QAPP). There were no recorded releases from the destruction/removal actions during the project.

5.2 AIR SAMPLING

A *Community Air Sampling Plan for Post-Removal* is included as Attachment F. The sampling plan is designed to demonstrate that the CBS operations did not pose an increased human-health or environment risk and that the CBS operations were sufficient for removing hazardous chemicals in the environment. Upon completion of the demonstration, the portable air stations will be removed from their locations.

5.3 GROUNDWATER

5.3.1 Sampling

In accordance with Section 5.1.3 of the Soil/Water QASP, dated September 2015, one (1) groundwater sample will be collected and analyzed from each of the six (6) perimeter monitoring wells (MW-1 through MW-6) to evaluate groundwater conditions at the site for closure.

Groundwater samples will be analyzed for the following:

PARAMETER	MATRIX	METHOD
Nitroaromatics and Nitramines	Water	EPA8330B
RECAP VOCs	Water	EPA8260C
RECAP SVOCs (and di-n-butylpthalate, and diphenylamine)	Water	EPA8270D

Based on analytical results, further actions may be taken, as necessary, as described in Section 6.0.

5.3.2 Plugging and Abandonment

If all confirmatory samples are below assessment limits, a plan for plugging and abandonment (P&A) of the six (6) monitoring wells will be submitted to EPA and LDEQ for approval. The plan shall state that P&A activities shall be performed in accordance with the *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems Handbook*, dated December 2000. After approval, these procedures will be followed during P&A activities. A report of the P&A activities will be submitted to EPA and LDEQ as well as submission of Water Well Plugging and Abandonment Forms (DNR-GW-2) to the Louisiana Department of Natural Resources (LDNR). All P&A activities will be performed by a licensed Louisiana Water Well Contractor. The P&A activities will include:

- Removal of concrete pad, guard posts, and protective casings at each monitoring well;
- An attempt will be made to pull the well casing at each monitoring well. If the casing cannot be removed, the casing will be cut below grade and left in place;
- The monitoring system and/or borehole shall be filled completely with bentonite-grout slurry by pumping via tremie pipe into the borehole from the bottom; and
- The borehole will be filled with grout to the ground surface.

5.4 SURFACE WATER SAMPLING

In accordance with Section 5.2.1 of the Soil/Water QASP, three (3) surface water samples shall be collected from Clarkes Bayou. Sample locations include the point of discharge, upstream of the site, and downstream of the site.

Surface water samples collected shall be analyzed for the following:

PARAMETER	MATRIX	METHOD
RECAP VOCs	Water	EPA8260C
RECAP SVOCs (and di-n-butylpthalate, and diphenylamine)	Water	EPA8270D

Based on analytical results, further actions may be taken, as necessary, as described in Section 6.0.

5.5 SEDIMENT SAMPLING

In accordance with Section 5.2.2 of the Soil/Water QASP, three (3) sediment samples shall be collected from Clarkes Bayou. Sample locations include the point of discharge, upstream of the site, and downstream of the site. The sediment samples shall be collected after the surface water sample at the corresponding location.

Sediment samples will be analyzed for the following:

PARAMETER	MATRIX	METHOD
RECAP VOCs	Sediment	EPA8260C
RECAP SVOCs (and di-n-butylpthalate, and diphenylamine)	Sediment	EPA8270D

Based on analytical results, further actions may be taken, as necessary, as described in Section 6.0.

5.6 SOIL SAMPLING

5.6.1 On-Site Soil

On-site soil sampling shall be conducted as described in Section 5.1.1 of the Soil/Water QASP. Thirty-four (34) soil samples shall be collected from the same locations identified during the Baseline Sampling Event of August 2015; provided that locations may be field adjusted, as necessary, should site conditions (such as concrete pads or obstruction) prevent collection of the sample from the same location. Also, one (1) sample, designated E6.5, shall be moved from the Baseline Sampling Event location and collected from an alternate location as shown in Figure 4. During the Baseline Sampling Event, sample E6.5 was collected from the anticipated location of the diesel and gasoline tanks. During site construction, the tanks were placed at an alternate location than originally designated. Therefore, sample E6.5 will be collected from the area between the final location of the diesel and gasoline tanks.

The locations of the 35 soil samples are identified on Figure 4.

The 35 Area I on-site surface soil samples collected will be analyzed for the following:

PARAMETER	MATRIX	METHOD
Nitroaromatics and Nitramines	Soil	EPA8330B
RECAP VOCs	Soil	EPA8260C
RECAP SVOCs (and di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D

Four (4) of the Area I on-site surface soil samples will be analyzed for additional parameters. Sample locations will include: CBS; the former location of the explosives waste incinerator (EWI); the former location of the incinerator; and the location between the diesel and gasoline tanks. These four (4) Area I on-site surface soil samples will be analyzed for the following additional parameters:

PARAMETER	MATRIX	METHOD
Nitrocellulose	Soil	EPA353.2 Modified
RCRA Metals	Soil	6020A/7471B
Dioxins/Furans	Soil	1613B

Sample E6.5, collected from the area between the final location of the diesel and gasoline tanks, will be further subjected to analysis for the following additional parameters:

PARAMETER	MATRIX	METHOD
Gasoline Range Organics	Soil	8015B
Diesel Range Organics	Soil	8015B

Based on analytical results, further actions may be taken, as necessary, as described in Section 6.0.

5.6.2 Community Soil

Community soil sampling shall be conducted as described in Section 5.3 of the Soil/Water QASP. A single grab soil sample shall be collected from the surface soil (0 to 1" below ground surface) at each air monitoring location.

Community soil samples collected will be analyzed for the following constituents identified in the *USEPA's Baseline Quality Assurance Sampling Plan*:

Parameter	Matrix	Method
RECAP VOCs	Soil	EPA8260C
RECAP SVOCs (and di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D
RCRA Metals	Soil	6020A/7471B

Based on analytical results, further actions may be taken, as necessary, as described in Section 6.0.

6.0 ENVIRONMENTAL ASSESSMENT ACTION LEVELS

The data from the Environmental Assessment activities shall be compared to the limits of the hazardous constituents of concern (HCOC) to determine whether further actions are necessary to restore the site to original conditions. For soils, all metals of concern shall be compared to data from the Baseline Sample Events conducted in August 2015. All other data from the Environmental Assessment activities shall be compared to screening levels for the HCOC established using the Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) document dated October 2003, and the USEPA Regional Screening Level (RSL) Summary Table revised June 2015. These screening levels are summarized in Table 1.

Should any samples exceed the corresponding HCOC limit, a plan shall be submitted for further action to identify, quantify, and address the contamination as necessary.

7.0 CERTIFICATION OF CLOSURE

Within 60 days of completion of final closure, a Final Closure Report will be provided to the EPA and LDEQ for review, including certification by LMD or their designee and a qualified Professional Engineer, that the facility has been closed in accordance with the specifications of the Closure Plan. The Final Report will include:

- Results of testing (wastes, soil, surface water, ground water, rinsate, stormwater, and decon water) during closure;
- Comparison of analytical results to action levels;
- Descriptions of actions taken during closure; and
- Quantities and types of materials removed off-site during closure as well as final disposition of the materials.

TABLES

TABLE 1
HAZARDOUS CONSTITUENTS OF CONCERN
SITE CLOSURE PLAN/POST-REMOVAL SITE CONTROL AND IMPLEMENTATION PLAN
CAMP MINDEN – AREA I

Constituent	SURFACE WATER		ON-SITE SURFACE SOIL		GROUNDWATER		SEDIMENT		COMMUNITY SOIL	
	Screening Level (ug/L)	PQL (ug/L)	Screening Level (ug/kg)	PQL (ug/kg)	Screening Level (ug/L)	PQL (ug/L)	Screening Level (ug/kg)	PQL (ug/kg)	Screening Level (ug/kg)	PQL (ug/kg)
Volatiles										
Acetone	100	20.0	1,500	20.0	100	20.0	1,500	20.0	1,500	20.0
Benzene	5	5.00	51	5.00	5	5.00	51	5.00	51	5.00
Bromoform	100	5.00	1,800	5.00	100	5.00	1,800	5.00	1,800	5.00
Bromodichloromethane	100	5.00	920	5.00	100	5.00	920	5.00	920	5.00
Bromomethane	10	10.0	40	10.0	10	10.0	40	10.0	40	10.0
2-Butanone (methyl ethyl ketone)	190	20.0	5,000	20.0	190	20.0	5,000	20.0	5,000	20.0
Carbon disulfide	100	5.00	11,000	5.00	100	5.00	11,000	5.00	11,000	5.00
Carbon tetrachloride	5	5.00	110	5.00	5	5.00	110	5.00	110	5.00
Chlorobenzene	100	5.00	3,000	5.00	100	5.00	3,000	5.00	3,000	5.00
Dibromochloromethane (chlorodibromomethane)	100	5.00	1,000	5.00	100	5.00	1,000	5.00	1,000	5.00
Chloroethane	10	10.0	35	10.0	10	10.0	35	10.0	35	10.0
Chloroform	100	5.00	300	5.00	100	5.00	44	5.00	44	5.00
Chloromethane	10	10.0	100	10.0	10	10.0	100	10.0	100	10.0
1,2-Dibromo-3-chloropropane	0.2	10.0	10	10.0	0.2	10.0	10	10.0	10	10.0
1,1-Dichloroethane	81	5.00	7,500	5.00	81	5.00	7,500	5.00	7,500	5.00
1,2-Dichloroethane	5	5.00	35	5.00	5	5.00	35	5.00	35	5.00
cis-1,2-Dichloroethene	70	5.00	490	5.00	70	5.00	490	5.00	490	5.00
trans-1,2-Dichloroethene	100	5.00	770	5.00	100	5.00	770	5.00	770	5.00
1,1-Dichloroethene	7	5.00	85	5.00	7	5.00	85	5.00	85	5.00
1,2-Dichloropropane	5	5.00	42	5.00	5	5.00	42	5.00	42	5.00
1,3-Dichloropropene, Total	5	10.0	40	10.0	5	10.0	40	10.0	40	10.0
Ethyl benzene	700	5.00	19,000	5.00	700	5.00	19,000	5.00	19,000	5.00
Hexachlorobutadiene	0.73	5.00	5,500	5.00	0.73	5.00	820	5.00	820	5.00
Isobutylalcohol	1100	200	30,000	200	1100	200	30,000	200	30,000	200
Methylene Chloride	5	5.00	17	5.00	5	5.00	17	5.00	17	5.00
4-Methyl-2-pentanone (methyl isobutyl ketone)	200	20.0	6,400	20.0	200	20.0	6,400	20.0	6,400	20.0
Methyl tert-butyl ether (MTBE)	20	5.00	77	5.00	20	5.00	77	5.00	77	5.00
Trichlorofluoromethane	130	5.00	37,000	5.00	130	5.00	37,000	5.00	37,000	5.00
Trichloroethene	5	5.00	73	5.00	5	5.00	73	5.00	73	5.00
1,1,1-Trichloroethane	200	5.00	4,000	5.00	200	5.00	4,000	5.00	4,000	5.00
Vinyl Chloride	2	5.00	13	5.00	2	5.00	13	5.00	13	5.00
Xylenes (total)	10,000	5.00	120,000	5.00	10,000	5.00	18,000	5.00	18,000	5.00
1,1,1,2-Tetrachloroethane	5	5.00	46	5.00	5	5.00	46	5.00	46	5.00
1,1,2,2-Tetrachloroethane	0.5	5.00	6	5.00	0.5	5.00	6	5.00	6	5.00
1,1,2-Trichloroethane	5	5.00	58	5.00	5	5.00	58	5.00	58	5.00
Styrene	100	5.00	11,000	5.00	100	5.00	11,000	5.00	11,000	5.00
Tetrachloroethene (tetrachloroethylene)	5	5.00	180	5.00	5	5.00	180	5.00	180	5.00
Toluene	1000	5.00	20,000	5.00	1000	5.00	20,000	5.00	20,000	5.00

Constituent	SURFACE WATER		ON-SITE SURFACE SOIL		GROUNDWATER		SEDIMENT		COMMUNITY SOIL	
	Screening Level (ug/L)	PQL (ug/L)	Screening Level (ug/kg)	PQL (ug/kg)	Screening Level (ug/L)	PQL (ug/L)	Screening Level (ug/kg)	PQL (ug/kg)	Screening Level (ug/kg)	PQL (ug/kg)
SEMI-VOLATILES										
1,1 Biphenyl	30	10.0	190,000	330	30	10.0	190,000	330	190,000	330
1,2,4,5-Tetrachlorobenzene	1.1	10.0	6,900	330	1.1	10.0	1,200	330	1,200	330
1,2,4-Trichlorobenzene	70	10.0	14,000	330	70	10.0	14,000	330	14,000	330
1,2-Dichlorobenzene	600	10.0	29,000	330	600	10.0	29,000	330	29,000	330
1,3-Dichlorobenzene	10	10.0	2,100	330	10	10.0	2,100	330	2,100	330
1,3-Dinitrobenzene	10	10.0	250	330	10	10.0	250	330	250	330
1,4-Dichlorobenzene	75	10.0	5,700	330	75	10.0	5,700	330	5,700	330
Bis(2-chlorisopropyl)ether	5.7	10.0	800	330	5.7	10.0	800	330	800	330
2,3,4,6-Tetrachlorophenol	110	50.0	31,000	1600	110	50.0	31,000	1600	31,000	1600
2,4,5-Trichlorophenol	370	10.0	320,000	330	370	10.0	320,000	330	320,000	330
2,4,6-Trichlorophenol	10	10.0	1,300	330	10	10.0	1,300	330	1,300	330
2,4-Dichlorophenol	11	10.0	12,000	330	11	10.0	12,000	330	12,000	330
2,4-Dimethylphenol	73	10.0	20,000	330	73	10.0	20,000	330	20,000	330
2,4-Dinitrophenol	50	50.0	1,700	1600	50	50.0	1,700	1600	1,700	1600
2,4-Dinitrotoluene	10	10.0	1,000	330	10	10.0	1,000	330	1,000	330
2,6-Dinitrotoluene	10	10.0	390	330	10	10.0	390	330	390	330
2-Chloronaphthalene	49	10.0	500,000	330	49	10.0	500,000	330	500,000	330
2-Chlorophenol	10	10.0	1,400	330	10	10.0	1,400	330	1,400	330
2-Methylnaphthalene	0.62	10.0	1,700	330	0.62	10.0	1,700	330	1,700	330
2-Nitroaniline	50	10.0	1,700	330	50	10.0	1,700	330	1,700	330
3,3-Dichlorobenzidine	20	50.0	1,800	1600	20	50.0	970	1600	970	1600
3-Nitroaniline	50	10.0	1,700	330	50	10.0	1,700	330	1,700	330
4-Nitroaniline	50	10.0	1,700	1600	50	10.0	1,700	1600	1,700	1600
4-Nitrophenol	50	10.0	2,600	1600	50	10.0	2,600	1600	2,600	1600
Acenaphthene	37	10.0	220,000	330	37	10.0	220,000	330	220,000	330
Acenaphthylene	100	10.0	88,000	330	100	10.0	88,000	330	88,000	330
Aniline	12	10.0	65	330	12	10.0	65	330	65	330
Anthracene	43	10.0	120,000	330	43	10.0	120,000	330	120,000	330
Benz(a)anthracene	7.8	10.0	2,900	330	7.8	10.0	620	330	620	330
Benzo(a)pyrene	0.2	10.0	330	330	0.2	10.0	330	330	330	330
Benzo(b)fluoranthene	4.8	10.0	2,900	330	4.8	10.0	620	330	620	330
Benzo(k)fluoranthene	2.5	10.0	29,000	330	2.5	10.0	6,200	330	6,200	330
Bis(2-chloroethyl)ether	5.7	10.0	330	330	5.7	10.0	330	330	330	330
Bis(2-ethylhexyl)phthalate	6	10.0	79,000	330	6	10.0	35,000	330	35,000	330
Butyl benzyl phthalate	730	10.0	220,000	330	730	10.0	220,000	330	220,000	330
Chrysene	1.6	10.0	76,000	330	1.6	10.0	62,000	330	62,000	330
Di-n-octyl phthalate	20	10.0	3,500,000	330	20	10.0	240,000	330	240,000	330
Dibenz(a,h)anthracene	2.5	10.0	330	330	2.5	10.0	330	330	330	330

Constituent	SURFACE WATER		ON-SITE SURFACE SOIL		GROUNDWATER		SEDIMENT		COMMUNITY SOIL	
	Screening Level (ug/L)	PQL (ug/L)	Screening Level (ug/kg)	PQL (ug/kg)	Screening Level (ug/L)	PQL (ug/L)	Screening Level (ug/kg)	PQL (ug/kg)	Screening Level (ug/kg)	PQL (ug/kg)
Dibenzofuran	10	10.0	24,000	330	10	10.0	24,000	330	24,000	330
Diethyl phthalate	2900	10.0	360,000	330	2900	10.0	360,000	330	360,000	330
Dimethyl phthalate	37000	10.0	1,500,000	330	37000	10.0	1,500,000	330	1,500,000	330
Fluoranthene	150	10.0	1,200,000	330	150	10.0	220,000	330	220,000	330
Fluorene	24	10.0	230,000	330	24	10.0	230,000	330	230,000	330
Hexachlorobutadiene	0.73	10.0	5,500	330	0.73	10.0	820	330	820	330
Hexachlorobenzene	1	10.0	2,000	330	1	10.0	340	330	340	330
Hexachlorocyclopentadiene	50	10.0	9,400	1600	50	10.0	1,400	1600	1,400	1600
Hexachloroethane	10	10.0	2,200	330	10	10.0	2,200	330	2,200	330
Indeno(1,2,3-cd)pyrene	3.7	10.0	2,900	330	3.7	10.0	620	330	620	330
Isophorone	70	10.0	560	330	70	10.0	560	330	560	330
N-Nitrosodi-n-propylamine	10	10.0	330	330	10	10.0	330	330	330	330
N-Nitrosodiphenylamine	14	10.0	2,100	330	14	10.0	2,100	330	2,100	330
Naphthalene	10	10.0	1,500	330	10	10.0	1,500	330	1,500	330
Nitrobenzene	1.9	10.0	330	330	1.9	10.0	330	330	330	330
Pentachlorophenol	1	10.0	1,700	660	1	10.0	1,700	660	1,700	660
Phenanthrene	180	10.0	660,000	330	180	10.0	660,000	330	660,000	330
Phenol	180	10.0	11,000	330	180	10.0	11,000	330	11,000	330
Pyrene	18	10.0	1,100,000	330	18	10.0	230,000	330	230,000	330
Di-n-butyl phthalate[2]	90	10.0	8,200,000	330	90	10.0	630,000	330	630,000	330
Diphenylamine[2]	130	10.0	8,200,000	330	1,300	10.0	630,000	330	630,000	330
RCRA Metals										
Arsenic	NA	NA	bg[3]	1.00	NA	NA	NA	NA	bg[3]	1.000
Barium	NA	NA	bg[3]	2.00	NA	NA	NA	NA	bg[3]	2.000
Cadmium	NA	NA	bg[3]	0.0500	NA	NA	NA	NA	bg[3]	0.050
Chromium	NA	NA	bg[3]	1.00	NA	NA	NA	NA	bg[3]	1.000
Lead	NA	NA	bg[3]	0.300	NA	NA	NA	NA	bg[3]	0.300
Mercury	NA	NA	bg[3]	0.0330	NA	NA	NA	NA	bg[3]	0.033
Selenium	NA	NA	bg[3]	0.500	NA	NA	NA	NA	bg[3]	0.500
Silver	NA	NA	bg[3]	0.200	NA	NA	NA	NA	bg[3]	0.200
Additional Constituents										
Nitrocellulose[2]	NA	NA	1.90E+10	5.00	NA	NA	NA	NA	NA	NA
Diesel Range Organics [C10-C28]	NA	NA	65	25	NA	NA	NA	NA	NA	NA
Gasoline Range Organics [C6-C12]	NA	NA	65	0.100	NA	NA	NA	NA	NA	NA

1 Unless indicated otherwise, the most conservative LDEQ RECAP Screening Standard (dated October 2003) was determined as the Screening Level when available.

2 Taken from the EPA Regional Screening Level (RSL) Summary Table (TR = 1E-06, THQ = 0.1) November 2017 (revised). The EPA RSL for residential soil (sediment and community soil), industrial soil (on-site soil), or tapwater, as appropriate, was determined as the Screening Level.

3 bg -- Sample results will be compared to background data collected during the Baseline Sampling Event.

Constituent	ONSITE SURFACE SOIL Screening Level	ONSITE SURFACE SOIL PQL	GROUNDWATER Screening Level	GROUNDWATER PQL
Nitroaromatics and Nitramines[4]	**(ug/kg)**	**(ug/kg)**	**(ug/L)**	**(ug/L)**
1,3,5-Trinitrobenzene	140,000	250	59	0.200
1,3-Dinitrobenzene	8,200	250	0.2	0.200
2,4,6-Trinitrotoluene	51,000	250	0.98	0.200
2-Amino-4,6-dinitrotoluene	23,000	250	3.9	0.200
2-Nitrotoluene	15,000	250	0.31	0.500
3-Nitrotoluene	8,200	250	0.17	0.200
4-Amino-2,6-dinitrotoluene	230,000	250	3.9	0.200
4-Nitrotoluene	140,000	250	4.3	0.500
HMX	5,700,000	250	100	0.200
Nitrobenzene	22,000	250	0.14	0.200
Nitroglycerin	8,200	1250	0.2	1.000
Pentaerythritol tetranitrate	160,000	2500	3.9	2.000
RDX	28,000	250	0.7	0.200
Tetryl	230,000	250	3.9	0.200
Dioxins/Furans[5]	**(pg/g)**	**(pg/g)**		
2,3,7,8-TCDD	22	1	NA	NA
2,3,7,8-TetraCDF	NP	1	NA	NA
1,2,3,7,8-PentaCDD	NP	5	NA	NA
1,2,3,7,8-PentaCDF	NP	5	NA	NA
2,3,4,7,8-PentaCDF	NP	5	NA	NA
1,2,3,4,7,8-HexaCDD	NP	5	NA	NA
1,2,3,6,7,8-HexaCDD	NP	5	NA	NA
1,2,3,7,8,9-HexaCDD	NP	5	NA	NA
1,2,3,4,7,8-HexaCDF	NP	5	NA	NA
1,2,3,6,7,8-HexaCDF	NP	5	NA	NA
1,2,3,7,8,9-HexaCDF	NP	5	NA	NA
2,3,4,6,7,8-HexaCDF	NP	5	NA	NA

	ONSITE SURFACE SOIL		GROUNDWATER	
Constituent	**Screening Level**	**PQL**	**Screening Level**	**PQL**
1,2,3,4,6,7,8-HeptaCDD	NP	5	NA	NA
1,2,3,4,6,7,8-HeptaCDF	NP	5	NA	NA
1,2,3,4,7,8,9-HeptaCDF	NP	5	NA	NA
OctaCDD	NP	10	NA	NA
OctaCDF	NP	10	NA	NA

4 Taken from the EPA Regional Screening Level (RSL) Summary Table (TR = 1E-06, THQ = 0.1) November 2017 (revised). The EPA RSL for industrial soil (on-site soil) or tapwater (groundwater) was determined as the Screening Level.

5 The USEPA, RSL Summary Table (TR = 1E-06, THQ = 0.1) November 2017 (revised). The USEPA, RSL for industrial soil was determined as the Screening Level for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). The 2005 World Hospital Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors (TEFs) for Dioxins and Dioxin like compounds will be used to calculate the total TCDD Toxic Equivalent (TEQ) in each medium. Total TEQs will be compared to the Screening Level for TCDD.

6 2,4-Dinitrotoluene and 2,6-Dinitrotoluene shall be analyzed as Semi-Volatiles only and are not included in the Nitroaromatics and Nitramines analysis.

Abbreviations:

ug/kg = micrograms per killograms
mg/kg = milligrams per killograms
pg/g = picogram per gram
RECAP = Risk Evaluation/Corrective Action Program
LDEQ = Louisiana Department of Environmental Quality
EPA = Environmental Protection Agency
NA = Not Analyzed. Sample is not subject to the indicated analysis.
NP = Not Published

FIGURES

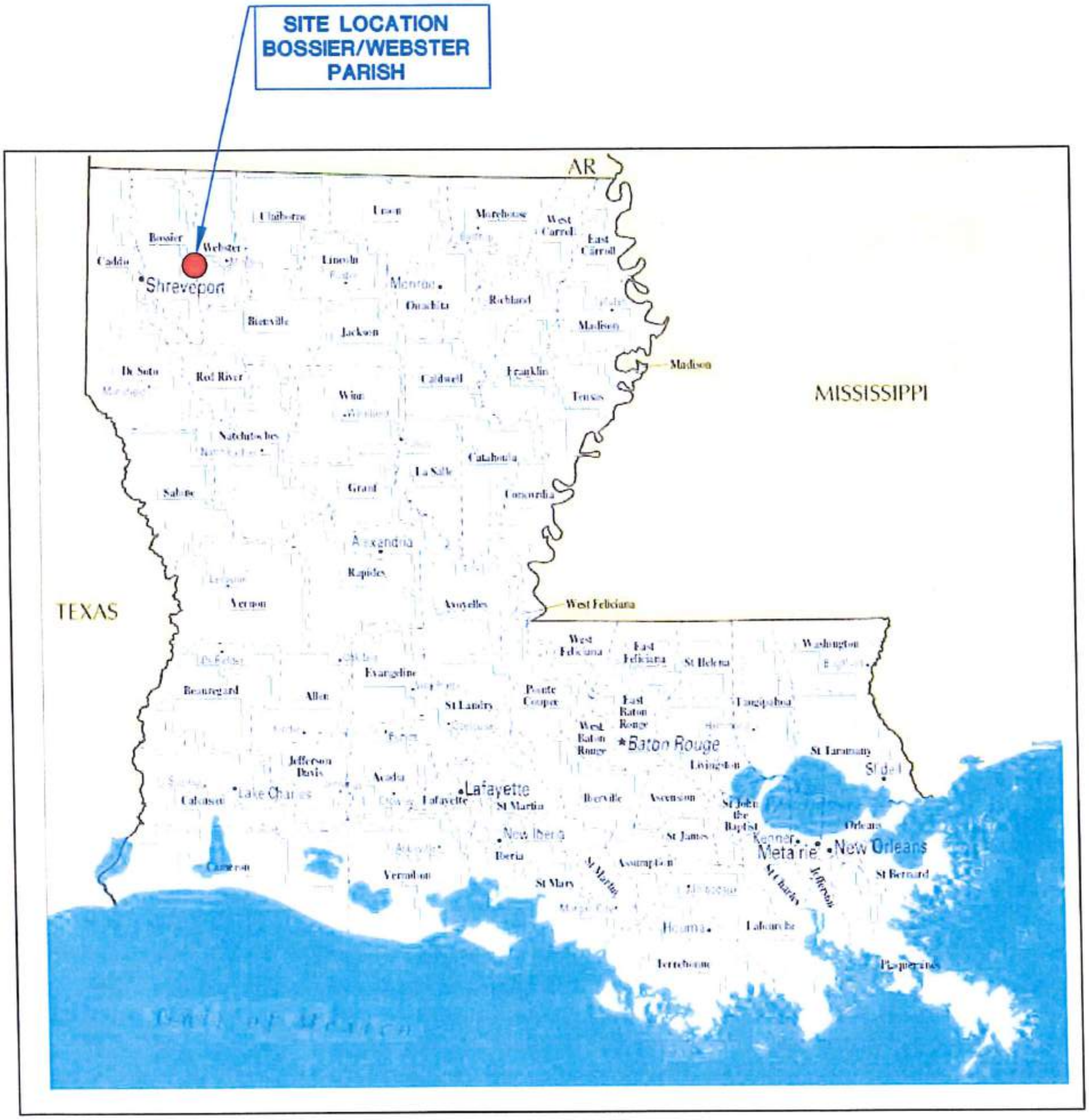


FIGURE 1

REGIONAL LOCATION MAP

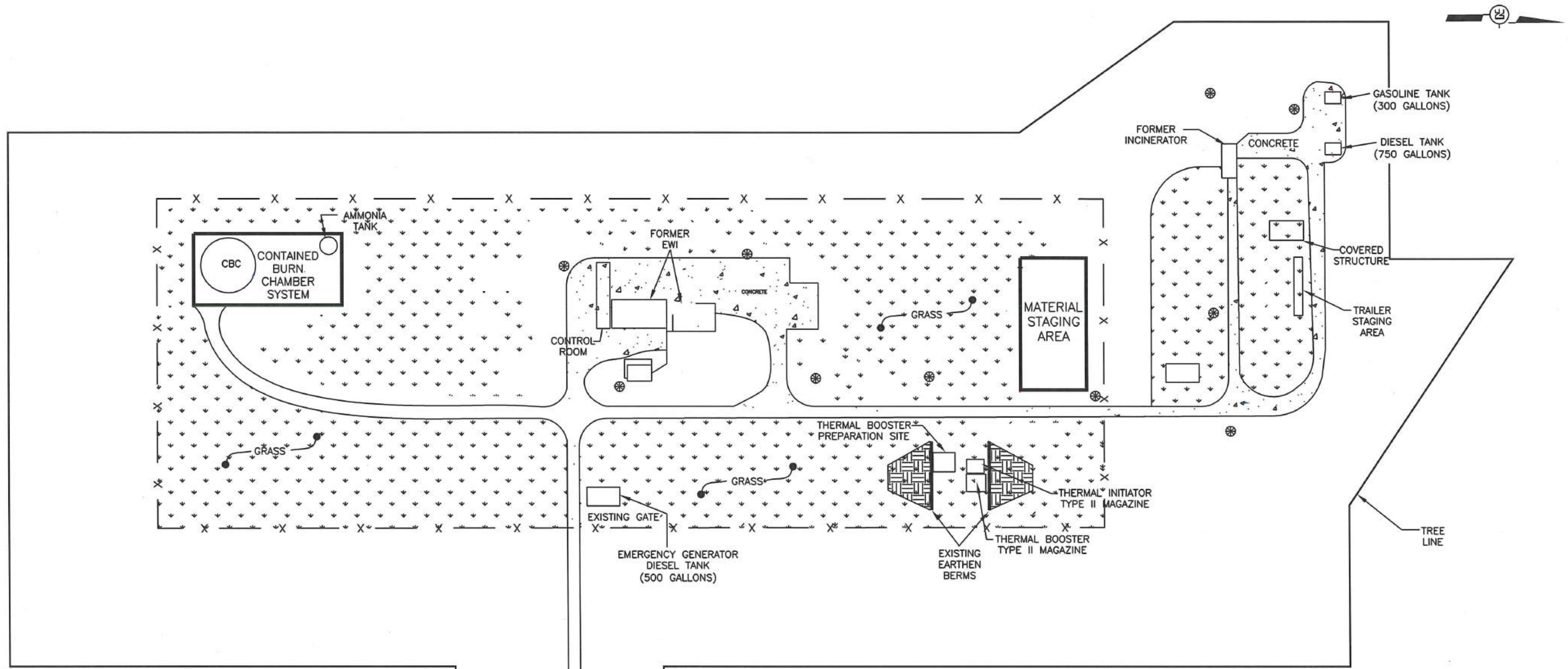
CAMP MINDEN – AREA I
DESTRUCTION SITE

PREPARED FOR:

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY	LDG	CHECKED BY	MG	DRAWING NO.
	07/09/15	APPROVED BY		SWPPP/REGIONAL



LEGEND

EWI	EXPLOSIVE WASTE INCINERATOR
⊛	UTILITY POLE
— X —	EXISTING PERIMETER FENCE
	GRASS WITHIN DISPOSAL SITE AREA

NOTE:
THIS FIGURE WAS MODIFIED TO INCORPORATE CHANGES MADE TO THE BASE MAP.

APPROXIMATE SCALE IN FEET
100 0 100

FIGURE 2
SITE PLAN

CAMP MINDEN – AREA I DESTRUCTION SITE

PREPARED FOR:
EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY	LDG 05/17/17	CHECKED BY	DRAWING NO. CLOSURE/003
		APPROVED BY	

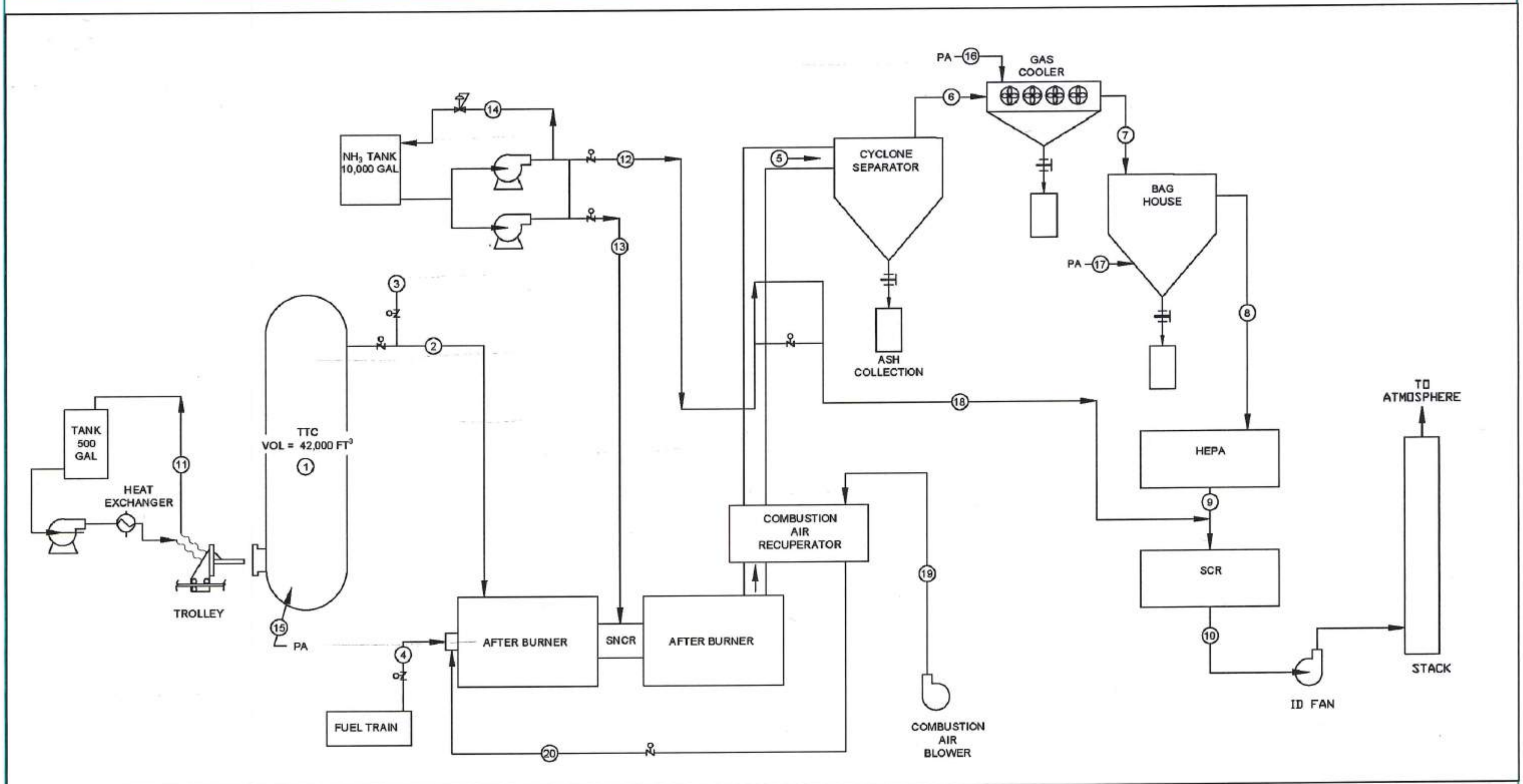


FIGURE 3

PROCESS FLOW DIAGRAM

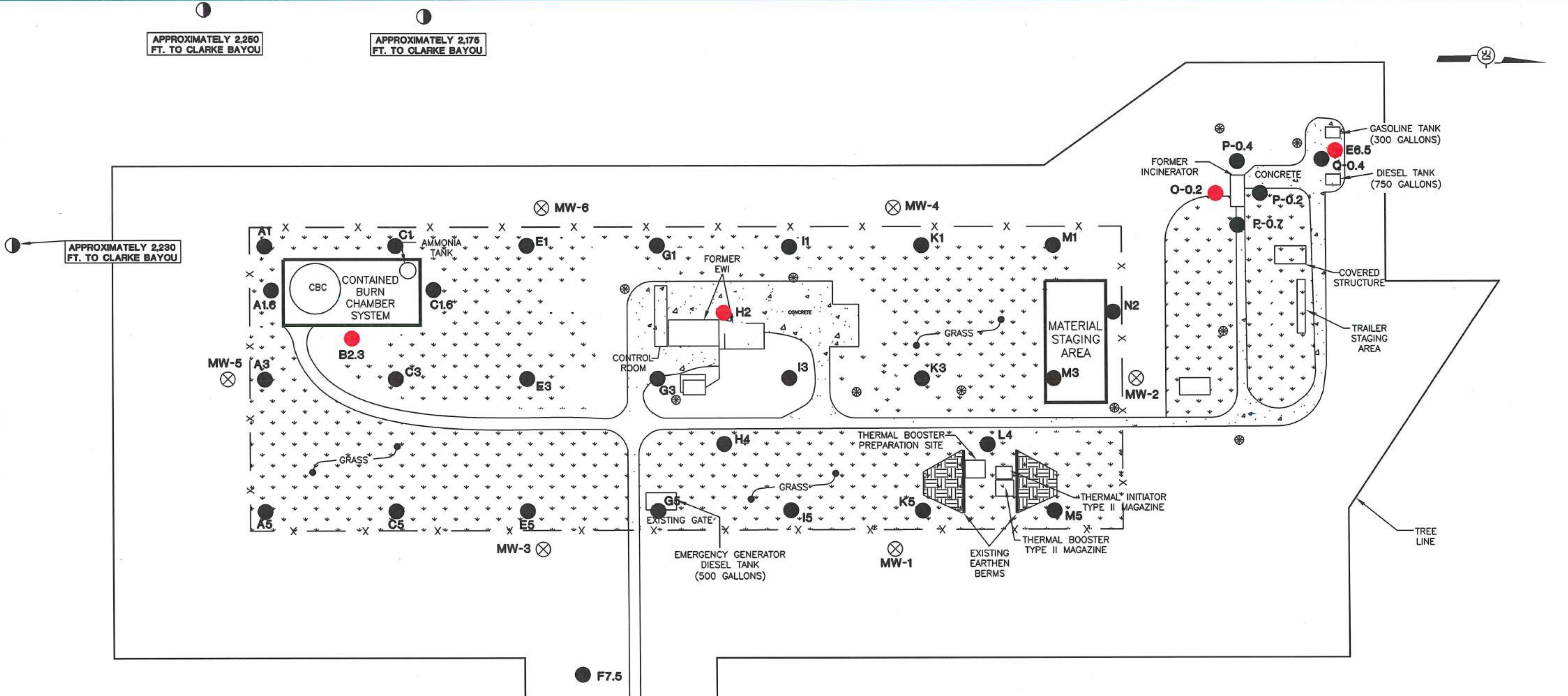
CAMP MINDEN – AREA I DESTRUCTION SITE

PREPARED FOR:

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY:	LDG	CHECKED BY		DRAWING NO.
	05/17/17	APPROVED BY		CLOSURE/002



LEGEND

EWI	EXPLOSIVE WASTE INCINERATOR
⊛	UTILITY POLE
— X —	EXISTING PERIMETER FENCE
	GRASS WITHIN DISPOSAL SITE AREA
●	SURFACE SOIL SAMPLE
● (red)	SURFACE SOIL SAMPLE LOCATIONS ANALYZED FOR ADDITIONAL PARAMETERS
⊗	GROUNDWATER SAMPLE LOCATION
◑	SURFACE WATER AND SEDIMENT SAMPLE LOCATION
FT–BGS	FEET BELOW GROUND SURFACE

NOTES:

1) SAMPLE E6.5 WAS RELOCATED FROM THE BASELINE SAMPLING EVENT LOCATION TO THE VICINITY OF THE FUEL TANKS.

APPROXIMATE SCALE IN FEET

100 0 100

FIGURE 4

SAMPLE LOCATION MAP

CAMP MINDEN – AREA I DESTRUCTION SITE

PREPARED FOR:

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY	LDG 05/17/17	CHECKED BY	DRAWING NO.
		APPROVED BY	CLOSURE/001

ATTACHMENT A

QUALITY ASSURANCE PROJECT PLAN

Quality Assurance Project Plan

Contained Burn Chamber

For:

Camp Minden M6 Destruction
Camp Minden
1600 Java Road
Minden, Louisiana 71055-7924

Prepared By:

Explosive Service International

9985 Baringer Foreman Road
Baton Rouge, Louisiana 70809
Phone 225-275-2152
Fax 225-273-2029

Preparation Date:

September 2015

Revision 5

SUMMARY OF REVISED DOCUMENTS

The approved Quality Assurance Sample Plan (QASP) submitted 14 July 2015 (Revision 5) has been revised to reflect the organizational changes to the projects Quality Assurance Project Plan (QAPP) per the 4 August 2015 telephone conference. The QAPP has been restructured as a general document supporting the QASPs, which are included as Appendix A, B, and C. Appendix A includes an Executive Summary that outlines the revisions to the approved QASP. The revised QASP for Soil and Water and the approved QASP dated 14 July 2015 are included in Appendix A.

Quality Assurance Project Plan Signature Page

Camp Minden – Area I
1600 Java Road
Minden, Louisiana 71055-7924

Hazardous Materials Removal and Disposal Service for the Military Department
State of Louisiana

Management
Review: ____ ________________
Dean Schellhase, ESI Project Manager Date

Management
Review: ____ ________________
Matthew Salinger, Quality Assurance/Quality Control Manager Date

U.S. EPA: ____ ________________
U.S. EPA Representative Date

Louisiana Military
Department: ____ ________________
Louisiana Military Department Representative Date

Distribution List:

Billy Poe	ESI Program Manager
W Jason Poe	ESI Project Manager
Dean Schellhase	ESI Project Manager
Matthew Salinger	EQ Response Manager/QA/QC Manager
COL (Ret) Ronnie Stuckey	Louisiana Military Department
Greg Fife	USEPA OSC

Table of Contents

List of Appendices

Quality Assurance Project Plan

Acronym	Description
CBI	Clean Burning Igniter
CAR	Corrective Action Report
COC	Chain-of-Custody
DQO	Data Quality Objective
ESI	Explosive Service International
EQ	Environmental Quality Management
RECAP	Risk Evaluation/Corrective Action Program
LCS/LCSD	Laboratory Control Sample and Duplicate
MS/MSD	Matrix Spike and Matrix Spike Duplicate
NIST	National Institute of Standards and Technology
NTEP	National Type Evaluation Program
QA	Quality Assurance
QC	Quality Control
QAPP	Quality Assurance Project Plan
QASP	Quality Assurance Sampling Plan
SEMS	Southern Environmental Management and Specialties
SOP	Standard Operating Procedures
T&D	Transportation and Disposal
USEPA	United States Environmental Protection Agency

1.0 Introduction

This Explosive Service International (ESI) Quality Assurance Project Plan (QAPP) supplements the contract plans and specifications for the Hazardous Materials Removal and Disposal Service for the Military Department, State of Louisiana (Military Department) in regards to the M6 Destruction Site (Explo) located on the Camp Minden National Guard Training Site in Minden, Louisiana. The QAPP is a general document supporting the Quality Assurance Sampling Plans (QASPs), which are included as Appendix A, B, and C. More detailed information regarding quality assurance (QA) methods and techniques is described in the attached QASPs.

This QAPP provides reference to the samples that ESI will collect during removal and disposal activities, how the samples will be analyzed, and how the results will be evaluated. The QAPP also defines quality assurance (QA) and Quality Control (QC) measures that will be applied to ensure that the data obtained are of the type and quality needed to meet project objectives. The QAPP follows the United States Environmental Protection Agency (USEPA) Requirements for Quality Assurance Project Plans (QA/R5)" (EPA/240/B-01/003, March 2001, reissued May 2006), "Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/240/R-02/009, December 2002).

2.0 Project Organization

Destructive activities managed under the EPA administration order will be conducted at the Camp Minden – Area I Destruction Site. The Explo Site and background to the site is further summarized in the following section.

2.1 Problem

Explo was located on the Camp Minden National Guard Training Site. Camp Minden is also an industrial park. Approximately 15,687,247 pounds of M6 propellant and approximately 320,890 pounds of Clean Burning Igniter (CBI) were abandoned at the Explo Site. Ninety-seven (97) magazines are filled with M6 propellant and other explosive materials. Some of the magazines were loaded by Explo while it was operating, while other magazines were filled to capacity by Explo as directed after the improper storage was discovered. Some of the M6 propellant was stacked outside for an undetermined period of time. The propellant and other explosive materials are stored and packaged within multiple configurations, including 60-pound cardboard boxes, 100/140-pound fiber drums, and primarily 880-pound super sacks, which were over packed into cardboard boxes. The storage of explosive material in magazines is not in accordance with the Department of Defense standards and requires handling techniques not standard for classical munitions technicians. The primary materials to be addressed are the M6 and the CBI.

Short-term and long-term measures being addressed with this QAPP include the removal and destruction of the propellant materials currently stored in magazines on base, and the assessment and restoration of the Camp Minden – Area I Destruction Site to the condition it was received by ESI to complete the removal and destruction work. A layout of the site and the surrounding areas is provided in the attached QASPs.

2.2 Site Remedy

The remedy is to properly remove, handle, and destroy the material. The material will be removed from present packaging and moved to a controlled burn area where the material will be systematically and safely burned as final destruction. Resulting waste (ash, packaging, storage pallets) will be characterized and profiled for destruction/reuse/recycling and then properly removed from the site for final disposition.

2.3 Project and Task Description

The primary purpose of the sampling and analysis that ESI will conduct is to obtain data needed to support the tasks involved in the removal and destruction of the improperly stored material.

The ESI Team will complete the following tasks while implementing the QAPP:

- Conduct a pre M6 destruction environmental site investigation to determine site closeout and restoration of the site.
    - Collect and analyze soil and groundwater samples from the Camp Minden – Area I Destruction Site area prior to construction of a burn pad.
    - Collect and analyze surface water and sediment samples from Clarkes Bayou prior to construction of a burn pad.
    - Collect and analyze soil samples at four (4) community air stations.
- Construct a burn pad for the proper and controlled destruction of the propellant material.
- Collect and analyze groundwater from six (6) monitoring wells quarterly.
- Collect and analyze air samples at four (4) community air stations semi-annually.
- Systematically remove propellant materials, and prepare materials for destruction. Preparation of this material includes the removal of the material from all packaging and destruction as described in the site Work Plan.
- Destroy all M6 propellant and CBI material systematically.
- Complete removal of all M6 propellant and CBI material from all designated magazines. Complete final cleaning and inspection of the magazines. Return the magazine to the control of the Louisiana Military Department representatives.
- Dispose of material packaged that will not be destroyed at the site.
- Inspect and recycle cardboard packaging.
- Inspect and reuse storage pallets.
- Remove burn pad and all construction material.
- Conduct a post M6 destruction environmental site investigation and determine site closeout and restoration of the site.
    - Collect and analyze soil and groundwater samples as the final sampling of the Camp Minden – Area I Destruction Site.
    - Collect and analyze surface water and sediment samples from Clarke Bayou as the final sample of the project.
    - Collect and analyze soil samples at four (4) community air stations.
- Return the site to conditions as established from the pre environmental site investigation upon completion of the M6 Destruction Project.
- Provide USEPA and Military Department with complete copies of laboratory reports for review.
- Work with USEPA and Military Department to resolve any issues concerning sample collection and laboratory analysis that may occur during implementation of this QAPP.
- Compile data obtained under this QAPP for inclusion in the final report for the Camp Minden – Area I Destruction Site.

2.4 Project Task Organization

The scope of work described will be performed by the ESI Team including Explosive Service International (ESI) as the prime contractor to the Military Department, State of Louisiana. ESI will be supported on all efforts of this project by Environmental Quality Management, Inc. (EQ) and Southern Environmental Management and Specialties (SEMS). As the prime contractor, ESI will be responsible for all aspects of the project and on-site management. This will include reporting, Health & Safety, removal and destruction of the propellant and igniter, offsite transportation and disposal (T&D) of waste materials that cannot be destroyed at the burn pad, and cost and schedule control. Ray Bell Construction will be responsible for site preparation. Construction and removal of the contained burn pad as well as restoration of the site will be performed by ESI. EQ will support ESI in all activities on site.

The Military Department will provide oversight of the ESI Team.

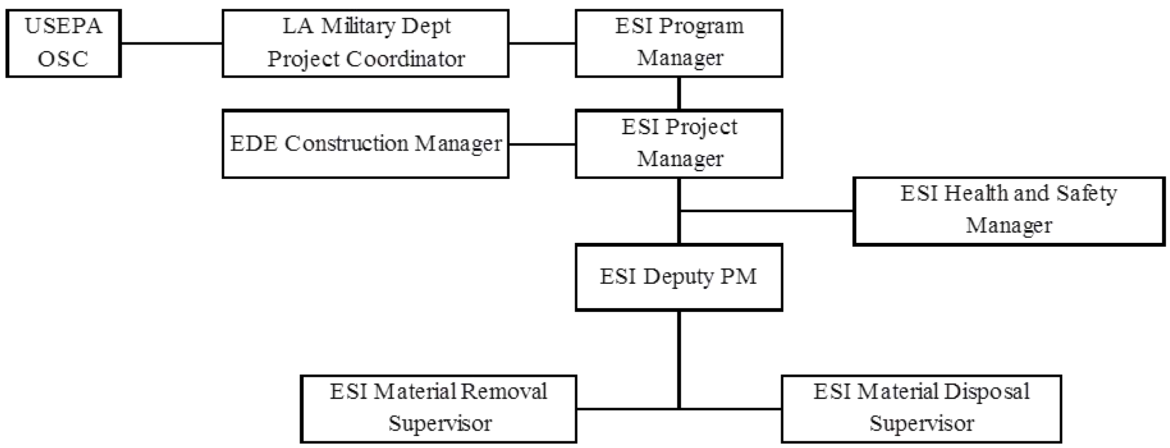
Table 1 presents the responsibilities and contact information for key personnel involved.

Table 1 Contact List

Company & Title	Name	Number	Email
ESI Project Manager	W. Jason Poe	225-275-2152	jpoe@explosiveserviceintl.com
ESI Deputy Project Manager	Dean Schellhase	225-275-2152	dean@explosiveserviceintl.com
EQ Response Manager/QAQC Manager	Matthew Salinger	713-502-6706	MatthewASalinger@aol.com
ESI H&S Officer	Kenyon Williams	918-841-7109	kenyonwilliams.safetypro@yahoo.com
Environmental Mgr.	Charles "Chuck" L. Ellis, Jr.	225-924-2002	cellis@semsinc.net
LA Military Dept	COL (Ret) Ronnie Stuckey	318-382-4139	ronnie.d.stuckey.nfg@mail.mil
USEPA OSC	Greg Fife	214-665-6773	Fife.Greg@epa.gov
LSP	Hotline	225-925-6595	N/A
LDEQ	Karen Price	225-936-8832	Karen.price2@la.gov

Figure 1 shows the organization and lines of authority of the LA Military Dept, USEPA and the ESI Team.

Figure 1 – ESI Site Organization and Lines of Authority



All site personnel are responsible for promptly reporting any environmental issue to the ESI Team Site Manager or designee. All Team personnel have "Stop Work" authority if an environmental issue is identified.

2.5 Quality Objectives and Criteria

The following sections discuss the Data Quality Objectives identified for the Camp Minden – Area I Destruction Site.

2.5.1 Data Quality Objectives

Data Quality Objectives (DQOs) are planned in accordance with Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) standards (dated October 2003) and the United States Environmental Protection Agency's (USEPA) Regional Screening Level (RSL) Summary Table (revised June 2015). Limits and evaluations are included in the appendices as follows: QASP for Soil & Water (Appendix A); QASP for Waste & CBC Feed Characterization (Appendix B); and QASP for Community Air Monitoring (Appendix C). All data analysis will meet or exceed the QA/QC requirements of LDEQ RECAP. Duplicate and MS/MSD samples will be collected at a frequency of 1 per 10 samples, except for air samples.

In order to determine post removal clean up effectiveness, environmental assessments will be conducted prior to commencement of onsite activities and upon project completion. The environmental assessments will not be conducted as RECAP investigations, but rather to obtain data for comparison of soil and water pre and post M6 Destruction activities to determine site closeout and restoration of the site. Upon project completion, confirmatory sampling will be conducted in the locations selected for the baseline sampling event and data will be compared to determine restoration of the site. Although screening levels are included in the QASP for Soil & Water, data from the baseline sample event will establish restoration of the site. Sample activities will be conducted in accordance with the QASP for Soil and Water included as Appendix A.

2.5.2 Measurement Quality Objectives

All analytical results will be evaluated in accordance with precision, accuracy, representativeness, completeness, and comparability parameters to document the data quality and to ensure that the data are of sufficient quality to meet the project objectives. Precision and accuracy will be evaluated quantitatively by collecting and analyzing the QC samples described below. References to specific control limits for QC samples are further discussed in Section 3.5. The sections below describe how each of the parameters that will be assessed within this project.

2.5.3 Precision

Laboratory analytical precision is evaluated by analyzing laboratory duplicates, matrix spikes and matrix spike duplicates (MS/MSD), or laboratory control samples and laboratory control sample duplicates (LCS/LCSD). For this project, environmental MS/MSD samples will be evaluated at a frequency of 1 per 10 samples in accordance with the published method. The results of the analysis of each MS/MSD and LCS/LCSD pair will be used to evaluate precision.

2.5.4 Accuracy

Accuracy is a measure of the agreement between a measurement and a known value. For this remedial action, accuracy will be determined by the recovery of spiked compounds including MS/MSDs, LCS, and surrogate standards. MS and MSD samples will be prepared and analyzed at a frequency of 1 per 10 samples for all chemical parameters. LCS will be analyzed at a frequency of one sample per analytical batch. Surrogate standards are added to each sample analyzed for PAHs. The results of the spiked samples are used to calculate the percent recovery for evaluating accuracy using the following equation:

$$\text{Percent Recovery} = \frac{S - C}{T}\ x\ 100\%$$

Where: S = Measured spiked sample concentration

C = Sample concentration

T = True or actual concentration of the spike

Results that fall outside the accuracy goals will be further evaluated on the basis of the results of other QC samples. Data provided by the laboratories will be considered sufficient for evaluating and making the determination of data accuracy.

2.5.5 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent the characteristics of a population, variations in a parameter at a sampling point, or an environmental condition that they are intended to represent. For this project, representative data will be obtained through proper collection and handling of samples to avoid interference and minimize contamination.

Data determined to be non-representative by comparison with existing data will be used only if accompanied by appropriate qualifiers and limits of uncertainty. Data provided by the laboratories will be considered sufficient for making the determination of data representativeness.

2.5.6 Completeness

Completeness is a measure of the percentage of project-specific data that are valid. Valid data are obtained when samples are collected and analyzed in accordance with QC procedures outlined in this QAPP and when the QC criteria that affect data usability are met. When all data validation is completed, the percent completeness will be calculated by dividing the number of useable sample results by the total number of sample results planned for this investigation.

2.5.7 Comparability

Comparability expresses the confidence with which one data set can be compared with another. Comparability of data for this project will be achieved by following standard field and laboratory procedures, and using standard measurement units in reporting analytical data.

2.5.8 Laboratory Reporting Limits

Reporting limits for chemical analysis are included in the attached QASPs.

2.6 Special Training and Certification

Handling of the M6 (propellant) and CBI (igniter) will require specialized training directly related to the position any one project member will have. ESI personnel who will be participating in on-site operations will have the following training and certifications:

- Personnel handling explosives will be licensed by Louisiana State Police as Explosives Handlers (8 hour course);
- Personnel responsible for initiating burns will have Louisiana State Police Explosive Blaster's license (16 hour course);
- DOD 4145.26-M - DOD Contractor's Safety Manual For Ammunition and Explosives; *
- DOD 5100.76 - Safeguarding Sensitive Conventional Arms, Ammunition, and Explosives (AA&E); *
- LAC Title 55 Chapter 15 – Public Safety – Explosives Code; *
- 49 CFR 172 Subpart A Through Subpart G – USDOT HAZMAT for purposes of transportation; *
- 27 CFR Part 555 - Bureau of Alcohol, Tobacco, Firearms, and Explosives - Commerce in Explosives; *
- LAC Title 33 Part V – Hazardous Waste; **
- 29 CFR 1910 – OHSA Occupational Safety and Health Standards; ** and
- Personnel operating forklifts and heavy equipment will have the appropriate licenses and certifications to operate the specified equipment (29CFR part 1926).

  *This training will be done by ESI Health & Safety Officer as part of a 16-hour course.

  **This training will be done by ESI Health & Safety Officer as part of an 8-hour course.

Sampling to be conducted for this project requires no specialized training or certification beyond the Occupational Safety and Health Administration (OSHA) training requirements defined in 29 Code of Federal Regulations (CFR) 1910.120(e). These requirements include:

- 40 hours of formal off-site instruction;

- Three (3) days of actual on-site field experience under the supervision of a trained and experienced field supervisor; and,
- 8 hours of annual refresher training.

All staff conducting sampling tasks will be trained. In addition to the required training; personnel conducting the sampling tasks outlined in the attached QASPs are qualified based on experience and field training. Similarly, laboratories have been selected based on experience and qualifications. Laboratory qualifications for performing tasks related to this QAPP and the attached QASPs can be found in Appendix D.

2.7 Documents and Records

Documentation is critical for evaluating the success of environmental and air data collection. The ESI QA/QC Manager is responsible for distribution of approved copies of the most recent revision of the QAPP and ensuring the appropriate QASP is respected.

The following sections discuss the requirements for documenting field activities and for preparing laboratory data packages. This section also describes reports that will be generated as a result of this project.

2.7.1 Field Documentation

Complete and accurate documentation is essential to demonstrate that field measurement and sampling procedures are carried out as described in the QAPP. Field personnel will use Site Activity Logs or PDA devices to record and document field data collection activities. The forms will list the project name and number, the site name, the names of subcontractors, the client, and the project manager. At a minimum, the following information will be recorded:

- Name and affiliation of all on-site personnel or visitors;
- Weather conditions during the field activity;
- Summary of daily activities and significant events;
- Locations of samples collected;
- Notes of conversations with coordinating officials;
- References to other field logs that contain specific information;
- Discussions of problems encountered and their resolution;
- Discussions of deviations from the QAPP or other governing documents; and
- Descriptions of photographs taken (if applicable).

Copies of field logs or data collection forms may be included with the reports that the ESI Team submits to the Military Department. Documents generated for this project will be archived in the ESI Team's project files. Field documentation generated under this QAPP will be included as needed to support the final report for the project.

2.7.2 Laboratory Documentation

Deliverable data packages will be generated by the subcontracted analytical laboratory as determined. Data packages should include a case narrative that provides documentation of any QC, sample handling, and analytical problems associated with the samples; corrective actions taken; and modifications to the project plans. Data packages will also include copies of chain-of-custody records; QC summaries of spike recovery, reporting limits, blank, and other results; and sample results on standard reporting forms. If warranted, the Military Department or USEPA may request that the laboratories provide raw data needed to reconstruct the analysis, such as chromatograms, mass spectra, and sample preparation logs.

2.7.3 Laboratory Data Packages

The ESI Team will provide copies of analytical data to the Military Department and USEPA electronically in pdf file format; as well as, real-time information on established project dashboard. Sample collection activities will be summarized in the daily and monthly progress reports as required by the RFP. Analytical data generated under this QAPP will be included in the final report.

3.0 Data Generation and Acquisition

QAPP elements related to sampling and analysis are as follows:

- Sampling Process Design and Methods:
- Sample Handling and Custody;
- Analytical Methods;
- Quality Control;
- Equipment Testing, Inspection, and Maintenance;
- Instrument Calibration and Frequency;
- Inspection and Acceptance of Supplies and Consumables;
- Non-direct Measurements; and
- Data Management.

3.1 Sampling Process Design and Methods

Sampling process design and methods for the project to be completed under this QAPP are included in the attached QASPs. The QASPs identify the types of samples to be collected, sampling locations, the number of samples for each sample type, and sampling equipment, if necessary. Common equipment and supplies that may be required during sampling activities pending field conditions include, but are not limited to the following:

- PPE including hard hat, safety glasses, steel toed shoes, and gloves;
- First aid kit;
- Stainless steel core sampler;
- Decontamination equipment and solutions;
- Rinse water containment barrel/ bucket;
- Field log forms and/or field logbook;
- Indelible pens and Sharpie® permanent markers;
- Sample labels;
- Sample containers (if sub sampling is conducted in the field);
- Cooler(s) and a supply of ice; and
- Chain-of-custody forms.

Split or duplicate environmental samples may be provided to the Military Department, USEPA and the State regulators, or their authorized representatives upon request. ESI will notify the Military Department, USEPA and the State regulators not less than seven (7) days in advance of any sample collection activity unless shorter notice is agreed to by the Military Department.

Additional information relative to sampling methods is included in the attached QASPs.

3.2 Sample Handling and Custody

Proper sample containers ensure that no chemical alteration occurs during the field sampling and transit to the laboratory. Containers will be pre-certified and shipped by the laboratories or commercial supplier. Air samples will have media that is not broken, sealed, and pre-cleaned by the lab. All samples will be packaged carefully to avoid breakage or contamination and will be shipped to the appropriate laboratory at proper temperatures. Shipping times will be minimized to prevent holding time violations. All care will be taken following these procedures:

- Sample containers will be selected to ensure compatibility with the sample and to minimize breakage during field activities.
- The lid of each sample container will be securely tightened.
- Sample labels will be affixed to each container. Each label will identify the site name, a unique identification number, collector's name, date and time of collection, preservatives (if any), and analyses to be performed and/or as specified in attached QASPs. All labels will be completed in waterproof ink. This same information will be placed on the Chain-of-Custody (COC) form and the COC will accompany the samples to the appropriate laboratory. The water resistant sample will be completed and affixed to the sample container. Due to the size of the air samples CTEH will use an internal COC that tracks the information to include the site name and date coded in unique ID's as detailed in Section 3.8 of the QASP for Community Air Monitoring.
- Environmental sample containers will be packed in coolers with samples from each sampling location grouped together. Air samples will be packed in accordance with the QASP for Community Air Monitoring (Appendix C). Packing material will be used to cushion and support the sample containers. Sample labels will be verified against the COC form as they packed.
- The COC will be checked for completeness for the samples contained within the cooler. A copy of relinquished COC forms will be retained with the field documentation. Samples will be maintained under strict COC protocol, including documentation of transfers among facilities and archival after completion of analysis. Samples and signed COC forms will remain in the possession of the field sampler until relinquished for transport to the specified laboratory.

3.3 Chain-of-Custody Records

Chain-of-Custody (COC) involves maintaining the integrity and traceability of the process of sample collection, laboratory analysis, and final evidence files. A sample is defined as being in one's custody if:

- The sample container is in one's actual possession.
- The sample container is in one's view after being in one's physical possession.
- The sample container has been continuously in one's physical possession and then placed in a secure location.

Samples will be maintained under strict COC protocol from the time of the sample collection through delivery to the appropriate laboratory. Each sample container will be recorded on a COC form. A sample of a COC is included in the attached QASPs. The COC will be completed and will accompany the final analytical report. Copies of the COC will be retained by the laboratories and included in the project records. The COC will be placed into a plastic sealable bag and taped to the inside of the cooler lid or inside the shipping container.

COC procedures provide an accurate written record that traces the possession of individual samples from the time they are collected in the field to the time they are accepted at the laboratory. The COC record also will be used to document all samples collected and the analyses requested. Information that field personnel will record on the COC record includes the following:

- Project name and number;
- Sampling identification number;
- Date and time of collection;
- Sample designation (grab or composite or integrated);
- Sample medium;
- Analysis requested;
- Number and type of containers filled;
- Destination of samples (laboratory name);
- Airbill number (if applicable);
- Name and signature of sampler;
- Signatures of individuals involved in custody transfer, including the date and time of transfer; and
- Project contact and telephone number.

ESI will use standard hard-copy COC forms for all samples. These forms will be provided by the specified laboratory. Field personnel will sign COC records that are initiated in the field, and the airbill number will be recorded, if necessary. Signed airbills will serve as evidence of custody transfer between field personnel and the courier, and between the courier and the laboratories. Field personnel will retain copies of the COC form and the airbill before the containers are shipped.

The field sampler is personally responsible for the care and custody of the samples until they are transferred to other personnel or properly dispatched to an overnight carrier or directly to the specified laboratory. When possession of the samples is transferred, the individuals who are relinquishing and receiving the samples will sign, date, and note the time of transfer on the COC form. Commercial carriers are not required to sign off on the COC form as long as the form is sealed inside the sample cooler and the custody seals remain intact.

Sample and shipping containers will remain in the custody of a sampling team member until relinquished via dated signature to the appropriate laboratory, shipping courier, or other appropriate party, who must sign and date the COC at the time the sample is transferred. If the courier does not sign the COC, sampler will note the name of the courier company, and the tracking number on the COC.

Laboratory COC begins when samples are received and continues until samples are discarded. Laboratories analyzing samples must follow custody procedures specified in their Standard Operating Procedures (SOPs).

3.4 Analytical Methods

Analytical methods and performance criteria for the tasks specified within this QAPP are described in the attached QASPs.

3.5 Quality Control

Quality control activities, acceptance criteria, and screening level information is outlined in the attached QASPs.

3.6 Equipment Testing, Inspection, and Maintenance

The testing, inspection, and maintenance procedures that will be used to keep both field and laboratory equipment in good working condition are described in the attached QASPs.

3.6.1 Maintenance of Field Equipment

Sampling and monitoring equipment for all matrices will be maintained in accordance with manufacturer's recommendations.

3.6.2 Maintenance of Laboratory Equipment

Laboratories are required by their SOPs to prepare and follow a maintenance schedule for each instrument used to analyze samples. The ESI subcontract laboratories will be required to demonstrate, by means of a laboratory QA plan, that they follow a maintenance program for laboratory instruments.

Laboratory QA plans and written SOPs shall describe specific preventive maintenance procedures for equipment maintained by the laboratory. These documents may identify the personnel responsible for major, preventive, and daily maintenance procedures; the frequency and type of maintenance performed; and the procedures for documenting maintenance. QA Plans for the Laboratories utilized for this project are included in Appendix D.

Instruments will be serviced at scheduled intervals necessary to optimize factory specifications. Routine preventive maintenance and major repairs will be documented and records maintained. An inventory of items to be kept ready for use in case of instrument failure will be maintained and restocked as needed. The list will include equipment parts subject to frequent failure, parts that have a limited lifetime of optimum performance, and parts that cannot be obtained in a timely manner.

Laboratory equipment malfunctions will require immediate corrective action. Actions should be documented and laboratory records maintained. No other formal documentation is required unless data quality is adversely affected or further corrective action is necessary. On-the-spot corrective actions may be taken as necessary in accordance with the procedures described in the laboratory QA plans and SOPs.

3.7 Instrument Calibration and Frequency

All subcontracted laboratories will follow calibration requirements documented in its laboratory QA plans and SOPs. Field equipment will be calibrated as recommended by the manufacture and/or the frequency specified in the QASP, if more frequent than the manufacturer's recommendation is specified.

3.8 Inspection and Acceptance of Supplies and Consumables

The ESI project manager and site supervisor have primary responsibility for identifying the types and quantities of supplies and consumables and are responsible for establishing acceptance criteria for these items. The supplies and consumables required for this project include PPE and sample containers. ESI will obtain and use sample containers that are certified clean and that meet USEPA standards described in "Specifications and Guidance for Obtaining Contaminant-Free Sampling Containers" (USEPA 1992).

When supplies are received, the project manager or his designate will sort according to the vendor, check packing slips against the purchase orders, and inspect the condition before supplies are accepted for use. If an item does not meet the acceptance criteria, deficiencies will be noted on the packing slip and purchase order, and the item will then be returned to the vendor for replacement or repair.

3.9 Data Acquisition Requirements for Non-Direct Measurements

Sample locations, methods, and rationale; analytical tasks; sample collection, handling, tracking, and custody procedures; quality control samples; and data management tasks are further discussed within the attached QASPs and corresponding Laboratory Quality Assurance Manuals provided in Appendix D.

3.10 Data Management

ESI will use a data management strategy that includes electronic storage of environmental sampling. ESI will generate electronic copies of Site Activity Logs, field data forms, laboratory results, and other documentation related to its data collection as part of this project. These data will be made accessible to the Military Department representative and the USEPA OSC.

ESI field personnel or their trained subcontractors will collect the samples specified in the attached QASPs. When samples are collected, sampling location, sample matrix, sampling method, and other sample collection information will be recorded on Site Activity Logs or on field data forms. Field personnel will also document sample collection by completing sample labels and chain-of-custody forms. Laboratory data packages submitted by the ESI subcontracted laboratories will be consistent with requirements outlined in the QAPP. Data packages will include sample and QC results, a chain-of custody record, and a summary report, and may also include raw data.

4.0 Assessment and Oversight

This section discusses assessment and response actions and reports to management.

4.1 Assessment and Response Actions

The Military Department may oversee collection of environmental data using the assessment and audit activities described below. Any problems discovered during an assessment of field investigation or laboratory activities may require corrective action to ensure that the problems are resolved. This section describes the types of assessments that may be completed, possible Military Department responsibilities for conducting the assessments, and corrective action procedures to address problems identified during the assessments.

4.1.1 ESI Team Assessments

On a daily basis, the ESI Project Manager will prepare daily quality control reports. Significant project-related activities will be summarized in these daily reports. ESI will provide comments on any deviations from the plans and SOPs. The daily reports will be provided to the Military Department project coordinator in accordance with the project Work Plan.

ESI will periodically review daily sampling reports, field sample forms, and sample results as they become available to evaluate if procedures in the QAPP are being implemented. If any deficiencies or significant deviations are identified, the ESI Manager will evaluate the identified deviation or deficiency. When quality processes and objectives are not being met, the ESI manager will contact the Military Department project coordinator to inform them and identify corrective measures.

In addition, the ESI QA/QC Manager may conduct a QA/QC audit. If the audit identifies a significant deviation from the QAPP or identifies an internal deficiency, the ESI Manager will notify the Military Department project coordinator.

4.1.2 Field Assessments

Military Department may oversee field sampling and environmental data acquisition conducted and completed by ESI. The Military Department may evaluate and document whether procedures specified in the QAPP are being implemented. Specific items that may be observed include the following:

- Availability of approved project plans such as the QAPP;
- Documentation of personnel qualifications and training;
- Sample collection, identification, preservation, handling, and shipping procedures;
- Sampling equipment decontamination; and
- Completeness of field records (including nonconformance documentation).

Military Department will verbally communicate any significant deficiencies to the ESI project manager and site supervisor for immediate correction. These and any other observations and comments will be documented in the monthly status reports prepared by the Military Department project coordinator or designee. Reports that describe sampling or environmental data acquisition issues observed by Military Department will also be distributed to the ESI project manager for resolution of the issues.

The Military Department project coordinator may also independently conduct a field assessment of the project. Items reviewed during these field assessments may be similar to those described above.

4.1.3 Laboratory Assessments

ESI will provide the Military Department with the qualifications of the laboratories, including relevant certifications and the results of the most recent inspections by certifying organizations. The Military Department will review this information to confirm that the proposed laboratory is qualified to perform the analyses required by the respective QASP.

During the project, ESI will provide Military Department with split samples, if requested and applicable. The Military Department may use the split sample results as an independent check on the ESI laboratory results. The Military Department may have these samples analyzed by a laboratory different than the ESI subcontracted laboratories.

The Military Department may elect to audit or assess the laboratories utilized by ESI or its subcontractors. The Military Department coordinator will evaluate the need for a laboratory assessment and will notify the ESI Team if an assessment is required.

4.1.4 Assessment Responsibilities

The Military Department's field and laboratory assessments described within may be completed by the Military Department project coordinator or designee. If a more formal assessment is required, the Military Department reviewer and project coordinator may select the appropriate personnel to conduct the assessments and will assign them responsibilities and deadlines for completing the assessment. These personnel may include the project QA reviewer or senior technical staff with relevant expertise and experience in assessment.

When an assessment is planned, the Military Department project QA reviewer selects a lead assessor who is responsible for the following:

- Selecting and preparing the assessment team;
- Preparing an assessment plan;
- Scheduling the assessment with the ESI Team or the subcontracted laboratories;
- Participating in the assessment;
- Preparing assessment reports and corrective action request forms; and
- Evaluating responses and resulting corrective actions.

After the assessment is completed, the lead assessor will submit an assessment report to the Military Department project coordinator. Other personnel may be included in the distribution as appropriate. Findings from the assessment will also be included in the ESI monthly progress reports.

4.1.5 Field Corrective Action Procedures

Field corrective action procedures will depend on the type and severity of the finding. The assessment findings are classified as either deficiencies or observations. Deficiencies are findings that may have a significant impact on data quality and require corrective action. Observations are findings that do not directly affect data quality but are suggestions for consideration and review.

As described in Section 4.1.1, ESI will respond to deficiencies identified during field assessments. Military Department will discuss the deficiencies with the ESI project manager and take appropriate steps to resolve each deficiency through the following activities:

- Determining when and how the problem developed;
- Assigning responsibility for problem investigation and documentation;
- Selecting the corrective action to eliminate the problem;
- Developing a schedule for completing the corrective action;
- Assigning responsibility for implementing the corrective action;
- Documenting and verifying that the corrective action has eliminated the problem; and
- Notifying Military Department of the problem and the corrective action taken.

In responding to assessment findings, ESI will describe each deficiency, the proposed corrective action, the individual responsible for implementing the corrective action, and the completion dates for each corrective action. The Military Department's project coordinator will monitor all corrective actions. The Military Department project coordinator can require data acquisition to be limited or discontinued until the corrective action is complete and a deficiency is eliminated. The project coordinator may also request reanalysis of samples and a review of all data acquired since the system was last in control.

4.1.6 Laboratory Corrective Action Procedures

Internal laboratory procedures for corrective action and descriptions of out-of-control situations that require corrective action are contained in the laboratories QA plans. If a laboratory assessment is conducted and identifies a situation requiring corrective action, the laboratory project manager will prepare and submit a corrective action report to the ESI project manager, who will forward a copy of the report to LA Military Department's project coordinator. This report will identify the out-of-control situation and the steps that the laboratory has taken to rectify it.

4.2 Reports to Management

Effective management of environmental data acquisition requires (1) timely assessment and review of project activities and (2) open communication, interaction, and feedback among project participants. The Military Department and ESI will use the reports described below to address any project-specific quality issues and to facilitate timely communication of these issues. Two copies of the reports will be delivered.

4.2.1 Daily and Monthly Progress Reports

ESI will maintain and provide a daily progress report that includes metrics, such as amount/volume/weight of material destroyed during that day total volume/weight of material destroyed, total magazines, completed, and health and safety concerns. Monthly In-Progress review meetings will be conducted to measure disposal progress. Pursuant to the RFP, ESI will submit a written progress report to the Military Department the 18th day after the date of receipt of USEPA's approval of the Work Plan and thereafter every 21st day after the original report until issuance of Notice of Completion of Work or Final Acceptance, unless otherwise directed in writing by the OSC.

4.2.2 Cost Progress Report

ESI will provide a detailed Cost Progress Report to the Project Coordinator no later than 180 days after the contract notice to proceed date and a subsequent report at 240 days after the contract notice to proceed date. The Cost Progress Report will be provided monthly thereafter to the Project Coordinator. The report will be in two parts. The first part of the report will include a cost incurred invoice type document with details concerning all work performed during the period to include sufficient documentation to allow verification of accuracy of costs incurred consistent with 40 CFR, 300.160(a)(1). The second part of the report will include an estimate of costs required to complete the contract. It will also include the following details at a minimum – description of remaining work to be performed, personnel, equipment, and materials required and cost associated for each.

Invoicing for burning operations will be based on actual weighed quantities burned. ESI will provide National Type Evaluation Program (NTEP) approved or certified scales for verification of quantities [reference National Institute of Standards and Technology (NIST), Handbook 44 Specifications and Tolerances and Handbook 130 – Uniform Weights and Measures]. ESI will provide weight tickets for verification of invoicing. An Example of Scale Ticket is provided in Appendix B.

4.2.3 Final Report

The ESI Team will prepare and submit to the Military Department a final report. The report will be submitted within fifteen (15) days after completion of all Work required by the implementation of the contract resulting from this RFP. ESI will submit to the Military Department for submittal for EPA review and approval a final report summarizing the actions taken to comply with the implementation of the contract resulting from this RFP. The final report will conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled “OSC Reports.” The final report will include a listing of quantities and types of materials removed off-site and/or handled on-site, a discussion of removal and disposal options considered for those materials, a listing of the ultimate destinations of those materials, a presentation of the analytical results of all sampling and analyses performed, certificate of disposal listing quantity and type of material disposed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g. manifests, invoices, bills, contracts, and permits).

5.0 Data Validation and Usability

This section describes the procedures planned for reviewing, verifying, and validating field and laboratory data. This section also discusses procedures for verifying that the data are adequate to meet DQOs and user requirements.

5.1 Data Review, Verification, and Validation

Validation and verification of data generated during field and laboratory activities are essential to obtaining defensible data of acceptable quality. Verification methods for field and laboratory activities are discussed below.

5.1.1 Field Data Verification

ESI personnel will verify field data through review to identify inconsistencies or anomalous values. Any inconsistencies discovered will be resolved as soon as possible by seeking clarification from field personnel responsible for data acquisition. All field personnel will be responsible for following the sampling and documentation procedures described in this QAPP and the attached QASPs so that defensible and justifiable data are obtained.

5.1.2 Laboratory Data Verification

Laboratory personnel will verify analytical data (1) at the time of analysis and reporting and (2) through subsequent reviews of the raw data for any non-conformances with the requirements of analytical methods. Laboratory personnel will make a systematic effort to identify any outliers or errors before the data are reported. Outliers identified during data verification will be investigated and corrected; outliers that cannot be attributed to errors in analysis, transcription, or calculation will be clearly identified in the case narrative section of the analytical data package.

5.2 Verification and Validation Methods

Data generated by the ESI subcontracted laboratories will be initially reviewed by the ESI manager before data packages are forwarded to the Military Department. Stage 2A data verification will be performed in accordance with OSWER N. 9200.1-85, EPA 540-R-08-005, *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*. The QA/QC manager will verify that the data packages contain all requested analyses, review analytical QC results, and confirm laboratory-reported results. No qualifiers are applied to the data submitted to Military Department as a result of this review; however, a brief description of the data quality will accompany the email reporting the data. Laboratory raw data will be reviewed if necessary to confirm that reported analytes have been correctly identified and quantified.

The Military Department may or may not validate analytical data generated by the ESI subcontracted laboratories at its discretion. However, Military Department may conduct a data review similar to that completed by the ESI QA/QC manager. In addition, Military Department may compare split sample results, if collected, to ESI's results as a QC check.

ESI will include the data review results in the reports submitted to the Military Department. If the results of these reviews and comparisons made by the Military Department indicate problems with the laboratory analytical data, the Military Department will determine whether more extensive data review and validation is warranted. If data validation is deemed necessary by the Military Department, only the data in question and a randomly selected data set of the same matrix will be validated. Military Department data qualifiers supplied by the Military Department will be applied as necessary to only the data that is validated. ESI will prepare a memorandum to summarize data validation results.

Any request for missing data or required corrections to the data by the specified laboratories as a result of the data review or validation will be made in writing by ESI personnel to the appropriate laboratory. This will be in the form of email and will identify the required information in sufficient detail for the appropriate laboratory to reply in a timely manner. In the event this impacts the results previously reported to the Military Department, a Corrective Action Report (CAR) will be submitted indicating the error identified, impact of change and any subsequent corrective action taken by the appropriate laboratory. Immediate notification to the Military Department will be made if the resulting error indicates previously reported data may not be below its respective screening level. The revised laboratory data report will be submitted to the Military Department along with the completed CAR.

5.3 Reconciliation with User Requirements

Analytical results generated under this QAPP will be incorporated in the final report to be completed by ESI at the end of the project. This report will identify any uncertainties associated with analytical results and discuss any potential impacts on data usability.

APPENDIX A

QUALITY ASSURANCE SAMPLE PLAN

SOIL & WATER

Quality Assurance Sample Plan

Soil and Water

For:

Camp Minden M6 Destruction
Camp Minden
1600 Java Road
Minden, Louisiana 71055-7924

Prepared By:

Explosive Service International

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Baton Rouge, Louisiana 70809
Phone 225-275-2152
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DATE REVISED:

25 September 2015

EXECUTIVE SUMMARY OF REVISIONS

The approved Quality Assurance Sample Plan (QASP) submitted 14 July 2015 (Revision 5) has been revised to incorporate the documents organizational changes per the 4 August 2015 telephone conference. Specifically, this Revised QASP addresses soil and water only; all other elements have been removed (Community Air Quality Monitoring & Sampling, Comprehensive Performance Testing, CEMS Stack Monitoring, and Waste Feed Sampling). Elements that have been removed are included as Appendices of the Quality Assurance Project Plan (QAPP).

The text portion of the revised QASP – Soil and Water is organized according to the areas samples will be collected and include: Camp Minden – Area I, Clarkes Bayou, and the community. Project-specific information for soil, groundwater, surface water, and sediment sampling are covered within the QASP – Soil and Water.

Tables 1 through 9 have been added to outline the project objectives and define the quality assurance/quality control (QA/QC) program. The QA/QC program was modified to reflect the United States Environmental Protection Agency's (USEPA) QA/QC program. Screening Levels were established as determined by the Louisiana Risk Evaluation/Corrective Action Program (RECAP) Screening Standards (dated October 2003), and the USEPA Regional Screening Level (RSL) Summary Table (revised June 2015). Tables 5 through 9 summarize limits and evaluation based on the media, laboratory analytical, and sample location. Figures 2 and 3 have been revised to incorporate changes in position to structures on the base map. The Field Forms have been revised to reflect only those pertinent to soil and water field activities.

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

Quality Assurance Sample Plan

Acronym	Description
ASTM	American Society of Testing and Materials
bgs	below ground surface
CBI	Clean Burning Igniter
COC	Constituent of Concern
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
ESI	Explosive Service International, Inc.
EWI	Explosive Waste Incinerator
GC/MS	Gas Chromatography/Mass Spectroscopy
GPS	Global Positioning System
HPLC	High Pressure Liquid Chromotography
IDW	Investigative Derived Waste
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LIMS	Laboratory Information Management System
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NIOSH	National Institute for Occupational Safety and Health
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety & Health Association
PID	Photoionization Detector
PVC	Polyvinylchloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QAQC	Quality Assurance Quality Control
QASP	Quality Assurance Sampling Plan
QC	Quality Control
RCRA	Resource Conservation Recovery Act
RECAP	Risk Evaluation Corrective Action Program
SOP	Standard Operating Procedure
SVOC	Semi-volatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSP	TriSodiumPhosphate
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

1.0 Introduction

This Quality Assurance Sample Plan (QASP) outlines the Explosive Service International (ESI) soil and water field sampling and analytical procedures for the M-6 destruction Project at Camp Minden National Guard Training Site in Webster and Bossier Parishes, Louisiana. Figure 1 shows the location of the site within the State of Louisiana. The project includes the complete removal, destruction, and disposal of all hazardous materials and waste located at Camp Minden associated with the M-6 Destruction Project. Destruction activities conducted under the EPA administration order will be conducted at the Camp Minden – Area I Destruction Site. Figure 2 presents the Camp Minden – Area I – Destruction Site and the significant features.

The QASP – Soil and Water is organized according to the areas which samples will be collected and includes Camp Minden – Area I, Clarkes Bayou, and the community. The ESI Team will collect soil, surface water, sediment, and groundwater samples from the designated areas as further discussed in Section 5.0. Described within are the samples that will be collected during the project, how the samples will be analyzed, and how the results will be evaluated. Short-term and long-term measures being addressed with this QASP include the environmental assessments and restoration of the site.

The QASP follows quality assurance (QA) and quality control (QC) measures detailed in the site Quality Assurance Project Plan (QAPP) which will be applied to ensure that the data obtained are of the type and quality needed to meet Remedial Action Objectives (RAOs) per the Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP). The QASP follows United States Environmental Protection Agency (USEPA) Requirements for Quality Assurance Project Plans (EPA QA/R-5) (EPA 2001) and the accompanying document, Guidance for Quality Assurance Project Plans (EPA QA/G-5) (EPA 2002).

2.0 Project Description

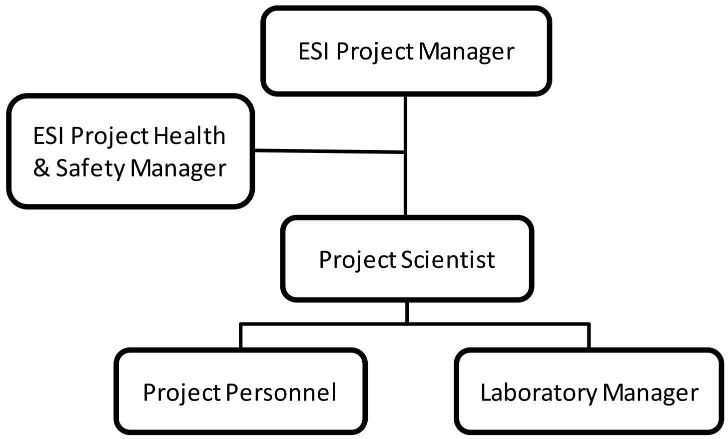
Approximately 15,687,247 pounds of M6 propellant and approximately 320,890 pounds of Clean Burning Igniter (CBI) were abandoned at the Explo site. Explo was located on the Camp Minden National Guard Training Site at 1600 Java Road, Minden, Louisiana 71055-7924. Ninety-seven (97) magazines are filled with M6 propellant and other explosive materials. Some of the magazines were loaded by Explo while in operation, while other magazines were filled to capacity as directed after the improper storage was discovered. Some of the M6 propellant was stacked outside for an undetermined period of time. The propellant and other explosive materials are stored and packaged within multiple configurations, including 60-pound cardboard boxes, 100/140-pound fiber drums, and primarily 880-pound super sacks, which were over packed into cardboard boxes. The storage of explosive material in magazines is not in accordance with the Department of Defense standards and requires handling techniques not standard for classical munitions technicians.

The primary materials to be addressed are the M6 and the CBI. The ESI Team remedy is to properly remove, handle, and destroy the material. The material will be removed from present packaging and moved to a controlled burn area where the material will be systematically and safely burned as final destruction. Resulting waste (ash, process water, packaging, storage pallets) will then be characterized and profiled for destruction/reuse/recycling and then properly removed from the site for final disposition.

The ESI Team will conduct environmental assessments prior to commencement of onsite activities and upon project completion. The environmental assessments will not be conducted as RECAP investigations, but rather to obtain data for comparison of soil and water pre and post M6 Destruction activities to determine site closeout and restoration of the site. The baseline data will establish site close out restoration of the site. Upon completion of the project, an environmental assessment will be conducted to collect samples from the same locations identified in the baseline sample event. ESI shall be responsible for restoration of the site to the baseline data obtained. Groundwater will be monitored quarterly throughout the duration of the project and data will be used for trending purposes.

3.0 Project Organization and Responsibility

This section establishes the M-6 Destruction Project organization functional responsibilities of key staff, levels of authority among key participants and lines of communication for activities affecting quality. The project team has been selected to provide the technical and management capabilities and qualifications as required by the investigative and/or restoration action tasks. These personnel have appropriate educational qualifications and previous experience on related projects.



Project Organization

<u>ESI Project Manager</u>

The ESI Project Manager is responsible for effective day-to-day management of all operations. His responsibilities include:

- Review and approval of all plans.
- Implementation of all quality control and health & safety standards required by the project.
- Preparation of progress reports with the assistance of key support personnel.
- Management of all funds for labor and materials procurement.
- Technical review of all task deliverables.
- Establishment and enforcement of work element milestones to ensure timely completion of project objectives.
- Liaison with the Camp Minden representative in regard to all operations of the project.

The ESI Project Manager for this site is Dean S. Schellhase of ESI.

<u>ESI Project Health & Safety Officer</u>

The ESI project health & safety officer is responsible for establishing and implementing the Site Specific Health & Safety Plan. His responsibilities include:

- Reviewing and monitoring compliance with the Site Specific Health & Safety Plan.
- Implementing corrective measures for site specific health & safety deficiencies.
- Ensuring required training and medical monitoring of project personnel.
- Oversight of air monitoring at all areas where personnel will potentially be exposed to hazardous conditions.
- Brief all personnel concerning health & safety requirements.
- Maintain all necessary calibration records related to health & safety monitoring.

The designated ESI Project Health & Safety Officer is Ken Williams of ESI.

Project Scientist

The project scientist is responsible for overall compliance of the QASP – Soil and Water. His responsibilities include:

- Preparation, maintenance and verification of compliance of the QASP – Soil and Water.
- Ensuring all established laboratory and field procedures as identified in the plan are being followed.
- Ensure all documentation is provided.
- Ensure all sampling and analysis problems are handled in an expeditious manner.
- Auditing of project sampling and analysis activities to verify conformance with the objectives.
- Ensuring all subcontractor activities are performed in accordance to the QASP – Soil and Water through review of subcontractor documents, laboratory data and audits, as needed.
- Informing the Project Manager of the sampling and analysis findings.

The designated Project Scientist is Matthew Salinger.

Environmental Manager

The environmental manager is responsible for all sample collection and laboratory analysis. His responsibilities include:

- Execution of the QASP – Soil and Water.
- Implementation of established laboratory and field procedures as identified in this QASP – Soil and Water are followed.
- Providing project documentation.
- Ensuring all sampling and analysis problems are handled in an expeditious manner.
- Preparation of the sampling and analysis findings as identified in this QASP – Soil and Water.
- Reporting of the sampling and analysis findings.

The designated Environmental Manager is Chuck Ellis of Southern Environmental Management and Specialties (SEMS).

Laboratory Project Manager

The analytical laboratory project manager has the ultimate responsibility for analytical performance, including adherence to contract requirements and quality control requirements. The laboratory project manager will serve as the primary laboratory contact person for the Environmental Manager, and any change in the scope of work will be processed through him.

The subcontracted analytical laboratory for the soil and water is TestAmerica St. Louis (TestAmerica) in Earth City, Missouri. TestAmerica's Laboratory Quality Assurance Manual is provided in Appendix D of the project QAPP. The Laboratory Project Manager for this QASP – Soil and Water is Chenise Lambert-Sykes of TestAmerica St. Louis.

Project Personnel

SEMS will support ESI in soil and water activities. TestAmerica St. Louis will support ESI as the analytical laboratory identified in this QASP – Soil and Water. Project personnel include both project specialists (environmental scientists, geotechnical engineers, chemists, etc…) and site personnel (supervisors, equipment operators, field technicians) as required for the individual task. Project personnel have the required education, training and/or experience commensurate with their responsibilities during the project. All personnel qualifications will be reviewed and evaluated by the ESI Project Manager and ESI administrative support.

4.0 Screening Levels and Site Restoration

The established Screening Levels were determined from the LDEQ Risk Evaluation/Corrective Action Program (RECAP) document dated October 2003, and the USEPA Regional Screening Level (RSL) Summary Table revised June 2015. Screening Levels were established by matrix, analyses, and the location of the sample collection point. The determination of the established Screening Level is further discussed in this section.

Sample events will be conducted prior to commencement of M6 Destruction activities (Baseline Sample Event) and upon project completion (Post-Activity Sample Event/Project Close Out) to obtain data needed to support the proper restoration of the site to conditions existing prior to work completed by ESI. Data from the Baseline Sample Event will establish a baseline for restoration of the site. Table 2 summarizes the sample events, sample locations, analytical methods, and defines the rationale of sample locations. Tables 5 through 9 define the Screening Levels, Project Quantitation Limits, Analytical Methods, and Achievable Laboratory Limits.

If analytical results are detected above the established Screening Level, then LDEQ site-specific RECAP standards can be calculated for the constituent(s) exceeding the Screening Level, if necessary.

4.1 Camp Minden – Area I

Soil and groundwater samples will be collected from the Camp Minden – Area I. Sample locations are shown on Figure 3.

4.1.1 On-Site Soil

On-site soil Screening Levels are defined in Table 5. The most conservative RECAP Screening Standard of the soil for industrial use (SSi) and the soil concentration protective of groundwater (SSGW) was determined as the Screening Level for the following:

- Volatile Organic Compounds (VOCs, Method 8260C);
- Semi-Volatile Organic Compounds (SVOCs, Method 8270D);
- RCRA Metals (Method 6020A and Method 7471B);
- Diesel Range Organics (Method 8015B); and
- Gasoline Range Organics (Method 8015B).

The USEPA, RSL for industrial soil was determined as the Screening Level for the following:

- Explosives and propellant residuals (Nitroaromatics, Nitramines and Nitrate Esters by High Performance Liquid Chromatography) (herein identified as Nitroaromatics and Nitramines) (Method 8330B);
- Di-n-butyl phthalate and Diphenylamine (SVOCs, Method 8270D); and
- Nitrocellulose.

The USEPA, RSL for industrial soil was determined as the Screening Level for 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD). The 2005 World Hospital Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors (TEFs) for Dioxins and Dioxin like compounds will be used to calculate the total TCDD in each medium. Total TEQs in each medium will be compared to the Screening Level for TCDD for the following:

- Dioxins and Furans (Method 1613B).

4.1.2 Perimeter Soil

Perimeter soil Screening Levels are defined in Table 5. The most conservative RECAP Screening Standard of the soil for industrial use (SSi), and the soil concentration protective of groundwater (SSGW) was determined as the Screening Level for surface soil. The soil concentration protective of groundwater (SSGW) was determined as the Screening Level for subsurface soil. The RECAP document dated October 2003 defines surface soil as the interval present from the ground surface to a depth of 15 feet below ground surface (ft-bgs), and subsurface soil as the interval present from 15 ft-bgs to the depth of impact. RECAP Screening Standards were used to determine the Screening Levels for the following:

- Volatile Organic Compounds (VOCs, Method 8260C); and
- Semi-Volatile Organic Compounds (SVOCs, Method 8270D).

The USEPA, RSL for industrial soil was determined as the Screening Level for the following:

- Nitroaromatics and Nitramines (Method 8330B); and
- Di-n-butyl phthalate and Diphenylamine (SVOCs, Method 8270D).

4.1.3 Groundwater

Groundwater Screening Levels are defined in Table 6. The RECAP Groundwater Screening Standard (GWSS) was determined as the Screening Level for the following:

- Volatile Organic Compounds (VOCs, Method 8260C); and
- Semi-Volatile Organic Compounds (SVOCs, Method 8270D).

The USEPA, RSL for tap water was determined as the Screening Level for the following:

- Nitroaromatics and Nitramines (Method 8330B);
- Di-n-butyl phthalate and Diphenylamine (SVOCs, Method 8270D).

4.2 Clarkes Bayou

Surface water and sediment samples will be collected from Clarkes Bayou. Sample locations are shown on Figure 3.

4.2.1 Surface Water

Surface water Screening Levels are defined in Table 7. The RECAP Groundwater Screening Standard (GWSS) was determined as the Screening Level for the following:

- Volatile Organic Compounds (VOCs, Method 8260C); and
- Semi-Volatile Organic Compounds (SVOCs, Method 8270D).

The USEPA, RSL for tap water was determined as the Screening Level for the following:

- Di-n-butyl phthalate and Diphenylamine (SVOCs, Method 8270D).

4.2.2 Sediment

Sediment Screening Levels are defined in Table 8. The most conservative RECAP Screening Standard of the soil for non-industrial use (SSni), soil for industrial use (SSi), and the soil concentration protective of groundwater (SSGW) was determined as the Screening Level for the following:

- Volatile Organic Compounds (VOCs, Method 8260C); and
- Semi-Volatile Organic Compounds (SVOCs, Method 8270D).

The USEPA, RSL for residential soil was determined as the Screening Level for the following:

- Di-n-butyl phthalate and Diphenylamine (SVOCs, Method 8270D).

4.3 Community Soil

Soil samples will be collected at the air stations positioned throughout the community.

Community soil Screening Levels are defined in Table 9. The most conservative RECAP Screening Standard of the soil for non-industrial use (SSni), soil for industrial use (SSi), and the soil concentration protective of groundwater (SSGW) was determined as the Screening Level for the following:

- Volatile Organic Compounds (VOCs, Method 8260C);
- Semi-Volatile Organic Compounds (SVOCs, Method 8270D); and
- RCRA Metals (Method 6020A and Method 7471B).

The USEPA, RSL for residential soil was determined as the Screening Level for the following:

- Di-n-butyl phthalate and Diphenylamine (SVOCs, Method 8270D).

5.0 Field Sampling

Field tasks and laboratory analytical for soil and water samples that may be performed during execution of the project are included in Section 5.0. Table 2 summarizes the Camp Minden M6 Destruction project sample events, sample locations, analytical methods, and defines the rationale for sample locations. Sample container requirements, preservation techniques, sample volume, and holding times for laboratory analysis as outlined in this QASP – Soil and Water are provided in Table 4. Copies of all field forms are included as Attachment A. All field methodologies utilized in collecting samples for analysis will be conducted in accordance with the procedures set forth in the project QAPP.

Split or duplicate samples will be provided to the Military Department, USEPA and the State regulators, or their authorized representatives upon request. ESI will notify the Military Department, USEPA and the State regulators not less than seven (7) days in advance of any sample collection activity unless shorter notice is agreed to by the Military Department.

5.1 Camp Minden – Area I

M6 Destruction activities will be conducted at Camp Minden – Area I. Figure 2 presents the Camp Minden – Area I – Destruction Site and the significant features. Soil and groundwater samples will be collected as part of the environmental assessments prior to commencement of onsite activities and upon project completion. Groundwater will be monitored quarterly throughout the duration of the project and data will be used for trending purposes.

5.1.1 On-Site Soil Sampling

Soil samples will be collected on-site as part of the mobilization and site setup, and site restoration tasks. The primary purpose of the sampling and analysis under this QASP is to obtain data needed to support the proper restoration of the site to conditions existing prior to work completed by ESI.

Upon mobilization, soil sample locations will be demarked using site markers (pin flags, stakes, etc.) as shown on Figure 3. No more than 35 soil samples will be collected throughout the Camp Minden – Area I Destruction Area to obtain data from all areas which may be impacted by ESI activities. These samples will be comprised of a single grab sample of the upper 2 feet of soil at each sample point.

A Geoprobe rig, which uses a hydraulic push technique, will be used to advance each borehole to a total depth of 2 ft-bgs. Soil cores will be collected in stainless steel sample barrels lined with disposable acetate liners and relinquished to the field sampler for collection of a grab sample.

Each on-site soil sample location will be plotted utilizing a hand held GPS for future identification in the post-activity sample event. Upon completion of the project, on-site soil samples will be collected in each location sampled prior to commencement of activities conducted by ESI. A single grab sample will be collected from the upper 2 feet of soil at each location. On-site soil samples shall be collected after pad removal activities have been completed and prior to restoration backfilling, if any. Sample locations and representative areas will be identified and documented on a final report map as well as field logs.

Area I on-site surface soil samples collected prior to commencement of activities by ESI, and upon project completion will be analyzed for the following:

PARAMETER	MATRIX	METHOD
Nitroaromatics and Nitramines	Soil	EPA8330B
RECAP VOCs	Soil	EPA8260C
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D

Four (4) of the Area I on-site surface soil samples will be analyzed for additional parameters. Sample locations will include each of the three identified areas: contained burn chamber system; the former location of the explosives waste incinerator (EWI); and the former location of the incinerator. The fourth surface soil sample will be collected southeast of the area of operation entrance gate. The four (4) additional Area I on-site surface soil samples will be analyzed for the following additional parameters:

PARAMETER	MATRIX	METHOD
Nitrocellulose	Soil	EPA353.2 Modified
RCRA Metals[1]	Soil	6020A/7471B
Dioxins/Furans	Soil	1613B

1) RCRA Metals: Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg), Selenium (Se), and Silver (Ag).

The Area I on-site soil sample located between the diesel and gasoline tanks shown on Figure 3 will be analyzed for the following analysis:

PARAMETER	MATRIX	METHOD
Gasoline Range Organics	Soil	8015B
Diesel Range Organics	Soil	8015B

5.1.2 Perimeter Soil Sampling

Soil samples will be collected around the area of operation as part of the mobilization and site setup. A Geoprobe rig, which uses a hydraulic push technique, will be used to advance six (6) boreholes to a maximum depth of 50 ft-bgs. These borings will be converted into permanent monitoring wells. The approximate borehole/well locations are indicated on the Sample Location Map provided as Figure 3. Soil cores will be collected in stainless steel sample barrels lined with disposable acetate liners and relinquished to the field sampler. Soil samples will be collected continuously from each soil boring in two-foot intervals from the ground surface to the total borehole depth.

A portion of each soil sample will be placed into a 16-ounce jar and sealed with foil for field screening. In addition, a portion of each sample will be collected in accordance with EPA Method 5035 sampling procedures. Each sample will be field screened for volatile organic compounds using a photoionization detector (PID) calibrated to 100 parts per million isobutylene. All data will be recorded on the boring logs. A sample of the boring log and the calibration form is included in Attachment A. In accordance with RECAP Appendix B criteria, a minimum of three (3) soil samples will be retained from each borehole for laboratory analysis, including the sample exhibiting the highest PID reading in surface soil (0–15 ft-bgs); highest PID reading in subsurface soil (greater than 15 ft-bgs); first encountered groundwater; and the total depth of the borehole.

Each sample location will be plotted utilizing a hand held GPS. Sample locations and representative areas will be identified and documented on a final report map as well as field logs. Perimeter soil samples collected prior to commencement of activities by ESI will be analyzed for the following:

PARAMETER	MATRIX	METHOD
Nitroaromatics and Nitramines	Soil	EPA8330B
RECAP VOCs	Soil	EPA8260C
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D

5.1.3 Groundwater Sampling

Groundwater samples will be collected and analyzed from the six (6) perimeter monitoring wells to evaluate groundwater conditions at the site. The wells will be sampled following installation, and quarterly throughout the duration of the project. Monitoring wells will be sampled from least contaminated to the most contaminated following receipt of data from the baseline sampling event. Monitoring well locations are indicated on the Sample Location Map provided as Figure 3.

5.1.3.1 Monitoring Well Installation and Construction

Upon reaching the total depth of the six (6) direct push soil borings advanced around the area of operation, each borehole will be completed with a 2-inch permanent monitoring well to provide monitoring of the groundwater around the operational area throughout the duration of the project.

Monitoring wells will be constructed of schedule-40 PVC casing; 10 foot long 0.01-inch slotted screen assembly, and riser pipe from the top-of screen to the surface. The annular space around the well will be filled with a sand pack material of uniform gradation (20/40 silca sand filter); a bentonite seal will be placed above the sand pack material utilizing water-activated pellets; and grout will be used to backfill the remaining annular space above the bentonite seal to the ground surface. Each well location will be completed with an above ground surface completion, lockable metal shroud, concrete pad, and four (4) protective metal guard posts. Well construction diagrams will be completed, and monitoring wells will be registered with the Louisiana Department of Natural Resources (LDNR) in accordance with guidelines.

5.1.3.2 Monitoring Well Development

Following installation, each well will be developed in an attempt to remove fine-grained particles. Each well will be developed using a peristaltic pump (Geopump) or a downhole pump with dedicated tubing at each location in order to prevent cross contamination. New polyethylene tubing will be lowered into each well, and the tubing will be connected to the pump. Well development will be complete when groundwater removed from the well is visually clear of fine-grained particles, or to dryness. A surge block may be used during well development. Well development records will be managed on the field logs. A copy of the Monitoring Well Development Log is provided in Attachment A.

5.1.3.3 Water Level Measurements

Data for the determination of the groundwater potentiometric surface will be collected at each monitoring well. The wells will be uncapped to allow water levels to equilibrate to atmospheric conditions. After equilibration, depth-to-water will be measured to the nearest one-hundredth of a foot with a groundwater interface probe. The interface probe will be decontaminated prior to on-site work, between each well, and after fluid level measurements are complete. A sample of the water level measurements log is included in the attached field forms provided as Attachment A.

5.1.3.4 Well Purging

Following gauging, the six (6) monitoring wells will be purged using the appropriate dedicated and/or disposable equipment. Bailers or a downhole pump with dedicated polyethylene tubing may be used to purge three (3) well volumes from each well. Should low-flow sampling be implemented, water quality parameters will be collected during purging to determine water stabilization. New polyethylene tubing will be lowered into each well to an appropriate depth within the well screen interval. The tubing will be connected to a peristaltic pump, and the purge rates will be maintained between 0.1 and 0.5 L/min. Water quality data will be collected to determine when stabilization is achieved. The outlet tubing from the pump will be connected to a flow-cell canister with a water quality instrument installed around the canister. Water will be pumped through the flow-through cell and instrument sensors. Water parameter readings will be recorded at a frequency of 3 to 5 minutes during well purging activities. Groundwater samples will be collected when water quality indicator parameters have stabilized within the parameter criteria for three consecutive measurements. Temperature, pH, specific conductivity, oxidation–reduction potential (ORP), dissolved oxygen (DO), and turbidity will be considered stable when three of the parameters are within the designated criteria for three successive measurements. Water levels, in conjunction with the water quality parameters, will be monitored to ensure that true formation water is extracted for sampling, rather than stagnant casing water. A sample of the low-flow groundwater monitoring sampling log is included in the attached field forms provided as Attachment A.

5.1.3.5 Groundwater Collection

Once three (3) well volumes or low-flow stabilization has been achieved, groundwater samples will be collected from the six (6) perimeter monitoring wells. Disposable bailers may be used. Should low-flow groundwater sampling be implemented, the samples shall be collected directly from the discharge port of the tubing, prior to passing through the flow-through cell. For volatiles, the discharge rate will be reduced to avoid aeration; not more than 100 ml/min, of the sample. Groundwater sampling will follow the USEPA Low-Flow Groundwater Sampling Procedures as appropriate for the desired laboratory analytical procedure, if the low-flow method is preferred.

Groundwater samples will be analyzed for the following:

PARAMETER	MATRIX	METHOD
Nitroaromatics and Nitramines	Water	EPA8330B
RECAP VOCs	Water	EPA8260C
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Water	EPA8270D

5.2 Clarkes Bayou

Clarkes Bayou is the nearest surface water body, located approximately 2,250 feet west of the Camp Minden – Area I M6 Destruction Site. Surface water and sediment samples will be collected to monitor for non-point sources to ensure activities conducted at the Camp Minden – Area I M6 Destruction Site have not caused an adverse impact at the point of discharge, upstream of the site, and downstream of the site.

5.2.1 Surface Water Sampling

Three (3) surface water samples will be collected during the mobilization and site setup, and upon completion of activities conducted by ESI. Sample locations include the point of discharge, upstream of the site, and downstream of the site. Approximate surface water sample locations are indicated on the Sample Location Map provided as Figure 3.

Discrete surface water samples will be collected from Clarkes Bayou using a dip sampler, positioned facing upstream. Surface water and sediment samples will be collected from the same collection point; therefore, the surface water samples will be collected prior to the collection of the sediment. The sample should be collected without disturbing the sediment.

Each sample location will be plotted utilizing a hand held GPS for future identification in the post-activity sampling event. Upon completion of the project, three (3) surface water samples will be collected in each location sampled prior to commencement of activities conducted by ESI. Sample locations and representative areas will be identified and documented on a final report map as well as the sample log.

Surface water samples collected prior to commencement of activities by ESI, and upon project completion will be analyzed for the following:

PARAMETER	MATRIX	METHOD
RECAP VOCs	Water	EPA8260C
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Water	EPA8270D

5.2.2 Sediment Sampling

Three (3) sediment samples will be collected from Clarkes Bayou during the mobilization and site setup and upon completion of activities conducted by ESI. Sample locations include the point of discharge, upstream of the site, and downstream of the site. Approximate sediment sample locations are indicated on the Sample Location Map provided as Figure 3.

Sediment samples will be collected from Clarkes Bayou after collection of the surface water samples. Discrete samples will be collected at the designated locations using a PVC pipe equipped with a ball valve or claim shell sampling device at the desired location. The device will be lowered into the sediment with an open valve, the valve will be closed, and the sampling device will be withdrawn. ESI will identify low flow areas (for example inside a curve of the waterway) to obtain representative samples. Excess water will be removed from the sampling device through a drainage port, and the sample will be collected from the reservoir.

Sample locations will be plotted utilizing a hand held GPS for future identification in the post-activity sampling event. Upon completion of the project, three (3) sediment samples will be collected in each location sampled prior to commencement of activities conducted by ESI. Sample locations and representative areas will be identified and documented on a final report map as well as the field logs.

Sediment samples collected prior to commencement of activities by ESI, and upon project completion will be analyzed for the following:

PARAMETER	MATRIX	METHOD
RECAP VOCs	Sediment	EPA8260C
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Sediment	EPA8270D

5.3 Community Soil Sampling

Soil samples will be collected prior to the Initial Acceptance Testing of the Contained Burn Chamber system to establish a baseline. The primary purpose of the sampling and analysis of the community soil sampling is to monitor the community for constituents identified in the USEPA's Baseline Quality Assurance Sampling Plan.

Four (4) air stations will be positioned to monitor the contained burn chamber system. Station locations will include upwind from the system, downwind from the system, at the property boundary, and in the community. The fourth location may not be stationary and may move throughout the project dependent upon prevailing winds. Prior to the Initial Acceptance Testing, one (1) soil sample will be collected from each of the air stations before commencement of destruction activities. Upon completion of the project, each air station location will also be sampled. A single grab soil sample will be collected from the surface soil (0 to 1 inch) at each air monitoring location. Sample locations and representative areas will be identified and documented on a final report map as well as the field logs.

Community soil samples collected before commencement of destruction activities prior to the Initial Acceptance Testing and upon completion of the project will be analyzed for the following constituents identified in the USEPA's Baseline Quality Assurance Sampling Plan:

Parameter	Matrix	Method
RECAP VOCs	Soil	EPA8260C
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D
RCRA Metals[1]	Soil	6020A/7471B

1) RCRA Metals: Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg), Selenium (Se), and Silver (Ag).

5.4 IDW and Waste Characterization

This section describes investigative derived wastes (IDW) generated during activities outlined in this QASP. Soil and water IDW should include: soil cuttings generated during advancement of the boreholes; soil cuttings generated during drilling of the monitoring wells; groundwater collected from the monitoring wells during well development and sampling activities; and equipment decontamination water. Soil and water IDW will be segregated and containerized in 55-gallon steel drums; properly labeled; and stored in a designated holding area at the Camp Minden – Area I M6 Destruction Site pending analytical results for proper disposal.

Laboratory data from the baseline sample event will be used to accurately characterize each matrix for disposal. Additional waste characterization may be conducted upon request by the permitted facility for disposal. Should the disposal facility require additional analysis, a representative composite sample of the waste stream will be collected and analyzed for the specified parameter.

6.0 Quality Assurance/Quality Control (QA/QC) Sample Program

A QA/QC sampling program will be implemented as a systematic process that controls the validity of the analytical results by measuring the accuracy and precision of the analytical method and sample matrix. The QA/QC program also develops expected control limits and uses these limits to detect anomalous events. Subsequently, corrective action techniques are implemented to prevent or minimize recurrence of the events. The accuracy and precision of the sample analyses are assessed by the analysis of both field and laboratory samples. To ensure that reliable data is collected, the data will meet the following requirements:

- The data will be generated using EPA approved SW-846 Test Methods;
- The data will be analyte-specific with the identity and concentration of the compound confirmed;
- Selected analysis reports (approximately 10%) will include raw data such as chromatograms, spectra, and digital values; and
- QA/QC samples will be included.

6.1 Field QA/QC Samples

Field QA/QC samples will be collected by the field sampling team during the collection of soil and/or water samples to insure QA/QC standards are attained. The field QA/QC samples are not included as part of the laboratory’s internal QA/QC program and will be handled by the laboratory as a routine environmental sample. The field team will, to the extent practical, schedule sample collection and shipment of samples to minimize the number of QA/QC samples requiring analysis. A Field Quality Control Sample Summary is provided as Table 3.

6.1.1 Field Duplicate Samples

Each duplicate is defined as a second sample taken in the field at a given location. Immediately following collection of the original sample, the field duplicate sample is collected by using the same collection method. For duplicate soil sampling, a shallow surface sample or a sample interval to be retained for laboratory analysis per RECAP Appendix B criteria will be collected. A discrete soil sample will be collected using the appropriate sampling tool for the desired depth. Water duplicate samples and sediment duplicate samples will be collected using the appropriate sampling device for the procedure and the desired laboratory analytical. The field duplicate sample location and time will not be revealed to the laboratory. Field duplicate samples will be analyzed using the same analyses performed on its associated routine sample.

- Duplicate samples will be collected at a frequency of one (1) per ten (10) field samples per matrix.

6.1.2 Material Spike and Material Spike Duplicate Samples

Material Spike/Material Spike Duplicate (MS/MSD) samples are collected for use as laboratory QC samples for analysis by organic methods. Aqueous samples are collected from one (1) sampling location at triple the normal sample volume for all organic analyses. In the laboratory, MS/MSD samples are split, and two portions are spiked with known amounts of analytes. Analytical results for MS/MSD samples are used to measure the precision and accuracy of the laboratory organic analytical program.

- MS/MSD samples will be collected at a frequency of one (1) per ten (10) field samples per matrix.

6.1.3 Equipment Rinsate Blanks

Equipment rinsate blanks will be collected during the field program to assess the effectiveness of the equipment decontamination methods. An equipment rinsate blank will consist of analyte-free water, which is poured over the decontaminated sampling equipment and subsequently collected in laboratory prepared sample bottles. Equipment rinsate samples will be analyzed for all analytes of interest in the media for which the equipment is being used.

- Rinsate samples will be collected at a frequency of one (1) per day during field sampling activities.

6.1.4 Field Blanks

Field blanks will be included in this program to evaluate the possible introduction of VOCs into samples from external sources. This sample is created by pouring analyte-free water used in the field into a randomly selected, laboratory supplied sample container at the sampling site. Field blanks will be analyzed for VOCs only. The field blank will be obtained near the sampling location and handled as a site sample.

- Field blanks will be collected at a frequency of one (1) per day during field sampling activities.

6.1.5 Trip Blanks

Trip blanks will be included in this program to evaluate the possible introduction of VOCs into samples during sample transit and storage. Trip blanks will include vials of analyte-free water prepared by the laboratory. Trip blank samples will be analyzed for VOCs only.

- Trip blanks will be analyzed at a frequency of one (1) per cooler containing samples for volatiles analysis.

7.0 Field Sample Documentation

Sample custody procedures are based on USEPA-recommended procedures that emphasize careful documentation of sample collection and sample transfer. To ensure that all of the important information pertaining to each sample is recorded, the following documentation procedures shall be obeyed. Table 1 includes a summary of the project documents and records that will be generated for the QASP – Soil and Water.

7.1 Sample Collection

The collection of samples will be in accordance with the established sampling procedures outlined in Section 5.0. Sample containers, preservatives and holding times will be in accordance with USEPA Test Methods for Evaluating Solid Waste (SW-846) document and the contracted laboratory.

Samples will be collected in laboratory-supplied, pre-preserved containers (if applicable). Immediately upon collection, the containers will be sealed, labeled with an identification number, wrapped in bubble pack, and placed on ice in a cooler maintained at approximately 4°C pending shipment to the laboratory. Table 4 summarizes the requirements for containers, preservation techniques, sample volumes, and holding times per matrix.

Decontamination of sampling equipment and tools prior to use and between each sampling location will be performed to minimize the potential for cross-contamination between sample locations. Equipment and tools will be scrubbed in a solution of TSP and distilled water, and tripled rinsed in distilled water. In addition, nitrile gloves will be used while handling samples and sampling equipment.

7.2 Field Logbooks

Project field books will be kept. All pertinent information regarding the site and sampling procedures will be documented in indelible ink. A site activity log will be completed each day sampling activities are conducted. Pertinent information noted on the site activity log should include the date of field activities, a description of activities, weather conditions, any onsite visitors, important phone calls, deviations from the plans/specifications, persons conducting the field activities, and a summary of field events. Notations made on the site activity logs should note the time and date for all entries. In addition, field data will be recorded on the specific field log as appropriate for the activity conducted. Copies of field logs are provided as Attachment A.

7.3 Documenting Sampling Locations

Sample locations will be documented for purposes of generating an accurate representation of the sample locations in the baseline sample event and the post-activity sample event. The locations will be reported using sample location maps. A hand held GPS will be utilized to plot each sample location during the baseline sample event. Waypoints will be uploaded and achieved in the electronic project document file. Upon completion of the project, plotted GPS waypoints may be used as a reference to accurately identify the baseline sample event sample location. Plotted GPS waypoints shall be used for sample location verification in the post-activity sample event. The comparison of the plotted waypoints will determine the precision of the locations sampled.

All samples collected will be logged and identified with a naming system to include the year, month, and day collected. The naming system will be specific to the sample collection point as outlined below:

- Camp Minden – Area I
  -Onsite Soil Sample: (yy,mm,dd Grid#);
  -Perimeter Soil Sample: defined by soil boring (SB) (yy,mm,dd SB# (interval collected); and
  -Groundwater Sample: (yy,mm,dd MW-#).
- Clarkes Bayou
  -Surface Water Sample:
    (yy,mm,dd SW Point of Discharge);
    (yy,mm,dd SW Upstream); and
    (yy,mm,dd SW Downstream).
  -Sediment Sample:
    (yy,mm,dd Sediment Point of Discharge);
    (yy,mm,dd Sediment Upstream); and
    (yy,mm,dd Sediment Downstream).
- Community
  -Community Soil Sample: defined by Air Station (yy,mm,dd Air Station#)
- Waste Characterization (if necessary)
  - Waste Characterization: (yy,mm,dd Waste Stream)

7.4 Sample Packaging and Shipping

Proper sample containers ensure that no chemical alteration occurs during the field sampling and transit to the laboratory. Containers will be delivered by the laboratory or shipped by a commercial supplier. During field activities, sample containers will be selected to ensure compatibility with the matrix and laboratory analytical. Table 4 summarizes the requirements for containers, preservation techniques, sample volumes, and holding times per matrix. Upon collection, the lid of each container will be securely tightened. Samples will be packaged carefully to avoid breakage or cross contamination and will be shipped to the laboratory at proper temperatures. Shipping times will be minimized to prevent holding time violations. All care will be taken following these procedures:

- Deliver samples to the laboratory the same day they are collected, if possible. If samples are to be held until the next day, they will be maintained at approximately 4º C in a controlled environment.
- Sample labels will be affixed to each container. Each label will identify the site name, a unique identification number, collector's name, date and time of collection, preservatives (if any), and analyses to be performed. All labels will be completed in waterproof ink. This same information will be placed on the chain-of-custody (COC) form and the COC will accompany the samples to the laboratory. The water resistant sample label will be completed and affixed to the sample container.
- The sample containers will be packed in coolers with samples from each sampling location grouped together. Packing material will be used to cushion and support the sample container. Sample labels will be verified against the COC form as they are packed.
- The COC will be checked for completeness for the samples contained within the cooler. A copy of relinquished COC forms will be retained with the field documentation. Samples will be maintained under strict COC protocol, including documentation of transfers among facilities and archival after completion of analysis. Samples and signed COC forms will remain in the possession of the field sampler until relinquished for transport to the laboratory.

7.5 Chain-of-Custody Records

Samples will be maintained under strict chain-of-custody (COC) protocol from the time of the sample collection through delivery to the laboratory. The COC involves maintaining the integrity and traceability of the process of sample collection, laboratory analysis, and final evidence files. Each sample container will be recorded on a COC form. The form documents the project number, sample identification, date and time of collection, preservation used (if any), sampler's name, and responsible person during each step of the transportation process. A sample of a COC is included in Attachment A.

A sample is defined as being in one's custody if:

- The sample container is in one's actual possession.
- The sample container is in one's view after being in one's physical possession.
- The sample container has been continuously in one's physical possession and then placed in a secure location.

The COC will be completed in triplicate with the original to accompany the final analytical report, one copy to be retained by the laboratory and the third copy to be retained in the project records. The COC will be placed into a plastic sealable bag and taped to the inside of the cooler lid.

Samples and shipping containers will remain in the custody of a sampling team member until relinquished via dated signature to the laboratory, shipping courier, or other appropriate party, who must sign and date the COC at the time the shipping containers are transferred. If the courier does not sign the COC, the sampler will note the name of the courier company, and the tracking number on the COC.

Laboratory COC begins when samples are received and continues until samples are discarded. Laboratories analyzing samples must follow custody procedures specified in their Standard Operating Procedures (SOPs).

8.0 Laboratory Sample Documentation

All sample log-in, storage and COC documentation will be the responsibility of the laboratory manager or his designee. He is responsible for retaining shipment documents and verifying data entered into the sample custody records. He will also ensure that the sample storage is secure and maintained at the proper temperature. Any problems shall be documented on the COC and the project scientist shall be notified immediately.

All samples shall be kept under the proper environmental control until after the holding times have expired and there are no QA/QC problems with any analysis on the samples. The contracted laboratory Quality Assurance Manual is included in Appendix D of the QAPP.

Sample administration will log the samples into the order entry system and the Laboratory Information Management System (LIMS). The LIMS will assist the tracking of the samples while the samples are in the custody of the laboratory.

9.0 Laboratory Analysis

Laboratory analysis per sample event including, sample locations and rationale for locations are discussed in Section 5.0 and are summarized on Table 2. Tables 5 through 9 specify the analytical laboratory limits and evaluation.

The USEPA and State regulator personnel and their authorized representatives will have access at reasonable times to all laboratories utilized by ESI in implementing the contract. ESI ensures that all laboratories contracted will analyze all samples submitted by EPA pursuant to the QAPP for quality assurance, quality control, and technical activities that will satisfy the stated performance criteria as specified in the QAPP. ESI ensures that the laboratories they utilize for the analysis of samples taken will perform all analyses according to accepted EPA methods. Accepted EPA methods consist of, but are not limited to:

- Methods that are documented in the EPA's Contract Laboratory Program (http://www.epa.gov/superfund/programs/clp/);
- SW 846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (http://www.epa.gov/epawaste/hazard/testmethods/sw846/online/index.htm);
- "Standard Methods for the Examination of Water and Wastewater" (http://www.standardmethods.org/); and
- Amendments made thereto during the course of the implementation of the contract resulting from this RFP.

ESI understands, upon approval by EPA, ESI may use other appropriate analytical methods, as long as:

- QA/QC criteria are contained in the methods, and the methods are included in the QAPP;
- The analytical methods are at least as stringent as the methods listed above; and
- The methods have been approved for use by a nationally recognized organization responsible for verification and publication of analytical methods, e.g., EPA, ASTM, NIOSH, OSHA, etc.

ESI ensures that all laboratories they use for analysis of samples have a documented Quality System that complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001, reissued May 2006), or equivalent documentation as determined by EPA. ESI understands EPA may consider Environmental Response Laboratory Network ("ERLN") laboratories, laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP"), or laboratories that meet International Standardization Organization (ISO 17025) standards or other nationally recognized programs (www.epa.gov/fem/accredit.htm) as meeting the Quality System requirements. All contracted testing companies and laboratories used to generate monitoring data will be Louisiana Environmental Laboratory Accreditation Program (LELAP) certified per LAC 33:I.subpart 3.

ESI, on behalf of the Military Department, will submit to EPA the results of all sampling and/or tests or other data obtained or generated by or on behalf of Military Department with respect to the project. ESI understands that the USEPA and the State of Louisiana regulating authorities retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes and regulations.

TABLES

Table 1
Project Documents and Records
M6 Destruction Project
Camp Minden National Guard Training Site

Sample Collection Documents and Records	**On-Site Analysis Documents and Records**	**Off-Site Analysis Documents and Records**	**Data Assessment Documents and Records**
Site Activity Logs	Equipment Calibaration Log	Sample Receipt, Custody and/or Tracking Logs	Approved Project Plans
Tailgate Safety Logs	Soil Boring Logs	Data packages (case narratives, sample results, QC summaries and raw data)	Analytical Sample Results
Photograph Log	Well Construction Diagram	Sample Disposal and Waste Manifest	Subcontract Laboratory Certifications
Chain-of-Custody Forms	Well Development Data	Baseline Data Report	Subcontract Laboratory QA Plan
Air Bills	Monitoring Well Logs (Water Quality Data, Water Level Measurement Data)	Quarterly Monitoring Reports	Data Package Validated Data Reports
	Survey Records	Post Activity Data Report	
	Photographs		
	Photograph Log		
	Waste Manifest		

Table 2
Sample Locations and Methods
M6 Destruction Project
Camp Minden National Guard Training Site

Sample Location[1]	Sample Naming System[2]	Matrix	Depth	Analytical Group/Method	Concentration Level[3]	Number of Sample Locations	Rationale for Sample Location
Baseline Sampling Event							
On-Site	Grid Locations	Soil	0-2 ft-bgs	Nitroaromatics and Nitramines (Method 8330B) RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	35	To establish a baseline that can be used for site closeout and site restoration.
On-Site	Grid Locations	Soil	0-2 ft-bgs	Nitrocellulose (353.2 Modified) RCRA Metals (6020A/7471B) Dioxins/furans (1613B)	Unknown	4	To establish a baseline that can be used for site closeout and site restoration.
On-Site	Grid Locations	Soil	0-2 ft-bgs	TPH-GRO (8015B) TPH-DRO (8015B)	Unknown	1	To establish a baseline that can be used for site closeout and site restoration.
Perimeter	(RECAP Criteria)[5] SB-1 ( ), SB-1 ( ), SB-1 ( ) SB-2( ), SB-2 ( ), SB-2 ( ) SB-3 ( ), SB-3 ( ), SB-3 ( ) SB-4 ( ), SB-4 ( ), SB-4 ( ) SB-5 ( ), SB-5 ( ), SB-5 ( ) SB-6 ( ), SB-6 ( ), SB-6 ( )	Soil	Varies	Nitroaromatics and Nitramines (Method 8330B) RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	18	To establish a baseline that can be used for site closeout and site restoration.
Community	Station #1 Station #2 Station #3 Station #4	Soil	0-1 inch	RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4] RCRA Metals (6020A/7471B)	Unknown	4	To establish a baseline that can be used for site closeout and site restoration.
Monitoring Wells	MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6	Groundwater	Varies	Nitroaromatics and Nitramines (Method 8330B) RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	6	To establish a baseline that can be used for trending purposes.
Clarke Bayou	SW Upstream SW Downstream SW Point of Discharge	Surface Water		RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	3	To establish a baseline that can be used to monitor the non-point sources of pollution.
Clarke Bayou	Sediment Upstream Sediment Downstream Sediment Point of Discharge	Sediment		RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	3	To establish a baseline that can be used to monitor the non-point sources of pollution.
Quarterly Sampling Event							
Monitoring Wells	MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6	Groundwater	Varies	Nitroaromatics and Nitramines (Method 8330B) RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	6	To monitor during destruction activities and used for trending purposes.
Post Project Sampling Event							
On-Site	Grid Locations	Soil	0-2 ft-bgs	Nitroaromatics and Nitramines (Method 8330B) RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	35	To determine the impact of destruction activities for use in site restoration.

Table 2
Sample Locations and Methods
M6 Destruction Project
Camp Minden National Guard Training Site

Sample Location[1]	Sample Naming System[2]	Matrix	Depth	Analytical Group/Method	Concentration Level[3]	Number of Sample Locations	Rationale for Sample Location
On-Site	Grid Locations	Soil	0-2 ft-bgs	Nitrocellulose (353.2 Modified) RCRA Metals (6020A/7471B) Dioxins/furans (1613B)	Unknown	4	To establish a baseline that can be used for site closeout and site restoration.
On-Site	Grid Locations	Soil	0-2 ft-bgs	TPH-GRO (8015B) TPH-DRO (8015B)	Unknown	1	To establish a baseline that can be used for site closeout and site restoration.
Community	Station #1 Station #2 Station #3 Station #4	Soil	0-1 inch	RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4] RCRA Metals (6020A/7471B)	Unknown	4	To determine the impact of destruction activities for use in site restoration.
Monitoring Wells	MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6	Groundwater	Varies	Nitroaromatics and Nitramines (Method 8330B) RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	6	To determine the impact of destruction activities for use in site restoration.
Clarke Bayou	SW Upstream SW Downstream SW Point of Discharge	Surface Water		RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	3	To verify that destruction activities have not caused an impact at the point of discharge.
Clarke Bayou	Sediment Upstream Sediment Downstream Sediment Point of Discharge	Sediment		RECAP VOCs (SW 846-8260C) RECAP SVOCs (SW 846-8270D)[4]	Unknown	3	To verify that destruction activities have not caused an impact at the point of discharge.

Notes:
1) The Sample Location Map is provided as Figure 3.
2) Sample naming system will include the collection date.
3) Data from the Baseline Sample event will determine Project closeout and site restoration
4) Method 8270 will include RECAP SVOCs constituents and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine.
5) Sample intervals submitted for laboratory analysis are in accordance with RECAP Appendix B criteria.

Table 3
Field Quality Control Sample Summary
M6 Destruction Project
Camp Minden National Guard Training Site

Matrix	Analytical Group	Concentration Level	Analytical Method	No. of Samples Collected	No. of Field Duplicates[1]	No. of Matrix Spikes[2]	No. of Matrix Spike Duplicates[2]	No. of Field Blanks[3]	No. of Equip. Blanks[4]	No. of Trip Blanks[5]
					Baseline Sampling Event					
Soil	Nitroaromatics and Nitramines	Unknown	EPA8330B	52	1/10	1/10	1/10	1/day	1/day	-
Soil	RECAP VOCs	Unknown	EPA8260C	56	1/10	1/10	1/10	1/day	1/day	1/ice chest
Soil	RECAP SVOCs	Unknown	EPA8270D[6]	56	1/10	1/10	1/10	1/day	1/day	-
Soil	RCRA Metals	Unknown	6020A/7471B	8	-	-	-	-	-	-
Soil	Dioxins/Furans	Unknown	1613B	4	-	-	-	-	-	-
Soil	Nitrocellulose	Unknown	353.2	4	-	-	-	-	-	-
Soil	TPH-GRO	Unknown	8015B	1	-	-	-	-	-	-
Soil	TPH-DRO	Unknown	8015B	1	-	-	-	-	-	-
Sediment	RECAP VOCs	Unknown	EPA8260C	3	1/10	1/10	1/10	1/day	1/day	1/ice chest
Sediment	RECAP SVOCs	Unknown	EPA8270D[6]	3	1/10	1/10	1/10	1/day	1/day	-
Groundwater	Nitroaromatics and Nitramines	Unknown	EPA8330B	6	1/10	1/10	1/10	1/day	1/day	-
Groundwater	RECAP VOCs	Unknown	EPA8260C	6	1/10	1/10	1/10	1/day	1/day	1/ice chest
Groundwater	RECAP SVOCs	Unknown	EPA8270D[6]	6	1/10	1/10	1/10	1/day	1/day	-
Surface Water	RECAP VOCs	Unknown	EPA8260C	3	1/10	1/10	1/10	1/day	1/day	1/ice chest
Surface Water	RECAP SVOCs	Unknown	EPA8270D[6]	3	1/10	1/10	1/10	1/day	1/day	-
					Quarterly Sampling Event					
Groundwater	Nitroaromatics and Nitramines	Unknown	EPA8330B	6	1/10	1/10	1/10	1/day	1/day	-
Groundwater	RECAP VOCs	Unknown	EPA8260C	6	1/10	1/10	1/10	1/day	1/day	1/ice chest
Groundwater	RECAP SVOCs	Unknown	EPA8270D[6]	6	1/10	1/10	1/10	1/day	1/day	-
					Post Project Sampling Event					
Soil	Nitroaromatics and Nitramines	Unknown	EPA8330B	34	1/10	1/10	1/10	1/day	1/day	-
Soil	RECAP VOCs	Unknown	EPA8260C	38	1/10	1/10	1/10	1/day	1/day	1/ice chest
Soil	RECAP SVOCs	Unknown	EPA8270D[6]	38	1/10	1/10	1/10	1/day	1/day	-
Soil	RCRA Metals	Unknown	6020A/7471B	8	-	-	-	-	-	-
Soil	Dioxins/Furans	Unknown	1613B	4	-	-	-	-	-	-
Soil	Nitrocellulose	Unknown	353.2	4	-	-	-	-	-	-
Soil	TPH-GRO	Unknown	8015B	1	-	-	-	-	-	-
Soil	TPH-DRO	Unknown	8015B	1	-	-	-	-	-	-
Sediment	RECAP VOCs	Unknown	EPA8260C	3	1/10	1/10	1/10	1/day	1/day	1/ice chest
Sediment	RECAP SVOCs	Unknown	EPA8270D[6]	3	1/10	1/10	1/10	1/day	1/day	-
Groundwater	Nitroaromatics and Nitramines	Unknown	EPA8330B	6	1/10	1/10	1/10	1/day	1/day	-
Groundwater	RECAP VOCs	Unknown	EPA8260C	6	1/10	1/10	1/10	1/day	1/day	1/ice chest
Groundwater	RECAP SVOCs	Unknown	EPA8270D[6]	6	1/10	1/10	1/10	1/day	1/day	-
Surface Water	RECAP VOCs	Unknown	EPA8260C	3	1/10	1/10	1/10	1/day	1/day	1/ice chest
Surface Water	RECAP SVOCs	Unknown	EPA8270D[6]	3	1/10	1/10	1/10	1/day	1/day	-

Notes:

1) At least 1 duplicate sample will be collected per 10 field samples per matrix. Number listed will change based on number of shipments scheduled.
2) At least 1 matrix spike/matrix spike duplicate will be collected per 10 field samples. Number listed will change based on number of shipments scheduled.
3) At least 1 field blank will be collected each day sampling activites are conducted. Number listed will change based on number of field sampling days.
4) An equipment blank will be collected each day sampling activites are conducted. Number listed will change based on number of field sampling days.
5) A trip blank will be included with each cooler that is shipped containing VOC samples, amount listed will change based on number of coolers.
6) Method 8270 will include RECAP SVOCs constituents and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine.

Table 4
Requirements for Containers, Preservation Techniques, Sample Volume and Holding Times
M6 Destruction Project
Camp Minden National Guard Training Site

Parameter	Matrix	Method	Container	Preservative	Sample Minimum Volume	Holding Time
Soil						
Nitroaromatics and Nitramines	Soil	EPA8330B	Glass	None	4 oz	14 Days
RECAP VOCs	Soil	EPA8260C	40 mL tared voa vial	Methanol	3 x 40 mL tared voa vial	14 Days
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D	Glass	None	4 oz	14 Days
RCRA Metals[1]	Soil	6020A/7471B	Glass	None	4 oz	28 Days
Dioxins/Furans	Soil	1613B	Glass	None	4 oz	1 Year
Nitrocellulose	Soil	EPA353.2 Modified[3]	Glass	None	4 oz	14 Days
Total Petroleum Hydrocarbons – Gasoline Range Organics	Soil	8015B	40 mL tared voa vial	Methanol	3 x 40 mL tared voa vial	14 Days
Total Petroleum Hydrocarbons – Diesel Range Organics	Soil	8015B	Glass	None	4 oz	14 Days
Sediment						
RECAP VOCs	Soil	EPA8260C	40 mL tared voa vial	Methanol	3 x 40 mL tared voa vial	14 Days
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Soil	EPA8270D	Glass	None	4 oz	14 Days
Groundwater						
Nitroaromatics and Nitramines	Water	EPA8330B	Amber Glass	None	1 Liter	7 Days
RECAP VOCs	Water	EPA8260C	40 mL tared voa vial	HCl	3 x 40 mL tared voa vial	14 Days

Table 4
Requirements for Containers, Preservation Techniques, Sample Volume and Holding Times
M6 Destruction Project
Camp Minden National Guard Training Site

Parameter	Matrix	Method	Container	Preservative	Sample Minimum Volume	Holding Time
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Water	EPA8270D	Amber Glass	None	1 Liter	7 Days
Surface Water						
RECAP VOCs	Water	EPA8260C	40 mL tared voa vial	HCl	3 x 40 mL tared voa vial	14 Days
RECAP SVOCs (and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine)	Water	EPA8270D	Amber Glass	None	1 Liter	7 Days

1) RCRA Metals: Arsenic (As), Barium (Ba), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg), Selenium (Se), and Silver (Ag).

Table 5
Area I Soil Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte			Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
					MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Nitroaromatics and Nitramines (ug/kg)								
Regional Screening Level Summary Table[3]	**Screening Level[3]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
1,3,5-Trinitrobenzene	3,200,000	3,200,000	Soil	250	250	8330B	27.4	250
1,3-Dinitrobenzene	8,200	8,200	Soil	250	250	8330B	43.5	250
2,4,6-Trinitrotoluene	51,000	51,000	Soil	250	250	8330B	35.7	250
2,4-Dinitrotoluene	7,400	7,400	Soil	250	250	8330B	37.7	250
2,6-Dinitrotoluene	1,500	1,500	Soil	250	250	8330B	63.7	250
2-Amino-4,6-dinitrotoluene	230,000	230,000	Soil	250	250	8330B	42.8	250
2-Nitrotoluene	15,000	15,000	Soil	250	250	8330B	65.1	250
3-Nitrotoluene	8,200	8,200	Soil	250	250	8330B	55.6	250
4-Amino-2,6-dinitrotoluene	230,000	230,000	Soil	250	250	8330B	93.3	250
4-Nitrotoluene	140,000	140,000	Soil	250	250	8330B	81.3	250
HMX	5,700,000	5,700,000	Soil	250	250	8330B	38.8	250
Nitrobenzene	22,000	22,000	Soil	250	250	8330B	43.2	250
Nitroglycerin	8,200	8,200	Soil	1250	1250	8330B	270	1250
Pentaerythritol Tetranitrate	160,000	160,000	Soil	2500	2500	8330B	344	2500
RDX	28,000	28,000	Soil	250	250	8330B	62.2	250
Tetryl	230,000	230,000	Soil	250	250	8330B	45.9	250
Volatile Organic Compounds (ug/kg)								
RECAP Screening Standards[4]	**Screening Level[4]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
Acetone	1,500	1,500	Soil	20.0	20.0	8260C	6.47	20.0
Benzene	51	51	Soil	5.00	5.00	8260C	0.250	5.00
Bromoform	1,800	1,800	Soil	5.00	5.00	8260C	0.370	5.00
Bromodichloromethane	920	920	Soil	5.00	5.00	8260C	0.250	5.00
Bromomethane	40	40	Soil	10.0	10.0	8260C	1.10	10.0
2-Butanone (methyl ethyl ketone)	5,000	5,000	Soil	20.0	20.0	8260C	1.92	20.0
Carbon disulfide	11,000	11,000	Soil	5.00	5.00	8260C	0.690	5.00
Carbon tetrachloride	110	110	Soil	5.00	5.00	8260C	0.510	5.00
Chlorobenzene	3,000	3,000	Soil	5.00	5.00	8260C	0.380	5.00
Dibromochloromethane (chlorodibromomethane)	1,000	1,000	Soil	5.00	5.00	8260C	0.410	5.00
Chloroethane	35	35	Soil	10.0	10.0	8260C	0.520	10.0
Chloroform	300	900	Soil	5.00	5.00	8260C	0.380	5.00
Chloromethane	100	100	Soil	10.0	10.0	8260C	0.650	10.0
1,2-Dibromo-3-chloropropane	10	10	Soil	10.0	10.0	8260C	1.45	10.0
1,1-Dichloroethane	7,500	7,500	Soil	5.00	5.00	8260C	0.390	5.00
1,2-Dichloroethane	35	35	Soil	5.00	5.00	8260C	0.870	5.00
cis-1,2-Dichloroethene	490	490	Soil	5.00	5.00	8260C	0.600	5.00
trans-1,2-Dichloroethene	770	770	Soil	5.00	5.00	8260C	0.940	5.00
1,1-Dichloroethene	85	85	Soil	5.00	5.00	8260C	1.61	5.00
1,2-Dichloropropane	42	42	Soil	5.00	5.00	8260C	0.380	5.00
1,3-Dichloropropene, Total	40	40	Soil	10.0	10.0	8260C	0.95	10.0
Ethyl benzene	19,000	19,000	Soil	5.00	5.00	8260C	0.300	5.00
Hexachlorobutadiene	5,500	5,500	Soil	5.00	5.00	8260C	0.680	5.00
Isobutylalcohol	30,000	30,000	Soil	200	200	8260C	25.4	200
Methylene Chloride	17	17	Soil	5.00	5.00	8260C	1.58	5.00
4-Methyl-2-pentanone (methyl isobutyl ketone)	6,400	6,400	Soil	20.0	20.0	8260C	0.730	20.0
Methyl tert-butyl ether (MTBE)	77	77	Soil	5.00	5.00	8260C	0.480	5.00
Trichlorofluoromethane	37,000	37,000	Soil	5.00	5.00	8260C	0.500	5.00

Analyte			Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
					MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Trichloroethene	73	73	Soil	5.00	5.00	8260C	0.390	5.00
1,1,1-Trichloroethane	4,000	4,000	Soil	5.00	5.00	8260C	0.430	5.00
Vinyl Chloride	13	13	Soil	5.00	5.00	8260C	0.430	5.00
Xylenes (total)	120,000	150,000	Soil	5.00	5.00	8260C	0.570	5.00
1,1,1,2-Tetrachloroethane	46	46	Soil	5.00	5.00	8260C	0.350	5.00
1,1,2,2-Tetrachloroethane	6	6	Soil	5.00	5.00	8260C	0.400	5.00
1,1,2-Trichloroethane	58	58	Soil	5.00	5.00	8260C	0.570	5.00
Styrene	11,000	11,000	Soil	5.00	5.00	8260C	0.350	5.00
Tetrachloroethene (tetrachloroethylene)	180	180	Soil	5.00	5.00	8260C	0.320	5.00
Toluene	20,000	20,000	Soil	5.00	5.00	8260C	0.700	5.00
Semi-Volatile Organic Compounds (ug/kg)								
RECAP Screening Standards[4]	**Screening Level[4]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
1,1 Biphenyl	190,000	190,000	Soil	330	330	8270D	33.3	330
1,2,4,5-Tetrachlorobenzene	6,900	6,900	Soil	330	330	8270D	33.3	330
1,2,4-Trichlorobenzene	14,000	14,000	Soil	330	330	8270D	33.3	330
1,2-Dichlorobenzene	29,000	29,000	Soil	330	330	8270D	33.3	330
1,3-Dichlorobenzene	2,100	2,100	Soil	330	330	8270D	33.3	330
1,3-Dinitrobenzene	250	250	Soil	330	330	8270D	33.3	330
1,4-Dichlorobenzene	5,700	5,700	Soil	330	330	8270D	33.3	330
Bis(2-chlorisopropyl)ether	800	800	Soil	330	330	8270D	33.3	330
2,3,4,6-Tetrachlorophenol	31,000	31,000	Soil	1600	1600	8270D	33.3	1600
2,4,5-Trichlorophenol	320,000	320,000	Soil	330	330	8270D	33.3	330
2,4,6-Trichlorophenol	1,300	1,300	Soil	330	330	8270D	33.3	330
2,4-Dichlorophenol	12,000	12,000	Soil	330	330	8270D	33.3	330
2,4-Dimethylphenol	20,000	20,000	Soil	330	330	8270D	33.3	330
2,4-Dinitrophenol	1,700	1,700	Soil	1600	1600	8270D	330	1600
2,4-Dinitrotoluene	1,000	1,000	Soil	330	330	8270D	33.3	330
2,6-Dinitrotoluene	390	390	Soil	330	330	8270D	33.3	330
2-Chloronaphthalene	500,000	500,000	Soil	330	330	8270D	33.3	330
2-Chlorophenol	1,400	1,400	Soil	330	330	8270D	33.3	330
2-Methylnaphthalene	1,700	1,700	Soil	330	330	8270D	33.3	330
2-Nitroaniline	1,700	1,700	Soil	330	330	8270D	33.3	330
3,3-Dichlorobenzidine	1,800	1,800	Soil	1600	1600	8270D	330	1600
3-Nitroaniline	1,700	1,700	Soil	330	330	8270D	33.3	330
4-Nitroaniline	1,700	1,700	Soil	1600	1600	8270D	330	1600
4-Nitrophenol	2,600	2,600	Soil	1600	1600	8270D	330	1600
Acenaphthene	220,000	220,000	Soil	330	330	8270D	33.3	330
Acenaphthylene	88,000	88,000	Soil	330	330	8270D	33.3	330
Aniline	65	65	Soil	330	330	8270D	59.9	330
Anthracene	120,000	120,000	Soil	330	330	8270D	33.3	330
Benz(a)anthracene	2,900	330,000	Soil	330	330	8270D	33.3	330
Benzo(a)pyrene	330	23,000	Soil	330	330	8270D	33.3	330
Benzo(b)fluoranthene	2,900	220,000	Soil	330	330	8270D	33.3	330
Benzo(k)fluoranthene	29,000	120,000	Soil	330	330	8270D	33.3	330
Bis(2-chloroethyl)ether	330	330	Soil	330	330	8270D	33.4	330
Bis(2-ethylhexyl)phthalate	79,000	79,000	Soil	330	330	8270D	45.3	330
Butyl benzyl phthalate	220,000	220,000	Soil	330	330	8270D	33.3	330
Chrysene	76,000	76,000	Soil	330	330	8270D	33.3	330
Di-n-octyl phthalate	3,500,000	10,000,000	Soil	330	330	8270D	33.3	330
Dibenz(a,h)anthracene	330	540,000	Soil	330	330	8270D	33.3	330

Analyte			Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
					MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Dibenzofuran	24,000	24,000	Soil	330	330	8270D	33.3	330
Diethyl phthalate	360,000	360,000	Soil	330	330	8270D	33.3	330
Dimethyl phthalate	1,500,000	1,500,000	Soil	330	330	8270D	33.3	330
Fluoranthene	1,200,000	1,200,000	Soil	330	330	8270D	33.3	330
Fluorene	230,000	230,000	Soil	330	330	8270D	33.3	330
Hexachlorobutadiene	5,500	5,500	Soil	330	330	8270D	33.3	330
Hexachlorobenzene	2,000	9,600	Soil	330	330	8270D	33.3	330
Hexachlorocyclopentadiene	9,400	1,200,000	Soil	1600	1600	8270D	330	1600
Hexachloroethane	2,200	2,200	Soil	330	330	8270D	33.3	330
Indeno(1,2,3-cd)pyrene	2,900	9,200	Soil	330	330	8270D	33.3	330
Isophorone	560	560	Soil	330	330	8270D	33.3	330
N-Nitrosodi-n-propylamine	330	330	Soil	330	330	8270D	33.3	330
N-Nitrosodiphenylamine	2,100	2,100	Soil	330	330	8270D	33.3	330
Naphthalene	1,500	1,500	Soil	330	330	8270D	33.3	330
Nitrobenzene	330	330	Soil	330	330	8270D	33.3	330
Pentachlorophenol	1,700	1,700	Soil	660	660	8270D	330	660
Phenanthrene	660,000	660,000	Soil	330	330	8270D	33.3	330
Phenol	11,000	11,000	Soil	330	330	8270D	33.3	330
Pyrene	1,100,000	1,100,000	Soil	330	330	8270D	33.3	330
Regional Screening Level Summary Table[3]	**Screening Level[3]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
Di-n-butyl phthalate	8,200,000	8,200,000	Soil	330	330	8270D	33.3	330
Diphenylamine	2,100,000	2,100,000	Soil	330	330	8270D	33.3	330
RCRA Metals (mg/kg)								
RECAP Screening Standards[4]	**Screening Level[4]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
Arsenic	12	NA	Soil	1.00	1.00	6020A	0.260	1.00
Barium	2,000	NA	Soil	2.00	2.00	6020A	0.0940	2.00
Cadmium	20	NA	Soil	0.0500	0.0500	6020A	0.0160	0.0500
Chromium	100	NA	Soil	1.00	1.00	6020A	0.450	1.00
Lead	100	NA	Soil	0.300	0.300	6020A	0.100	0.300
Mercury	4	NA	Soil	0.0330	0.0330	7471B	0.0110	0.0330
Selenium	20	NA	Soil	0.500	0.500	6020A	0.158	0.500
Silver	100	NA	Soil	0.200	0.200	6020A	0.0240	0.200
Dioxins/Furans (pg/g)								
Regional Screening Level Summary Table[5]	**Screening Level[5]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
2,3,7,8-TCDD	22	NA	Soil	1	1	1613B	N/A	1
2,3,7,8-TetraCDF	NP	NA	Soil	1	1	1613B	N/A	1
1,2,3,7,8-PentaCDD	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,7,8-PentaCDF	NP	NA	Soil	5	5	1613B	N/A	5
2,3,4,7,8-PentaCDF	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,4,7,8-HexaCDD	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,6,7,8-HexaCDD	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,7,8,9-HexaCDD	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,4,7,8-HexaCDF	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,6,7,8-HexaCDF	NP	NA	Soil	5	5	1613B	N/A	5

Table 5
Area I Soil Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte			Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
					MDLs[1]	Method[1]	MDLs[2]	QLs[2]
1,2,3,7,8,9-HexaCDF	NP	NA	Soil	5	5	1613B	N/A	5
2,3,4,6,7,8-HexaCDF	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,4,6,7,8-HeptaCDD	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,4,6,7,8-HeptaCDF	NP	NA	Soil	5	5	1613B	N/A	5
1,2,3,4,7,8,9-HeptaCDF	NP	NA	Soil	5	5	1613B	N/A	5
OctaCDD	NP	NA	Soil	10	10	1613B	N/A	10
OctaCDF	NP	NA	Soil	10	10	1613B	N/A	10
General Chemistry (mg/kg)								
Regional Screening Level Summary Table[3]	**Screening Level[3]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
Nitrocellulose	250,000,000	NA	Soil	5.00	5.00	353.2_Nitrocell	0.780	5.00
Diesel Range Organics (mg/kg)								
RECAP Screening Standards[4]	**Screening Level[4]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
Diesel Range Organics [C10-C28]	65	NA	Soil	25.0	25.0	8015B_DRO	0.333	25.0
Gasoline Range Organics (mg/kg)								
RECAP Screening Standards[4]	**Screening Level[4]**							
	Surface Soil (0-15 ft bgs)	**Sub-Surface Soil (>15 ft bgs)**						
Gasoline Range Organics [C6-C12]	65	NA	Soil	0.100	0.100	8015B_GRO	0.0100	0.100

Notes:

[1] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[2] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] The United States Environmental Protection Agency (USEPA) Regional Screening Level (RSL) Summary Table (TR = 1E-06, THQ = 0.1) June 2015 (revised). The USEPA, RSL for industrial soil was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

[4] The most conservative Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) Screening Standard (dated October 2003) of the soil for industrial use (SSi) and the soil concentration protective of groundwater (SSGW) was determined as the Screening Level for surface soil. The soil concentration protective of groundwater (SSGW) LDEQ RECAP Screening Standard (RSS) was determined as the Screening Level for subsurface soil. The LDEQ RECAP document (October 2003) defines surface soil as the interval present from the ground surface to a depth of 15 feet below ground surface, and subsurface soil as the interval present from 15 feet below ground surface to the depth of impact. Data from the baseline sample event will establish site closeout and site restoration.

[5] The USEPA, RSL Summary Table (TR = 1E-06, THQ = 0.1) June 2015 (revised). The USEPA, RSL for industrial soil was determined as the Screening Level for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). The 2005 World Hospital Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors (TEFs) for Dioxins and Dioxin like compounds will be used to calculate the total TCDD Toxic Equivalent (TEQ) in each medium. Total TEQs in each medium will be compared to the Screening Level for TCDD. Data from the baseline sample event will establish site closeout and site restoration.

Abbreviations:

ug/kg = micrograms per killograms
mg/kg = milligrams per killograms
pg/g = picogram per gram
RECAP = Risk Evaluation/Corrective Action Program
SSni = Soil Screening non-industrial
SSi = Soil Screening industrial
SSGW = Soil Screening protective of groundwater
NA = Not Analyzed
NP = Not Published

Table 6
Groundwater Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Nitroaromatics and Nitramines (ug/L)							
Regional Screening Level Summary Table[3]	**Screening Level[3]**						
1,3,5-Trinitrobenzene	59	Water	0.200	0.200	8330B	0.057	0.200
1,3-Dinitrobenzene	0.2	Water	0.200	0.200	8330B	0.100	0.200
2,4,6-Trinitrotoluene	0.98	Water	0.200	0.200	8330B	0.080	0.200
2,4-Dinitrotoluene	0.24	Water	0.200	0.200	8330B	0.081	0.200
2,6-Dinitrotoluene	0.048	Water	0.200	0.200	8330B	0.126	0.200
2-Amino-4,6-dinitrotoluene	3.9	Water	0.200	0.200	8330B	0.118	0.200
2-Nitrotoluene	0.31	Water	0.500	0.500	8330B	0.095	0.500
3-Nitrotoluene	0.17	Water	0.200	0.200	8330B	0.123	0.200
4-Amino-2,6-dinitrotoluene	3.9	Water	0.200	0.200	8330B	0.123	0.200
4-Nitrotoluene	4.2	Water	0.500	0.500	8330B	0.139	0.500
HMX	100	Water	0.200	0.200	8330B	0.106	0.200
Nitrobenzene	0.14	Water	0.200	0.200	8330B	0.082	0.200
Nitroglycerin	0.2	Water	1.000	1.000	8330B	0.544	1.000
Pentaerythritol Tetranitrate	3.9	Water	2.000	2.000	8330B	0.608	2.000
RDX	0.7	Water	0.200	0.200	8330B	0.094	0.200
Tetryl	3.9	Water	0.200	0.200	8330B	0.059	0.200
Volatile Organic Compounds (ug/L)							
RECAP Screening Standards[4]	**Screening Level[4]**						
Acetone	100	Water	20.0	20.0	8260C	6.67	20.0
Benzene	5	Water	5.00	5.00	8260C	0.250	5.00
Bromoform	100	Water	5.00	5.00	8260C	0.370	5.00
Bromodichloromethane	100	Water	5.00	5.00	8260C	0.250	5.00
Bromomethane	10	Water	10.0	10.0	8260C	0.400	10.0
2-Butanone (methyl ethyl ketone)	190	Water	20.0	20.0	8260C	0.390	20.0
Carbon disulfide	100	Water	5.00	5.00	8260C	0.370	5.00
Carbon tetrachloride	5	Water	5.00	5.00	8260C	0.360	5.00
Chlorobenzene	100	Water	5.00	5.00	8260C	0.380	5.00
Dibromochloromethane (chlorodibromomethane)	100	Water	5.00	5.00	8260C	0.330	5.00
Chloroethane	10	Water	10.0	10.0	8260C	0.380	10.0
Chloroform	100	Water	5.00	5.00	8260C	0.150	5.00
Chloromethane	10	Water	10.0	10.0	8260C	0.550	10.0
1,2-Dibromo-3-chloropropane	0.2	Water	10.0	10.0	8260C	1.15	10.0
1,1-Dichloroethane	81	Water	5.00	5.00	8260C	0.390	5.00
1,2-Dichloroethane	5	Water	5.00	5.00	8260C	0.370	5.00
cis-1,2-Dichloroethene	70	Water	5.00	5.00	8260C	0.160	5.00
trans-1,2-Dichloroethene	100	Water	5.00	5.00	8260C	0.180	5.00
1,1-Dichloroethene	7	Water	5.00	5.00	8260C	0.370	5.00
1,2-Dichloropropane	5	Water	5.00	5.00	8260C	0.320	5.00
1,3-Dichloropropene, Total	5	Water	10.0	10.0	8260C	0.690	10.0
Ethyl benzene	700	Water	5.00	5.00	8260C	0.300	5.00
Hexachlorobutadiene	0.73	Water	5.00	5.00	8260C	0.025	5.00
Isobutylalcohol	1100	Water	200	200	8260C	7.34	200
Methylene Chloride	5	Water	5.00	5.00	8260C	1.67	5.00
4-Methyl-2-pentanone (methyl isobutyl ketone)	200	Water	20.0	20.0	8260C	0.330	20.0

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Methyl tert-butyl ether (MTBE)	20	Water	5.00	5.00	8260C	0.400	5.00
Trichlorofluoromethane	130	Water	5.00	5.00	8260C	0.220	5.00
Trichloroethene	5	Water	5.00	5.00	8260C	0.290	5.00
1,1,1-Trichloroethane	200	Water	5.00	5.00	8260C	0.290	5.00
Vinyl Chloride	2	Water	5.00	5.00	8260C	0.430	5.00
Xylenes (total)	10000	Water	5.00	5.00	8260C	0.570	5.00
1,1,1,2-Tetrachloroethane	5	Water	5.00	5.00	8260C	0.250	5.00
1,1,2,2-Tetrachloroethane	0.5	Water	5.00	5.00	8260C	0.430	5.00
1,1,2-Trichloroethane	5	Water	5.00	5.00	8260C	0.570	5.00
Styrene	100	Water	5.00	5.00	8260C	0.350	5.00
Tetrachloroethene (tetrachloroethylene)	5	Water	5.00	5.00	8260C	0.280	5.00
Toluene	1000	Water	5.00	5.00	8260C	1.00	5.00
Semi-Volatile Organic Compounds (ug/L)							
RECAP Screening Standards[4]	**Screening Level[4]**						
1,1 Biphenyl	30	Water	10.0	10.0	8270D	1.00	10.0
1,2,4,5-Tetrachlorobenzene	1.1	Water	10.0	10.0	8270D	1.00	10.0
1,2,4-Trichlorobenzene	70	Water	10.0	10.0	8270D	1.00	10.0
1,2-Dichlorobenzene	600	Water	10.0	10.0	8270D	1.00	10.0
1,3-Dichlorobenzene	10	Water	10.0	10.0	8270D	1.00	10.0
1,3-Dinitrobenzene	10	Water	10.0	10.0	8270D	1.00	10.0
1,4-Dichlorobenzene	75	Water	10.0	10.0	8270D	1.00	10.0
Bis(2-chlorisopropyl)ether	5.7	Water	10.0	10.0	8270D	1.00	10.0
2,3,4,6-Tetrachlorophenol	110	Water	50.0	50.0	8270D	1.00	50.0
2,4,5-Trichlorophenol	370	Water	10.0	10.0	8270D	1.00	10.0
2,4,6-Trichlorophenol	10	Water	10.0	10.0	8270D	1.00	10.0
2,4-Dichlorophenol	11	Water	10.0	10.0	8270D	1.00	10.0
2,4-Dimethylphenol	73	Water	10.0	10.0	8270D	1.00	10.0
2,4-Dinitrophenol	50	Water	50.0	50.0	8270D	2.00	50.0
2,4-Dinitrotoluene	10	Water	10.0	10.0	8270D	1.00	10.0
2,6-Dinitrotoluene	10	Water	10.0	10.0	8270D	2.16	10.0
2-Chloronaphthalene	49	Water	10.0	10.0	8270D	1.00	10.0
2-Chlorophenol	10	Water	10.0	10.0	8270D	1.00	10.0
2-Methylnaphthalene	0.62	Water	10.0	10.0	8270D	1.00	10.0
2-Nitroaniline	50	Water	10.0	10.0	8270D	1.10	10.0
3,3-Dichlorobenzidine	20	Water	50.0	50.0	8270D	1.29	50.0
3-Nitroaniline	50	Water	10.0	10.0	8270D	1.00	10.0
4-Nitroaniline	50	Water	10.0	10.0	8270D	1.00	10.0
4-Nitrophenol	50	Water	10.0	10.0	8270D	2.00	10.0
Acenaphthene	37	Water	10.0	10.0	8270D	1.00	10.0
Acenaphthylene	100	Water	10.0	10.0	8270D	1.00	10.0
Aniline	12	Water	10.0	10.0	8270D	1.27	10.0
Anthracene	43	Water	10.0	10.0	8270D	1.00	10.0
Benz(a)anthracene	7.8	Water	10.0	10.0	8270D	1.00	10.0
Benzo(a)pyrene	0.2	Water	10.0	10.0	8270D	1.00	10.0
Benzo(b)fluoranthene	4.8	Water	10.0	10.0	8270D	1.00	10.0
Benzo(k)fluoranthene	2.5	Water	10.0	10.0	8270D	1.00	10.0
Bis(2-chloroethyl)ether	5.7	Water	10.0	10.0	8270D	1.00	10.0
Bis(2-ethylhexyl)phthalate	6	Water	10.0	10.0	8270D	1.86	10.0
Butyl benzyl phthalate	730	Water	10.0	10.0	8270D	1.00	10.0

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Chrysene	1.6	Water	10.0	10.0	8270D	1.00	10.0
Di-n-octyl phthalate	20	Water	10.0	10.0	8270D	1.00	10.0
Dibenz(a,h)anthracene	2.5	Water	10.0	10.0	8270D	1.00	10.0
Dibenzofuran	10	Water	10.0	10.0	8270D	1.00	10.0
Diethyl phthalate	2900	Water	10.0	10.0	8270D	1.00	10.0
Dimethyl phthalate	37000	Water	10.0	10.0	8270D	1.00	10.0
Fluoranthene	150	Water	10.0	10.0	8270D	1.00	10.0
Fluorene	24	Water	10.0	10.0	8270D	1.00	10.0
Hexachlorobutadiene	0.73	Water	10.0	10.0	8270D	1.00	10.0
Hexachlorobenzene	1	Water	10.0	10.0	8270D	1.00	10.0
Hexachlorocyclopentadiene	50	Water	10.0	10.0	8270D	1.00	10.0
Hexachloroethane	10	Water	10.0	10.0	8270D	1.00	10.0
Indeno(1,2,3-cd)pyrene	3.7	Water	10.0	10.0	8270D	1.00	10.0
Isophorone	70	Water	10.0	10.0	8270D	1.00	10.0
N-Nitrosodi-n-propylamine	10	Water	10.0	10.0	8270D	1.50	10.0
N-Nitrosodiphenylamine	14	Water	10.0	10.0	8270D	1.00	10.0
Naphthalene	10	Water	10.0	10.0	8270D	1.00	10.0
Nitrobenzene	1.9	Water	10.0	10.0	8270D	1.00	10.0
Pentachlorophenol	1	Water	10.0	10.0	8270D	1.27	10.0
Phenanthrene	180	Water	10.0	10.0	8270D	1.00	10.0
Phenol	180	Water	10.0	10.0	8270D	2.00	10.0
Pyrene	18	Water	10.0	10.0	8270D	1.00	10.0
Regional Screening Level Summary Table[3]	**Screening Level[3]**						
Di-n-butyl phthalate	90	Water	10.0	10.0	8270D	1.00	10.0
Diphenylamine	31	Water	10.0	10.0	8270D	1.00	10.0

Notes:

Groundwater will be monitored at Camp Minden - Area I.

[1] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[2] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] The United States Environmental Protection Agency (USEPA) Regional Screening Level (RSL) Summary Table (TR = 1E-06, THQ = 0.1) June 2015 (revised). The USEPA, RSL for tapwater was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

[4] The Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) (dated October 2003) Groundwater Screening Standard (GWSS) was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

Abbreviations:

ug/L = micrograms per Liter
RECAP = Risk Evaluation/Corrective Action Program
GWSS = Groundwater Screening Standard

Table 7
Surface Water Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Volatile Organic Compounds (ug/L)							
RECAP Screening Standards[3]	**Screening Level[3]**						
Acetone	100	Water	20.0	20.0	8260C	6.67	20.0
Benzene	5	Water	5.00	5.00	8260C	0.250	5.00
Bromoform	100	Water	5.00	5.00	8260C	0.370	5.00
Bromodichloromethane	100	Water	5.00	5.00	8260C	0.250	5.00
Bromomethane	10	Water	10.0	10.0	8260C	0.400	10.0
2-Butanone (methyl ethyl ketone)	190	Water	20.0	20.0	8260C	0.390	20.0
Carbon disulfide	100	Water	5.00	5.00	8260C	0.370	5.00
Carbon tetrachloride	5	Water	5.00	5.00	8260C	0.360	5.00
Chlorobenzene	100	Water	5.00	5.00	8260C	0.380	5.00
Dibromochloromethane (chlorodibromomethane)	100	Water	5.00	5.00	8260C	0.330	5.00
Chloroethane	10	Water	10.0	10.0	8260C	0.380	10.0
Chloroform	100	Water	5.00	5.00	8260C	0.150	5.00
Chloromethane	10	Water	10.0	10.0	8260C	0.550	10.0
1,2-Dibromo-3-chloropropane	0.2	Water	10.0	10.0	8260C	1.15	10.0
1,1-Dichloroethane	81	Water	5.00	5.00	8260C	0.390	5.00
1,2-Dichloroethane	5	Water	5.00	5.00	8260C	0.370	5.00
cis-1,2-Dichloroethene	70	Water	5.00	5.00	8260C	0.160	5.00
trans-1,2-Dichloroethene	100	Water	5.00	5.00	8260C	0.180	5.00
1,1-Dichloroethene	7	Water	5.00	5.00	8260C	0.370	5.00
1,2-Dichloropropane	5	Water	5.00	5.00	8260C	0.320	5.00
1,3-Dichloropropene, Total	5	Water	10.0	10.0	8260C	0.690	10.0
Ethyl benzene	700	Water	5.00	5.00	8260C	0.300	5.00
Hexachlorobutadiene	0.73	Water	5.00	5.00	8260C	0.025	5.00
Isobutylalcohol	1100	Water	200	200	8260C	7.34	200
Methylene Chloride	5	Water	5.00	5.00	8260C	1.67	5.00
4-Methyl-2-pentanone (methyl isobutyl ketone)	200	Water	20.0	20.0	8260C	0.330	20.0
Methyl tert-butyl ether (MTBE)	20	Water	5.00	5.00	8260C	0.400	5.00
Trichlorofluoromethane	130	Water	5.00	5.00	8260C	0.220	5.00
Trichloroethene	5	Water	5.00	5.00	8260C	0.290	5.00
1,1,1-Trichloroethane	200	Water	5.00	5.00	8260C	0.290	5.00
Vinyl Chloride	2	Water	5.00	5.00	8260C	0.430	5.00
Xylenes (total)	10000	Water	5.00	5.00	8260C	0.570	5.00
1,1,1,2-Tetrachloroethane	5	Water	5.00	5.00	8260C	0.250	5.00
1,1,2,2-Tetrachloroethane	0.5	Water	5.00	5.00	8260C	0.430[2]	5.00
1,1,2-Trichloroethane	5	Water	5.00	5.00	8260C	0.570	5.00
Styrene	100	Water	5.00	5.00	8260C	0.350	5.00
Tetrachloroethene (tetrachloroethylene)	5	Water	5.00	5.00	8260C	0.280	5.00
Toluene	1000	Water	5.00	5.00	8260C	1.00	5.00
Semi-Volatile Organic Compounds (ug/L)							
RECAP Screening Standards[3]	**Screening Level[3]**						
1,1 Biphenyl	30	Water	10.0	10.0	8270D	1.00	10.0
1,2,4,5-Tetrachlorobenzene	1.1	Water	10.0	10.0	8270D	1.00	10.0
1,2,4-Trichlorobenzene	70	Water	10.0	10.0	8270D	1.00	10.0
1,2-Dichlorobenzene	600	Water	10.0	10.0	8270D	1.00	10.0

Table 7
Surface Water Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
1,3-Dichlorobenzene	10	Water	10.0	10.0	8270D	1.00	10.0
1,3-Dinitrobenzene	10	Water	10.0	10.0	8270D	1.00	10.0
1,4-Dichlorobenzene	75	Water	10.0	10.0	8270D	1.00	10.0
Bis(2-chlorisopropyl)ether	5.7	Water	10.0	10.0	8270D	1.00	10.0
2,3,4,6-Tetrachlorophenol	110	Water	50.0	50.0	8270D	1.00	50.0
2,4,5-Trichlorophenol	370	Water	10.0	10.0	8270D	1.00	10.0
2,4,6-Trichlorophenol	10	Water	10.0	10.0	8270D	1.00	10.0
2,4-Dichlorophenol	11	Water	10.0	10.0	8270D	1.00	10.0
2,4-Dimethylphenol	73	Water	10.0	10.0	8270D	1.00	10.0
2,4-Dinitrophenol	50	Water	50.0	50.0	8270D	2.00	50.0
2,4-Dinitrotoluene	10	Water	10.0	10.0	8270D	1.00	10.0
2,6-Dinitrotoluene	10	Water	10.0	10.0	8270D	2.16	10.0
2-Chloronaphthalene	49	Water	10.0	10.0	8270D	1.00	10.0
2-Chlorophenol	10	Water	10.0	10.0	8270D	1.00	10.0
2-Methylnaphthalene	0.62	Water	10.0	10.0	8270D	1.00	10.0
2-Nitroaniline	50	Water	10.0	10.0	8270D	1.10	10.0
3,3-Dichlorobenzidine	20	Water	50.0	50.0	8270D	1.29	50.0
3-Nitroaniline	50	Water	10.0	10.0	8270D	1.00	10.0
4-Nitroaniline	50	Water	10.0	10.0	8270D	1.00	10.0
4-Nitrophenol	50	Water	10.0	10.0	8270D	2.00	10.0
Acenaphthene	37	Water	10.0	10.0	8270D	1.00	10.0
Acenaphthylene	100	Water	10.0	10.0	8270D	1.00	10.0
Aniline	12	Water	10.0	10.0	8270D	1.27	10.0
Anthracene	43	Water	10.0	10.0	8270D	1.00	10.0
Benz(a)anthracene	7.8	Water	10.0	10.0	8270D	1.00	10.0
Benzo(a)pyrene	0.2	Water	10.0	10.0	8270D	1.00	10.0
Benzo(b)fluoranthene	4.8	Water	10.0	10.0	8270D	1.00	10.0
Benzo(k)fluoranthene	2.5	Water	10.0	10.0	8270D	1.00	10.0
Bis(2-chloroethyl)ether	5.7	Water	10.0	10.0	8270D	1.00	10.0
Bis(2-ethylhexyl)phthalate	6	Water	10.0	10.0	8270D	1.86	10.0
Butyl benzyl phthalate	730	Water	10.0	10.0	8270D	1.00	10.0
Chrysene	1.6	Water	10.0	10.0	8270D	1.00	10.0
Di-n-octyl phthalate	20	Water	10.0	10.0	8270D	1.00	10.0
Dibenz(a,h)anthracene	2.5	Water	10.0	10.0	8270D	1.00	10.0
Dibenzofuran	10	Water	10.0	10.0	8270D	1.00	10.0
Diethyl phthalate	2900	Water	10.0	10.0	8270D	1.00	10.0
Dimethyl phthalate	37000	Water	10.0	10.0	8270D	1.00	10.0
Fluoranthene	150	Water	10.0	10.0	8270D	1.00	10.0
Fluorene	24	Water	10.0	10.0	8270D	1.00	10.0
Hexachlorobutadiene	0.73	Water	10.0	10.0	8270D	1.00	10.0
Hexachlorobenzene	1	Water	10.0	10.0	8270D	1.00	10.0
Hexachlorocyclopentadiene	50	Water	10.0	10.0	8270D	1.00	10.0
Hexachloroethane	10	Water	10.0	10.0	8270D	1.00	10.0
Indeno(1,2,3-cd)pyrene	3.7	Water	10.0	10.0	8270D	1.00	10.0
Isophorone	70	Water	10.0	10.0	8270D	1.00	10.0
N-Nitrosodi-n-propylamine	10	Water	10.0	10.0	8270D	1.50	10.0
N-Nitrosodiphenylamine	14	Water	10.0	10.0	8270D	1.00	10.0
Naphthalene	10	Water	10.0	10.0	8270D	1.00	10.0
Nitrobenzene	1.9	Water	10.0	10.0	8270D	1.00	10.0
Pentachlorophenol	1	Water	10.0	10.0	8270D	1.27	10.0

Table 7
Surface Water Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Phenanthrene	180	Water	10.0	10.0	8270D	1.00	10.0
Phenol	180	Water	10.0	10.0	8270D	2.00	10.0
Pyrene	18	Water	10.0	10.0	8270D	1.00	10.0
Regional Screening Level Summary Table[4]	**Screening Level[4]**						
Di-n-butyl phthalate	90	Water	10.0	10.0	8270D	1.00	10.0
Diphenylamine	31	Water	10.0	10.0	8270D	1.00	10.0

Notes:

Surface Water samples will be collected from Clarkes Bayou.

[1] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[2] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] The Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) (dated October 2003) Groundwater Screening Standard (GWSS) was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

[4] The United States Environmental Protection Agency (USEPA) Regional Screening Level (RSL) Summary Table (TR – 1E-06, THQ – 0.1) June 2015 (revised). The USEPA, RSL for tapwater was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

Abbreviations:
ug/L = micrograms per Liter
RECAP = Risk Evaluation/Corrective Action Program
GWSS = Groundwater Screening Standard

Table 8
Sediment Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Volatile Organic Compounds (ug/kg)							
RECAP Screening Standards[3]	**Screening Level[3]**						
Acetone	1,500	Sediment	20.0	20.0	8260C	6.47	20.0
Benzene	51	Sediment	5.00	5.00	8260C	0.250	5.00
Bromoform	1,800	Sediment	5.00	5.00	8260C	0.370	5.00
Bromodichloromethane	920	Sediment	5.00	5.00	8260C	0.250	5.00
Bromomethane	40	Sediment	10.0	10.0	8260C	1.10	10.0
2-Butanone (methyl ethyl ketone)	5,000	Sediment	20.0	20.0	8260C	1.92	20.0
Carbon disulfide	11,000	Sediment	5.00	5.00	8260C	0.690	5.00
Carbon tetrachloride	110	Sediment	5.00	5.00	8260C	0.510	5.00
Chlorobenzene	3,000	Sediment	5.00	5.00	8260C	0.380	5.00
Dibromochloromethane (chlorodibromomethane)	1,000	Sediment	5.00	5.00	8260C	0.410	5.00
Chloroethane	35	Sediment	10.0	10.0	8260C	0.520	10.0
Chloroform	44	Sediment	5.00	5.00	8260C	0.380	5.00
Chloromethane	100	Sediment	10.0	10.0	8260C	0.650	10.0
1,2-Dibromo-3-chloropropane	10	Sediment	10.0	10.0	8260C	1.45	10.0
1,1-Dichloroethane	7,500	Sediment	5.00	5.00	8260C	0.390	5.00
1,2-Dichloroethane	35	Sediment	5.00	5.00	8260C	0.870	5.00
cis-1,2-Dichloroethene	490	Sediment	5.00	5.00	8260C	0.600	5.00
trans-1,2-Dichloroethene	770	Sediment	5.00	5.00	8260C	0.940	5.00
1,1-Dichloroethene	85	Sediment	5.00	5.00	8260C	1.61	5.00
1,2-Dichloropropane	42	Sediment	5.00	5.00	8260C	0.380	5.00
1,3-Dichloropropene, Total	40	Sediment	10.0	10.0	8260C	0.95	10.0
Ethyl benzene	19,000	Sediment	5.00	5.00	8260C	0.300	5.00
Hexachlorobutadiene	820	Sediment	5.00	5.00	8260C	0.680	5.00
Isobutylalcohol	30,000	Sediment	200	200	8260C	25.4	200
Methylene Chloride	17	Sediment	5.00	5.00	8260C	1.58	5.00
4-Methyl-2-pentanone (methyl isobutyl ketone)	6,400	Sediment	20.0	20.0	8260C	0.730	20.0
Methyl tert-butyl ether (MTBE)	77	Sediment	5.00	5.00	8260C	0.480	5.00
Trichlorofluoromethane	37,000	Sediment	5.00	5.00	8260C	0.500	5.00
Trichloroethene	73	Sediment	5.00	5.00	8260C	0.390	5.00
1,1,1-Trichloroethane	4,000	Sediment	5.00	5.00	8260C	0.430	5.00
Vinyl Chloride	13	Sediment	5.00	5.00	8260C	0.430	5.00
Xylenes (total)	18,000	Sediment	5.00	5.00	8260C	0.570	5.00
1,1,1,2-Tetrachloroethane	46	Sediment	5.00	5.00	8260C	0.350	5.00
1,1,2,2-Tetrachloroethane	6	Sediment	5.00	5.00	8260C	0.400	5.00
1,1,2-Trichloroethane	58	Sediment	5.00	5.00	8260C	0.570	5.00
Styrene	11,000	Sediment	5.00	5.00	8260C	0.350	5.00
Tetrachloroethene (tetrachloroethylene)	180	Sediment	5.00	5.00	8260C	0.320	5.00
Toluene	20,000	Sediment	5.00	5.00	8260C	0.700	5.00
Semi-Volatile Organic Compounds (ug/kg)							
RECAP Screening Standards[3]	**Screening Level[3]**						
1,1 Biphenyl	190,000	Sediment	330	330	8270D	33.3	330
1,2,4,5-Tetrachlorobenzene	1,200	Sediment	330	330	8270D	33.3	330
1,2,4-Trichlorobenzene	14,000	Sediment	330	330	8270D	33.3	330

Table 8
Sediment Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
1,2-Dichlorobenzene	29,000	Sediment	330	330	8270D	33.3	330
1,3-Dichlorobenzene	2,100	Sediment	330	330	8270D	33.3	330
1,3-Dinitrobenzene	250	Sediment	330	330	8270D	33.3	330
1,4-Dichlorobenzene	5,700	Sediment	330	330	8270D	33.3	330
Bis(2-chlorisopropyl)ether	800	Sediment	330	330	8270D	33.3	330
2,3,4,6-Tetrachlorophenol	31,000	Sediment	1600	1600	8270D	33.3	1600
2,4,5-Trichlorophenol	320,000	Sediment	330	330	8270D	33.3	330
2,4,6-Trichlorophenol	1,300	Sediment	330	330	8270D	33.3	330
2,4-Dichlorophenol	12,000	Sediment	330	330	8270D	33.3	330
2,4-Dimethylphenol	20,000	Sediment	330	330	8270D	33.3	330
2,4-Dinitrophenol	1,700	Sediment	1600	1600	8270D	330	1600
2,4-Dinitrotoluene	1,000	Sediment	330	330	8270D	33.3	330
2,6-Dinitrotoluene	390	Sediment	330	330	8270D	33.3	330
2-Chloronaphthalene	500,000	Sediment	330	330	8270D	33.3	330
2-Chlorophenol	1,400	Sediment	330	330	8270D	33.3	330
2-Methylnaphthalene	1,700	Sediment	330	330	8270D	33.3	330
2-Nitroaniline	1,700	Sediment	330	330	8270D	33.3	330
3,3-Dichlorobenzidine	970	Sediment	1600	1600	8270D	330	1600
3-Nitroaniline	1,700	Sediment	330	330	8270D	33.3	330
4-Nitroaniline	1,700	Sediment	1600	1600	8270D	330	1600
4-Nitrophenol	2,600	Sediment	1600	1600	8270D	330	1600
Acenaphthene	220,000	Sediment	330	330	8270D	33.3	330
Acenaphthylene	88,000	Sediment	330	330	8270D	33.3	330
Aniline	65	Sediment	330	330	8270D	59.9	330
Anthracene	120,000	Sediment	330	330	8270D	33.3	330
Benz(a)anthracene	620	Sediment	330	330	8270D	33.3	330
Benzo(a)pyrene	330	Sediment	330	330	8270D	33.3	330
Benzo(b)fluoranthene	620	Sediment	330	330	8270D	33.3	330
Benzo(k)fluoranthene	6,200	Sediment	330	330	8270D	33.3	330
Bis(2-chloroethyl)ether	330	Sediment	330	330	8270D	33.4	330
Bis(2-ethylhexyl)phthalate	35,000	Sediment	330	330	8270D	45.3	330
Butyl benzyl phthalate	220,000	Sediment	330	330	8270D	33.3	330
Chrysene	62,000	Sediment	330	330	8270D	33.3	330
Di-n-octyl phthalate	240,000	Sediment	330	330	8270D	33.3	330
Dibenz(a,h)anthracene	330	Sediment	330	330	8270D	33.3	330
Dibenzofuran	24,000	Sediment	330	330	8270D	33.3	330
Diethyl phthalate	360,000	Sediment	330	330	8270D	33.3	330
Dimethyl phthalate	1,500,000	Sediment	330	330	8270D	33.3	330
Fluoranthene	220,000	Sediment	330	330	8270D	33.3	330
Fluorene	230,000	Sediment	330	330	8270D	33.3	330
Hexachlorobutadiene	820	Sediment	330	330	8270D	33.3	330
Hexachlorobenzene	340	Sediment	330	330	8270D	33.3	330
Hexachlorocyclopentadiene	1,400	Sediment	1600	1600	8270D	330	1600
Hexachloroethane	2,200	Sediment	330	330	8270D	33.3	330
Indeno(1,2,3-cd)pyrene	620	Sediment	330	330	8270D	33.3	330
Isophorone	560	Sediment	330	330	8270D	33.3	330
N-Nitrosodi-n-propylamine	330	Sediment	330	330	8270D	33.3	330

Table 8
Sediment Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
N-Nitrosodiphenylamine	2,100	Sediment	330	330	8270D	33.3	330
Naphthalene	1,500	Sediment	330	330	8270D	33.3	330
Nitrobenzene	330	Sediment	330	330	8270D	33.3	330
Pentachlorophenol	1,700	Sediment	660	660	8270D	330	660
Phenanthrene	660,000	Sediment	330	330	8270D	33.3	330
Phenol	11,000	Sediment	330	330	8270D	33.3	330
Pyrene	230,000	Sediment	330	330	8270D	33.3	330
Regional Screening Level Summary Table[4]	**Screening Level[4]**						
Di-n-butyl phthalate	630,000	Sediment	330	330	8270D	33.3	330
Diphenylamine	160,000	Sediment	330	330	8270D	33.3	330

Notes:

Sediment samples will be collected from Clarkes Bayou.

[1] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[2] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] The most conservative Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) Screening Standard (dated October 2003) was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

[4] The United States Environmental Protection Agency (USEPA) Regional Screening Level (RSL) Summary Table (TR = 1E-06, THQ = 0.1) June 2015 (revised). The USEPA, RSL for residential soil was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

Abbreviations:

ug/kg = micrograms per killograms
RECAP = Risk Evaluation/Corrective Action Program
SSni = Soil Screening non-industrial
SSi = Soil Screening industrial
SSGW = Soil Screening protective of groundwater

Table 9
Community Soil Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
Volatile Organic Compounds (ug/kg)							
RECAP Screening Standards[3]	**Screening Level[3]**						
Acetone	1,500	Soil	20.0	20.0	8260C	6.47	20.0
Benzene	51	Soil	5.00	5.00	8260C	0.250	5.00
Bromoform	1,800	Soil	5.00	5.00	8260C	0.370	5.00
Bromodichloromethane	920	Soil	5.00	5.00	8260C	0.250	5.00
Bromomethane	40	Soil	10.0	10.0	8260C	1.10	10.0
2-Butanone (methyl ethyl ketone)	5,000	Soil	20.0	20.0	8260C	1.92	20.0
Carbon disulfide	11,000	Soil	5.00	5.00	8260C	0.690	5.00
Carbon tetrachloride	110	Soil	5.00	5.00	8260C	0.510	5.00
Chlorobenzene	3,000	Soil	5.00	5.00	8260C	0.380	5.00
Dibromochloromethane (chlorodibromomethane)	1,000	Soil	5.00	5.00	8260C	0.410	5.00
Chloroethane	35	Soil	10.0	10.0	8260C	0.520	10.0
Chloroform	44	Soil	5.00	5.00	8260C	0.380	5.00
Chloromethane	100	Soil	10.0	10.0	8260C	0.650	10.0
1,2-Dibromo-3-chloropropane	10	Soil	10.0	10.0	8260C	1.45	10.0
1,1-Dichloroethane	7,500	Soil	5.00	5.00	8260C	0.390	5.00
1,2-Dichloroethane	35	Soil	5.00	5.00	8260C	0.870	5.00
cis-1,2-Dichloroethene	490	Soil	5.00	5.00	8260C	0.600	5.00
trans-1,2-Dichloroethene	770	Soil	5.00	5.00	8260C	0.940	5.00
1,1-Dichloroethene	85	Soil	5.00	5.00	8260C	1.61	5.00
1,2-Dichloropropane	42	Soil	5.00	5.00	8260C	0.380	5.00
1,3-Dichloropropene, Total	40	Soil	10.0	10.0	8260C	0.95	10.0
Ethyl benzene	19,000	Soil	5.00	5.00	8260C	0.300	5.00
Hexachlorobutadiene	820	Soil	5.00	5.00	8260C	0.680	5.00
Isobutylalcohol	30,000	Soil	200	200	8260C	25.4	200
Methylene Chloride	17	Soil	5.00	5.00	8260C	1.58	5.00
4-Methyl-2-pentanone (methyl isobutyl ketone)	6,400	Soil	20.0	20.0	8260C	0.730	20.0
Methyl tert-butyl ether (MTBE)	77	Soil	5.00	5.00	8260C	0.480	5.00
Trichlorofluoromethane	37,000	Soil	5.00	5.00	8260C	0.500	5.00
Trichloroethene	73	Soil	5.00	5.00	8260C	0.390	5.00
1,1,1-Trichloroethane	4,000	Soil	5.00	5.00	8260C	0.430	5.00
Vinyl Chloride	13	Soil	5.00	5.00	8260C	0.430	5.00
Xylenes (total)	18,000	Soil	5.00	5.00	8260C	0.570	5.00
1,1,1,2-Tetrachloroethane	46	Soil	5.00	5.00	8260C	0.350	5.00
1,1,2,2-Tetrachloroethane	6	Soil	5.00	5.00	8260C	0.400	5.00
1,1,2-Trichloroethane	58	Soil	5.00	5.00	8260C	0.570	5.00
Styrene	11,000	Soil	5.00	5.00	8260C	0.350	5.00
Tetrachloroethene (tetrachloroethylene)	180	Soil	5.00	5.00	8260C	0.320	5.00
Toluene	20,000	Soil	5.00	5.00	8260C	0.700	5.00
Semi-Volatile Organic Compounds (ug/kg)							
RECAP Screening Standards[3]	**Screening Level[3]**						
1,1 Biphenyl	190,000	Soil	330	330	8270D	33.3	330
1,2,4,5-Tetrachlorobenzene	1,200	Soil	330	330	8270D	33.3	330

Table 9
Community Soil Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site
Page 2 of 3

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
1,2,4-Trichlorobenzene	14,000	Soil	330	330	8270D	33.3	330
1,2-Dichlorobenzene	29,000	Soil	330	330	8270D	33.3	330
1,3-Dichlorobenzene	2,100	Soil	330	330	8270D	33.3	330
1,3-Dinitrobenzene	250	Soil	330	330	8270D	33.3	330
1,4-Dichlorobenzene	5,700	Soil	330	330	8270D	33.3	330
Bis(2-chlorisopropyl)ether	800	Soil	330	330	8270D	33.3	330
2,3,4,6-Tetrachlorophenol	31,000	Soil	1600	1600	8270D	33.3	1600
2,4,5-Trichlorophenol	320,000	Soil	330	330	8270D	33.3	330
2,4,6-Trichlorophenol	1,300	Soil	330	330	8270D	33.3	330
2,4-Dichlorophenol	12,000	Soil	330	330	8270D	33.3	330
2,4-Dimethylphenol	20,000	Soil	330	330	8270D	33.3	330
2,4-Dinitrophenol	1,700	Soil	1600	1600	8270D	330	1600
2,4-Dinitrotoluene	1,000	Soil	330	330	8270D	33.3	330
2,6-Dinitrotoluene	390	Soil	330	330	8270D	33.3	330
2-Chloronaphthalene	500,000	Soil	330	330	8270D	33.3	330
2-Chlorophenol	1,400	Soil	330	330	8270D	33.3	330
2-Methylnaphthalene	1,700	Soil	330	330	8270D	33.3	330
2-Nitroaniline	1,700	Soil	330	330	8270D	33.3	330
3,3-Dichlorobenzidine	970	Soil	1600	1600	8270D	330	1600
3-Nitroaniline	1,700	Soil	330	330	8270D	33.3	330
4-Nitroaniline	1,700	Soil	1600	1600	8270D	330	1600
4-Nitrophenol	2,600	Soil	1600	1600	8270D	330	1600
Acenaphthene	220,000	Soil	330	330	8270D	33.3	330
Acenaphthylene	88,000	Soil	330	330	8270D	33.3	330
Aniline	65	Soil	330	330	8270D	59.9	330
Anthracene	120,000	Soil	330	330	8270D	33.3	330
Benz(a)anthracene	620	Soil	330	330	8270D	33.3	330
Benzo(a)pyrene	330	Soil	330	330	8270D	33.3	330
Benzo(b)fluoranthene	620	Soil	330	330	8270D	33.3	330
Benzo(k)fluoranthene	6,200	Soil	330	330	8270D	33.3	330
Bis(2-chloroethyl)ether	330	Soil	330	330	8270D	33.4	330
Bis(2-ethylhexyl)phthalate	35,000	Soil	330	330	8270D	45.3	330
Butyl benzyl phthalate	220,000	Soil	330	330	8270D	33.3	330
Chrysene	62,000	Soil	330	330	8270D	33.3	330
Di-n-octyl phthalate	240,000	Soil	330	330	8270D	33.3	330
Dibenz(a,h)anthracene	330	Soil	330	330	8270D	33.3	330
Dibenzofuran	24,000	Soil	330	330	8270D	33.3	330
Diethyl phthalate	360,000	Soil	330	330	8270D	33.3	330
Dimethyl phthalate	1,500,000	Soil	330	330	8270D	33.3	330
Fluoranthene	220,000	Soil	330	330	8270D	33.3	330
Fluorene	230,000	Soil	330	330	8270D	33.3	330
Hexachlorobutadiene	820	Soil	330	330	8270D	33.3	330
Hexachlorobenzene	340	Soil	330	330	8270D	33.3	330
Hexachlorocyclopentadiene	1,400	Soil	1600	1600	8270D	330	1600
Hexachloroethane	2,200	Soil	330	330	8270D	33.3	330
Indeno(1,2,3-cd)pyrene	620	Soil	330	330	8270D	33.3	330
Isophorone	560	Soil	330	330	8270D	33.3	330

Table 9
Community Soil Limits and Evaluation
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte		Matrix	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
				MDLs[1]	Method[1]	MDLs[2]	QLs[2]
N-Nitrosodi-n-propylamine	330	Soil	330	330	8270D	33.3	330
N-Nitrosodiphenylamine	2,100	Soil	330	330	8270D	33.3	330
Naphthalene	1,500	Soil	330	330	8270D	33.3	330
Nitrobenzene	330	Soil	330	330	8270D	33.3	330
Pentachlorophenol	1,700	Soil	660	660	8270D	330	660
Phenanthrene	660,000	Soil	330	330	8270D	33.3	330
Phenol	11,000	Soil	330	330	8270D	33.3	330
Pyrene	230,000	Soil	330	330	8270D	33.3	330
Regional Screening Level Summary Table[4]	**Screening Level[4]**						
Di-n-butyl phthalate	630,000	Soil	330	330	8270D	33.3	330
Diphenylamine	160,000	Soil	330	330	8270D	33.3	330
RCRA Metals (mg/kg)							
RECAP Screening Standards[3]	**Screening Level[3]**						
Arsenic	12	Soil	1.000	1.000	6020A	0.260	1.000
Barium	550	Soil	2.000	2.000	6020A	0.094	2.000
Cadmium	3.9	Soil	0.050	0.050	6020A	0.016	0.050
Chromium	23	Soil	1.000	1.000	6020A	0.450	1.000
Lead	100	Soil	0.300	0.300	6020A	0.100	0.300
Mercury	2.3	Soil	0.033	0.033	7471B	0.011	0.033
Selenium	20	Soil	0.500	0.500	6020A	0.158	0.500
Silver	39	Soil	0.200	0.200	6020A	0.024	0.200

Notes:

Soil samples will be collected at Air Stations.

[1] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[2] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

[3] The most conservative Louisiana Department of Environmental Quality (LDEQ) Risk Evaluation/Corrective Action Program (RECAP) Screening Standard (dated October 2003) was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

[4] The United States Environmental Protection Agency (USEPA) Regional Screening Level (RSL) Summary Table (TR = 1E-06, THQ = 0.1) June 2015 (revised). The USEPA, RSL for residential soil was determined as the Screening Level. Data from the baseline sample event will establish site closeout and site restoration.

Abbreviations:

ug/kg = micrograms per killograms
mg/kg = milligrams per killograms
RECAP = Risk Evaluation/Corrective Action Program
SSni = Soil Screening non-industrial
SSi = Soil Screening industrial
SSGW = Soil Screening protective of groundwater

FIGURES

FIGURE 1

REGIONAL LOCATION MAP

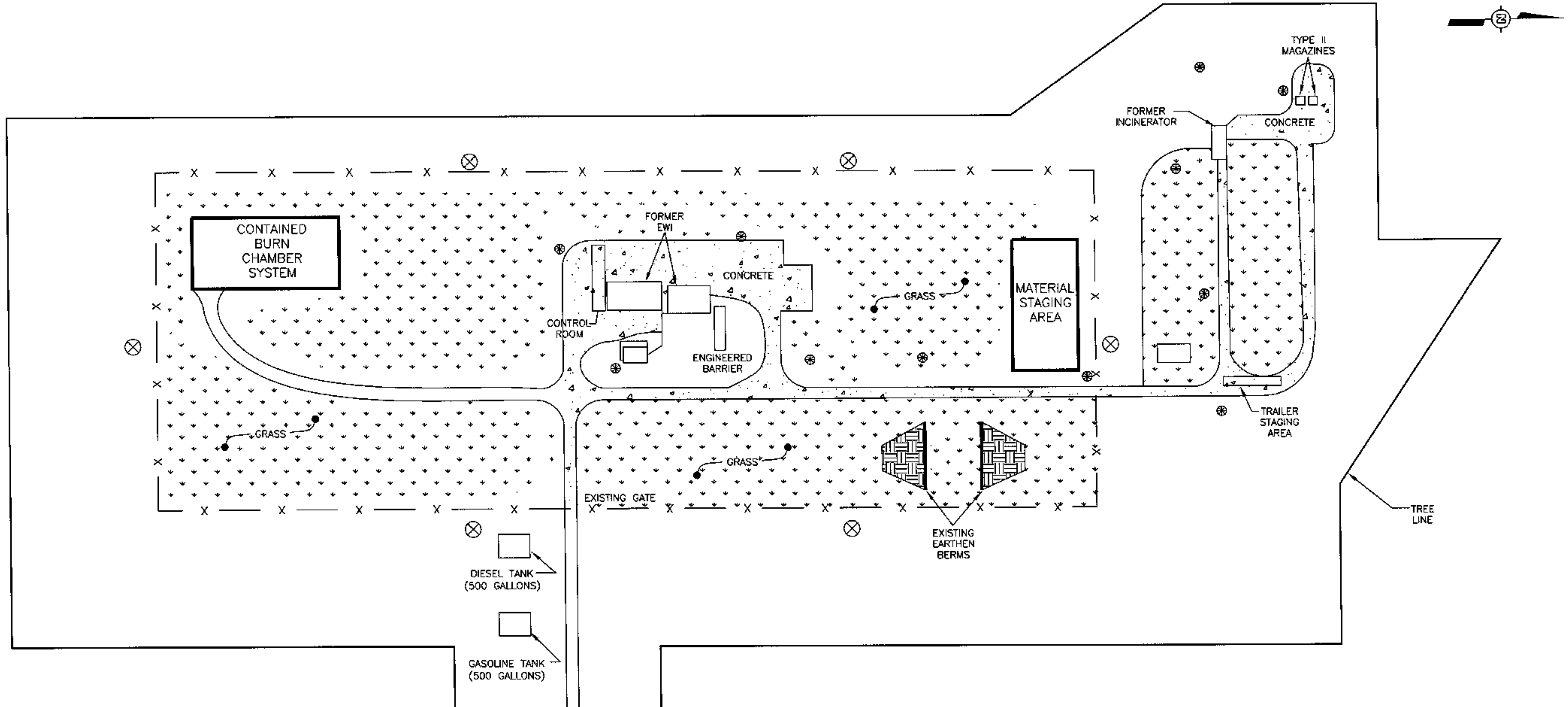
CAMP MINDEN – AREA I
DESTRUCTION SITE

PREPARED FOR:

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY	LDG	CHECKED BY	MG	DRAWING NO.
	07/09/15	APPROVED BY		SWPPP/REGIONAL



LEGEND

EWI	EXPLOSIVE WASTE INCINERATOR
⊛	UTILITY POLE
— X —	EXISTING PERIMETER FENCE
	GRASS WITHIN DISPOSAL SITE AREA
⊗	MONITORING WELL LOCATION

NOTES:
THIS FIGURE WAS MODIFIED TO INCORPORATE CHANGES MADE TO THE BASE MAP.

APPROXIMATE SCALE IN FEET
100 0 100

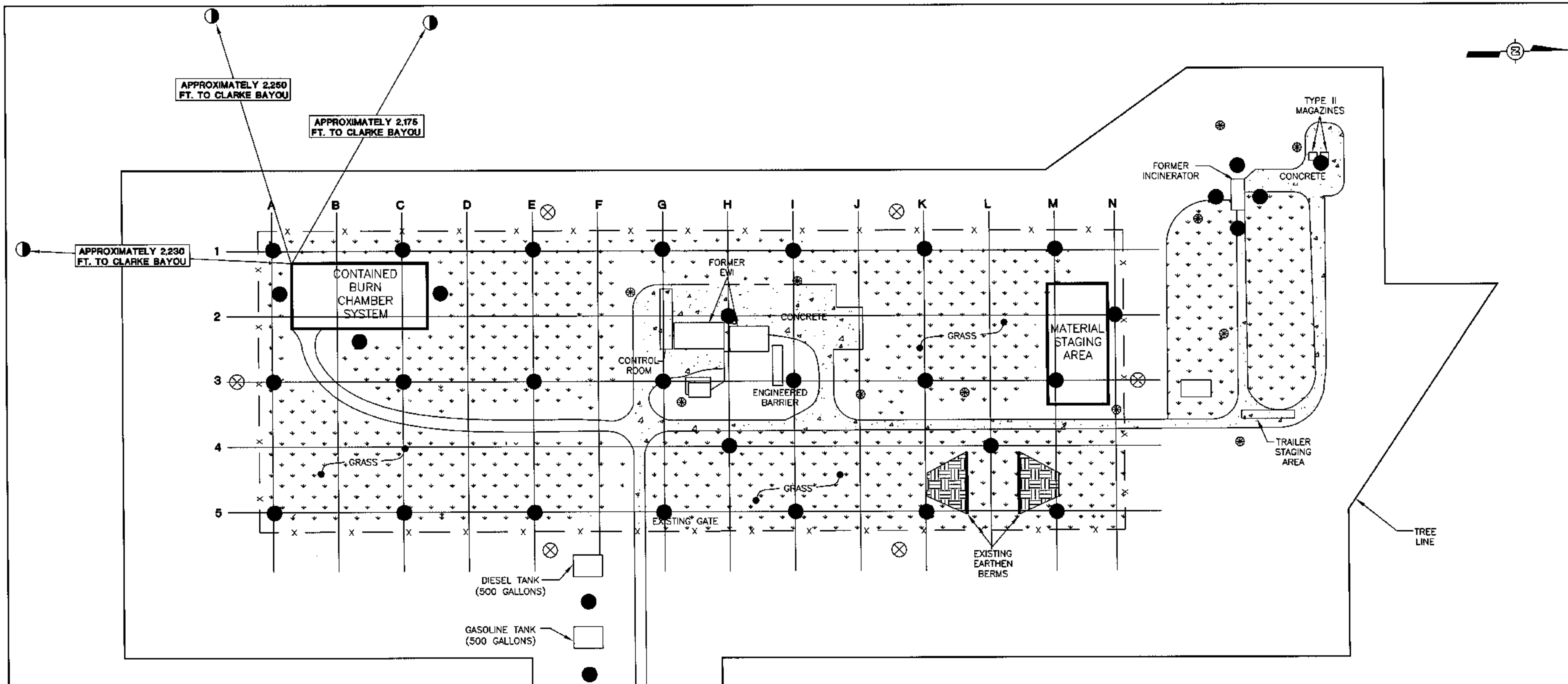
DRAWN BY	LDG 07/09/15	CHECKED BY / APPROVED BY MG	DRAWING NO. QASP/SITE-REV

FIGURE 2
SITE PLAN

CAMP MINDEN – AREA I
DESTRUCTION SITE

PREPARED FOR:
EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.



LEGEND

EWI	EXPLOSIVE WASTE INCINERATOR
⊛	UTILITY POLE
— X —	EXISTING PERIMETER FENCE
	GRASS WITHIN DISPOSAL SITE AREA
●	ON SITE SOIL SAMPLE
⊗	PERIMETER SOIL SAMPLE LOCATION COMPLETED WITH MONITORING WELL FOR GROUNDWATER SAMPLING
◐	SURFACE WATER AND SEDIMENT SAMPLE LOCATION

NOTE:
1) LOCATIONS MAY BE ADJUSTED BASED ON SITE ACCESS AND SURFACE OBSTRUCTIONS.
2) THIS FIGURE WAS MODIFIED TO INCORPORATE CHANGES MADE TO THE BASE MAP.

APPROXIMATE SCALE IN FEET
100 0 100

DRAWN BY	LDG 07/09/15	CHECKED BY / APPROVED BY MS	DRAWING NO. QASP/002

FIGURE 3

SAMPLE LOCATION MAP

CAMP MINDEN – AREA I DESTRUCTION SITE

PREPARED FOR:

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

ATTACHMENT A

FIELD FORMS

SITE ACTIVITY LOG

PAGE

PROJECT GENERAL INFORMATION

Client:	**ESI/LMD**	Date:	
	Camp Minden - Area I Disposal Site	Activities:	
Address:			
Project #:	**750-0001**		

Weater Conditions:	
Visitors OnSite:	
Impt. Phone Calls:	
Changes Plans/Specs:	

SEMS EQUIPMENT & MATERIALS USED

Description		Unit	Quantity	Rate

SEMS PERSONNEL INFORMATION

Employee Name: ______________________ Employee Signature: ______________________

DAILY ACTIVITY LOG

PAGE OF

PROJECT GENERAL INFORMATION

Client: **ESI/LMD - Camp Minden - Area I Disposal Site** **Date:** ____________

Project #: **750-0001** **Activities:** ____________

ACTIVITY DOCUMENTATION

Notes & Observations

Time (Military)	Personnel:

SEMS PERSONNEL INFORMATION

Employee Name: ____________ Date: ____________

SEMS, Inc.

TAILGATE SAFETY MEETING

GENERAL INFORMATION

Company SEMS, INC.

Date ____ Time ____ Job Number 750-0001

Customer ESI/LMD Address ____

Job Location Camp Minden - Area I Disposal Site

Type of Work ____

Protective Clothing/Equipment Level D PPE

Hard hat, glasses, long sleeves, high viz vest, safety-toe work boots, gloves (as needed)

SAFETY TOPICS

Chemical Hazards ____

Physical Hazards ____

Emergency Procedures See HASP for emergency proceedure details

Hospital/Clinic Minden Medical Center Phone (318) 377-2321

Hospital Address 1 Medical Plaza, Minden, LA 71055

Special Equipment ____

Other ____

ATTENDEES

NAME PRINTED	SIGNATURE
SITE SUPERVISOR	SIGNATURE

SEMS Inc.
Southern Environmental Management & Specialties

CAMP MINDEN - AREA I DISPOSAL SITE
EQUIPMENT CALIBRATION LOG

GENERAL INFORMATION			
Date of Calibration		Technician Name	

CALIBRATION EQUIPMENT INFORMATION			
Equipment	Model Number	Serial/Unit Number	Manufacture Name

RECOMMENDATIONS/OBSERVATIONS:

CALIBRATION			
Function	Initial Reading	Calibrated To	Comments

Additional Comments

Notes for Eagle 2: Calibrate Methane (CH_4) to 2.5 %; Oxygen (O_2) to 12%; Hydrogen Sulfide (H_2S) to 25ppm; Carbon Monoxide (CO) to 50ppm; and Isobutylene (IBL) to 100ppm.

SOIL BORING & WELL CONSTRUCTION LOG

OWNER:	LMD	BORING/WELL #:	
FACILITY #:	Camp Minden - Area I Disposal Site	DATE COMPLETED:	
ADDRESS:	1600 Java Road	GW DEPTH (Encountered):	
CITY, STATE:	Minden, Louisiana	GW DEPTH (Static):	
PROJECT ID#:	750-0001	WELL T-O-C ELEVATION:	

DEPTH (ft)	SAMPLING Method	SAMPLING Time	PID Reading	USCS Symbol	% Recovered	SOIL CHARACTERISTICS AND REMARKS	GEN WELL CONSTR (Refer to Diagram)	DEPTH (ft)
2							cap	2
4								4
6								6
8								8
10								10
12								12
14								14
16								16
18								18
20								20
22								22
24								24
26								26
28								28
30								30

NOTES

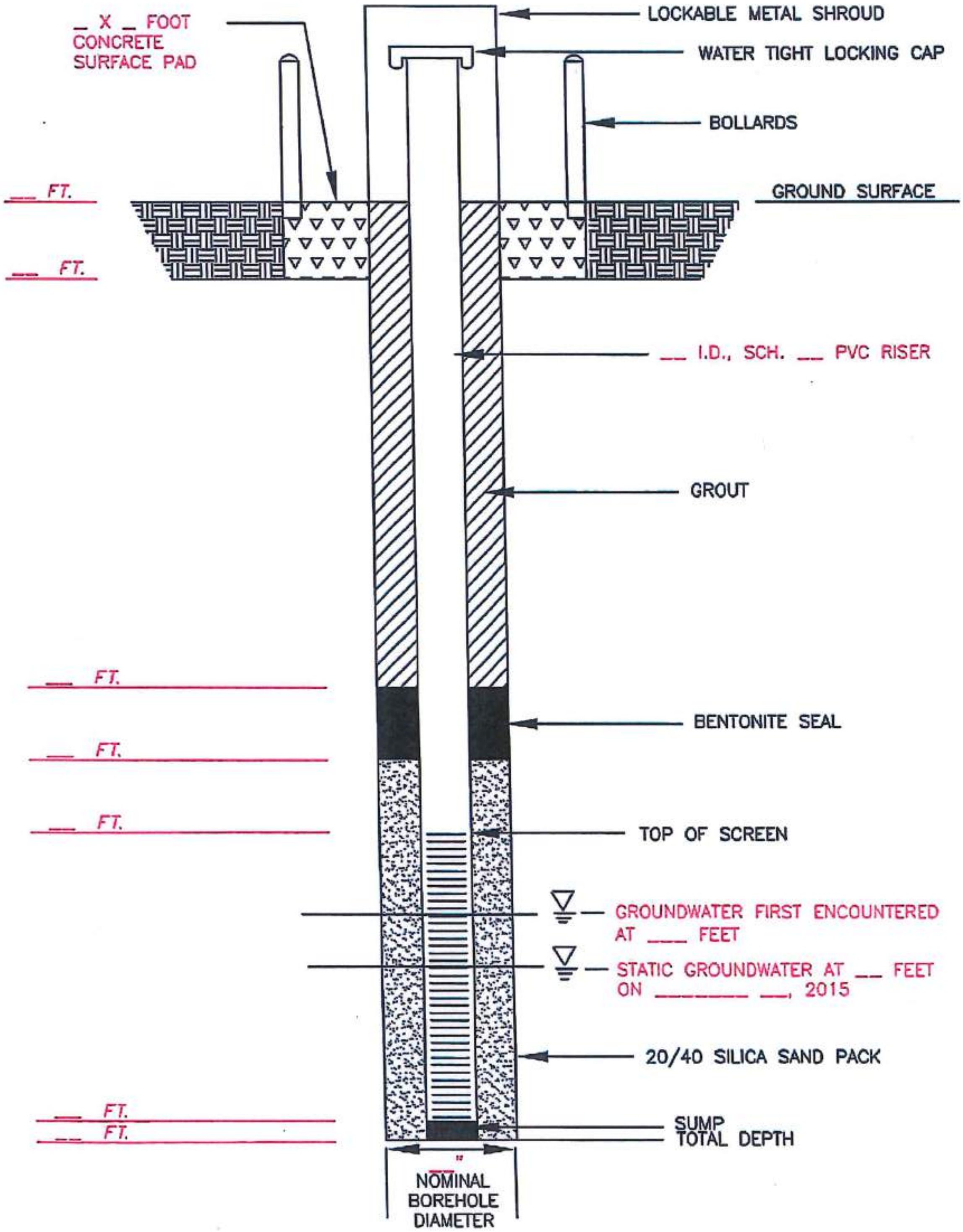
All Times Military	NR-No Recovery
*-Sample Analyzed	PH-Post Hole Digger
GW-Groundwater	SS-Split Spoon
HA-Hand Auger	ST-Shelby Tube
NA-Not Applicable	TD-Total Depth
NS-Not Sampled	

Drilling Company:
Driller Name:
Drill Rig Type:
Drill Diam. & Meth:
SEMS, Inc. Rep:

Conc./Grout
Bentonite Plug
Sand Pack
Well Casing
**** Natural Soil

NOTES

SEMS Inc.



LEGEND

JOB/PHASE/TASK NO.: 750-0001
WELL NO.: MW-__
DATE INSTALLED: __/__/15
ELEVATION OF CASING: ___ FEET
LATITUDE: __° __' __" N
LONGITUDE: __° __' __" W

SAND FILL
GROUT
CONCRETE FILL

NOT TO SCALE

WELL CONSTRUCTION DIAGRAM

CAMP MINDEN – AREA I
MINDEN, LOUISIANA

PREPARED FOR

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY	LDG	CHECKED BY		DRAWING #
	07/09/15	APPROVED BY		MW-NO.

SEMS Inc.
Southern Environmental Management & Specialties

CAMP MINDEN - AREA I DISPOSAL SITE
GROUNDWATER SAMPLING EVENT
WATER LEVEL MEASUREMENTS

WELL NO.	DATE	TOC Elev. Ft. MSL	Water Level		Comments	
			Depth	Elev.		
MW-1						
MW-2						
MW-3						
MW-4						
MW-5						
MW-6						

GROUNDWATER MONITORING SAMPLING LOG
LOW-FLOW

Project: Camp Minden – Area I Disposal Site
Project No.: 750-0001
Site Location: Minden, Louisiana
Monitor Well No.: MW-
Date Purged/Sampled: ____________ **Sampled By:** ____________

MONITOR WELL INFORMATION

Total Depth of Monitor Well (**TD**): ________ ft.
Static Depth to Groundwater (**DTW**): ________ ft.
Screen Length (**SL**) from Boring Logs: ________ ft.
Depth to Top of Well Screen (**TD-SL**): ________ ft.
Height of Water Column (**H=TD-DTW**): ________ ft.

Purge Flow Rate: ________ mL/min
Volume Purged: ________ gallons
Date/Time of Sample: ________ @ ________ Time

WELL CASING VOLUME CALCULATIONS

☐ 2" Well (H x 0.163 gal/ft) ________ gal. (1 well volume) ________ gal. (3 well volumes)
☐ 4" Well (H x 0.653 gal/ft) ________ gal. (1 well volume) ________ gal. (3 well volumes)
☐ Other: ________

PURGING METHOD

☐ Peristaltic Pump
☐ Low-flow Submersible Pump
☐ Water Well
☐ Other (Specify)

METHOD OF SAMPLE COLLECTION

☐ Peristaltic Pump
☐ Low-flow Submersible Pump
☐ Bailer ☐ Dedicated ☐ Disposable
☐ Other (Specify) ________

LOW-FLOW MONITORING PARAMETERS

Time	Flow Rate	Temp.	Specific Conductivity	Dissolved Oxygen	pH	ORP	Turbidity	DTW
hr/min	mL/min	°C	mS/cm	mg/L	Standard Units	mV	NTU or FTU	feet
Stabilization Criteria	100 - 500 mL/min	+/- 1°C	+/- 3%	+/- 10%	+/- 0.1	+/- 10%	+/- 10% (if >10 NTU or FTU)	<0.3 ft. or Top of Screen
	Initial							

Notes:
1. Well is stable if 3 consecutive measurements of as many as 3 indicators are within their target ranges.
2. Take measurements every 3 to 5 minutes.
3. Field QA/QC Sample ID and Time Collected: ________

SHEET ________ OF ________

ANALYSIS REQUEST AND CHAIN OF CUSTODY FORM

Project Manager & Company | Phone #:

Address: | FAX #:

Project PO No.: | Project No.: | Project Name:

Project Location: | Sampler Signature:

Sample ID	Lab # Lab use Only	# Containers	Volume/Amount	Matrix					Method Preserved					Sampling		ANALYSIS REQUESTED										HANDLING					
				Water	Soil	Sludge	Other	Other	Ice	HCl	HNO_3	None	Other	Date	Time											Priority One Service (24-48 Hrs)	Expedited Service (2-3 working days)	Normal Service	Verbals / Fax	Special Detection Limits (Specify)	Special Reporting Requirements

Relinquished by:	Date	Time	Received by:	Date	Time

Remarks:

P.O.= must be included or work may be delayed. Please call 1-2 days in advance to arrange for expedited service, if not samples may be delayed.

M6 DESTRUCTION CAMP MINDEN

AREA I DESTRUCTION SITE

PHOTOGRAPH LOG

DATE ______________________

PHOTO NO.	SUBJECT/DESCRIPTION

S:\Explosive Service International - 750\Camp Minden 750-0001\Plans\QASP\Field Forms for SEMS\Photograph Log

APPENDIX B

QUALITY ASSURANCE SAMPLE PLAN

WASTE & CBC FEED CHARACTERIZATION

Quality Assurance Sample Plan

Waste & CBC Feed Characterization

For:

Camp Minden M6 Destruction
Camp Minden
1600 Java Road
Minden, Louisiana 71055-7924

Prepared By:

Explosive Service International

9985 Baringer Foreman Road
Baton Rouge, Louisiana 70809
Phone 225-275-2152
Fax 225-273-2029

DATE REVISED:

29 September 2015

EXECUTIVE SUMMARY OF REVISIONS

The approved Quality Assurance Sample Plan (QASP) submitted 14 July 2015 (Revision 5) has been revised to incorporate the documents organizational changes per the 4 August 2015 telephone conference. Specifically, this Revised QASP addresses the waste & contained burned chamber (CBC) feed characterization; all other elements have been removed (Soil and Water Sampling, Community Air Quality Monitoring & Sampling, Comprehensive Performance Testing, and CEMS Stack Monitoring). Elements that have been removed are included as Appendices of the Quality Assurance Project Plan (QAPP).

Tables 1 through 6 have been added to outline the project objectives and define the quality assurance/quality control (QA/QC) program. The QA/QC program was modified to reflect the United States Environmental Protection Agency's (USEPA) QA/QC program. Figure 2 has been revised to incorporate changes in position to structures on the base map. The Field Forms have been revised to reflect only those pertinent to the waste and CBC feed characterization field activities.

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

Quality Assurance Sample Plan

Acronym	Description
ASTM	American Society of Testing and Materials
bgs	below ground surface
CBI	Clean Burning Igniter
COC	Constituent of Concern
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
ESI	Explosive Service International, Inc.
EWI	Explosive Waste Incinerator
GC/MS	Gas Chromatography/Mass Spectroscopy
GPS	Global Positioning System
HPLC	High Pressure Liquid Chromotography
IDW	Investigative Derived Waste
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LIMS	Laboratory Information Management System
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NIOSH	National Institute for Occupational Safety and Health
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety & Health Association
PID	Photoionization Detector
PVC	Polyvinylchloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QAQC	Quality Assurance Quality Control
QASP	Quality Assurance Sampling Plan
QC	Quality Control
RCRA	Resource Conservation Recovery Act
RECAP	Risk Evaluation Corrective Action Program
SOP	Standard Operating Procedure
SVOC	Semi-volatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSP	TriSodiumPhosphate
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

1.0 Introduction

This Quality Assurance Sample Plan (QASP) outlines the Explosive Service International (ESI) waste & contained burn chamber (CBC) feed characterization sampling and analytical procedures for the M6 Destruction Project at Camp Minden National Guard Training Site in Webster and Bossier Parishes, Louisiana. Figure 1 shows the location of the site within the State of Louisiana. The project includes the complete removal, destruction, and disposal of all hazardous materials and waste located at Camp Minden associated with the M6 Destruction Project. Destruction activities conducted under the EPA administration order will be conducted at the Camp Minden – Area I Destruction Site. Figure 2 presents the Camp Minden – Area I – Destruction Site and the significant features.

Described within are the samples that the ESI Team will collect during the project, how the samples will be analyzed, and how the results will be evaluated. The QASP follows quality assurance (QA) and quality control (QC) measures detailed in the site Quality Assurance Project Plan (QAPP) which will be applied to ensure that the data obtained are of the type and quality needed to meet Remedial Action Objectives (RAOs) per the Louisiana Department of Environmental Quality Risk Evaluation/Corrective Action Program (LDEQ RECAP). The QASP follows United States Environmental Protection Agency (USEPA) Requirements for Quality Assurance Project Plans (EPA QA/R-5) (EPA 2001) and the accompanying document, Guidance for Quality Assurance Project Plans (EPA QA/G-5) (EPA 2002).

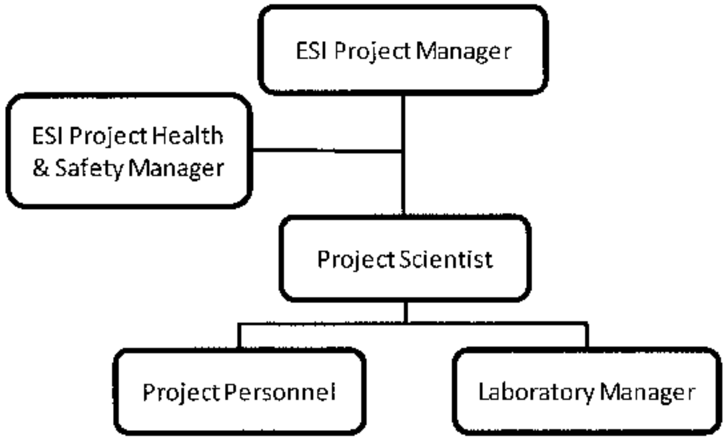
2.0 Project Description

Approximately 15,687,247 pounds of M6 propellant and approximately 320,890 pounds of Clean Burning Igniter (CBI) were abandoned at the Explo site. Explo was located on the Camp Minden National Guard Training Site at 1600 Java Road, Minden, Louisiana 71055-7924. Ninety-seven (97) magazines are filled with M6 propellant and other explosive materials. Some of the magazines were loaded by Explo while in operation, while other magazines were filled to capacity as directed after the improper storage was discovered. Some of the M6 propellant was stacked outside for an undetermined period of time. The propellant and other explosive materials are stored and packaged within multiple configurations, including 60-pound cardboard boxes, 100/140-pound fiber drums, and primarily 880-pound super sacks, which were over packed into cardboard boxes. The storage of explosive material in magazines is not in accordance with the Department of Defense standards and requires handling techniques not standard for classical munitions technicians.

The primary materials to be addressed are the M6 propellant and the CBI waste. The ESI Team remedy is to properly remove, handle, and destroy the material. The material will be removed from present packaging and moved to a controlled burn area where the material will be systematically and safely burned as final destruction. Resulting waste (ash, packaging, storage pallets) will then be characterized and profiled for destruction/reuse/recycling and then properly removed from the site for final disposition.

3.0 Project Organization and Responsibility

This section establishes the M6 Destruction Project organization functional responsibilities of key staff, levels of authority among key participants and lines of communication for activities affecting quality. The project team has been selected to provide the technical and management capabilities and qualifications as required by the investigative and/or restoration action tasks. These personnel have appropriate educational qualifications and previous experience on related projects.



Project Organization

ESI Project Manager

The ESI Project Manager is responsible for effective day-to-day management of all operations. His responsibilities include:

- Review and approval of all plans.
- Implementation of all quality control and health & safety standards required by the project.
- Preparation of progress reports with the assistance of key support personnel.
- Management of all funds for labor and materials procurement.
- Technical review of all task deliverables.
- Establishment and enforcement of work element milestones to ensure timely completion of project objectives.
- Liaison with the Camp Minden representative in regard to all operations of the project.

The ESI Project Manager for this site is Dean S. Schellhase of ESI.

ESI Project Health & Safety Officer

The ESI project health & safety officer is responsible for establishing and implementing the Site Specific Health & Safety Plan. His responsibilities include:

- Reviewing and monitoring compliance with the Site Specific Health & Safety Plan.
- Implementing corrective measures for site specific health & safety deficiencies.
- Ensuring required training and medical monitoring of project personnel.
- Oversight of air monitoring at all areas where personnel will potentially be exposed to hazardous conditions.
- Brief all personnel concerning health & safety requirements.
- Maintain all necessary calibration records related to health & safety monitoring.

The designated ESI Project Health & Safety Officer is Ken Williams of ESI.

Project Scientist

The project scientist is responsible for overall compliance of the QASP – Waste & CBC Feed Characterization. His responsibilities include:

- Preparation, maintenance and verification of compliance of the QASP – Waste & CBC Feed Characterization.
- Ensuring all established laboratory and field procedures as identified in the plan are being followed.
- Ensure all documentation is provided.
- Ensure all sampling and analysis problems are handled in an expeditious manner.
- Auditing of project sampling and analysis activities to verify conformance with the objectives.
- Ensuring all subcontractor activities are performed in accordance to the QASP – Waste & CBC Feed Characterization through review of subcontractor documents, laboratory data and audits, as needed.
- Informing the Project Manager of the sampling and analysis findings.

The designated Project Scientist is Matthew Salinger.

Laboratory Project Manager

The analytical laboratory project manager has the ultimate responsibility for analytical performance, including adherence to contract requirements and quality control requirements. The laboratory project manager will serve as the primary laboratory contact person for the Project Scientist, and any change in the scope of work will be processed through him.

The subcontracted analytical laboratory for the Waste & CBC Feed Characterization is GCAL Analytical Laboratories (GCAL) in Baton Rouge, Louisiana. GCAL's Laboratory Quality Assurance Manual is provided in Appendix D of the project QAPP. The Laboratory Project Manager for the analytical provided within this QASP - Waste & CBC Feed Characterization is Kim Litel.

Project Personnel

Project personnel include both project specialists (environmental scientists, geotechnical engineers, chemists, etc…) and site personnel (supervisors, equipment operators, field technicians) as required for the individual task. Project personnel have the required education, training and/or experience commensurate with their responsibilities during the project. All personnel qualifications will be reviewed and evaluated by the ESI Project Manager and ESI administrative support.

4.0 Project Limits and Evaluations

The ESI Team will collect and analyze samples of the M6 propellant, CBI, and packaging materials (plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums) to characterize the waste being introduced into the destruction unit prior to testing the CBC. Characterization of wastes will determine the presence or absence of analytes in the wastes being introduced into the destruction unit. Analytical results of the wastes Analytical results of the wastes will be used to devise the Comprehensive Performance Test (CPT) Plan. Tables 5 and 6 define the Project Quantitation Limits, Analytical Methods, and Achievable Laboratory Limits.

5.0 Field Sampling

Field tasks and laboratory analytical for waste characterization that may be performed during execution of the project are included in Section 4.0. Table 2 summarizes the Camp Minden M6 Destruction Project waste & CBC feed characterization samples, analytical methods, and defines the rationale for sample collection. Sample container requirements, preservation techniques, sample volume, and holding times for laboratory analysis as outlined in this QASP – Waste & CBC Feed Characterization are provided in Table 4. Copies of field forms are included as Attachment A. All field methodologies utilized in collecting samples for analysis will be conducted in accordance with the procedures set forth in the project QAPP.

Split or duplicate samples will be provided to the Military Department, USEPA and the State regulators, or their authorized representatives upon request. ESI will notify the Military Department, USEPA and the State regulators not less than seven (7) days in advance of any sample collection activity unless shorter notice is agreed to by the Military Department.

5.1 Waste & CBC Feed Sampling

Waste feed sampling will be conducted prior to testing of the contained burn chamber (CBC) system. The purpose of the sampling is to characterize the M6 propellant and CBI materials being introduced into the destruction unit. Associated M6 propellant and CBI packaging materials will also be sampled for characterization.

Prior to the Initial Acceptance Testing of the contained burn chamber system, representative samples of M6 propellant and the CBI waste only, and associated packing materials (plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums) will be collected and analyzed. Discrete samples of each waste feed will be collected as appropriate for the required laboratory analytical procedure. Samples and materials collected for analysis will be identified and documented on field logs.

Waste & CBC Feed Characterization samples collected prior to commencement of destructive activities will be analyzed for the following constituents:

Parameter	Matrix	Material	Method
VOCs[1]	Solid	M6 Propellant	EPA8260C
SVOCs[2]	Solid	M6 Propellant	EPA8270D
Metals[3]	Solid	M6 Propellant	6020A
Mercury	Solid	M6 Propellant	7471B
Total Chlorine	Solid	M6 Propellant	9056A
VOCs[1]	Solid	CBI	EPA8260C
SVOCs[2]	Solid	CBI	EPA8270D
Metals[3]	Solid	CBI	6020A
Mercury	Solid	CBI	7471B
Total Chlorine	Solid	CBI	9056A
VOCs[1]	Solid	Packaging Materials[4]	EPA8260C
SVOCs[2]	Solid	Packaging Materials[4]	EPA8270D
Metals[3]	Solid	Packaging Materials[4]	6020A
Mercury	Solid	Packaging Materials[4]	7471B
Total Chlorine	Solid	Packaging Materials[4]	9056A

1) Volatile Organic Compounds (VOCs).
2) Semi-Volatile Organic Compounds (SVOCs).
3) Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Manganese (Mn), Cobalt (Co), beryllium (Be), and Nickel (Ni).
4) Packaging Materials: plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums.

5.2 Waste Characterization

Waste characterization will be conducted to identify each waste stream for disposal. Generator's knowledge and analytical testing will be used to accurately characterize each waste stream. The waste streams anticipated for the project include the following:

- Ash from the material destruction process; and
- Packaging from the material containers (plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums). It is noted that the packaging materials may be combined into one waste stream and would be stored and disposed collectively.

One (1) composite sample of the ash from the material destruction process will be collected and analyzed for characterization, if necessary for disposal.

- Ash – A composite sample of ash will be collected and submitted for laboratory analysis. Five (5) grab samples will be collected from the vessel for composite. Samples will be collected from the north, south, east, and west locations of the vessel, as well as the center of the vessel as appropriate for the laboratory analysis.

Analysis for the packaging materials (plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums) is listed in Section 5.1. Laboratory results of the packaging material will be used to accurately characterize the waste stream for disposal. Additional waste characterization may be conducted upon request by the permitted facility for disposal. Should the disposal facility require additional analysis, a representative composite sample of the waste stream will be collected and analyzed for the specified parameter.

- Material Packaging – Generator's knowledge is anticipated.

Waste characterization samples may be analyzed for the following:

PARAMETER	MATRIX	MATERIAL	METHOD
Explosives	Solid	Ash	EPA8330B
Nitrocellulose	Solid	Ash	EPA353.2 Modified
TCLP VOCs[1]	Solid	Ash	EPA1311/8260C
TCLP SVOCs[2]	Solid	Ash	EPA1311/8270D
TCLP Metals[3]	Solid	Ash	EPA1311/6020A
TCLP Mercury	Solid	Ash	EPA1311/7471B
RCI[4]	Solid	Ash	SW846, Chapter 7.3.3.2

Note: Analysis will be submitted as required by the permitted facility.

1) Volatile Organic Compounds (VOCs).
2) Semi-Volatile Organic Compounds (SVOCs).
3) Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Manganese (Mn), Cobalt (Co), beryllium (Be), and Nickel (Ni).
4) Reactivity, Corrosivity, Ignitability (RCI)

6.0 Quality Assurance/Quality Control (QA/QC) Sample Program

A QA/QC sampling program will be implemented as a systematic process that controls the validity of the analytical results by measuring the accuracy and precision of the analytical method and sample matrix. The QA/QC program also develops expected control limits and uses these limits to detect anomalous events. Subsequently, corrective action techniques are implemented to prevent or minimize recurrence of the events. The accuracy and precision of the sample analyses are assessed by the analysis of both field and laboratory samples. To ensure that reliable data is collected, the data will meet the following requirements:

- The data will be generated using EPA approved SW-846 Test Methods;
- The data will be analyte-specific with the identity and concentration of the compound confirmed;
- Selected analysis reports (approximately 10%) will include raw data such as chromatograms, spectra, and digital values; and
- QA/QC samples will be included.

6.1 Field QA/QC Samples

Field QA/QC samples will be collected by the field sampling team during the collection of samples to insure QA/QC standards are attained. The field QA/QC samples are not included as part of the laboratory's internal QA/QC program and will be handled by the laboratory as a routine environmental sample. The field team will, to the extent practical, schedule sample collection and shipment of samples to minimize the number of QA/QC samples requiring analysis. A Field Quality Control Sample Summary is provided as Table 3.

6.1.1 Field Duplicate Samples

Each duplicate is defined as a second sample taken in the field at a given location. Immediately following collection of the original sample, the field duplicate sample is collected by using the same collection method. Duplicate samples will be collected using the appropriate sampling device for the procedure and the desired laboratory analytical. The field duplicate sample location and time will not be revealed to the laboratory. Field duplicate samples will be analyzed using the same analyses performed on its associated routine sample.

- Duplicate samples will be collected at a frequency of one (1) per ten (10) field samples.

6.1.2 Material Spike and Material Spike Duplicate Samples

Material Spike/Material Spike Duplicate (MS/MSD) samples are collected for use as laboratory QC samples for analysis by organic methods. Aqueous samples are collected from one (1) sampling location at triple the normal sample volume for all organic analyses. In the laboratory, MS/MSD samples are split, and two portions are spiked with known amounts of analytes. Analytical results for MS/MSD samples are used to measure the precision and accuracy of the laboratory organic analytical program.

- MS/MSD samples will be collected at a frequency of one (1) per ten (10) field samples.

6.1.3 Equipment Rinsate Blanks

Equipment rinsate blanks will be collected during the field program to assess the effectiveness of the equipment decontamination methods. An equipment rinsate blank will consist of analyte-free water, which is poured over the decontaminated sampling equipment and subsequently collected in laboratory prepared sample bottles. Equipment rinsate samples will be analyzed for all analytes of interest in the media for which the equipment is being used.

- Rinsate samples will be collected at a frequency of one (1) per day during field sampling activities.

6.1.4 Field Blanks

Field blanks will be included in this program to evaluate the possible introduction of VOCs into samples from external sources. This sample is created by pouring analyte-free water used in the field into a randomly selected, laboratory supplied sample container at the sampling site. Field blanks will be analyzed for VOCs only. The field blank will be obtained near the sampling location and handled as a site sample.

- Field blanks will be collected at a frequency of one (1) per day during field sampling activities.

6.1.5 Trip Blanks

Trip blanks will be included in this program to evaluate the possible introduction of VOCs into samples during sample transit and storage. Trip blanks will include vials of analyte-free water prepared by the laboratory. Trip blank samples will be analyzed for VOCs only.

- Trip blanks will be analyzed at a frequency of one (1) per cooler containing samples for volatiles analysis.

7.0 Field Sample Documentation

Sample custody procedures are based on USEPA-recommended procedures that emphasize careful documentation of sample collection and sample transfer. To ensure that all of the important information pertaining to each sample is recorded, the following documentation procedures shall be obeyed. Table 1 includes a summary of the project documents and records that will be generated for the QASP – Waste & CBC Feed Characterization.

7.1 Sample Collection

The collection of samples will be in accordance with the established sampling procedures outlined in Section 5.0. Sample containers, preservatives and holding times will be in accordance with USEPA Test Methods for Evaluating Solid Waste (SW-846) document and the contracted laboratory.

Samples will be collected in laboratory-supplied, pre-preserved containers (if applicable). Immediately upon collection, the containers will be sealed, labeled with an identification number, wrapped in bubble pack, and placed on ice in a cooler maintained at approximately 4°C pending shipment to the laboratory. Table 4 summarizes the requirements for containers, preservation techniques, sample volumes, and holding times per matrix.

Decontamination of sampling equipment and tools prior to use and between each sampling location will be performed to minimize the potential for cross-contamination between sample locations. Equipment and tools will be scrubbed in a solution of TSP and distilled water, and tripled rinsed in distilled water. In addition, nitrile gloves will be used while handling samples and sampling equipment.

7.2 Field Logbooks

Project field books will be kept. All pertinent information regarding the site and sampling procedures will be documented in indelible ink. A site activity log will be completed each day sampling activities are conducted. Pertinent information noted on the site activity log should include the date of field activities, a description of activities, weather conditions, any onsite visitors, important phone calls, deviations from the plans/specifications, persons conducting the field activities, and a summary of field events. Notations made on the site activity logs should note the time and date for all entries. In addition, field data will be recorded on the specific field log as appropriate for the activity conducted. Copies of field logs are provided as Attachment A.

7.3 Documenting Sampling Locations

Samples collected will be logged and identified with a naming system to include the year, month, and day collected. The naming system will be specific to the sample collection point as outlined below:

- -Waste Feed Samples:
  - (yy,mm,dd Waste Feed: M6 propellant);
  - (yy,mm,dd Waste Feed: CBI);
  - (yy,mm,dd Waste Feed: packaging material).
- -Waste Characterization:
  - (yy,mm,dd Waste Stream Destruction).

7.4 Sample Packaging and Shipping

Proper sample containers ensure that no chemical alteration occurs during the field sampling and transit to the laboratory. Containers will be delivered by the laboratory or shipped by a commercial supplier. During field activities, sample containers will be selected to ensure compatibility with the matrix and laboratory analytical. Table 4 summarizes the requirements for containers, preservation techniques, sample volumes, and holding times per matrix. Upon collection, the lid of each container will be securely tightened. Samples will be packaged carefully to avoid breakage or cross contamination and will be shipped to the laboratory at proper temperatures. Shipping times will be minimized to prevent holding time violations. All care will be taken following these procedures:

- Deliver samples to the laboratory the same day they are collected, if possible. If samples are to be held until the next day, they will be maintained at approximately 4° C in a controlled environment.
- Sample labels will be affixed to each container. Each label will identify the site name, a unique identification number, collector's name, date and time of collection, preservatives (if any), and analyses to be performed. All labels will be completed in waterproof ink. This same information will be placed on the chain-of-custody (COC) form and the COC will accompany the samples to the laboratory. The water resistant sample label will be completed and affixed to the sample container.
- The sample containers will be packed in coolers with samples from each sampling location grouped together. Packing material will be used to cushion and support the sample container. Sample labels will be verified against the COC form as they are packed.
- The COC will be checked for completeness for the samples contained within the cooler. A copy of relinquished COC forms will be retained with the field documentation. Samples will be maintained under strict COC protocol, including documentation of transfers among facilities and archival after completion of analysis. Samples and signed COC forms will remain in the possession of the field sampler until relinquished for transport to the laboratory.

7.5 Chain-of-Custody Records

Samples will be maintained under strict chain-of-custody (COC) protocol from the time of the sample collection through delivery to the laboratory. The COC involves maintaining the integrity and traceability of the process of sample collection, laboratory analysis, and final evidence files. Each sample container will be recorded on a COC form. The form documents the project number, sample identification, date and time of collection, preservation used (if any), sampler's name, and responsible person during each step of the transportation process. A sample of a COC is included in Attachment A.

A sample is defined as being in one's custody if:

- The sample container is in one's actual possession.
- The sample container is in one's view after being in one's physical possession.
- The sample container has been continuously in one's physical possession and then placed in a secure location.

The COC will be completed in triplicate with the original to accompany the final analytical report, one copy to be retained by the laboratory and the third copy to be retained in the project records. The COC will be placed into a plastic sealable bag and taped to the inside of the cooler lid.

Samples and shipping containers will remain in the custody of a sampling team member until relinquished via dated signature to the laboratory, shipping courier, or other appropriate party, who must sign and date the COC at the time the shipping containers are transferred. If the courier does not sign the COC, the sampler will note the name of the courier company, and the tracking number on the COC.

Laboratory COC begins when samples are received and continues until samples are discarded. Laboratories analyzing samples must follow custody procedures specified in their Standard Operating Procedures (SOPs).

8.0 Laboratory Sample Documentation

All sample log-in, storage and COC documentation will be the responsibility of the laboratory manager or his designee. He is responsible for retaining shipment documents and verifying data entered into the sample custody records. He will also ensure that the sample storage is secure and maintained at the proper temperature. Any problems shall be documented on the COC and the project scientist shall be notified immediately.

All samples shall be kept under the proper environmental control until after the holding times have expired and there are no QA/QC problems with any analysis on the samples. The contracted laboratory Quality Assurance Manual is included as Appendix D of the QAPP.

Sample administration will log the samples into the order entry system and the Laboratory Information Management System (LIMS). The LIMS will assist the tracking of the samples while the samples are in the custody of the laboratory.

9.0 Laboratory Analysis

Laboratory analyses per sample material including rationale for analyses is discussed in Section 5.0 and summarized on Table 2.

The USEPA and State regulator personnel and their authorized representatives will have access at reasonable times to all laboratories utilized by ESI in implementing the contract. ESI ensures that all laboratories contracted will analyze all samples submitted by EPA pursuant to the QAPP for quality assurance, quality control, and technical activities that will satisfy the stated performance criteria as specified in the QAPP. ESI ensures that the laboratories they utilize for the analysis of samples taken will perform all analyses according to accepted EPA methods. Accepted EPA methods consist of, but are not limited to:

- Methods that are documented in the EPA's Contract Laboratory Program (http://www.epa.gov/superfund/programs/clp/);
- SW 846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (http://www.epa.gov/epawaste/hazard/testmethods/sw846/online/index.htm); and
- Amendments made thereto during the course of the implementation of the contract resulting from this RFP.

ESI understands, upon approval by EPA, ESI may use other appropriate analytical methods, as long as:

- QA/QC criteria are contained in the methods, and the methods are included in the QAPP;
- The analytical methods are at least as stringent as the methods listed above; and
- The methods have been approved for use by a nationally recognized organization responsible for verification and publication of analytical methods, e.g., EPA, ASTM, NIOSH, OSHA, etc.

ESI ensures that all laboratories they use for analysis of samples have a documented Quality System that complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001, reissued May 2006), or equivalent documentation as determined by EPA. ESI understands EPA may consider Environmental Response Laboratory Network ("ERLN") laboratories, laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP"), or laboratories that meet International Standardization Organization (ISO 17025) standards or other nationally recognized programs (www.epa.gov/fem/accredit.htm) as meeting the Quality System requirements. All contracted testing companies and laboratories used to generate monitoring data will be Louisiana Environmental Laboratory Accreditation Program (LELAP) certified per LAC 33:I.subpart 3.

ESI, on behalf of the Military Department, will submit to EPA the results of all sampling and/or tests or other data obtained or generated by or on behalf of Military Department with respect to the project. ESI understands that the USEPA and the State of Louisiana regulating authorities retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes and regulations.

TABLES

Table 1
Project Documents and Records
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Sample Collection Documents and Records	On-Site Analysis Documents and Records	Off-Site Analysis Documents and Records	Data Assessment Documents and Records
Site Activity Logs	Photographs	Sample Receipt, Custody and/or Tracking Logs	Approved Project Plans
Tailgate Safety Logs	Photograph Log	Data packages (case narratives, sample results, QC summaries and raw data)	Analytical Sample Results
Photograph Log		Waste & CBC Feed Characterization Report	Subcontract Laboratory Certifications
Chain-of-Custody Forms			Subcontract Laboratory QA Plan
Air Bills			Data Package Validated Data Reports

Table 2
Sample Materials and Methods
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Sample Material	Sample Naming System	Matrix	Analytical Group/Method	Rationale for Analysis
M6 Propellant	yy,mm,dd Waste Feed: M6 Propellant	Solid	VOCs (8260C)[1] SVOCs (8270D)[2] Metals (6020A)[3] Mercury (7471B) Total Chlorine (9056A)	To characterize materials before being introduced into the destruction unit.
CBI	yy,mm,dd Waste Feed: CBI	Solid	VOCs (8260C)[1] SVOCs (8270D)[2] Metals (6020A)[3] Mercury (7471B) Total Chlorine (9056A)	To characterize materials before being introduced into the destruction unit.
Packaging Materials[4]	yy,mm,dd Waste Feed: Packaging Material	Solid	VOCs (8260C)[1] SVOCs (8270D)[2] Metals (6020A)[3] Mercury (7471B) Total Chlorine (9056A)	To characterize materials before being introduced into the destruction unit and for disposal.
Ash	yy,mm,dd Waste Stream Destruction	Solid	Explosives (Method 8330B) Nitrocellulose (353.2) VOCs (EPA 1311/8260C)[1] SVOCs (EPA 1311/8270D)[2] TCLP Metals (EPA 1311/6020A)[3] TCLP Mercury (EPA 1311/7471B) RCI (SW846, Chapter 7.3.3.2)[5]	To characterize waste for disposal.

Notes:
1) Volatile Organic Compounds (VOCs) are provided on Table 5 (solids) and Table 6 (QA/QC Water).
2) Semi-Volatile Organic Compounds (SVOCs) are provided on Table 5 (solids) and Table 6 (QA/QC Water).
3) Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Manganese (Mn), Cobalt (Co), Beryllium (Be), and Nickel (Ni).
4) Packaging Materials include the following: plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums
5) RCI: Reactivity, Corrosivity, Ignitability

Table 3
Field Quality Control Sample Summary
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Sample Location	Matrix	Analytical Group	Analytical Method	No. of Field Duplicates[1]	No. of Matrix Spikes[2]	No. of Matrix Spike Duplicates[2]	No. of Field Blanks[3]	No. of Equip. Blanks[4]	No. of Trip Blanks[5]
M6 Propellant	Solid	VOCs	EPA8260C	1/10	1/10	1/10	1/day	1/day	1/ice chest
M6 Propellant	Solid	SVOCs	EPA8270D[6]	1/10	1/10	1/10	1/day	1/day	-
M6 Propellant	Solid	Metals[7]	6020A	1/10	1/10	1/10	1/day	1/day	-
M6 Propellant	Solid	Mercury	7471B	1/10	1/10	1/10	1/day	1/day	-
M6 Propellant	Solid	Total Chlorine	9056A	1/10	1/10	1/10	1/day	1/day	-
CBI	Solid	VOCs	EPA8260C	1/10	1/10	1/10	1/day	1/day	1/ice chest
CBI	Solid	SVOCs	EPA8270D[6]	1/10	1/10	1/10	1/day	1/day	-
CBI	Solid	Metals[7]	6020A	1/10	1/10	1/10	1/day	1/day	-
CBI	Solid	Mercury	7471B	1/10	1/10	1/10	1/day	1/day	-
CBI	Solid	Total Chlorine	9056A	1/10	1/10	1/10	1/day	1/day	-
Packaging Materials[8]	Solid	VOCs	EPA8260C	1/10	1/10	1/10	1/day	1/day	1/ice chest
Packaging Materials[8]	Solid	SVOCs	EPA8270D[6]	1/10	1/10	1/10	1/day	1/day	-
Packaging Materials[8]	Solid	Metals[7]	6020A	1/10	1/10	1/10	1/day	1/day	-
Packaging Materials[8]	Solid	Mercury	7471B	1/10	1/10	1/10	1/day	1/day	-
Packaging Materials[8]	Solid	Total Chlorine	9056A	1/10	1/10	1/10	1/day	1/day	-
Ash	Solid	Explosives	EPA8330B	1/10	1/10	1/10	1/day	1/day	-
Ash	Solid	Nitrocellulose	353.2	1/10	1/10	1/10	1/day	1/day	-
Ash	Solid	TCLP VOCs	EPA 1311/8260C	1/10	1/10	1/10	1/day	1/day	1/ice chest
Ash	Solid	TCLP SVOCs	EPA 1311/8270D[6]	1/10	1/10	1/10	1/day	1/day	-
Ash	Solid	TCLP Metals[7]	EPA 1311/6020A	1/10	1/10	1/10	1/day	1/day	-
Ash	Solid	TCLP Mercury	EPA 1311/7471B	1/10	1/10	1/10	1/day	1/day	-
Ash	Solid	RCI[9]	SW846, Chapter 7.3.3.2	1/10	1/10	1/10	1/day	1/day	-

Notes:
1) At least 1 duplicate sample will be collected per 10 field samples per matrix. Number listed will change based on number of shipments scheduled.
2) At least 1 matrix spike/matrix spike duplicate will be collected per 10 field samples. Number listed will change based on number of shipments scheduled.
3) At least 1 field blank will be collected each day sampling activities are conducted. Number listed will change based on number of shipments scheduled.
4) An equipment blank will be collected each day sampling activites are conducted, if necessary. Number listed will change based on number of field sampling days.
5) A trip blank will be included with each cooler that is shipped containing VOC samples, amount listed will change based on number of coolers.
6) Method 8270 will include RECAP SVOCs constituents and 2,4-dinitrotoluene, 2,6-dinitrotoluene, di-n-butylpthalate, and diphenylamine.
7) Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Manganese (Mn), Cobalt (Co), Beryllium (Be), and Nickel (Ni).
8) Packaging Materials include the following: plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums.
9) RCI: Reactivity, Corrosivity, Ignitability

Table 4
Requirements for Containers, Preservation Techniques, Sample Volume and Holding Times
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Parameter	Matrix	Method	Container	Preservative	Sample Minimum Volume	Holding Time
M6 Propellant						
VOCs[1]	Solid	EPA8260C	Glass	None	8 oz	14 Days
SVOCs[2]	Solid	EPA8270D	Glass	None	8 oz	14 Days
Metals[3]	Solid	6020A	Glass	None	8 oz	6 months
Mercury	Solid	7471B	Glass	None	8 oz	28 Days
Total Chlorine	Solid	9056A	Glass	None	8 oz	Analyze Immediately
CBI						
VOCs[1]	Solid	EPA8260C	Glass	None	8 oz	14 Days
SVOCs[2]	Solid	EPA8270D	Glass	None	8 oz	14 Days
Metals[3]	Solid	6020A	Glass	None	8 oz	6 months
Mercury	Solid	7471B	Glass	None	8 oz	28 Days
Total Chlorine	Solid	9056A	Glass	None	8 oz	Analyze Immediately
Packaging Materials						
VOCs[1]	Solid	EPA8260C	Glass	None	1 Liter	14 Days
SVOCs[2]	Solid	EPA8270D	Glass	None	1 Liter	14 Days
Metals[3]	Solid	6020A	Glass	None	1 Liter	6 months
Mercury	Solid	7471B	Glass	None	1 Liter	28 Days
Total Chlorine	Solid	9056A	Glass	None	1 Liter	Analyze Immediately
Ash[5]						

Table 4
Requirements for Containers, Preservation Techniques, Sample Volume and Holding Times
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Parameter	Matrix	Method	Container	Preservative	Sample Minimum Volume	Holding Time
Explosives	Solid	EPA8330B	Glass	None	8 oz	14 Days
Nitrocellulose	Solid	EPA353.2	Glass	None	8 oz	28 Days
TCLP VOCs[1]	Solid	EPA1311/8260C	Glass	None	8 oz	14 Days
TCLP SVOCs[2]	Solid	EPA1311/8270D	Glass	None	8 oz	14 Days
TCLP Metals[3]	Solid	EPA1311/6020A	Glass	None	8 oz	6 months
TCLP Mercury	Solid	EPA1311/7471B	Glass	None	8 oz	28 Days
RCI[4]	Solid	SW846, Chapter 7.3.3.2	Glass	None	8 oz	Not Regulated
Quality Assurance/Quality Control						
Explosives	Water	EPA8330B	Glass	None	2-1 Liter	7 Days
Nitrocellulose	Water	EPA353.2	Glass	None	1 Liter	28 Days
VOCs[1]	Water	EPA8260C	40 mL tared voa vial	HCl	3 x 40 mL tared voa vial	14 Days
SVOCs[2]	Water	EPA8270D	Amber Glass	None	1 Liter	7 Days
Metals[3]	Water	6020A	Plastic	HNO3; pH<2	250 mL	6 Months
Mercury	Water	7471B	Plastic	HNO3; pH<2	500 mL	28 Days
Total Chlorine	Water	9056A	Plastic	None	125 mL	Analyze Immediately

Notes:
1) Volatile Organic Compounds (VOCs) are provided on Table 5 (solids) and Table 6 (QA/QC Water).
2) Semi-Volatile Organic Compounds (SVOCs) are provided on Table 5 (solids) and Table 6 (QA/QC Water).
3) Metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Manganese (Mn), Cobalt (Co), Beryllium (Be), and Nickel (Ni).
4) RCI: Reactivity, Corrosivity, Ignitability.
5) Analysis will be performed as required by the permitted disposal facility.

Table 5
Solids Limits and Evaluation
Waste CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte	Matrix[1]	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
			MDLs[2]	Method[2]	MDLs[3]	QLs[3]
Explosives (ug/kg)						
1,3,5-Trinitrobenzene	Solid	200	200	8330B	42	200
1,3-Dinitrobenzene	Solid	200	200	8330B	77	200
2,4,6-Trinitrotoluene	Solid	200	200	8330B	51	200
2,4-Dinitrotoluene	Solid	200	200	8330B	99	200
2,6-Dinitrotoluene	Solid	200	200	8330B	61	200
2-Amino-4,6-dinitrotoluene	Solid	200	200	8330B	98	200
2-Nitrotoluene	Solid	200	200	8330B	64	200
3,5-Dinitroaniline	Solid	200	200	8330B	83	200
3-Nitrotoluene	Solid	200	200	8330B	125	200
4-Amino-2,6-dinitrotoluene	Solid	200	200	8330B	77	200
4-Nitrotoluene	Solid	200	200	8330B	77	200
HMX	Solid	200	200	8330B	26	200
Nitrobenzene	Solid	200	200	8330B	36	200
Nitroglycerin	Solid	200	200	8330B	74	200
Pentaerythritol Tetranitrate	Solid	200	200	8330B	122	200
RDX	Solid	200	200	8330B	18	200
Tetryl	Solid	200	200	8330B	41	200
Nitrocellulose (mg/kg)						
Nitrocellulose	Solid	5	5	353.2	0.78	5
Volatile Organic Compounds (ug/kg)						
1,1,1,2-Tetrachloroethane	Solid	5	5	8260C	0.25	5
1,1,1-Trichloroethane	Solid	5	5	8260C	0.25	5
1,1,2,2-Tetrachloroethane	Solid	5	5	8260C	0.25	5
1,1,2-Trichloroethane	Solid	5	5	8260C	0.25	5
1,1-Dichloroethane	Solid	5	5	8260C	0.25	5
1,1-Dichloroethene	Solid	5	5	8260C	0.25	5
1,2,4-Trichlorobenzene	Solid	5	5	8260C	0.50	5
1,2-Dibromo-3-chloropropane	Solid	5	5	8260C	0.50	5
1,2-Dichlorobenzene	Solid	5	5	8260C	0.25	5
1,2-Dichloroethane	Solid	5	5	8260C	0.25	5
1,2-Dichloropropane	Solid	5	5	8260C	0.25	5
1,3-Dichlorobenzene	Solid	5	5	8260C	0.25	5
1,3-Dichloropropylene	Solid	10	10	8260C	1.00	10
1,4-Dichlorobenzene	Solid	5	5	8260C	0.25	5
2-Butanone	Solid	5	5	8260C	0.50	5
4-Methyl-2-pentanone	Solid	5	5	8260C	0.25	5
Acetone	Solid	25	25	8260C	0.50	25
Benzene	Solid	5	5	8260C	0.25	5
Bromodichloromethane	Solid	5	5	8260C	0.25	5
Bromoform	Solid	5	5	8260C	0.50	5
Bromomethane	Solid	5	5	8260C	0.50	5
Carbon disulfide	Solid	5	5	8260C	0.25	5
Carbon tetrachloride	Solid	5	5	8260C	0.25	5
Chlorobenzene	Solid	5	5	8260C	0.25	5
Chloroethane	Solid	5	5	8260C	0.25	5
Chloroform	Solid	5	5	8260C	0.25	5
Chloromethane	Solid	5	5	8260C	0.50	5

Table 5
Solids Limits and Evaluation
Waste CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte	Matrix[1]	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
			MDLs[2]	Method[2]	MDLs[3]	QLs[3]
Dibromochloromethane	Solid	5	5	8260C	0.25	5
Ethylbenzene	Solid	5	5	8260C	0.25	5
Hexachlorobutadiene	Solid	5	5	8260C	0.50	5
Isobutyl alcohol	Solid	25	25	8260C	5.00	25
Methylene chloride	Solid	10	10	8260C	1.00	10
Naphthalene	Solid	5	5	8260C	0.50	5
Styrene	Solid	5	5	8260C	0.25	5
Tetrachloroethene	Solid	5	5	8260C	0.50	5
Toluene	Solid	5	5	8260C	0.25	5
Trichloroethene	Solid	5	5	8260C	0.25	5
Trichlorofluoromethane	Solid	5	5	8260C	0.25	5
Vinyl chloride	Solid	5	5	8260C	0.25	5
Xylene (total)	Solid	15	15	8260C	0.50	15
cis-1,2-Dichloroethene	Solid	5	5	8260C	0.25	5
tert-Butyl methyl ether (MTBE)	Solid	5	5	8260C	0.25	5
trans-1,2-Dichloroethene	Solid	5	5	8260C	0.25	5
Semi-Volatile Organic Compounds (ug/kg)						
1,2,4,5-Tetrachlorobenzene	Solid	330	330	8270D	33	330
1,3-Dinitrobenzene	Solid	330	330	8270D	33	330
2,3,4,6-Tetrachlorophenol	Solid	330	330	8270D	33	330
2,4,5-Trichlorophenol	Solid	330	330	8270D	5	330
2,4,6-Trichlorophenol	Solid	330	330	8270D	5	330
2,4-Dichlorophenol	Solid	330	330	8270D	33	330
2,4-Dimethylphenol	Solid	330	330	8270D	33	330
2,4-Dinitrophenol	Solid	1650	1650	8270D	33	1650
2,4-Dinitrotoluene	Solid	330	330	8270D	33	330
2,6-Dinitrotoluene	Solid	330	330	8270D	33	330
2-Chloronaphthalene	Solid	330	330	8270D	5	330
2-Chlorophenol	Solid	330	330	8270D	5	330
2-Methylnaphthalene	Solid	330	330	8270D	5	330
2-Nitroaniline	Solid	1650	1650	8270D	5	1650
3,3'-Dichlorobenzidine	Solid	660	660	8270D	33	660
3-Nitroaniline	Solid	1650	1650	8270D	33	1650
4-Chloroaniline	Solid	330	330	8270D	33	330
4-Nitroaniline	Solid	1650	1650[2]	8270D	33	1650
4-Nitrophenol	Solid	1650	1650	8270D	33	1650
Acenaphthene	Solid	330	330	8270D	5	330
Acenaphthylene	Solid	330	330	8270D	5	330
Aniline	Solid	330	330	8270D	33	330
Anthracene	Solid	330	330	8270D	5	330
Benzo(a)anthracene	Solid	330	330	8270D	5	330
Benzo(a)pyrene	Solid	330	330	8270D	5	330
Benzo(b)fluoranthene	Solid	330	330	8270D	5	330
Benzo(k)fluoranthene	Solid	330	330	8270D	5	330
Biphenyl	Solid	330	330	8270D	33	330
Bis(2-Chloroethyl)ether	Solid	330	330	8270D	5	330
Bis(2-Chloroisopropyl)ether	Solid	330	330	8270D	5	330
Bis(2-Ethylhexyl)phthalate	Solid	330	330	8270D	5	330

Table 5
Solids Limits and Evaluation
Waste CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte	Matrix[1]	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
			MDLs[2]	Method[2]	MDLs[3]	QLs[3]
Butyl benzyl phthalate	Solid	330	330	8270D	5	330
Chrysene	Solid	330	330	8270D	5	330
Di-n-octyl phthalate	Solid	330	330	8270D	5	330
Dibenz(a,h)anthracene	Solid	330	330	8270D	5	330
Dibenzofuran	Solid	330	330	8270D	5	330
Diethyl phthalate	Solid	330	330	8270D	5	330
Dimethyl phthalate	Solid	330	330	8270D	8	330
Dinoseb	Solid	330	330	8270D	33	330
Fluoranthene	Solid	330	330	8270D	5	330
Fluorene	Solid	330	330	8270D	5	330
Hexachlorobenzene	Solid	330	330	8270D	8	330
Hexachlorocyclopentadiene	Solid	330	330	8270D	33	330
Hexachloroethane	Solid	330	330	8270D	5	330
Indeno(1,2,3-cd)pyrene	Solid	330	330	8270D	5	330
Isophorone	Solid	330	330	8270D	8	330
Nitrobenzene	Solid	330	330	8270D	8	330
Pentachlorophenol	Solid	1650	1650	8270D	33	1650
Phenanthrene	Solid	330	330	8270D	5	330
Phenol	Solid	330	330	8270D	33	330
Pyrene	Solid	330	330	8270D	5	330
n-Nitrosodi-n-propylamine	Solid	330	330	8270D	5	330
n-Nitrosodiphenylamine	Solid	330	330	8270D	5	330
Di-n-butyl phthalate	Solid	330	330	8270D	5	330
Diphenylamine	Solid	330	330	8270D	5	330
METALS (ug/kg)						
Arsenic	Solid	40	40	6020A	10	40
Cadmium	Solid	40	40	6020A	10	40
Chromium	Solid	40	40	6020A	10	40
Lead	Solid	40	40	6020A	10	40
Manganese	Solid	40	40	6020A	10	40
Cobalt	Solid	40	40	6020A	10	40
Beryllium	Solid	40	40	6020A	10	40
Nickel	Solid	40	40	6020A	10	40
MERCURY (mg/kg)						
Mercury	Solid	0.04	0.04	7471B	0.013	0.04
TOTAL CHLORIDE (mg/kg)						
Chloride	Solid	10	10	9056A	0.1	10

Notes:

[1] Solid Samples will include propellant materials (M6 and CBI), packaging materials (plastic liners, super sack storage bags, cardboard boxes, and metal rings from the fiber drums) and ash. Feed CBC Characterization analytical results will be used to devise the Comprehensive Performance Test (CPT) Plan.

[2] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[3] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

Abbreviations:

ug/kg = micrograms per killograms
mg/kg = milligrams per killograms

Table 6
QA/QC Water Limits and Evaluation
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte	Matrix[1]	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
			MDLs[2]	Method[2]	MDLs[3]	QLs[3]
Explosives (ug/L)						
1,3,5-Trinitrobenzene	Water	1	1	8330B	0.15	1
1,3-Dinitrobenzene	Water	1	1	8330B	0.15	1
2,4,6-Trinitrotoluene	Water	1	1	8330B	0.27	1
2,4-Dinitrotoluene	Water	1	1	8330B	0.29	1
2,6-Dinitrotoluene	Water	1	1	8330B	0.26	1
2-Amino-4,6-dinitrotoluene	Water	1	1	8330B	0.3	1
2-Nitrotoluene	Water	1	1	8330B	0.17	1
3,5-Dinitroaniline	Water	1	1	8330B	0.23	1
3-Nitrotoluene	Water	1	1	8330B	0.33	1
4-Amino-2,6-dinitrotoluene	Water	1	1	8330B	0.36	1
4-Nitrotoluene	Water	1	1	8330B	0.42	1
HMX	Water	1	1	8330B	0.13	1
Nitrobenzene	Water	1	1	8330B	0.23	1
Nitroglycerin	Water	1	1	8330B	0.38	1
Pentaerythritol Tetranitrate	Water	1	1	8330B	0.59	1
RDX	Water	1	1	8330B	0.17	1
Tetryl	Water	1	1	8330B	0.24	1
Nitrocellulose (mg/L)						
Nitrocellulose	Water	2	2	353.2	0.475	2
Volatile Organic Compounds (ug/L)						
1,1,1,2-Tetrachloroethane	Water	1	1	8260C	0.2	1
1,1,1-Trichloroethane	Water	1	1	8260C	0.2	1
1,1,2,2-Tetrachloroethane	Water	1	1	8260C	0.2	1
1,1,2-Trichloroethane	Water	1	1	8260C	0.2	1
1,1-Dichloroethane	Water	1	1	8260C	0.2	1
1,1-Dichloroethene	Water	1	1	8260C	0.2	1
1,2,4-Trichlorobenzene	Water	1	1	8260C	0.2	1
1,2-Dibromo-3-chloropropane	Water	1	1	8260C	0.2	1
1,2-Dichlorobenzene	Water	1	1	8260C	0.2	1
1,2-Dichloroethane	Water	1	1	8260C	0.2	1
1,2-Dichloropropane	Water	1	1	8260C	0.2	1
1,3-Dichlorobenzene	Water	1	1	8260C	0.2	1
1,3-Dichloropropylene	Water	2	2	8260C	0.5	2
1,4-Dichlorobenzene	Water	1	1	8260C	0.2	1
2-Butanone	Water	5	5	8260C	0.2	5
4-Methyl-2-pentanone	Water	5	5	8260C	0.2	5
Acetone	Water	5	5	8260C	0.5	5
Benzene	Water	1	1	8260C	0.2	1
Bromodichloromethane	Water	1	1	8260C	0.2	1
Bromoform	Water	1	1	8260C	0.25	1
Bromomethane	Water	1	1	8260C	0.5	1
Carbon disulfide	Water	1	1	8260C	0.2	1
Carbon tetrachloride	Water	1	1	8260C	0.25	1
Chlorobenzene	Water	1	1	8260C	0.2	1
Chloroethane	Water	1	1	8260C	0.25	1
Chloroform	Water	1	1	8260C	0.2	1
Chloromethane	Water	1	1	8260C	0.2	1
Dibromochloromethane	Water	1	1	8260C	0.2	1
Ethylbenzene	Water	1	1	8260C	0.2	1
Hexachlorobutadiene	Water	5	5	8260C	0.5	5

Table 6
QA/QC Water Limits and Evaluation
Waste & CBC Feed Characterization
M6 Destruction Project
Camp Minden National Guard Training Site

Analyte	Matrix[1]	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
			MDLs[2]	Method[2]	MDLs[3]	QLs[3]
Isobutyl alcohol	Water	10	10	8260C	2	10
Methylene chloride	Water	5	5	8260C	0.2	5
Naphthalene	Water	5	5	8260C	0.2	5
Styrene	Water	1	1	8260C	0.2	1
Tetrachloroethene	Water	1	1	8260C	0.2	1
Toluene	Water	1	1	8260C	0.2	1
Trichloroethene	Water	1	1	8260C	0.2	1
Trichlorofluoromethane	Water	1	1	8260C	0.2	1
Vinyl chloride	Water	1	1	8260C	0.2	1
Xylene (total)	Water	3	3	8260C	0.4	3
cis-1,2-Dichloroethene	Water	1	1	8260C	0.2	1
tert-Butyl methyl ether (MTBE)	Water	1	1	8260C	0.2	1
trans-1,2-Dichloroethene	Water	1	1	8260C	0.2	1
Semi-Volatile Organic Compounds (ug/L)						
1,2,4,5-Tetrachlorobenzene	Water	50	50	8270D	0.5	50
1,3-Dinitrobenzene	Water	10	10	8270D	0.5	10
2,3,4,6-Tetrachlorophenol	Water	50	50	8270D	0.5	50
2,4,5-Trichlorophenol	Water	10	10	8270D	0.5	10
2,4,6-Trichlorophenol	Water	10	10	8270D	0.5	10
2,4-Dichlorophenol	Water	10	10	8270D	0.5	10
2,4-Dimethylphenol	Water	10	10	8270D	0.5	10
2,4-Dinitrophenol	Water	50	50	8270D	1.5	50
2,4-Dinitrotoluene	Water	10	10	8270D	0.5	10
2,6-Dinitrotoluene	Water	10	10	8270D	0.5	10
2-Chloronaphthalene	Water	10	10	8270D	0.5	10
2-Chlorophenol	Water	10	10	8270D	0.5	10
2-Methylnaphthalene	Water	10	10	8270D	0.5	10
2-Nitroaniline	Water	10	10	8270D	0.5	10
3,3'-Dichlorobenzidine	Water	10	10	8270D	0.5	10
3-Nitroaniline	Water	50	50	8270D	0.5	50
4-Chloroaniline	Water	10	10	8270D	0.5	10
4-Nitroaniline	Water	50	50	8270D	1.5	50
4-Nitrophenol	Water	50	50	8270D	1.5	50
Acenaphthene	Water	10	10	8270D	0.5	10
Acenaphthylene	Water	10	10	8270D	0.5	10
Aniline	Water	10	10	8270D	0.75	10
Anthracene	Water	10	10	8270D	0.25	10
Benzo(a)anthracene	Water	10	10	8270D	0.25	10
Benzo(a)pyrene	Water	10	10	8270D	0.2	10
Benzo(b)fluoranthene	Water	10	10	8270D	0.25	10
Benzo(k)fluoranthene	Water	10	10	8270D	0.5	10
Biphenyl	Water	10	10	8270D	0.5	10
Bis(2-Chloroethyl)ether	Water	10	10	8270D	0.5	10
Bis(2-Chloroisopropyl)ether	Water	10	10	8270D	0.5	10
Bis(2-Ethylhexyl)phthalate	Water	10	10	8270D	0.25	10
Butyl benzyl phthalate	Water	10	10	8270D	0.25	10
Chrysene	Water	10	10	8270D	0.25	10
Di-n-octyl phthalate	Water	10	10	8270D	0.25	10
Dibenz(a,h)anthracene	Water	10	10	8270D	0.25	10
Dibenzofuran	Water	10	10	8270D	0.5	10
Diethyl phthalate	Water	10	10	8270D	0.5	10

Table 6
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Analyte	Matrix[1]	Project Quantitation Limit (units, wet or dry weight)	Analytical Method		Achievable Laboratory Limits	
			MDLs[2]	Method[2]	MDLs[3]	QLs[3]
Dimethyl phthalate	Water	10	10	8270D	0.5	10
Dinoseb	Water	50	50	8270D	1.5	50
Fluoranthene	Water	10	10	8270D	0.25	10
Fluorene	Water	10	10	8270D	0.5	10
Hexachlorobenzene	Water	10	10	8270D	0.5	10
Hexachlorocyclopentadiene	Water	10	10	8270D	1.5	10
Hexachloroethane	Water	10	10	8270D	0.5	10
Indeno(1,2,3-cd)pyrene	Water	10	10	8270D	0.25	10
Isophorone	Water	10	10	8270D	0.5	10
Nitrobenzene	Water	10	10	8270D	0.5	10
Pentachlorophenol	Water	10	10	8270D	0.5	10
Phenanthrene	Water	10	10	8270D	0.25	10
Phenol	Water	10	10	8270D	0.5	10
Pyrene	Water	10	10	8270D	0.5	10
n-Nitrosodi-n-propylamine	Water	10	10	8270D	0.5	10
n-Nitrosodiphenylamine	Water	10	10	8270D	0.5	10
Di-n-butyl phthalate	Water	10	10	8270D	0.5	10
Diphenylamine	Water	10	10	8270D	0.5	10
METALS (ug/L)						
Arsenic	Water	1	1	6020A	0.25	1
Cadmium	Water	1	1	6020A	0.25	1
Chromium	Water	1	1	6020A	0.25	1
Lead	Water	1	1	6020A	0.25	1
Manganese	Water	1	1	6020A	0.25	1
Cobalt	Water	1	1	6020A	0.25	1
Beryllium	Water	1	1	6020A	0.25	1
Nickel	Water	1	1	6020A	0.25	1
MERCURY (mg/L)						
Mercury	Water	0.0002	0.0002	7470B	0.0001	0.0002
TOTAL CHLORIDE (mg/L)						
Chloride	Water	0.1	0.1	9056A	0.05	0.1

Notes:

[1] Water Samples will include Field QA/QC.

[2] Analytical Method Detection Limits (MDLs) and Quantitation Limits (QLs) documented in validated methods. QLs can be 3-10 times higher than the MDLs, depending on the specifications from the Data Quality Objectives established for the project.

[3] Achievable MDLs and QLs are limits that an individual laboratory can achieve when performing a specific analytical method.

Abbreviations:

ug/L = micrograms per Liter
mg/L = milligrams per Liter

FIGURES

FIGURE 1

REGIONAL LOCATION MAP

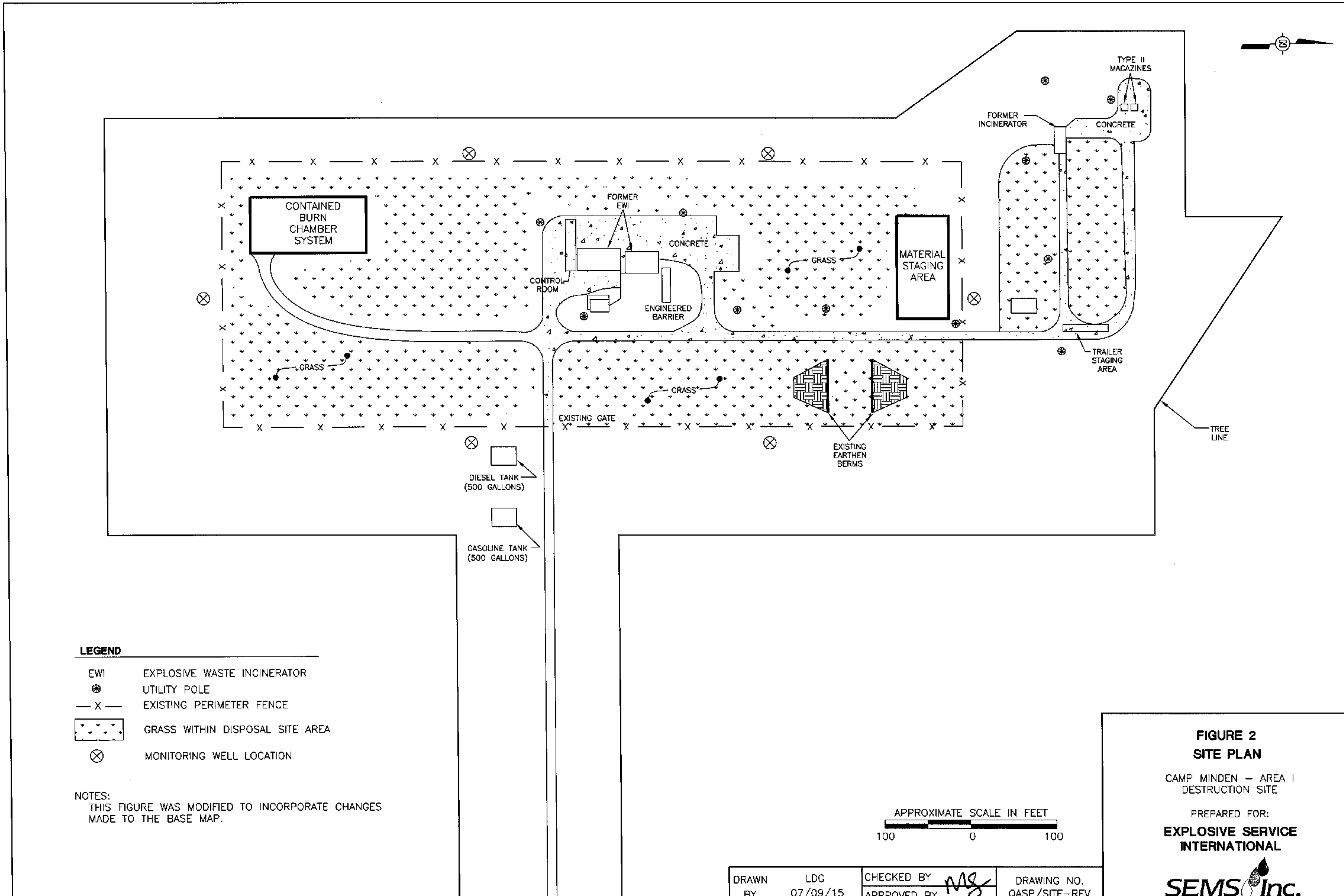
CAMP MINDEN – AREA I
DESTRUCTION SITE

PREPARED FOR:

EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

DRAWN BY	LDG	CHECKED BY	MG	DRAWING NO.
	07/09/15	APPROVED BY		SWPPP/REGIONAL



LEGEND

EWI	EXPLOSIVE WASTE INCINERATOR
⊛	UTILITY POLE
— X —	EXISTING PERIMETER FENCE
	GRASS WITHIN DISPOSAL SITE AREA
⊗	MONITORING WELL LOCATION

NOTES:
THIS FIGURE WAS MODIFIED TO INCORPORATE CHANGES MADE TO THE BASE MAP.

APPROXIMATE SCALE IN FEET
100 0 100

DRAWN BY	LDG 07/09/15	CHECKED BY / APPROVED BY	DRAWING NO. QASP/SITE-REV

FIGURE 2
SITE PLAN

CAMP MINDEN – AREA I DESTRUCTION SITE

PREPARED FOR:
EXPLOSIVE SERVICE INTERNATIONAL

SEMS Inc.

ATTACHMENT A

FIELD FORMS

SITE ACTIVITY LOG

PAGE

PROJECT GENERAL INFORMATION

Client:	LMD	Date:	
	M6 Destruction at Camp Minden	Activities:	
Address:			
Project #:			

Weater Conditions:	
Visitors OnSite:	
Impt. Phone Calls:	
Changes Plans/Specs:	

ESI EQUIPMENT & MATERIALS USED

Description		Unit	Quantity	Rate

ESI PERSONNEL INFORMATION

Employee Name: ____________________ Employee Signature: ____________________

DAILY ACTIVITY LOG

PAGE OF

PROJECT GENERAL INFORMATION

Client: LMD **Date:**

Project #: **Activities:**

ESI ACTIVITY DOCUMENTATION

Notes & Observations

Time (Military)	Personnel:

ESI PERSONNEL INFORMATION

Employee Name: Date:

ESI

TAILGATE SAFETY MEETING

GENERAL INFORMATION

Company ESI

Date ______ Time ______ Job Number ______

Customer LMD Address ______

Job Location Camp Minden - Area I

Type of Work ______

Protective Clothing/Equipment Level D PPE

Hard hat, glasses, long sleeves, high viz vest, safety-toe work boots, gloves (as needed)

SAFETY TOPICS

Chemical Hazards ______

Physical Hazards ______

Emergency Procedures See HASP for emergency proceedure details

Hospital/Clinic Minden Medical Center Phone (318) 377-2321

Hospital Address 1 Medical Plaza, Minden, LA 71055

Special Equipment ______

Other ______

ATTENDEES

NAME PRINTED	SIGNATURE
SITE SUPERVISOR	SIGNATURE

M6 Destruction at Camp Minden
Example of Scale Ticket - Net Explosive Weight

DATE ____________________ NO. ____________
TIME ____________________

COMPANY ____________________
TIME ____________________
ADDRESS ____________________
CITY ____________________ STATE ________ ZIP ________

GROSS ____________________
TARE ____________________
NET ____________________

M6 DESTRUCTION CAMP MINDEN

AREA I DESTRUCTION SITE

PHOTOGRAPH LOG

DATE ______________________

PHOTO NO.	SUBJECT/DESCRIPTION

ANALYSIS REQUEST AND CHAIN OF CUSTODY FORM

Project Manager & Company	Phone #:
Address:	FAX #:
Project PO No.: Project No.:	Project Name:
Project Location:	Sampler Signature:

Sample ID	Lab # Lab use Only	# Containers	Volume/Amount	Matrix					Method Preserved					Sampling		ANALYSIS REQUESTED										HANDLING					
				Water	Soil	Sludge	Other	Other	Ice	HCl	HNO_3	None	Other	Date	Time											Priority One Service (24-48 Hrs)	Expedited Service (2-3 working days)	Normal Service	Verbals / Fax	Special Detection Limits (Specify)	Special Reporting Requirements

Relinquished by:	Date	Time	Received by:	Date	Time	Remarks:

P.O.# must be included or work may be delayed. Please call 1-2 days in advance to arrange for expedited service, if not samples may be delayed.

APPENDIX C

QUALITY ASSURANCE SAMPLE PLAN

COMMUNITY AIR MONITORING (CTEH)

CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

INITIAL ACCEPTANCE TESTING AND POST-ACCEPTANCE TESTING AIR QUALITY ASSURANCE SAMPLING PLAN

CAMP MINDEN AND SURROUNDING COMMUNITY,

1600 JAVA ROAD MINDEN, WEBSTER AND BOSSIER PARISHES, LOUISIANA

VERSION 1.2

CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

PAUL NONY, PH.D., PROJECT TECHNICAL DIRECTOR
CHASE SELBY, BS, GENERAL PROJECT MANAGER
SCOTT SKELTON, MS, CIH, PROJECT TECHNICAL MANAGER
CHRISTINE MILLNER, BS, MBA, QUALITY ASSURANCE MANAGER
5120 NORTHSHORE DRIVE, NORTH LITTLE ROCK, AR 72118

On Behalf Of:

Explosive Service International (ESI)
Dean Schellhase, Project Manager
9985 Baringer Foreman Rd.
Baton Rouge, 70809 LA

October 23, 2015

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

QASP Amendment Documentation

The purpose of this section is to document revisions, additions, and/or addenda made to the approved Quality Assurance Sampling Plan (QASP). A description of the change, including section and page numbers are detailed below. In addition, the reason for the revision may be incorporated. Amendments to QASP may be made when new information is presented; specific chemicals or parameters of interest are added or eliminated; site conditions change; activities change, are initiated, or ceased; or when the project moves into a new phase. After revisions are adopted, the QASP's revision number and revision date is updated. The title page will include the revision number, revision date, and original approval date. The template for incorporating revisions is provided below.

Change 001 – Updates from 1.0 to Version 1.1			
Description of Change (include sections & page numbers): *Updated headers, changed to version 1.1, re-organized a few sections for consistency, added Laboratory Quality Assurance Manuals or QAPPs as Appendix D, re-organized Appendices to be in order or appearance in the document, added sentences to Quality Assurance Manager (QAM) description on pg. 4, added Section 1.1 Distribution List on page 1, added Section 2.1.1. Additional Team Member Responsibilities pg. 5, added Section 2.3 Project/Task Description pg.8, added Section 2.6 Documentation and Records pg. 13, added language on LA lab certifications to Section 4.1 pg. 26-27, removed Community Relations section, and updated references.*			
	Name/Position	Signature	Date Signed
Prepared By:	Christine Millner - QAM	Christine Millner	September 30, 2015
Approved By:	Dr. Paul Nony - PTD	Paul A. Nony	September 30, 2015
Change 002 - Updates from 1.1 to Version 1.2			
Description of Change (include sections & page numbers): *Updated headers, changed to version 1.2, Updated %R goal to 30% in Section 2.4.1.3. on page, added 30% RPD goal to Section 2.4.1.2.on page, changed dioxin/furan frequency to every 6 months in Table 3.2 on page 14., added language on confirmation/investigative sampling/monitoring in the event that site-specific screening levels are exceeded to DQO Step 3 in Appendix A and Section 3.2 on page 13., and updated language in Step 2in Appendix A.*			
	Name/Position	Signature	Date Signed
Prepared By:	Christine Millner - QAM	Christine Millner	October 23, 2015
Approved By:	Dr. Paul Nony - PTD	Paul A. Nony	October 23, 2015

ABBREVIATIONS AND DEFINITIONS

AIHA	American Industrial Hygiene Association
COC	Chain of Custody
CTEH	Center for Toxicology and Environmental Health
DM	CTEH® Data Manager
DMP	Data Management Plan
DQO	Data Quality Objective
EDD	Electronic Data Deliverable
ESI	Explosive Service International, Ltd.
GIS	Geographic Information System
GPM	CTEH® General Project Manager
LDEQ	Louisiana Department of Environmental Quality
MDL	Method Detection Limit
NELAP	National Environmental Laboratory Accreditation Program
PTD	Project Technical Director
QA	Quality Assurance
QAM	CTEH® Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QASP	Quality Assurance Sampling Plan
QC	Quality Control
RL	Reporting Limit
SAP	Sampling and Analysis Plan
SDG	Sample Delivery Group
SIERA	Source, Instrument, Event, Receptor, Awareness
SOP	Standard Operating Procedure
TPM	CTEH® Technical Project Manager
USEPA	United States Environmental Protection Agency or EPA

1.0 INTRODUCTION

The Center for Toxicology and Environmental Health, LLC (CTEH®) has been contracted by Explosive Service International, Ltd. (ESI) to conduct air monitoring and sampling at the former Louisiana Army Ammunition Plant (also referred to as Camp Minden) and in the surrounding community. Camp Minden is located at 1600 Java Road, Minden, Webster Parish, Louisiana. Site coordinates are Latitude 32.55200° North and Longitude 93.41245° West. This Quality Assurance Sampling Plan (QASP) has been prepared to describe the technical scope of work to be completed as part of the air sampling effort for both the Initial Acceptance Testing of the Contained Burning System and the monitoring conducted after the completion of Initial Acceptance Testing and continuing through the duration of the project.

This QASP follows general Quality Assurance (QA) and Quality Control (QC) procedures. This document has been prepared following the United States Environmental Protection Agency (USEPA or EPA) publications *EPA Requirements for Quality Assurance Project Plans* (QAPP) dated March 2001 (EPA QA/R-5) (USEPA, 2001) and *Guidance for Quality Assurance Project Plans (EPA QA/G-5)* dated December 2002 (USEPA, 2002).

1.1 PROJECT OBJECTIVES

CTEH® is providing technical assistance to ESI to collect air samples and to perform air monitoring at Camp Minden and in the nearby community. The primary objective of air sampling is to determine the levels of fine particulate matter (2.5 microns and smaller, $PM_{2.5}$) and PM_{10}, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and dioxin/furans during the initial acceptance testing and post-acceptance testing. Air sampling for $PM_{2.5}$, PM_{10}, VOCs, and SVOCs will be conducted during the burning of the hazardous materials and waste. Air monitoring of criteria pollutants including $PM_{2.5}$, NO, NO_2, $S0_2$, CO_2 and CO will also be conducted.

1.1 DISTRIBUTION LIST

Each person listed on the approval sheet and each person listed under Project/Task Organization (Section 2.1 below), data validators, and laboratories utilized will receive a copy of this QASP once it has been approved. Individuals taking part in the project may request additional copies of the QASP from personnel listed, once approved by the CTEH® General Project Manager.

1.2 QASP FORMAT

This QASP has been organized in a format that is intended to facilitate and effectively meet the project objectives. The QASP is organized in the following sections:

- Section 1 – Introduction
- Section 2 – Project Organization
- Section 3 – Data Generation and Acquisition
    - Sampling Approach and Procedures
    - Field QC
    - Sample Management, Labeling, Preservation, etc.
- Section 4 – Analytical Approach
- Section 5 – Data Validation
- Section 6 – Quality Assurance
    - Sample Custody
    - Documentation
    - Audits

Appendices are attached with the following information:

- Appendix A Data Quality Objectives
- Appendix B Laboratory Target Compounds and Reporting Limits
- Appendix C CTEH® Data Management Plan
- Appendix D Laboratory Quality Assurance Manuals or QAPPs

2.0 PROJECT ORGANIZATION

This section describes the project organization and specifies personnel responsibilities. The project organization presented in this section has been developed to guide and assess the quality of sampling and testing procedures for obtaining reliable data, and to facilitate effective communication and decision-making during the project.

2.1 PROJECT/TASK ORGANIZATION

The CTEH® field team will consist of the Project Technical Director (PTD); General Project Manager (GPM), Project Technical Manager (PTM), Quality Assurance Manager (QAM), Field Operations Manager (FOM), Data Manager (DM); and additional support personnel as necessary. These principal roles are detailed below:

- *Explosive Service International, Ltd. (ESI)* – is the authority that CTEH® PTD and GPM coordinate efforts with and who corresponds with the various stakeholders.
    - *Project Manager* – is the ESI Project manager who is responsible for the effective day-to-day management of all operations.

  - *QA/QC Manager* - Responsible for providing any updates sampling plans, task plans, QAPP, etc. to CTEH® General Project Manager for distribution.
- *Center for Toxicology and Environmental Health, L.L.C. (CTEH®)* – A sub-contractor hired by ESI to conduct air monitoring and sampling activities during initial acceptance and post acceptance testing phases of the project. This includes coordinating with the analytical laboratories and data validation services.
  - *Project Technical Director (PTD)* – is a CTEH® Toxicologist that oversees all aspects of the project; reviews deliverables; acts as a liaison to public officials and stakeholders; and reviews CTEH® Sampling and Analysis Plan (SAP), QASP, and Data Management Plan (DMP), as applicable.

  - *General Project Manager* (GPM) – is a CTEH® PM who is responsible for all aspects of air project elements, including operations; client liaison; and project team meeting participation. The GPM oversees all project planning and will review and approve project specifications, plans, and procedures. The PM has ultimate project responsibility for assuring that the project is completed according to plan. The GPM attends any relevant project meetings and/or meetings between other project participants. The GPM communicates with regulatory agencies regarding methodologies and requirements. They are also responsible for the preparation of project plans, specifications, and reports within their defined scope of work.

    The GPM is also responsible for identifying internal, regulatory, and procedural requirements pertinent to the work that may differ from accepted industry standards of work. The GPM is responsible for assuring that field work activities are properly staffed and is ultimately responsible for the technical direction and quality of the work. He/she is responsible for establishing appropriate schedules, making available appropriate forms, and monitoring the performance of the staff.

    The GPM is also responsible for the development and execution of QA/QC activities in all phases of the project, including plan design, execution, data reduction, and reporting for the scope of work. The GPM will provide an independent review of the project approach, methods, and design.

    Each GPM provides direction to the field staff involved in field sampling activities within their scope so that the project is completed in accordance with the SAP and QASP, as applicable. The GPM consults with field staff to discuss compliance with the SAP and QASP, as applicable, and to evaluate corrective measures if problems occur.

    Other responsibilities include:

- Review and add input to QAPP or SAPs being generated or revised;
- Support the efforts of the Field Staff in all matters concerning the quality of data being generated and field documentation;
- Oversee effective response to corrective action requirements identified by any member of the project team of staff;
- Effectively carry out the QASP and SAP, as relevant; and
- Oversee completion of corrective actions, as needed.

- Technical Project Manager (TPM) – is a CTEH® manager who is responsible for ensuring sampling and monitoring equipment is set-up per established criteria, drafts sections of SAP/QASP/DMP, etc. as needed, supports the PTD, GPM, and QAM with technical matters, attends project meetings as needed, and acts as a liaison for public officials and stakeholders. The TPM will also assist with field audits, as necessary.

- *Field Operations Manager* (FOM) – CTEH® FOM are responsible for overseeing and implementing sampling activities according to the SAP and this document, any requirements outlined in this document, and participate in general meetings with client and/or meetings as designated by the GPM. Additionally, the FOM is responsible for specific objectives under that program and for communicating the same to the field staff. FOM are responsible for maintaining the schedule of the work and will regularly advise the GPM of the progress of the project.

- *Quality Assurance Manager (QAM)* – CTEH® Manager(s) who is responsible for the overseeing and implementing quality elements of this QASP; assisting with overall implementation of this QASP; initiating, implementing, documenting, and performing follow-up on any corrective actions; working with FOM, PTD, TPM, and GPM on quality assurance objectives; reviewing any SAPs or DMP; and attending meetings as needed. Furthermore, the QAM will provide the ESI QAPP[1] and CTEH® QASP to the laboratories, coordinate validation services, manage the field audit processes, be a technical resource for Data Managers and Laboratories, and assist with conducting laboratory audits, if necessary.

- Data Manager(s) - CTEH® manager(s) responsible for documenting and implementing appropriate data pathways, including extracting, transforming, and loading datasets in compliance with this QASP and DMP requirements, as well as generating data

[1] *Explosive Service International, Quality Assurance Project Plan, Contained Burn Chamber for Camp Minden M6 Destruction, September 2015, Revision 5.*

summaries and geographic information system (GIS) schematics to support management decisions.

2.1.1 Additional Team Member Responsibilities

The responsibilities of key members of the project team are summarized in the following subsections.

2.1.1.1 Field Staff

Field staff are responsible for executing their work assignments in strict conformance to documented procedures and for the immediate identification of any conditions adverse to the quality performance of the work or work products. They are responsible for acquainting themselves with the technical requirements of any work assigned and to seek training or guidance as necessary to comply with those requirements. They are responsible for documenting their activities according to applicable standard operating procedures (SOPs) and reviewing their own work and the work of others presented to them for peer review. They will immediately cause work to cease on any activity that in their judgment does not meet applicable quality and safety standards, will appropriately document and report such conditions to management, and will be active in the resolution of any such conditions. Specific responsibilities include the following:

- Ensure that all work is performed according to the applicable specifications;
- Ensure that QC measures are being carried out and documented;
- Oversee the quality of work and work products;
- Communicate QA and safety concerns to management.

2.1.1.2 Data Validators

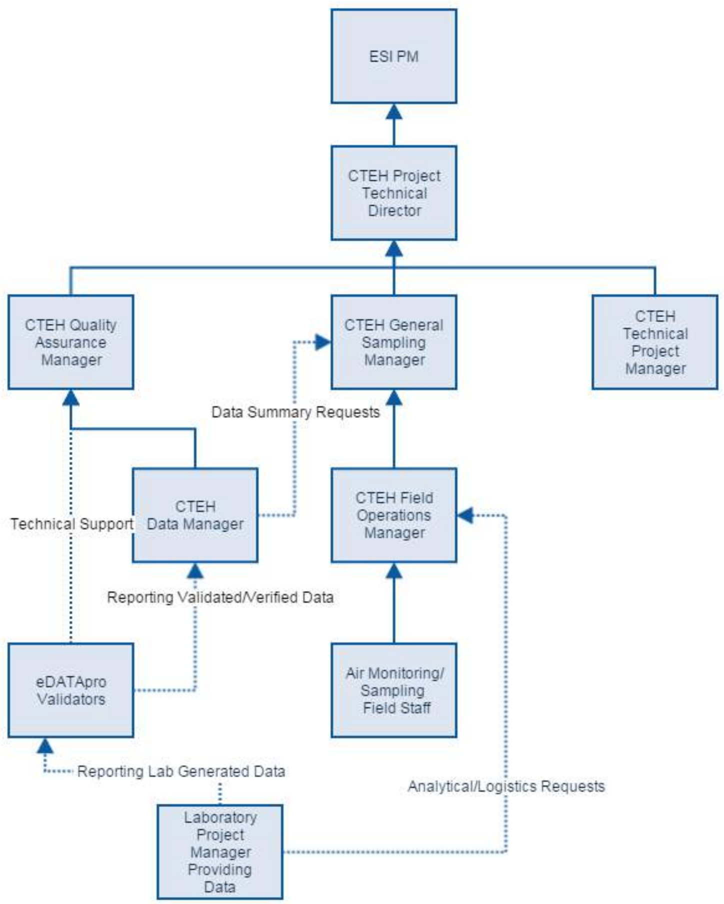
Third party, independent data validation is provided by Environmental Data Professional, L.L.C. (eDATApro). Validator's specific tasks are outlined in Section 5.0. In general, they are responsible for verifying/validating laboratory generated data in a format exportable to CTEH® for interpretation and reporting. CTEH® has the right to change third-party validation firm as needed.

2.1.1.3 Analytical Laboratory

Air samples will be sent to the laboratories outlined in Section 4.1 below. In general, the laboratories are responsible for sending sampling media, receiving samples under chain-of-custody, storing samples properly, preparing samples according to SOPs, analyzing and reporting samples following documented procedures, ensuring the quality of reported data in accordance with the laboratory's Quality Manual/QAPP, this QASP, and ESI QAPP.

Unless otherwise directed, CTEH® will report results directly to the ESI PM. Requests from other stakeholders to CTEH® may be delivered by the ESI PM to the CTEH® GPM or PTD, or applicable FOM. For a general understanding of relationships and lines of communication, see below organizational chart (Figure 1).

Figure 1 Organizational Chart



CTEH®, with input from ESI, local and state officials, and EPA, will determine the exact locations for sampling locations. Sampling locations may be relocated as needed or warranted by the operation. Locations are based on several factors, such as:

- Points around Camp Minden
- Population Center
- Electric Power Availability
- Site Security
- Site Access

The field team will collect samples, log the activities at each sample location in the field logbook, and verify the sample documentation. The Field Data Manager will be responsible for entering all samples collected into SCRIBE; producing accurate chain-of-custody documentation during the sampling event; and entering daily operations and sample collection data into the SCRIBE and project-specific databases. The PTM will direct and/or oversee the packaging and shipping of samples to the designated laboratory.

2.2 PROBLEM DEFINITION AND SITE BACKGROUND

Destructive activities managed by ESI will be conducted at the Camp Minden – Area I Destruction Site. Information about the site location and description and history is included in the following subsections.

2.2.1 Site Location and Description

Camp Minden is located in the northwestern portion of the State of Louisiana in Webster and Bossier Parishes. Camp Minden encompasses approximately 15,000 acres of land in a rectangular shape running approximately 9 miles east to west and 3 miles north to south. Camp Minden is completely fenced and public access is restricted by site security. Bordering Camp Minden is U.S. Highway 80 to the north, U.S. Highway 164 to the south, Dorcheat Bayou to the east, and Clarke Bayou to the west. A Site Area Map will be provided after the initial site visit.

The City of Doyline, Louisiana is located within 0.75 mile south of Camp Minden. The City of Haughton is located approximately 3 miles west of Camp Minden. The town of Sibley is located just over 2 miles east and southeast of the Camp Minden. The City of Minden is located within 3.0 miles northeast of Camp Minden. All distances are estimates from the Camp Minden property boundary.

2.2.2 Site History

Explo Systems, Inc. is a former explosives recycling company that has operated at Camp Minden for approximately seven years. On October 15, 2012, one of 98 storage bunkers at Camp Minden exploded prompting investigations by the EPA, Louisiana Department of Environmental Quality (LDEQ), and the Louisiana State Police (LSP). The explosion shattered windows in the City of Minden, Louisiana and generated a 7,000-foot mushroom cloud. The residents of Doyline were put under a voluntary evacuation order for several days following the explosion.

In August 2013, Explo Systems, Inc. declared bankruptcy and the Louisiana Military Department (LMD) took ownership of the explosives at the site. While some of the material left by Explo Systems, Inc. is being addressed by other responsible parties, over 15 million pounds of M6 propellant and over 300,000 pounds of clean burning igniter remains to be addressed by the Louisiana Military Department.

2.3 PROJECT/TASK DESCRIPTION

The primary purpose of the sampling and analysis is to obtain data needed to support the tasks involved in the removal and destruction of the improperly stored material by ESI. A description of the tasks that CTEH® personnel will perform is listed in Section 2.1 in addition to the following tasks while implementing this QASP:

- Collect air samples and have them analyzed from the Camp Minden – Area I Destruction site prior to construction of the burn pad,
- Collect air samples and have them analyzed at four (4) community air stations,
- Conduct air monitoring at four (4) community air stations,
- Calibrate instrumentation as necessary,
- Collect air samples and have them analyzed as the final samples, or confirmatory sampling, of the Camp Minden – Area I Destruction Site,
- Provide a summary of air monitoring and sampling results to ESI,
- Provide laboratory reports to ESI, and
- Compile data obtained following this QASP to ESI for inclusion in their final report for the Camp Minden – Area I Destruction site.

2.4 DATA QUALITY OBJECTIVES AND CRITERIA

This section on DQOs presents the intended data usage and QA objectives for the sampling and analysis that will be performed during this phase of the project. The primary objective of the field activities is to determine baseline air conditions at Camp Minden and in off-site community locations and generate valid data that is suitable for its intended use during the Initial Acceptance Testing and the subsequent monitoring and sampling conducted after the Initial Acceptance Testing and continuing through the duration of the project. This will be done through the use of equipment that can monitor/sample and analyze constituents associated with the destruction of propellants at levels below national or state standards. The purpose of the DQOs are to establish a target level that can be measured against to determine whether the data collected are documented properly and are consistent and technically defensible. DQOs were generated for the air matrices following EPA Guidance on Systematic Planning using the Data Quality Objectives Process (QA/G-4 2006) (USEPA, 2006). A DQOs worksheet was created and provided as Appendix A to this QASP, and modified as objectives change.

The following subsection summarizes the precision, accuracy, completeness, representativeness, comparability and sensitivity to be used for all sample analyses:

2.4.1.1 Representativeness

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a spatial and/or temporal boundary. Representativeness is dependent upon the design of the sampling program and will be satisfied by ensuring that the sampling and analysis protocols contained in a SAP, if applicable, and this QASP are followed. Sampling processes will be utilized to help ensure that samples collected are reasonably representative of the matrix or media present in the field. Appropriate sample handling techniques, including such tasks as storage, transportation, and preservation, and collection will be used to protect the representativeness of the samples gathered during the project. Proper documentation in the field and the laboratory will verify whether procedures have been followed, and whether sample identification and integrity have been preserved. These will include the analysis of field blank data, as appropriate, as well as calibration and documentation review of field instruments.

Laboratory representativeness is ensured by using the proper analytical procedures, appropriate methods, meeting sample holding times and analyzing and assessing field duplicate samples, if applicable. The sampling network was designed to provide data representative of applicable site conditions.

2.4.1.2 Precision

Precision is a measure of the degree to which two or more measurements are in agreement. In other words, precision is a characteristic that reflects the ability to replicate a previously obtained value using identical testing procedures.

Field precision is assessed through the collection and measurement of field duplicates or co-located samples, as appropriate.

Precision in the laboratory is assessed through analysis of a laboratory control sample/laboratory control sample duplicate (LCS/LCSD), and field duplicate/co-located pairs and the evaluation of the relative percent differences (RPD) between duplicate pairs, when performed. The variation in results is a measure of precision. Precision can be expressed as the relative percent difference (RPD), which is determined using the formula below.

$\%RPD = \{(S - D)/[(S + D)/2]\} \times 100$ or by $\left|\frac{x_1 - x_2}{(x_1 + x_2)/2}\right| \times 100$

Where: S = First sample value (original value)
D = Second sample value (duplicate value)

We have a precision goal for of ±30% RPD, unless the laboratory has established LCS/LCSD limits.

2.4.1.3 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference or true value. Accuracy is the measure of the bias in a system and can be defined as the degree of agreement between a measurement and an accepted reference or true value. The quality assurance objective with respect to accuracy for these analyses is to achieve the QC acceptance criteria of the analytical protocols. The accuracy of field measurements will be supported by adherence to the sampling procedures described in this QASP and calibration and maintenance of field equipment in accordance with manufacturer's recommendations.

Accuracy in the field is assessed through the use of field blanks, when applicable, to assess the potential of cross contamination. In addition, field accuracy is assessed by the adherence to all sample handling, preservation, and holding time criteria per method requirements.

Laboratory accuracy is assessed through the analysis of LCS/LCSD, surrogate compounds, or equivalent and the determination of percent recoveries, when performed. The percent recovery (%R) of laboratory control samples will be calculated using the following equation (or in similar fashion) and reported by the laboratory:

$$\%R = (A/B) \times 100$$

Where:
A = The analyte concentration determined experimentally from the laboratory control sample
B = The known amount of concentration in the sample

A %R goal has been established as ±70% (70-130% are the recovery limits). However, some analytes may be more difficult to recover. In this case, the laboratory will provide documentation as to acceptable recovery limits. Validators will assess %R in their review and flag or qualify, as appropriate.

2.4.1.4 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that expected under normal conditions. The objective for completeness is to provide enough valid data to ensure the goals of the field investigation are met. Complete data are data that are not rejected by the laboratory or during the process of data validation. Data qualified with qualifiers such as a "J" or a "UJ" (estimated or <MDL or RL, respectively) are still deemed acceptable and can still be used to make project decisions. Field and laboratory completeness goal for this project is greater than 95 %; less than 5% rejection rate. The completeness of the analytical data are calculated using the following equation:

$$\%\ \text{Completeness} = [(\text{Valid data obtained}) / (\text{Total data planned})] \times 100$$

2.4.1.5 Comparability

Comparability is an expression of the confidence with which one data set can be compared to another. The characteristic of comparability expresses the confidence that one set of analytical data may be compared with another. Comparability is dependent upon the design of the sampling program and will be satisfied by ensuring that proper sampling techniques are used. Data sets that can be used for comparison include background sampling results or results of studies conducted previously in the area. Comparability is maintained by use of standard analytical methods and units' consistency. Also, the personnel involved in data acquisition and reduction will operate measurement systems within the calibrated range of the particular instrument for monitoring equipment as well as utilize analytical methodologies that produce comparable results. The comparability of field investigation tasks will be maintained by following the applicable EPA Technical Guidance documents, and/or the applicable SAPs. For the purposes of this QASP, comparability of air data includes, but is not limited to: background sampling results, GIS locations, and modeling. Furthermore, analytical data will be comparable when similar sampling and analytical methods are used, as documented in this QASP.

2.4.1.6 Sensitivity

Sensitivity is defined as the capability of a method or instrument to discriminate between measurement responses representing different levels of a variable of interest. Method Detection Limit (MDL) is defined as the minimum concentration of a substance that can be identified, measured, and reported with a 99 percent (99%) confidence that the analyte concentration is greater than zero and is determined from repeated analysis of a sample in a given matrix containing the analyte.

Laboratory MDLs have been determined as required in Title 40 of the Code of Federal Regulation (CFR) Part 136B. The reporting limit (RL) is greater than or equal to the lowest standard used to establish the calibration curve. The RLs are generally at least 3 times greater than the MDL. Results greater than the MDL and less than the RL will be qualified estimated (J) by the laboratory. The laboratory MDLs, RLs are available in the SCRIBE electronic data deliverable (EDDs) deliverables. Target compounds will be reported to the RLs, but can be reported to the MDLs. Tables on laboratory MDL and RLs for each analyte and matrix are attached as Appendix B.

The laboratory reporting limits and accuracy and precision limits cannot be pre-determined due to the variability of final volumes or ending pressure readings or potential dilutions that may be necessary. The laboratory typically reports the smallest dilution possible and the actual reporting limits will be adjusted accordingly.

In addition, the following criteria for air sample handling and analysis will help attain the DQOs:

- Standard chain-of-custody (COC) procedures
- Analytical testing will be performed according to approved laboratory methods with data packages prepared that are consistent with Level II components (see Section 5.0 for explanation of Level II components). In some instances, Level IV packages may be required above the frequency detailed in Section 5.1.

2.5 SPECIAL TRAINING/CERTIFICATION

All CTEH® personnel collecting air samples have a the following minimum training requirements: (1) 40 hour HAZWOPER, (2) read and understand CTEH® safety policies, and (3) completed required training per CTEH's "Response Core Safety" training program for their individual enrollment level (4) have read and understand this QASP, and (5) comply with training specified in the ESI QAPP such as:

- Three (3) days of site-specific training under PTM and/or GPM,
- Have completed their 8-hr HAZWOPER refresher training, as necessary.

CTEH® training records are available and managed on qualified.cteh.com. CTEH® developed and operates web application (qualified.cteh.com) to track qualification standards, employee enrollments, and qualifications achieved for all CTEH® staff. A snapshot of the CTEH® Response Core Safety requirements is provided below. In the event that sub-contractors are collecting air, they have a minimum of a 40 hour HAZWOPER certification and work is being supervised by CTEH® personnel.

Matrix | Requirements | Program Enrollments | Levels | Email Alerts | Satisfies Other Requirements

Requirement	Provider	Type	Class Hours	Online Hours	L1	L2	L3	L4	L5	L6	L7
CTEH Safety/Quality Policies	Skillport	Requirement Set Course	0.0		A	A	A	A	A	A	A
40hr Hazwoper	National Environmental Trainers	Certifying Record Course	1.0	40.0	☐	X	X	X	X	X	X
HAZWOPER Refresher	Skillsoft	Certifying Record Skillport Course		8.0	☐	A	A	A	A	A	A
Asbestos	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
Behavior Based Safety	Skillsoft	Certifying Record Course		0.5	☐	☐	☐	☐	A	A	A
BNSF Safety	bnsfcontractor.com	Certifying Record		1.0	☐	☐	☐	☐	A	A	A
CN Safety	ContractorOrientation.com	Certifying Record		1.0	☐	☐	☐	☐	A	A	A
Confined Spaces	Skillsoft	Certifying Record Skillport Course		1.0	☐	☐	☐	☐	A	A	A
Conrail Safety	ContractorOrientation.com	Certifying Record		1.0	☐	☐	☐	☐	A	A	A
Construction Safety Orientation	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
CSXT Roadway Worker & FRA	CTEH	Certifying Record Course	2.0		☐	☐	☐	☐	A	A	A
CTEH Hands on Safety Training 101	CTEH LLC	Certifying Record Course	8.0	0.0	☐	☐	☐	☐	A	A	A
E-RailSafe	E-RailSafe	Certifying Record Course			☐	☐	☐	☐	2	2	2
Fall Protection (or Working at Heights) (Update Available)	Skillsoft	Certifying Record		0.5	☐	☐	☐	☐	A	A	A
Hearing Conservation	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
Hydrogen Sulfide	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
Lockout/Tagout	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
NS Roadway Worker & FRA	CTEH	Certifying Record	4.0		☐	☐	☐	☐	A	A	A
Trenching and Excavation Safety	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
UPRR Safety	ContractorOrientation.com	Certifying Record		1.0	☐	☐	☐	☐	A	A	A
Workplace Inspections	Skillsoft	Certifying Record Skillport Course		0.5	☐	☐	☐	☐	A	A	A
HAZWOPER 8 Hour Supervisor	NET	Certifying Record	8.0		☐	☐	☐	☐	☐	X	X
CPR Certified	CTEH	Certifying Record Course	4.0		☐	☐	☐	☐	☐	☐	2
First Aid Certified	CTEH	Certifying Record	4.0		☐	☐	☐	☐	☐	☐	2
					+	+	+	+	+	+	+

2.6 DOCUMENTATION AND RECORDS

The CTEH® QM is responsible for distribution of approved copies of the most recent CTEH® QASP and ESI QAPP, once provided by the ESI QA/QC Manager. Furthermore, Section 6.2. outlines requirements for field documentation.

3.0 DATA GENERATION AND ACQUISITION

The specific field activities that will be conducted as part of the initial acceptance and post-acceptance sampling are presented in the following subsections.

3.1 SAMPLING PROCESS DESIGN

EPA developed a sampling strategy to collect data necessary to evaluate baseline air conditions at Camp Minden and in off-site community locations. That strategy is duplicated here for the purpose of consistent methodology and data collection during the Initial Acceptance Testing of the Contained Burning System (CBS) and the monitoring conducted after the completion of Initial Acceptance Testing and continuing through the duration of the project. Furthermore, a strategic planning approach based on scientific methodology will be employed for data collection activities providing a systematic procedure to ensure the type, quantity, and quality of data used in decision-making will be appropriate for the intended application.

3.2 AIR SAMPLING AND AIR MONITORING APPROACH

Continuous air monitoring and periodic air sampling will be conducted on Camp Minden and in surrounding community location(s) to be determined after air dispersion modeling has been conducted. Based upon historical predominant wind direction, sampling locations may be placed at an upwind location on the Camp Minden property, downwind on the Camp Minden property, one in an intermediate location to be determined based upon a site visit, and the last one in a downwind community location.

The monitoring and sampling locations will be equipped with instruments required to monitor/sample for the chemicals identified in the EPA's baseline monitoring and sampling plan. The equipment will be stationed at each location for the duration of the project unless CTEH® is directed otherwise. Continuous air monitors will operate at each location for the duration of the project. Meteorological data will be collected during the entire duration of the field sampling effort. In the event that site-specific screening values are exceeded, and investigation will be performed to confirm or deny air monitoring or sampling results. Results will be provided to ESI for discussion and determination as to next actions. Table 3.2

summarizes analytical parameters, type of sample collected, analytical method, equipment type, and sample duration, and shipping frequency to send analytical samples to the laboratory. All standard laboratory estimated turnaround times (TAT) will be used for this project.

Table 3.2 Air Monitoring and Sampling Operations

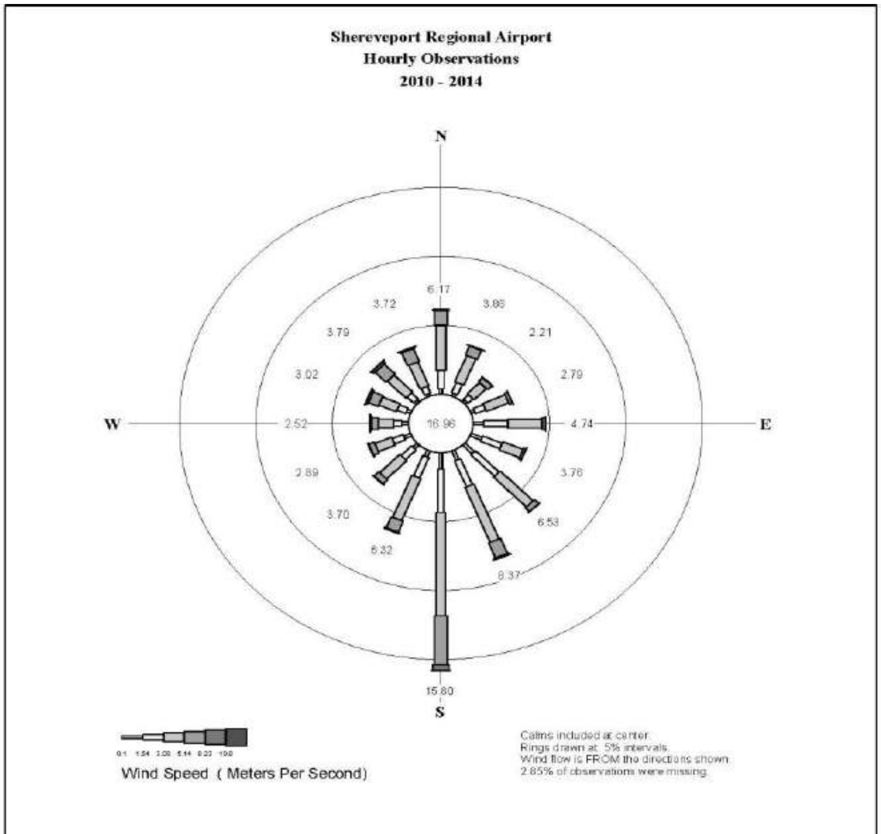
Parameters	Type	Analytical Method	Equipment	Sample Duration (hours)	Sample Shipping Frequency
VOCs	Sample	EPA TO-15	Evacuated Canister + regulator	24	Weekly or more frequent
SVOCs	Sample	EPA TO-13/8270	PS-1 PUF Sampler + PUF or PUF/XAD Media	24	Weekly or more frequent
Dioxin/ Furans	Sample	EPA TO-9/8290	PS-1 PUF Sampler + PUF/XAD Media	24-72 Goal of 48	Every six months or more frequent
$PM_{2.5}$	Sample	40 CFR 50*	BGI PQ200 + PTFE media	24	Weekly or more frequent
PM_{10}	Sample	40 CFR 50*	BGI PQ200 + PTFE media	24	Weekly or more frequent
$PM_{2.5}$	Monitor	NA	MetOne BAM1020	Continuous, 60-min averages	NA; Report Daily after QC
NO/NO_2	Monitor	NA	Thermo 42i	Continuous; 1, 15, and/or 60 min. averages	NA; Report Daily after QC
SO_2	Monitor	NA	Thermo 43i	Continuous; 1, 15, and/or 60 min. averages	NA; Report Daily after QC
CO	Monitor	NA	Thermo 48iTLE	Continuous; 1, 15, and/or 60 min. averages	NA; Report Daily after QC
CO_2	Monitor	NA	Teledyne-API Model 360E	Continuous; 1, 15, and/or 60 min. averages	NA; Report Daily after QC

*http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr50_main_02.tpl

3.2.1 Sampling Locations and Target Parameters

A wind rose for the nearby Shreveport, Louisiana Regional Airport representing the annual prevailing winds is illustrated as Figure 2 below. The lengths of the "petals" of the rose represent the portion of hours when the wind at the observation time was coming from the indicated direction sector. The prevailing winds in the area are generally from the south, with a secondary peak of frequency from the north. This orientation is the basis for the strategy to provide coverage at Camp Minden and in the community.

Figure 2 Windrose



PERCENT OCCURRENCE: Wind Speed (Meters Per Second)
LOWER BOUND OF CATEGORY

DIR	0.1	1.54	3.09	5.14	8.23	10.8
N	0.41	1.32	3.27	1.08	0.09	0.00
NNE	0.24	0.81	2.05	0.71	0.05	0.01
NE	0.19	0.44	1.15	0.40	0.02	0.00
ENE	0.27	0.72	1.58	0.21	0.01	0.00
E	0.69	1.59	2.23	0.23	0.01	0.00
ESE	0.78	1.37	1.43	0.16	0.01	0.00
SE	0.89	2.18	3.06	0.39	0.01	0.00
SSE	0.74	2.03	4.29	1.19	0.11	0.01

TOTAL OBS = 43824 MISSING OBS = 1249

PERCENT OCCURRENCE: Wind Speed (Meters Per Second)
LOWER BOUND OF CATEGORY

DIR	0.1	1.54	3.09	5.14	8.23	10.8
S	1.18	3.12	7.52	3.54	0.40	0.02
SSW	0.47	1.59	3.31	0.86	0.09	0.00
SW	0.39	0.99	1.87	0.43	0.03	0.00
WSW	0.49	0.77	1.20	0.38	0.05	0.00
W	0.44	0.53	1.00	0.43	0.09	0.02
WNW	0.30	0.62	1.24	0.68	0.15	0.03
NW	0.21	0.61	1.72	1.02	0.18	0.03
NNW	0.20	0.55	1.86	1.01	0.10	0.02

CALM OBS = 7434 PERCENT CALM = 16.96

Reference: CampMindenAirandSoilQASP.docx

Particulate matter less than 2.5 microns aerodynamic diameter ($PM_{2.5}$) is a criteria air pollutant primarily associated with combustion, such as diesel engines and power plants. The $PM_{2.5}$ particles in that size range can penetrate more deeply into the respiratory tract. Due the significance of $PM_{2.5}$, both continuous monitoring and time-integrated sampling will be performed. The sampling will provide direct measurement of 24-hour average $PM_{2.5}$ mass and provide equivalent quality time-resolved hourly concentration measurements.

Particulate matter less than 10 microns aerodynamic diameter (PM_{10}) is the size range of particles that is predominantly associated with fugitive dust from unpaved roads and material handling. Nitrogen oxides (NO_x), sulfur dioxide (SO_2), and carbon monoxide (CO) will be monitored as well.

The propellants at Camp Minden do not contain chlorine; therefore, dioxins and furans are not expected from the destruction of the material. However, due to local concerns, dioxin and furan samples, or more specifically, polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzo-p-furans (PCDF), a subcategory of SVOCs will be collected at the beginning and end of the project. Because many PCDD and PCDF compounds are present at extremely low levels in the atmosphere, greater volumes of air must be sampled to collect detectable quantities of these compounds. SVOC samples to be analyzed for dioxin/furans will be run for24-72 hrs with a goal 48 hours.

In addition to the chemicals that will be monitored noted above, carbon dioxide (CO_2) is a compound of interest. A continuous CO_2 analyzer will be included to collect baseline concentration data at all locations.

The field team will employ several types of air sampling and monitoring equipment to collect baseline air concentration data. The air program will use EPA-designed air methods where applicable. For the gaseous criteria pollutants, continuous analyzers designed to measure parts per billion (ppb) levels will be used. These analyzers differ significantly from direct-reading instruments used by first responders in both technology and sensitivity.

In the following sections, "ambient air" is used to refer to typical outdoor air. The methods used for time-integrated ambient air sampling are detailed in Section 3.3. The continuous ambient air monitoring methods are described in detail in Section 3.4. Meteorological monitoring is described in Section 3.4.3.

3.3 AIR SAMPLING METHODS

3.3.1 VOC Sampling

Sampling for VOCs will be done using laboratory provided, clean, evacuated stainless steel canisters designed for use with EPA Method TO-15 analysis. The laboratory will batch certify that the canisters have been cleaned to the standards required for achieving the low ambient-air sample detection limits. After cleaning, air from the canisters will be evacuated. The canisters will have a 6-liter capacity and an initial vacuum of approximately negative 30 inches mercury (" Hg). A pre-filter will be attached to the canister to minimize entry of particulates.

A vacuum gauge will be used to measure the initial and final vacuum of the canister and to monitor the filling of the canister. The gauges will be used to provide a relative measure of pressure change. Additionally, laboratory provided hand digital gauges will be used to check the canister pressures before and after sampling as a QC check. Before sampling, the gauge will confirm the pressure reads between negative 28.5" Hg and negative 30" Hg for each canister. Furthermore, a canister leak test will be performed following the CTEH® protocol to ensure that equipment was not damaged during shipment or canister handling.

Fixed-rate flow controllers preceded with micron particulate filters will be placed on the canisters after the initial canister pressure check. The flow-controllers will be pre-set by the laboratory to meter the flow of air into the canister at a relatively constant rate over the course of the sampling period to fill approximately two thirds of the canister capacity (a 5-liter sample for a 6-liter canister). The flow controller and the filters will be cleaned and supplied by the laboratory and will be dedicated for each sample. If necessary, in order to collect air samples representative of the breathing zone (3 to 5 feet aboveground or floor level), a tripod or equivalent may be used to elevate a sampling canister. All air samples will be collected at a uniform height and will be positioned (if possible) to avoid direct sunlight during the sampling, since excessive solar heating can affect the micro-orifice sampling rate.

To begin sampling, the flow controller will be attached to the sampler. All connections between the canister and the flow controller must be tight enough so that the various pieces of equipment (flow controller, gauge, etc.) when assembled cannot be rotated by hand, and a leak check performed. Since a leak test was performed, there should be no leaks in any connections. However, after movement and the sampler notices any loose connections, these connections will be corrected prior to sampling or the canister will be replaced. After the canister has been placed at the sample location, the canister inlet valve will be opened to begin sampling.

At the end of the sampling period, the final canister pressure will be measured using a vacuum gauge. The target final pressure is between negative 0.5" Hg and negative 10"Hg. However, the laboratory can analyze samples whose pressure is above 10" Hg, but pressurizing the canister is required, which will elevate the reporting limits. The laboratory will check the pressures pre- and post- sampling and note in the case narrative on the laboratory report any pressures documented outside of the 0.5-10" Hg range. The canisters will be sent to the laboratory for air analysis by modified EPA Method TO-15.

3.3.2 SVOC Sampling

Sampling for SVOCs will be done using plugs of polyurethane foam (PUF) and XAD resin. The main SVOC compounds of interest are the propellants 2,4-dinitrotoluene (2,4-DNT), 2,6-dinitrotoluene (2,6DNT), dibutyl phthalate (DBP), and diphenylamine (DPA).

High-volume SVOC samples will be collected at all on-site and off-site locations using General Metal Works (GMW) Model PS-1 high-volume air samplers following EPA Method TO-13A for SVOCs and Method TO-9A for PCDD/PCDF. Both methods use the PS-1 samplers to draw air through a sampling train consisting of a 102-millimeter-diameter microquartz filter first to collect the semi-volatile aerosols and particulates and then a glass cylinder holding a PUF plug to collect the semi-volatile vapors. In order to maximize collection efficiency of vapors, 1 inch of XAD-2 adsorbent resin is used in the middle of the PUF sampling media. The entire sampling train (filter, XAD-2, and PUF plugs) is extracted together and analyzed for speciated SVOC compounds using gas chromatography/mass spectrometry following modified EPA Method 8270 and PCDD/PCDF by EPA Method 8290. Since "N-nitrosodiphenylamine" decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine, the laboratory will report both compounds as diphenylamine (USEPA 625, 2007). The samplers will be set to run at approximately 225 liters per minute resulting in a total air volume of 360 m^3 over a 24-hour sampling period or 120 m^3 over an 8-hour sample period. Sampling duration for PCDD/PCDF will be extended to 48- hours or longer to enhance and/or lower laboratory detection limit sensitivity.

3.3.3 PM_{10} and $PM_{2.5}$ Sampling

BGI PQ200 Ambient Air Samplers and PTFE media will be used to collect ambient air samples for PM_{10} and $PM_{2.5}$ samples for gravimetric analysis following 40 CFR 50 Appendices L-O, as applicable. The laboratory will ship cassettes in anti-static plastic bags with the filter. The PQ200 has a size-selective inlet head that limits the particles collected to the desired PM_{10} size range. When configured for $PM_{2.5}$, the PQ200 includes a cyclone downstream of the PM_{10} inlet to further limit the particle sizes. The PQ200 has a standard airflow rate of 16.7 liters per minute (L/min). The PM_{10} or $PM_{2.5}$ will be collected on a 47 mm diameter PTFE membrane filter, and the particle mass collected determined gravimetrically.

3.4 Air Monitoring Methods

3.4.1 Particulates

Continuous monitoring for $PM_{2.5}$ will be conducted using beta attenuation monitors (BAM) manufactured by Met One Instruments, Inc. (Met One). For community and on-site monitoring, Model BAM1020 units will be deployed for continuous (24/7) coverage for $PM_{2.5}$.

The beta attenuation process uses a small source of beta particles (carbon-14, 60 microcuries) coupled to a sensitive detector that counts the emitted beta particles. The dust particles are collected on a filter tape that is placed between the beta source and the detector. Dust on the filter will intercept some of the beta particles. The reduction of beta particles is proportional to the amount of dust on the filter, which allows the mass of dust to be determined from the beta particle counts. The dust mass is combined with the air volume collected during the filter exposure time to determine the PM concentration.

The BAM1020 monitors will be equipped with particle-size selective inlets. The design of the inlets is such that particles larger than the desired size range will be removed from the air flow, based on the air-flow rate. The units will be equipped with an inlet head to separate larger particles followed inline by a $PM_{2.5}$ cyclone. Sampling flow rate is critical to maintain the proper particle size cut points of the inlets. Flow rates are maintained at 16.7 liters per minute (LPM) in both monitors using an integral flow meter, pressure sensor, and ambient temperature sensor on board each monitor.

The data from the BAM1020 units will be recorded by digital data loggers using the analog signal outputs of the monitors. The BAM1020 can only record hourly average $PM_{2.5}$ data.

3.4.2 Gaseous Criteria Pollutants

The gaseous pollutants (NO, NO_2, SO_2, CO_2, and CO) will be monitored with continuous gas analyzers. The analyzers to be used will be appropriate to monitor for each pollutant. It is important to note that the gas analyzers used for monitoring are dissimilar to the “direct-reading instruments” (such as MultiRAEs) used by first responders. The most significant differences are that the analyzers are more sensitive and designed for continuous operation.

The gas analyzers will be housed in climate-controlled monitoring trailers that will require AC line power. Each trailer will also be equipped with a sample inlet and manifold to draw in outdoor air and distribute it to the analyzers, along with a dilution calibration system, calibration gas cylinders, and a digital data acquisition system. The data acquisition systems will record average concentrations over 1-, 15-, and/or 60-minute intervals.

3.4.3 Meteorology

On-site continuous meteorological data will be collected during the field activities using the prevailing, forecasted, and current winds for the most accurate measurements and coverage.

On-site meteorology will also be collected to establish and document the current conditions. A weather station will be deployed to measure wind speed and direction, air temperature, and barometric pressure. The weather station will follow EPA guidelines for siting of meteorological monitoring as closely as site logistics allow, ensuring the data collected accurately represent the actual on-site conditions.

The meteorological monitoring component will consist of equipment designed to continuously record wind speed, wind direction, standard deviation of wind direction (sigma theta), and air temperature. The meteorological monitoring will be conducted continuously for the duration of the air monitoring program. Meteorological monitoring quality assurance (QA) will be conducted in accordance with the " “Meteorological Monitoring Guidance for Regulatory Modeling Applications” " (USEPA, 2000) and the "Quality Assurance Handbook for Air Pollution Measurements Systems, Volume IV - Meteorological Measurements" (USEPA, 2008), as actual site conditions allow. The meteorological station will consist of a tripod, instrumentation, and a data logger. The tripod will have an tall mast, mounted on a tilt-down base to provide convenient access to instruments at the top of the tripod. The meteorological tripod will be located on the site in an unobstructed area closely following EPA siting criteria. This location will provide data representative of atmospheric conditions at the operations area site.

The meteorological variables to be monitored are:

- Wind speed
- Wind direction
- Precipitation
- Standard deviation of horizontal wind direction (sigma theta)
- Ambient air temperature
- Relative humidity
- Barometric pressure

The sensors for the meteorological monitoring component of the program have been selected to meet or exceed EPA monitoring criteria.

All sensors will be connected to a data logging system. The data logger will measure the sensor responses and telemeter averaged data to an on-site data collection computer at regular intervals. The meteorological station will be located in a secure area within radio telemetry distance of the main site trailer. The meteorological system will include wind sensors at and barometric pressure and air temperature at the foot level the sensors are placed.

Wind measurements will be made using a sonic anemometer. The sonic anemometer uses the travel time of a sound pulse between an emitter and a receiver to measure the wind speed. The anemometer measures the wind speed 40 times per second along two perpendicular axes, referred to as the north-south and east-west components. The averaged relative magnitudes of the two components are added together as vectors to obtain resultant wind speed and direction, output once per second. The speed data are also used to calculate a standard deviation of the horizontal wind direction, referred to as sigma theta. The sonic anemometer can measure wind speeds from 0.02 mph up to 134 mph with an accuracy of ±2% at 27 mph. The wind direction accuracy is ±3°.

Air temperature measurements will be made with an expanded range, two-thermistor composite sensor encased in stainless steel. A naturally aspirated radiation shield will be used to reduce errors due to solar radiation.

3.5 Sampling and Sample Handling Procedures

Analytical air samples are being collected in accordance with method specifications using the equipment and procedures appropriate to the parameter and sampling objectives for preservation, media type, and holding times. The volume of the sample collected must be sufficient to perform the laboratory analysis requested. Samples must be stored in the proper types of containers and preserved in a manner appropriate to the analysis to be performed.

All sampling equipment and sample containers will be maintained in a clean, segregated area. Air canisters are pre-cleaned and batch certified by laboratory prior to use. For SVOC and $PM_{2.5}$ and PM_{10} sampling, media is inspected prior to use and if damaged or defective, will not be used. Media is only used once and sent to the laboratory for applicable analysis after sample collection. All samples collected for laboratory analysis will be placed directly into laboratory supplied containers for shipment.

The field activities will be conducted in accordance with the ESI site-specific Health and Safety Plan (HASP). Level D Personal Protective Equipment (PPE) will be utilized for routine field activities.

3.6 Field Quality Control

Field Quality assurance/quality control (QA/QC) sample collection and monitoring processes are outlined in Sections 3.6.1. and 3.6.2., respectively.

3.6.1 Field Quality Control for Air Matrix Samples

Field QA/QC samples for air sampling are inherently different from environmental (i.e. water or soil) QA/QC samples. No true field duplicate samples exist because sample start, stop, and elapsed times, sample flow rates, final air volumes, and the equipment used to collect each sample are inherently different. These factors will be controlled to provide samples that are as identical as is practicable, but samples designed to reflect field sampling reproducibility are more properly referred to as co-located. However, one inlet (i.e. T-bar) will be used for evacuated canister samples to be representative of a duplicate sample. Additionally, certain air matrix methods preclude certain types of field QA/QC samples because a certain QA/QC function is already accounted for in the laboratory procedure.

Air matrix QA/QC samples will be collected for each sample method as follows:

- Co-located samples will be collected so that at least 10% of samples per zone will be collected in duplicate or co-located. As samples are collected, collect at least one duplicate or co-located sample along with the first of every set of 10 investigative samples collected (i.e., if you only collect 5 samples one duplicate will have been collected).

- If the laboratory can provide spiked media, co-located un-spiked/spiked sample pairs will be collected during sampling activities for semi-volatiles using Method TO-13A, similar to Method 18. Media will be spiked at 10 times the method detection limit or two times the reporting limit with the explosive residue compounds including 2,4 and 2,6 DNT, DBP, and DBA using commercially available certified standards of these explosive residues in method-compatible volatile solvents. Un-spiked/spiked pairs will be collected for each sample during the initial acceptance testing phase and post-acceptance testing phase. The data obtained from these samples will demonstrate analyte capture efficiency, stability, and recovery during preparation for the Method TO-13A sampling and Method 8270 analytical procedures.
- Field blanks will be prepared by installing sample media into the sampling apparatus, as though a sample run was about to be performed, but no air sample will be collected. The media will then be recovered, stored, labeled, and shipped according to the identical protocols as normal air matrix samples. These samples will be prepared to demonstrate that the equipment decontamination procedures for the sampling equipment were performed effectively. Field blanks will be prepared and submitted at a rate of 10% of samples collected. Field blanks are not required for Method TO-15A for VOCs, as sample canisters and flow regulators are screened for chemical contaminants prior to deployment by the laboratory.
- Media/Method blanks will be retained and analyzed by the laboratory. For most air matrix methods, sample media/method blanks are analyzed prior to and during project sample analysis in order to ensure that media is free from trace levels of target analytes or other interferences.
- Lot blanks will be retained and analyzed by the laboratory per lot number of sample media for air analysis, when applicable. The laboratory will remove one sample media example from the media lot prior to exposure to site contaminants. This lot blank will be evaluated for the same parameters as the samples that will be collected using this lot of sample media. In the event that lot blanks will be submitted in the field, it will be denoted as a lot blank on the chain of custody (COC) and is considered field QC. Lot blanks will be submitted to the laboratory with each new lot of media, unless the laboratory is supplying media and has already retained a lot blank.

3.6.2 Field Quality Control for Continuous Air Monitoring

For the collection of quality data, field calibration of monitoring instruments will be performed during the initial installation and at any time that certain criteria are met as listed below. These calibrations will be conducted by the trained personnel. All calibration records will be examined by the PTM.

Instrument calibration checks will be required if any one of following criteria is met:

- At start-up;
- When any maintenance activity that may alter the response of any instrument is conducted;

- When the daily span of any of the continuous gas analyzers deviates by more than ±10 percent from the designated span value;
- When audit results of the continuous gas analyzers show that the difference between the audit standard and the instrument response exceeds ±10 percent;
- When a continuous gas analyzer has been shut-off for more than 2 days; and
- Prior to removal of an instrument from a station if it is still operational.

As a best practice, the following will be performed:

- Calibrations will be performed according to requirements of EPA regulatory guidelines and National Institute of Standards and Technology (NIST) traceability and documentation.
- Documentation of all site visits will be provided through several forms. A station log will be maintained at the site or using electronic devices and stored on projects.cteh.com detailing inspection, calibration, or repair activities. Records of measurements taken during calibrations will be recorded on forms designed specifically for the instrument under calibration.
- Test equipment used for calibrations will be maintained and calibrated on a regular basis. Records that provide traceability to the NIST of all equipment used for adjusting monitoring systems are maintained by the air team.
- Periodic multi-point calibrations and spans will be performed using standards documented traceable to NIST.
- Calibrations, zero checks, span checks, and precision checks will be performed through the sampling trains (i.e., scrubbers and filters employed during sampling).
- Zero/span checks will be performed daily, but no automatic adjustment will occur, and the information will be used to detect sudden malfunctions or changes in calibration that may warrant unscheduled maintenance visits. The span-check concentration will be at 70 to 90 percent of instrument full-scale response.
- Level-I span (~90% full scale), zero and precision checks (~5% full scale) will be performed bi-monthly. Multi-point calibrations will be performed whenever the daily span exceeds ±15 percent of expected.

Accuracy checks are done by performing multi-point calibrations of the continuous gas analyzers consisting of challenging each instrument with known concentrations at approximately 5, 20, 40, and 90 percent of full scale. In addition to these points, a zero check will be performed on each analyzer. Gas phase titration (GPT) with ozone will be performed to assess NO_2-to-NO converter efficiency in the NOx (NO/NO_2) analyzer. Linearity over the range of each analyzer will be checked and adjustments made, as appropriate, to bring the analyzer response within the control limits.

The control limits for multi-point calibrations for the SO_2, NOx, CO, and CO_2 analyzers is ± 15 percent for span concentrations and ± 0.015 ppm for zero checks (± 1.5 ppm for CO and CO_2).

When performing calibrations, the entire sample train of the analyzer is connected to a certified dilution system output port via a glass manifold. Care is taken to introduce the audit span gas through as much of the normal sampling train (i.e., filters and scrubbers) as possible. The analyzers are challenged with specific concentrations of span gas as follows. These ranges may vary depending on the final selected operational range.

NO, SO_2, CO, and CO_2 concentrations are generated using NIST traceable EPA Protocol No. 2 cylinders and gas dilution. Zero air is used to dilute the concentrations of cylinder span gas. The zero air is provided by a zero air generator. Zero air for the CO_2 dilution is provided by a cylinder of CO_2 free air or by using a soda lime scrubber in conjunction with a zero air generator.

In addition to the accuracy checks, the NO_2 concentrations are introduced into a NO/ NO_2/NOx analyzer by gas-phase titration (GPT) of NO with O_3 (ozone). NO reacts completely with O_3 to produce NO_2 and oxygen (O_2) to test the analyzer's converter efficiency. The analyzer converter efficiency is defined as the slope of the linear regression using the NO_2 source versus the NO_2 converted x 100. The converter efficiency must be greater than or equal to 96 percent to pass the calibration check.

Lastly, independent field audits will be performed periodically throughout the testing with the frequency based on the final program expected duration. Audit procedures will be exactly as a multi-point calibration for each monitor with an additional GPT done to check the NOx converter efficiency. Independent audits will be performed by a technician not directly involved in the initial installation, operation, or calibrations of the monitors using a separate set of NIST calibration equipment and gases. The control limits for multi-point audits for the SO_2, NOx, CO, and CO_2 analyzers is ± 15 percent for span concentrations and ± 0.015 ppm for zero checks (± 1.5 ppm for CO and CO_2).

3.7 Sample Management

Air sample collection media is shipped by a vendor or laboratory as prepared by the manufacturer. Air canisters used will be cleaned by the laboratory prior to use (if they are re-usable). Upon receipt by CTEH®, sampling media and canisters will be inspected prior to use in the field and during time of preparation by field personnel. If sampling media or canisters appear to be damaged, broken, or incorrectly labeled, the media or container will be discarded or returned unused to the laboratory. Field personnel will inspect to make sure air media has not expired. Furthermore, field personnel will inspect media and containers to make sure that sample integrity will not be compromised prior to the sampling event. When samples are picked up after the sampling period has ended, they will be inspected again before shipment to the analytical laboratory.

3.8 SAMPLE LABELING

Specific nomenclature that will be used will provide a consistent means of facilitating the sampling and overall data management for the project. Sample nomenclature will follow a general format regardless of the type or location of the sample collected. Sample containers are/will be clearly labeled with the following information:

- Unique sample identification;
- Unique sample IDs will follow this sample nomenclature format:
  - Spaces are not allowed
  - Zeros should be recorded with a slash to differentiate from the letter "O".
  - "Z" should be recorded with a line to differentiate from the number "7".

Digit	Description
1 2 3	Site/State Prefix
4 5 6 7	Two Digit Month and Two Digit Day
8	Matrix Code (From Below)
9 10 11	Three Digit Serial # (000 – 999)

Matrix/QC Codes:
A - Air Sample
F - Field Blank
L – Filter/Media/Lot Blank
T - Trip Blank

Sample aliquots designated for use as QA/QC analyses will be indicated in last position on sample label and then transposed to COCs. Duplicate samples will be blind to the laboratory. Furthermore, sample data management will be completed utilizing the EPA-provided SCRIBE software. Refer to Appendix C for the Data Management Plan

3.9 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES

Once collected, applicable media samples will be stored in coolers or other suitable shipping containers while at the site and until submitted for laboratory analysis. The samples will be sent by common carrier to the designated laboratory or courier service.

4.0 ANALYTICAL APPROACH

The objectives of air sampling procedures and field measurements are to obtain samples and/or measurements that are representative of the environment being investigated. Through the use of proper sampling tools, sampling techniques, and equipment decontamination procedures, the potential for cross-contamination due to trace levels of chemicals will be reduced. CTEH® specific standard operating procedures (SOPs) will be utilized for consistent method continuity among field technicians collecting individual samples. SOPs can be provided upon request. Information regarding analytical methods and data validation is provided in the following subsections.

4.1 Analytical Methods

The air samples will be submitted for the analyses noted below. The laboratory analytical methods are also listed below (Table 4.1). Again, laboratory reporting limits for air analyses are included in Appendix B and each laboratory's Quality Assurance Manual or QAPP is provide in Appendix D. However, RLs will be re-evaluated once baseline monitoring has been conducted and project-specific risk-based screening values are established and provided to CTEH® QAM.

- VOCs by TO-15
- SVOCs including explosive residues by TO-13A and SW-846 Method 8270D
- Dioxin/Furans (PCDD/PCDF) by TO-9A and SW-846 Method 8290A
- Particulates ($PM_{2.5}$ and PM_{10}) by 40 CFR 50

To assure the usability of the data, the following will be evaluated to verify that the analytical data are within acceptable QA/QC tolerances by a third-party validator:

Table 4.1 Requirements for Container Types, Preservation, and Holding Times

Parameter	Method	Media	Preservation	Min. Vol	Max Holding Time
VOCs	EPA TO-15	Evacuated Canister	None	5.5L for 8 hr.	30 days after sampling
SVOCs – PAHs	EPA TO-13/8270	PUF or PUF/XAD	4°C	200 m^3	None
SVOCs – explosive residues	EPA TO-13/8270	PUF or PUF/XAD	4°C, protect from light	200 m^3	None
SVOCs-Dioxins/Furans	EPA TO-9/8290	PUF/XAD	PUF (PCDD/PCDF) or PUF/XAD cartridge	200 m^3	None
$PM_{2.5}$	40 CFR 50	PTFE/ Teflon filter	<25°C	200 m^3	30 days after sampling
PM_{10}	40 CFR 50	PTFE/ Teflon filter	<25°C	200 m^3	30 days after sampling

The field sampler may indicate on the chain of custody that a Level IV data package is required. However, typically the CTEH® QAM will request specific Level IV packages from the laboratory. The proposed laboratories that will be used for this project include:

- TestAmerica Laboratories, Inc. (TestAmerica)
- Inter-Mountain Labs, Air Lab (IML), and/or
- Pace Analytical Services (Pace)

All laboratories are National Environmental Laboratory Accreditation Program (NELAP) certified or American Industrial Hygiene Association (AIHA) accredited laboratory. TestAmerica and Pace were chosen since they are Louisiana State/NELAP certified (referred to as LDEQ) for EPA TO-9, EPA TO-13, and EPA TO-15 methods. Although several laboratories were contacted showing they were LDEQ certified for $PM_{2.5}$-PM_{10}, they were not set-up for $PM_{2.5}$ following 40 CFR 50 or they subcontracted to IML. Therefore, IML will be utilized for $PM_{2.5}$ and PM_{10} to have consistency in sample preparation and reporting. IML is in the process of seeking Louisiana State/NELAP certification. The analytical laboratories listed will be utilized. However, in the event lower RLs or MDLs are necessary, once baseline sampling and/or project-specific screening values are provided, additional parameters or analytes are required, or additional analytical methods are necessary, CTEH® will utilize a laboratory that conforms to these specifications.

Overall responsibilities and duties of the analytical laboratory include the following:

- Perform sample analyses and follow associated laboratory SOPs and QA/QC procedures,
- Supply sample media and shipping containers,
- Maintain laboratory custody of samples, and
- Adhere to all protocols in the QASP.

Each analytical laboratory processing air sampling data will be instructed to discard samples, any extracts if applicable, after the holding time or laboratory noted disposal time has passed.

Deliverables will include preliminary data via email in PDF format and an electronic data deliverable (EDD) in Excel format. The final data deliverable will include a full Level IV data package in PDF format and a final EDD in excel format.

5.0 DATA VALIDATION

Third party, independent data validation is provided by Environmental Data Professional, L.L.C. (eDATApro). Validator's specific tasks are outlined below. In general, they are responsible for verifying/validating laboratory generated data in a format exportable to CTEH® for interpretation and reporting. CTEH® has the right to change third-party validation firm as needed.

Data review, verification, and validation criteria used to review and validate, qualify, accept, or reject data are performed in accordance with EPA Guidance on Environmental Data Verification and Data

Validation (USEPA, 2002), EPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review (USEPA, 1999), applicable analytical methods, and in conjunction with requirements outlined in this QASP.

All data packages will receive a data package completion check from the corresponding laboratory generating the data package to make sure that the deliverable requirements specified for this project have been satisfied. Data verification (Level II) will be performed on sample delivery groups prior to release of the data. However, if time does not permit, data may be provided, but flagged to show that no independent validation has been conducted, except by the laboratory. Supplementary details about data validation are included in the CTEH® DMP.

Third-party data reviews are conducted on data, as the data are received, to assess whether the QC criteria established for the associated analytical methods have been met. A Level II Data Verification review will be conducted on EDDs.

Level II data verification is the process of evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual requirements. The analytical data are evaluated to determine whether the reported laboratory results are compliant with the requirements of the sampling and analysis methods and procedures used to generate results. The following parameters will be evaluated:

- Data Completeness
- Holding Times
- Sample Preservation
- Sample Receipt
- Sample Analysis
- Review of all QA/QC samples (blanks, duplicates, etc.)

At the completion of the data verification process, eDATApro will prepare a summary of the results which includes an overall narrative of the data quality along with a data verification or validation report. This report will outline data verification acceptance, flagging/qualification, and rejection criteria.

Furthermore, Level IV data validation is conducted at the frequency outlined in sections below for sample delivery group (SDGs) for each laboratory. Laboratories will provide Level IV compliant data packages, upon request, and must be maintained by the laboratory for a minimum of five years or longer (electronic or hardcopy). SDGs will be selected for representativeness across laboratories, methods, media, and time of sampling and analysis. Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of its validity prior to use. The validation process includes checks for internal consistency, checks for transmittal errors, and checks for verification of laboratory capability. Evaluation of these criteria will involve review of parameters listed above and in addition to, but not limited to the following:

- Review of Surrogate Recoveries (if applicable)
- Detection limit records
- Instrument calibration records
- Continuing calibration records
- Internal standard records (if applicable)
- Target compound results
- Sample results

At the completion of the data validation process, eDATApro (or other third-party validation group) will prepare a summary of the results as submitted by the laboratory, validated sampling results, and deems data are suitable for its intended purposes. Data validation acceptance criteria will be provided by eDATApro. Furthermore, eDATApro will provide a written document explaining criteria for flagging, qualifying, and rejecting data. This document will explain the data verification and validation process, provide applicable SOPs, and identify data validation software used. eDATApro is responsible for verifying and validating different components of the project data and contacting laboratories for clarification or resolution of data issues. eDATApro will identify issues, potential resolutions and corrective action steps from each laboratory and/or party responsible for conveying results to the data users.

5.1 DATA VALIDATION FOR AIR SAMPLING

Data verification and validation frequency is performed as follows:

- Level II data verification will be performed on 100% of the data.
- Level IV data validation will be performed on the first sample delivery groups (SDGs) analyzed.
- Level IV data validation may be performed on 10% of all samples.

Data verification/validation frequency may be changed based upon project needs.

6.0 QUALITY ASSURANCE

Quality Assurance (QA) will be conducted in accordance with EPA's quality management requirements (*EPA Requirements for Quality Assurance Project Plans (QA/R-5*) [EPA/240/B01/003, dated March 2001]; and *EPA Guidance for Quality Assurance Project Plans* [EPA/240/R02/009, dated December 2002]).

This QASP represents the foundation of QA/QC that will be utilized to assess and verify that sampling, testing, and analysis activities are executed in a manner consistent with applicable guidance and conventional QA/QC objectives. The procedures described in this document are intended to assess the data generated in terms of representativeness, precision, accuracy, completeness, and comparability, as noted in Sections above.

A QAM will be assigned and will monitor work conducted throughout the entire project including reviewing interim report deliverables and field audits. The GPM will be responsible for QA/QC of the field investigation activities. The designated laboratory utilized during the investigation will be responsible for QA/QC related to the analytical work. The project chemist will verify that laboratory QA/QC is consistent with the required standards and provide data validation support once the laboratory data have been received.

6.1 Sample Custody Procedures

Because of the evidentiary nature of sample collection, the possession of samples must be traceable from the time the samples are collected until they are introduced as evidence in legal proceedings. After sample collection and identification, samples will be maintained under the chain-of-custody procedures. If the sample collected is to be split (laboratory QC), the sample will be allocated into similar sample containers. Sample labels completed with the same information as that on the original sample container will be attached to each of the split samples. All personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly.

The COC procedures are documented and will be made available to all personnel involved with the sampling. A typical COC record will be completed each time a sample or group of samples is prepared for shipment to the laboratory. The record will repeat the information on each sample label and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and another copy will be retained by the member of the Sampling Team who originally relinquished the samples.

6.1.1 Chain-of-Custody Record

The purpose of the COC procedure is to prevent misidentification of samples, prevent tampering of the samples during shipment and storage, allow easy identification of tampering, and allow for easy tracking of possession. A chain-of-custody will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept by each individual who has signed it. If the COC is broken at any time from sample collection through sample analysis, the QAM will be notified by CTEH® data managers, GPM, FOM, etc. The QAM is responsible for implementing corrective action and responsible for ensuring that all necessary documentation is completed.

The laboratory will compare the samples entered on the COC forms with the sample containers received by the laboratory. If the laboratory finds any discrepancies, the laboratory will contact the CTEH® FOM, GPM, or QAM for resolution. The COC forms will be the primary source of information for the laboratory to enter data into the laboratory's sample tracking system. Sample coolers packaging is an integral part of field activities. Procedures for proper sample packaging will be followed.

6.1.2 Custody Seal

The sample custody seal is used to ensure that the samples in the shipping container have not been tampered with or opened, therefore ensuring sample integrity. When samples leave the sampler's immediate control (e.g., shipment to laboratory), custody seals will be placed on the front (and potentially the back) of the shipping container. If FedEX or equivalent boxes or packages are used, then seal will be used in lieu of a custody seal. The individual who has custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

6.2 Project Documentation

After SAP and QASP has been approved, CTEH® will upload the documents to projects.cteh.com, a dashboard accessible by all CTEH® personnel that stores all relevant current (revised) and original approved SAPs. CTEH® developed and operates web application (projects.cteh.com) to assist employees with data collection of real-time and analytical data. Furthermore, the QAM will either hand-deliver or email all personnel roles listed in Section 2.1 the most updated version of the QASP. Personnel will read and verify they understand the QASP by affixing their signature to a signature page that will be maintained by the QAM, including each version that may be produced.

6.2.1 Field Documentation

Field logs, documentation forms, and calculation work sheets, as appropriate, utilized during the field operations will be maintained accurately and in accordance with the requirements of the written SAP and the CTEH® DMP (Appendix C). The majority of field logs and forms will be collected in electronic format on mobile devices and stored in the project database (projects.cteh.com). In the event that paper forms are utilized, copies of paper field logs will be retained and saved to the project folder, as appropriate.

6.2.2 Field Logbook

The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. All entries will be signed by the individuals making them. Entries should include, at a minimum, the following:

- Site name and project number,
- Names of personnel on-site,
- Dates and times of all entries,
- Description of all site activities, including site entry and exit times,
- Noteworthy events and discussions,
- Weather conditions,
- Site observations,
- Identification and description of samples and locations,
- Subcontractor information and names of on-site personnel,
- Dates and times of sample collections and chain-of-custody information,
- Records of photographs,
- Site sketches, and
- Calibration results.

6.2.3 Sample Labels

Sample labels will be securely affixed to the sample container. The labels will clearly identify the particular sample ID (as described in Section 3.8) and may include the following information:

- Site name and project number,
- Date and time the sample was collected,
- Sample preservation method,
- Analysis requested, and
- Sampling location.

6.2.4 Photographic Documentation

Photographs will be taken to document site conditions and activities as site work progresses. Initial conditions should be well documented by photographing features that define the site-related contamination or special working conditions. Representative photographs should be taken of each type of site activity. The photographs should show typical operations and operating conditions as well as special situations and conditions that may arise during site activities. Site final conditions should also be documented as a record of how the site appeared at completion of the work.

Photographs will be collected using handheld devices for the purposes of documenting sources, events, and safety observations. Photographs will be collected with global positioning systems (GPS) coordinates, a short description of the event or observation, and stored in a secure database, known as SIERA (Source, Instrument, Event, Receptor, and Awareness). All photographs are available for CTEH® personnel on projects.cteh.com.

6.1 AUDITS

Quality assurance audits will be performed and documented to assess whether the QA/QC measures are being utilized to provide data of acceptable quality, upon approval of this QASP.

6.1.1 Field Systems Audit

Field audits are coordinated by CTEH® QAM or their designee and carried out by independent staff(s), most likely the PTM, that is not actively engaging in executing the QASP/SAP at the time field audits are being performed. Field audits will involve at least one audit of each parameter will be conducted semi-annually initially. As discussed previously, audit frequency will depend on projected project duration. Furthermore, field auditor checklists will be created for the purpose of this program. Auditors will fill out worksheets that review sample handling, sample collection, sample storage, field documentation, decontamination, and personal protective equipment. The field audit will include following the data from the collection point to until samples are relinquished to the laboratory. CTEH® may hire an external, third-party, data validator to audit field auditing activities and/or records, sample collection and reporting, review Level II data validated results, and may conduct an audit of the laboratory in person of their sample receiving, standard preparation, sample preparation, sample analysis, data generation, and reporting to CTEH®.

6.1.2 Laboratory Audit

Laboratory documentation audit procedures of received electronic data deliverables (EDDs) are described in the CTEH® DMP. Furthermore, data managers or third-party validators will notify the QAM immediately in writing if data is consistently rejected or other anomalous, erroneous measures are identified for a specific laboratory. In the event the QAM believes a formal audit of a specific laboratory (or all laboratories) is necessary, measures will be taken to conduct audits.

7.0 REFERENCES

USEPA. Compendium Method TO-9A Determination of Polychlorinated, Polybrominated and Brominated/Chlorinated Dibenzo-p-Dioxins and Dibenzofurans in Ambient Air. In: USEPA. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. 2nd ed. Cincinnati, Ohio: U.S. Environmental Protection Agency, Office of Research and Development; 1999 Jan.

USEPA. Compendium Method TO-13. Determination of Polycyclic Aromatic Hydrocarbons (PAHs) in Ambient Air Using Gas Chromatography/Mass Spectrometry (GC/MS). In: USEPA. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. 2nd ed. Cincinnati, Ohio: U.S. Environmental Protection Agency, Office of Research and Development; 1999 Jan; EPA/625/R-96/010b.

USEPA. Compendium Method TO-15. Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). In: USEPA. Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. 2nd ed. Cincinnati, Ohio: U.S. Environmental Protection Agency, Office of Research and Development; 1999 Jan; EPA/625/R-96/010b.

USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. Washington, DC: U. S. Environmental Protection Agency; 1999 Oct; EPA/540/R-99/008.

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USEPA. Guidance on Systematic Planning Using the Data Quality Objectives Process: EPA QA/G-4. Washington, DC: U.S. Environmental Protection Agency; 2006 Feb; EPA/240/B-06/0.

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Municipal and Industrial Wastewater. Washington, DC: U.S. Environmental Protection Agency; 2007.

USEPA. Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). In: USEPA. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response; 1996 Dec;

USEPA. Method 8270D: Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS). In: USEPA. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response; 2007 Feb.

USEPA. Method 8290A: Polychlorinated Dibenzo-p-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PDCFs) by High-Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRCGC/HRMS). In: USEPA. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846). Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response; 2007 Feb.

USEPA. National Primary and Secondary Ambient Air Quality Standards. 40CFR 50

USEPA. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume IV: Meteorological Measurements Version 2.0 (Final). Washington, DC: U.S. Environmental Protection Agency; 2008 Mar; EPA-454/B-08-002.

APPENDIX A

DATA QUALITY OBJECTIVES

INITIAL ACCEPTANCE AND POST-ACCEPTANCE TESTING

DATA QUALITY OBJECTIVES

MATRIX: Air

STEP 1. DEFINE THE PROBLEM	
Explosives are present on the Camp Minden grounds that present a threat to human health and the environment.	
STEP 2. IDENTIFY THE DECISION OR GOAL OF SAMPLING/STUDY	
Air monitoring and sampling will be conducted in four locations in the community surrounding Camp Minden during the Initial Acceptance and Post-Acceptance testing phase of the project to (1) determine baseline air concentrations; (2) compare post-acceptance testing results to baseline air concentrations to determine whether or not the Contained Burn System has a potential impact to human-health or the environment; (3) compare particulate matter concentrations during Contained Burn to baseline values and/or National Ambient Air Quality Standards to determine if particulate matter concentrations pose a potential human-health risk; (4) detections of SVOCs, particularly polycyclic aromatic hydrocarbons (PAHs) and explosive residues, are present to determine whether or not the Contained Burn System is sufficient for destructing M6.	
IDENTIFY THE ALTERNATIVE ACTIONS THAT MAY BE TAKEN BASED ON THE DECISIONS.	• If air sampling results indicate results are “not detected” above laboratory established reporting limits (RLs), then it will be determined that there are no chemicals of interest present. • If particulate monitoring and/or sampling results are present above baseline sampling results, but below the NAQQS, then it will be determined that particulates detected do not present an increased human-health or environmental risk. • If downwind concentrations less than upwind concentrations, then it will be determined that results do not present an increased human-health or environmental risk. • If air sampling results during Contained Burn Unit operations and post-acceptance testing are comparable to initial acceptance testing (baseline), then it will be determined that the Contained Burn System operations were sufficient for removing hazardous chemicals in the environment. • If air sampling results during post-acceptance testing are comparable to initial acceptance testing, then it will be determined that the Contained Burn System operations did not pose an increased human-health or environmental risk.

STEP 3. IDENTIFY INPUTS NEEDED FOR THE DECISION	
IDENTIFY THE INFORMATIONAL INPUTS NEEDED TO RESOLVE A DECISION.	• Background monitoring/ sampling results • Upwind monitoring/sampling results • NAQQS PM values • Analytical results • Confirmation/investigative monitoring results in the event of site-specific baseline or screening values exceedances are observed. • Predominant wind conditions daily • Post-acceptance testing results
IDENTIFY THE SOURCES FOR EACH INFORMATIONAL INPUT AND LIST THE INPUTS THAT ARE OBTAINED THROUGH ENVIRONMENTAL MEASUREMENTS.	• Monitoring results for $PM_{2.5}$, PM_{10}, NO_X, SO_2, CO, CO_2 using sampling devices for 1, 15, and/or 60 minute averages. • Analytical results from $PM_{2.5}$ and PM_{10} following 40 CFR 50, EPA, Air Program, National Primary and Secondary Ambient Air Quality Standards • Polycyclic aromatic hydrocarbons (PAH) using EPA TO-13 or Method 8270. • SVOCs for the four explosive residues referenced by EPA TO-13 or Method 8270. • Dioxins/Furans (PDCC/PDCF) by EPA TO-9 or EPA 8290 • VOCs by EPA TO-15. • Background sampling results. • Sample location coordinates and relational proximity to the Contained Burn Unit.
BASIS FOR THE CONTAMINANT SPECIFIC ACTION LEVELS.	Air samples will be collected from upwind locations to determine background concentrations and downwind locations will be compared to upwind concentrations and/or screening values developed by ESI, LDEQ, and/or EPA to determine the absence or presence of combustion by-products or explosives residue for decision making purposes.
IDENTIFY POTENTIAL SAMPLING TECHNIQUES AND APPROPRIATE ANALYTICAL METHODS.	• SVOCs by EPA TO-13/8270 • PDCC/PDCF by EPA TO-9/8290 • VOCs by TO-15 • PM2.5/PM10 by 40 CFR 50

STEP 4. DEFINE THE BOUNDARIES OF THE STUDY	
DEFINE THE DOMAIN OR GEOGRAPHIC AREA WITHIN WHICH ALL DECISIONS MUST APPLY.	Camp Minden encompasses approximately 15,000 acres of land in a rectangular shape running approximately 9 miles east to west and 3 miles north to south. Camp Minden is completely fenced and public access is restricted by site security. The City of Doyline, Louisiana is located within 0.75 mile south of Camp Minden. The City of Haughton is located approximately 3 miles west of Camp Minden. The town of Sibley is located just over 2 miles east and southeast of the Camp Minden. The City of Minden is located within 3.0 miles northeast of Camp Minden. All distances are estimates from the Camp Minden property boundary.
SPECIFY THE CHARACTERISTICS THAT DEFINE THE POPULATION OF INTEREST.	Results are representative of the area sampled. Specific sampling locations will be determined after a site visit. Upwind locations and downwind locations are determined by prevailing winds. Based upon the historical windrose, prevailing winds are generally from the south or north. Therefore, sampling locations will encompass both upwind and downwind locations in the community.
DEFINE THE SCALE OF DECISION MAKING.	Results of air samples will be used to determine the absence or presence of target VOCs, SVOCs, and particulates in air against ESI, LDEQ, and/or EPA screening levels (once established), background and/or upwind concentrations in the community. Results will be uploaded to SCRIBE for stakeholder review.
DETERMINE THE TIME FRAME TO WHICH THE DATA APPLY.	The data will apply until the post-acceptance testing is completed for air represented by the samples collected.
DETERMINE WHEN TO COLLECT DATA.	Samples will be collected upon approval of the QASP.
IDENTIFY PRACTICAL CONSTRAINTS ON DATA COLLECTION.	• Inclement weather, • Access not attainable, • Not safe to enter area, • Unforeseen hazards.

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STEP 5. DEVELOP ANALYTICAL APPROACH/ DECISION RULE	
SPECIFY THE PARAMETER THAT CHARACTERIZES THE POPULATION OF INTEREST.	Detection of target compounds in air samples by analytical testing compared to laboratory established reporting limits, background concentrations, upwind concentrations, and then future developed screening values.
SPECIFY THE ACTION LEVEL FOR THE DECISION.	• If air sampling results indicate results are "not detected" above laboratory established reporting limits (RLs), then it will be determined that there are no chemicals of interest present. • If particulate monitoring and/or sampling results are present above baseline sampling results, but below the NAQQS, then it will be determined that particulates detected do not present an increased human-health or environmental risk. • If downwind concentrations less than upwind concentrations, then it will be determined that results do not present an increased human-health or environmental risk. • If chemicals are identified in air samples are present above background concentrations, but below future established screening values, then LDEQ/EA will make determination on further actions. • If chemicals are identified in air samples are present above laboratory Reporting Limits, background concentrations, upwind concentrations, and future established screening levels, then LDEQ/EPA will make determination on further actions. • If air sampling results during Contained Burn Unit operations and post-acceptance testing are comparable to initial acceptance testing (baseline), then it will be determined that the Contained Burn System operations were sufficient for removing hazardous chemicals in the environment. • If air sampling results during post-acceptance testing are comparable to initial acceptance testing (baseline), then it will be determined that the Contained Burn System operations did not pose an increase human-health or environmental risk.

STEP 6. SPECIFY PERFORMANCE OR ACCEPTANCE CRITERIA OR LIMITS ON DECISION ERRORS	
DEVELOP A DECISION RULE.	If target chemicals are below laboratory established reporting limits or LDEQ/EPA derived screening values, then there is not an increased human-health or environmental risk and no further actions are required. If background sampling results are deemed usable by a third party validator (Level II) and are at concentrations higher than LDEQ/EPA agreed upon screening values, then background sampling results become the new screening values. If target chemicals are below background concentrations, then there is not an increased human-health or environmental risk and no further actions are required. If upwind sampling results are deemed usable by a third party validator (Level II) and meteorological data (dominant prevailing wind) confirm that the sampling location is upwind and results are detected at concentrations greater than LDEQ/EPA agreed upon screening values, then upwind sampling results become the new screening value for that day's sampling for downwind samples. If target chemicals are detected from air samples collected downwind above upwind, background, and/or future established screening values, then the area requires further consideration by LDEQ/EPA.
DETERMINE THE POSSIBLE RANGE OF THE PARAMETER OF INTEREST.	Contaminant concentrations may range from below the RL for each specific constituent to more than the LDEQ/EPA agreed upon screening value.
DEFINE BOTH TYPES OF DECISION ERRORS AND IDENTIFY THE POTENTIAL CONSEQUENCES OF EACH.	See Section 6. Determinations about actions are to be determined by LDEQ/EPA.
DEFINE THE TRUE STATE OF NATURE FOR THE MORE SEVERE DECISION ERROR AS THE BASELINE CONDITION OR THE NULL HYPOTHESIS (H_o) AND DEFINE THE TRUE STATE FOR THE LESS SEVERE DECISION ERROR AS THE ALTERNATIVE HYPOTHESIS (H_a).	Ho: The air concentration represented by the sample is above the established screening value. Ha: The air concentration represented by the sample is below the established screening value.

ASSIGN THE TERMS “FALSE POSITIVE” AND “FALSE NEGATIVE” TO THE PROPER DECISION ERRORS.	• False Positive Error = Type I • False Negative Error = Type II
ASSIGN PROBABILITY VALUES TO POINTS ABOVE AND BELOW THE ACTION LEVEL THAT REFLECT THE ACCEPTABLE PROBABILITY FOR THE OCCURRENCES OF DECISION ERRORS.	To be assigned based on discussions with LDEQ/EPA.
STEP 7. OPTIMIZE THE DESIGN	
REVIEW THE DQOs.	Not applicable.
DEVELOP GENERAL SAMPLING AND ANALYSIS DESIGN. See QASP for details	

APPENDIX B

LABORATORY TARGET LIST AND REPORTING LIMITS

Analysis Group	Method Description	Method Code				
Air Samples	Volatile Organic Compounds in Ambient Air	TO15				
	Analyte Description	CAS Number	Reference RL - Limit	Reference RL - Units	Reference MDL - Limit	Reference MDL - Units
	Acetone	67-64-1	11.9	ug/m3	0.423	ug/m3
	Benzene	71-43-2	1.28	ug/m3	0.252	ug/m3
	Benzyl chloride	100-44-7	4.14	ug/m3	0.844	ug/m3
	Bromodichloromethane	75-27-4	2.01	ug/m3	0.442	ug/m3
	Bromoform	75-25-2	4.13	ug/m3	0.724	ug/m3
	Bromomethane	74-83-9	3.11	ug/m3	1.30	ug/m3
	2-Butanone (MEK)	78-93-3	2.36	ug/m3	0.587	ug/m3
	Carbon disulfide	75-15-0	2.49	ug/m3	0.243	ug/m3
	Carbon tetrachloride	56-23-5	5.03	ug/m3	0.403	ug/m3
	Chlorobenzene	108-90-7	1.38	ug/m3	0.295	ug/m3
	Dibromochloromethane	124-48-1	3.41	ug/m3	0.673	ug/m3
	Chloroethane	75-00-3	2.11	ug/m3	0.813	ug/m3
	Chloroform	67-66-3	1.46	ug/m3	0.464	ug/m3
	Chloromethane	74-87-3	1.65	ug/m3	0.407	ug/m3
	1,2-Dibromoethane (EDB)	106-93-4	6.15	ug/m3	0.576	ug/m3
	1,2-Dichlorobenzene	95-50-1	2.40	ug/m3	0.782	ug/m3
	1,3-Dichlorobenzene	541-73-1	2.40	ug/m3	0.661	ug/m3
	1,4-Dichlorobenzene	106-46-7	2.40	ug/m3	0.896	ug/m3
	Dichlorodifluoromethane	75-71-8	1.98	ug/m3	0.717	ug/m3
	1,1-Dichloroethane	75-34-3	1.21	ug/m3	0.291	ug/m3
	1,2-Dichloroethane	107-06-2	3.24	ug/m3	0.356	ug/m3
	1,1-Dichloroethene	75-35-4	3.17	ug/m3	0.511	ug/m3
	cis-1,2-Dichloroethene	156-59-2	1.59	ug/m3	0.353	ug/m3
	trans-1,2-Dichloroethene	156-60-5	1.59	ug/m3	0.396	ug/m3
	1,2-Dichloropropane	78-87-5	1.85	ug/m3	1.11	ug/m3
	cis-1,3-Dichloropropene	10061-01-5	1.82	ug/m3	0.472	ug/m3
	trans-1,3-Dichloropropene	10061-02-6	1.82	ug/m3	0.399	ug/m3
	1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	2.80	ug/m3	1.08	ug/m3
	Ethylbenzene	100-41-4	1.74	ug/m3	0.274	ug/m3
	4-Ethyltoluene	622-96-8	1.97	ug/m3	0.919	ug/m3
	Hexachlorobutadiene	87-68-3	21.3	ug/m3	4.61	ug/m3
	2-Hexanone	591-78-6	1.64	ug/m3	0.357	ug/m3
	Methylene Chloride	75-09-2	1.39	ug/m3	0.250	ug/m3
	4-Methyl-2-pentanone (MIBK)	108-10-1	1.64	ug/m3	0.553	ug/m3
	Styrene	100-42-5	1.70	ug/m3	0.251	ug/m3
	1,1,2,2-Tetrachloroethane	79-34-5	2.75	ug/m3	0.474	ug/m3
	Tetrachloroethene	127-18-4	2.71	ug/m3	0.346	ug/m3
	Toluene	108-88-3	1.51	ug/m3	0.192	ug/m3

	1,2,4-Trichlorobenzene	120-82-1	14.8	ug/m3	3.21	ug/m3
	1,1,1-Trichloroethane	71-55-6	1.64	ug/m3	0.355	ug/m3
	1,1,2-Trichloroethane	79-00-5	2.18	ug/m3	0.366	ug/m3
	Trichloroethene	79-01-6	2.15	ug/m3	0.564	ug/m3
	Trichlorofluoromethane	75-69-4	2.25	ug/m3	1.10	ug/m3
	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	3.07	ug/m3	1.25	ug/m3
	1,2,4-Trimethylbenzene	95-63-6	3.93	ug/m3	0.796	ug/m3
	1,3,5-Trimethylbenzene	108-67-8	1.97	ug/m3	0.615	ug/m3
	Vinyl acetate	108-05-4	2.82	ug/m3	0.511	ug/m3
	Vinyl chloride	75-01-4	1.02	ug/m3	0.307	ug/m3
	m,p-Xylene	179601-23-1	3.47	ug/m3	0.434	ug/m3
	o-Xylene	95-47-6	1.74	ug/m3	0.234	ug/m3
	4-Bromofluorobenzene (Surr)	460-00-4		ug/m3		ug/m3
	1,2-Dichloroethane-d4 (Surr)	17060-07-0		ug/m3		ug/m3
	Toluene-d8 (Surr)	2037-26-5		ug/m3		ug/m3
Air Samples	Collection via Passivated Canister	Air_Pass_Can				

Air Samples	PAHs/ Semivolatile Organics in Ambient Air	TO_13A				
	Analyte Description	CAS Number	Reference RL - Limit	Reference RL - Units	Reference MDL - Limit	Reference MDL - Units
	Acenaphthene	83-32-9	10.0	ug/PUF	1.40	ug/PUF
	Acenaphthylene	208-96-8	10.0	ug/PUF	1.20	ug/PUF
	Anthracene	120-12-7	10.0	ug/PUF	1.00	ug/PUF
	Benzo[a]anthracene	56-55-3	10.0	ug/PUF	1.00	ug/PUF
	Benzo[b]fluoranthene	205-99-2	10.0	ug/PUF	1.90	ug/PUF
	Benzo[k]fluoranthene	207-08-9	10.0	ug/PUF	1.60	ug/PUF
	Benzoic acid	65-85-0	50.0	ug/PUF	8.70	ug/PUF
	Benzo[g,h,i]perylene	191-24-2	10.0	ug/PUF	1.50	ug/PUF
	Benzo[a]pyrene	50-32-8	10.0	ug/PUF	1.50	ug/PUF
	Benzyl alcohol	100-51-6	10.0	ug/PUF	2.40	ug/PUF
	Bis(2-chloroethoxy)methane	111-91-1	10.0	ug/PUF	1.40	ug/PUF
	Bis(2-chloroethyl)ether	111-44-4	10.0	ug/PUF	1.20	ug/PUF
	bis (2-chloroisopropyl) ether	108-60-1	10.0	ug/PUF	1.60	ug/PUF
	Bis(2-ethylhexyl) phthalate	117-81-7	10.0	ug/PUF	5.00	ug/PUF
	4-Bromophenyl phenyl ether	101-55-3	10.0	ug/PUF	1.20	ug/PUF
	Butyl benzyl phthalate	85-68-7	10.0	ug/PUF	1.20	ug/PUF
	4-Chloroaniline	106-47-8	10.0	ug/PUF	1.90	ug/PUF
	4-Chloro-3-methylphenol	59-50-7	50.0	ug/PUF	1.30	ug/PUF
	2-Chloronaphthalene	91-58-7	10.0	ug/PUF	1.30	ug/PUF
	2-Chlorophenol	95-57-8	10.0	ug/PUF	1.00	ug/PUF
	4-Chlorophenyl phenyl ether	7005-72-3	10.0	ug/PUF	1.30	ug/PUF
	Chrysene	218-01-9	10.0	ug/PUF	1.00	ug/PUF
	Dibenz(a,h)anthracene	53-70-3	10.0	ug/PUF	1.50	ug/PUF

Dibenzofuran	132-64-9	10.0	ug/PUF	1.30	ug/PUF
Di-n-butyl phthalate	84-74-2	20.0	ug/PUF	13.0	ug/PUF
1,2-Dichlorobenzene	95-50-1	10.0	ug/PUF	1.00	ug/PUF
1,3-Dichlorobenzene	541-73-1	10.0	ug/PUF	1.20	ug/PUF
1,4-Dichlorobenzene	106-46-7	10.0	ug/PUF	1.10	ug/PUF
3,3'-Dichlorobenzidine	91-94-1	10.0	ug/PUF	8.30	ug/PUF
2,4-Dichlorophenol	120-83-2	10.0	ug/PUF	2.10	ug/PUF
Diethyl phthalate	84-66-2	10.0	ug/PUF	2.20	ug/PUF
2,4-Dimethylphenol	105-67-9	10.0	ug/PUF	2.10	ug/PUF
Dimethyl phthalate	131-11-3	10.0	ug/PUF	1.40	ug/PUF
4,6-Dinitro-2-methylphenol	534-52-1	50.0	ug/PUF	9.00	ug/PUF
2,4-Dinitrophenol	51-28-5	50.0	ug/PUF	7.30	ug/PUF
2,4-Dinitrotoluene	121-14-2	10.0	ug/PUF	1.40	ug/PUF
2,6-Dinitrotoluene	606-20-2	10.0	ug/PUF	1.60	ug/PUF
Di-n-octyl phthalate	117-84-0	10.0	ug/PUF	1.40	ug/PUF
Fluoranthene	206-44-0	10.0	ug/PUF	1.30	ug/PUF
Fluorene	86-73-7	10.0	ug/PUF	1.20	ug/PUF
Hexachlorobenzene	118-74-1	10.0	ug/PUF	1.30	ug/PUF
Hexachlorobutadiene	87-68-3	10.0	ug/PUF	1.50	ug/PUF
Hexachloro-1,3-cyclopentadiene	77-47-4	50.0	ug/PUF	2.10	ug/PUF
Hexachloroethane	67-72-1	10.0	ug/PUF	1.20	ug/PUF
Indeno[1,2,3-cd]pyrene	193-39-5	10.0	ug/PUF	1.70	ug/PUF
Isophorone	78-59-1	10.0	ug/PUF	1.70	ug/PUF
2-Methylnaphthalene	91-57-6	10.0	ug/PUF	1.40	ug/PUF
2-Methylphenol	95-48-7	10.0	ug/PUF	1.00	ug/PUF
3 & 4 Methylphenol	15831-10-4	50.0	ug/PUF	25.0	ug/PUF
Naphthalene	91-20-3	10.0	ug/PUF	1.20	ug/PUF
2-Nitroaniline	88-74-4	10.0	ug/PUF	1.80	ug/PUF
3-Nitroaniline	99-09-2	10.0	ug/PUF	2.70	ug/PUF
4-Nitroaniline	100-01-6	50.0	ug/PUF	3.70	ug/PUF
Nitrobenzene	98-95-3	10.0	ug/PUF	2.60	ug/PUF
2-Nitrophenol	88-75-5	50.0	ug/PUF	1.50	ug/PUF
4-Nitrophenol	100-02-7	50.0	ug/PUF	7.60	ug/PUF
N-Nitrosodimethylamine	62-75-9	10.0	ug/PUF	4.40	ug/PUF
N-Nitrosodiphenylamine	86-30-6	10.0	ug/PUF	1.20	ug/PUF
N-Nitrosodi-n-propylamine	621-64-7	10.0	ug/PUF	1.90	ug/PUF
Pentachlorophenol	87-86-5	50.0	ug/PUF	8.40	ug/PUF
Phenanthrene	85-01-8	10.0	ug/PUF	1.00	ug/PUF
Phenol	108-95-2	10.0	ug/PUF	1.10	ug/PUF
Pyrene	129-00-0	10.0	ug/PUF	1.10	ug/PUF
1,2,4-Trichlorobenzene	120-82-1	10.0	ug/PUF	1.20	ug/PUF
2,4,5-Trichlorophenol	95-95-4	10.0	ug/PUF	1.60	ug/PUF
2,4,6-Trichlorophenol	88-06-2	50.0	ug/PUF	1.90	ug/PUF

	2-Fluorophenol	367-12-4		ug/PUF		ug/PUF
	2-Fluorobiphenyl (Surr)	321-60-8		ug/PUF		ug/PUF
	Phenol-d5	4165-62-2		ug/PUF		ug/PUF
	Nitrobenzene-d5	4165-60-0		ug/PUF		ug/PUF
	2,4,6-Tribromophenol	118-79-6		ug/PUF		ug/PUF
	Terphenyl-d14	1718-51-0		ug/PUF		ug/PUF
	1,2-Dichlorobenzene-d4	2199-69-1		ug/PUF		ug/PUF
Air Samples	Extraction of PAH/Semivolatile Compounds (Ambient Air)	TO13A_Prep				
Air Samples	Collection via Polyurethane Foam Plug	Air_Foam_Plug				

Air Samples	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	8270C_SIM_IDA				
	Analyte Description	CAS Number	Reference RL - Limit	Reference RL - Units	Reference MDL - Limit	Reference MDL - Units
	Acenaphthene	83-32-9	500	ng/PUF	200	ng/PUF
	Acenaphthylene	208-96-8	500	ng/PUF	200	ng/PUF
	Anthracene	120-12-7	500	ng/PUF	200	ng/PUF
	Benzo[a]anthracene	56-55-3	500	ng/PUF	200	ng/PUF
	Benzo[b]fluoranthene	205-99-2	500	ng/PUF	200	ng/PUF
	Benzo[k]fluoranthene	207-08-9	500	ng/PUF	200	ng/PUF
	Benzo[g,h,i]perylene	191-24-2	500	ng/PUF	200	ng/PUF
	Benzo[a]pyrene	50-32-8	500	ng/PUF	200	ng/PUF
	Chrysene	218-01-9	500	ng/PUF	200	ng/PUF
	Dibenz(a,h)anthracene	53-70-3	500	ng/PUF	200	ng/PUF
	Fluoranthene	206-44-0	500	ng/PUF	200	ng/PUF
	Fluorene	86-73-7	500	ng/PUF	200	ng/PUF
	Indeno[1,2,3-cd]pyrene	193-39-5	500	ng/PUF	200	ng/PUF
	2-Methylnaphthalene	91-57-6	1000	ng/PUF	500	ng/PUF
	Naphthalene	91-20-3	1000	ng/PUF	500	ng/PUF
	Phenanthrene	85-01-8	500	ng/PUF	200	ng/PUF
	Pyrene	129-00-0	500	ng/PUF	200	ng/PUF
	Acenaphthene-d10	15067-26-2		ng/PUF		ng/PUF
	Acenaphthylene-d8	93951-97-4		ng/PUF		ng/PUF
	Benzo(a)anthracene-d12	1718-53-2		ng/PUF		ng/PUF
	Benzo(b)fluoranthene-d12	93951-98-5		ng/PUF		ng/PUF
	Benzo(k)fluoranthene-d12	93952-01-3		ng/PUF		ng/PUF
	Benzo(a)pyrene-d12	63466-71-7		ng/PUF		ng/PUF
	Benzo[g,h,i]perylene-d12	93951-66-7		ng/PUF		ng/PUF
	Chrysene-d12	1719-03-5		ng/PUF		ng/PUF
	Dibenz(a,h)anthracene-d14	13250-98-1		ng/PUF		ng/PUF
	Fluoranthene-d10	93951-69-0		ng/PUF		ng/PUF
	Fluorene -d10	81103-79-9		ng/PUF		ng/PUF
	Indeno[1,2,3-cd]pyrene-d12	203578-33-0		ng/PUF		ng/PUF

	Naphthalene-d8	1146-65-2		ng/PUF		ng/PUF
	Phenanthrene-d10	1517-22-2		ng/PUF		ng/PUF
	Pyrene-d10	1718-52-1		ng/PUF		ng/PUF
Air Samples	Extraction of PAH/Semivolatile Compounds (Ambient Air)	TO13A_Prep				
Air Samples	Collection via Polyurethane Foam Plug	Air_Foam_Plug				

Air Samples	Dioxins & Furans (HRGC/HRMS) in Ambient Air	TO_9				
	Analyte Description	CAS Number	Reference RL - Limit	Reference RL - Units	Reference MDL - Limit	Reference MDL - Units
	2,3,7,8-TCDD	1746-01-6	20.0	pg/PUF		
	2,3,7,8-TCDF	51207-31-9	20.0	pg/PUF		
	1,2,3,7,8-PeCDD	40321-76-4	100	pg/PUF		
	1,2,3,7,8-PeCDF	57117-41-6	100	pg/PUF		
	2,3,4,7,8-PeCDF	57117-31-4	100	pg/PUF		
	1,2,3,4,7,8-HxCDD	39227-28-6	100	pg/PUF		
	1,2,3,6,7,8-HxCDD	57653-85-7	100	pg/PUF		
	1,2,3,7,8,9-HxCDD	19408-74-3	100	pg/PUF		
	1,2,3,4,7,8-HxCDF	70648-26-9	100	pg/PUF		
	1,2,3,6,7,8-HxCDF	57117-44-9	100	pg/PUF		
	1,2,3,7,8,9-HxCDF	72918-21-9	100	pg/PUF		
	2,3,4,6,7,8-HxCDF	60851-34-5	100	pg/PUF		
	1,2,3,4,6,7,8-HpCDD	35822-46-9	100	pg/PUF		
	1,2,3,4,6,7,8-HpCDF	67562-39-4	100	pg/PUF		
	1,2,3,4,7,8,9-HpCDF	55673-89-7	100	pg/PUF		
	OCDD	3268-87-9	200	pg/PUF		
	OCDF	39001-02-0	200	pg/PUF		
	Total TCDD	41903-57-5	20.0	pg/PUF		
	Total TCDF	30402-14-3	20.0	pg/PUF		
	Total PeCDD	36088-22-9	100	pg/PUF		
	Total PeCDF	30402-15-4	100	pg/PUF		
	Total HxCDD	34465-46-8	100	pg/PUF		
	Total HxCDF	55684-94-1	100	pg/PUF		
	Total HpCDD	37871-00-4	100	pg/PUF		
	Total HpCDF	38998-75-3	100	pg/PUF		
	37Cl4-2,3,7,8-TCDD	85508-50-5		pg/PUF		
	13C-2,3,7,8-TCDD	76523-40-5		pg/PUF		
	13C-2,3,7,8-TCDF	89059-46-1		pg/PUF		
	13C-1,2,3,7,8-PeCDD	109719-79-1		pg/PUF		
	13C-1,2,3,7,8-PeCDF	109719-77-9		pg/PUF		
	13C-1,2,3,6,7,8-HxCDD	109719-81-5		pg/PUF		
	13C-1,2,3,4,7,8-HxCDF	114423-98-2		pg/PUF		
	13C-1,2,3,4,6,7,8-HpCDD	109719-83-7		pg/PUF		
	13C-1,2,3,4,6,7,8-HpCDF	109719-84-8		pg/PUF		

	13C-OCDD	114423-97-1		pg/PUF		
Air Samples	Extraction of Dioxins and Furans (Ambient Air)	TO9_Prep				
Air Samples	Collection via Polyurethane Foam Plug	Air_Foam_Plug				

Air Samples	Particulate Matter	40 CFR 50				
	Analyte Description	CAS Number	Reference RL - Limit	Reference RL - Units	Reference MDL - Limit	Reference MDL - Units
	Particulate Matter as PM 10 and PM2.5		2	Ug/m3		

APPENDIX C

CTEH® DATA MANAGEMENT PLAN

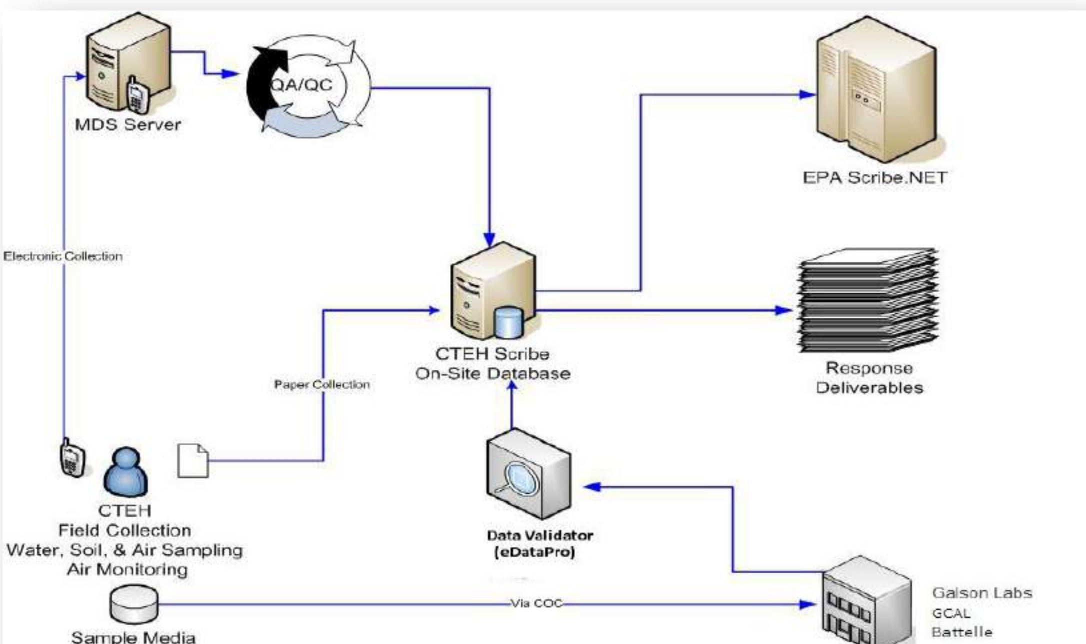
CTEH® Data Management Plan

This CTEH® Data Management Plan (DMP) is designed to support the data management and sharing procedures for air monitoring and analytical air sampling results reported as a result of samples collected as a part of this project. This plan is applicable to data collected by CTEH®. Importantly, the collection of data from various activities is difficult to predict prior to starting the project; therefore, this plan will be updated to incorporate new data streams and data management procedures, as applicable.

1.0 CTEH® DATA FLOW DIAGRAM

CTEH® will perform air monitoring and air sampling at specified locations detailed in this QASP. These results, after undergoing initial quality assurance and quality control procedures, will be made readily available and pushed to EPA SCRIBE. The data flow from these data streams will be processed in accordance with **Figure C-1**, below. In addition to USEPA Scribe.net (as shown below), data streams may also be shared with other regulatory agencies, upon request.

Figure C-1 CTEH® Data Flow Diagram



1.1 DATA STREAMS

A data stream represents a source of incoming information that is transmitted from the field to a centralized location. **Table C-1**, below, outlines the data streams produced by CTEH® for this project. Additional data streams may be added, as requested by the ESI PM.

Table C-1 CTEH® Project-Specific Data Streams

Data Stream	Description
Real-Time Air Monitoring	Air Monitoring data as collected as defined this QASP
Air Samples	Air Samples collected as defined in this QASP
SIERA	Sample, Instrument, Event, Receptor, Awareness (SIERA) is utilized to document sample metadata and site observations

2.0 DATA COLLECTION, PROCESSING AND FIELD STORAGE

This section describes standard procedures for the collection, processing and storage of data in the field (C-2). It is intended to provide specifications and detailed guidance for protocols associated with the current scope of operations.

Table C-2 Data Types and Descriptions

Data Stream	Data Type	Data Type Description	Collection Strategy	Processed Deliverable	Field Repository
Air Samples	Operational	Metadata and physical parameters of samples	Log Book and Mobile Application	Sync to SQL Server	SCRIBE/ Paper
Air Monitoring Data	Monitoring	Location and monitoring data	Mobile Application	Sync to SQL Server	SQL Server
Air Monitoring Data	Monitoring	Location and monitoring data	Real-Time Instruments	Telemetry to Local Storage Device	Local Storage Device

3.0 DATA QUALITY CONTROL AND QUALITY ASSURANCE PROCEDURES

3.1 FIELD DATA VERIFICATION

Field Audit: A series of quality control queries will be employed to ensure basic data quality. Conflicts will be resolved by a CTEH® Data Manager with input from field personnel involved in the creation of an entry.

Location Data Verification: Coordinate data will be checked by a GIS analyst. Field teams are expected to verify the data they have submitted is appearing in the correct location.

3.2 LABORATORY DATA VERIFICATION AND VALIDATION

Lab EDD verification: Electronic Data Deliverable (EDD) files received from a laboratory will be checked by a CTEH® Data Manager and submitted to a third party data validation or verification service (e.g. eDATApro) in accordance with the appropriate Sampling and Analysis Plan.

4.0 DATA REPORTING

4.1 FIELD DATA REPORTING

Monitoring and Field Sampling data collected by CTEH® will be summarized daily and made available to ESI after review by CTEH® Project Managers or Technical Directors.

4.2 LABORATORY DATA REPORTING

A CTEH® Data Manager will create an accompanying summary of laboratory results, available to ESI after review by the CTEH® Technical Director. This data may be presented to in tabular or graphical format, if requested.

APPENDIX D

Laboratory Quality Assurance Manuals or QAPPs

APPENDIX D

LABORATORY QUALITY ASSURANCE MANUALS

TESTAMERICA

INTER-MOUNTAIN

PACE

GULF COAST ANALYTICAL LABORATORY

Laboratory Quality Assurance Manuals were submitted with the approved QAPP. Due to the sheer volume of materials, the manuals will be made available upon request. All utilized laboratories maintain certification with the Louisiana Environmental Laboratory Accreditation Program (LELAP).

ATTACHMENT B

WASTE MANAGEMENT PLAN

Waste Management Plan

For:

Camp Minden M6 Destruction
Camp Minden
1600 Java Road
Minden, Louisiana 71055-7924

Prepared By:

Explosive Service International

9985 Baringer Foreman Road
Baton Rouge, Louisiana 70809
Phone 225-275-2152
Fax 225-273-2029

Preparation Date: 30 October 2015

Final Revision: 17 November 2015

LIST OF ATTACHMENTS

Waste Management Plan

Acronym	Description
CBC	Contained Burn Chamber
CBI	Clean Burning Ignitor
DOD	Department of Defense
DOT	Department of Transportation
EPA	Environmental Protection Agency
ESI	Explosive Service International, Inc.
IDW	Investigation Derived Waste
LAAP	Louisiana Army Ammunition Plant
LDEQ	Louisiana Department of Environmental Quality
LMD	Louisiana Military Department
MSA	Materials Staging Area
PAS	Pollution Abatement System
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
SOP	Standard Operating Procedure
SPCC	Spill Prevention Control and Countermeasures
TCLP	Toxicity Characteristic Leaching Procedure
WMP	Waste Management Plan

1.0 INTRODUCTION

This Waste Management Plan (WMP) includes procedures for managing wastes generated during activities for the M-6 Destruction Project at the Camp Minden National Guard Training Site in Webster and Bossier Parishes, Louisiana. The project includes the complete removal, destruction, and disposal of all hazardous materials and waste located at Camp Minden associated with the M-6 Destruction Project. Destruction activities conducted under the EPA administration order will be conducted at the Camp Minden – Area I Destruction Site (Site).

Camp Minden is formerly known as the Louisiana Army Ammunition Plant (LAAP). LAAP was established in 1942; the primary function was to load, assemble, and pack munitions, and manufacture ammunition metal parts. The Camp Minden Property is now under the control of the Louisiana Military Department (LMD) and serves as a training base of the LMD and Louisiana National Guard.

The project involves removal of the hazardous materials at or in connection with the abandoned Explo Systems, Inc. Site. These hazardous materials included approximately 15,687,247 pounds of M6 propellant and approximately 320,890 pounds of Clean Burning Ignitor (CBI) that were abandoned at the Site. Ninety (90) magazines are filled with M6 propellant and other explosive materials. A magazine is an earth covered structure built to store ammunition and explosives. The propellant and other explosive materials were stored or packaged in cardboard boxes, fiber drums and flexible intermediate bulk containers (FIBC, also known as supersacks).

Project activities include removal of propellant materials (M6 and CBI) from the magazines, on-site destruction of the materials by thermal treatment in a Contained Burn Chamber (CBC) and off-site disposal or recycle/reuse of any remaining inert residual ash materials and inert related packaging materials.

2.0 WASTE STREAMS

2.1 CONTAMINANTS/CHARACTERISTICS OF CONCERN

The EPA Memorandum, "*Request for Approval of a Time-Critical Removal at the Explo Systems, Inc. Site*" signed June 28, 2014 describes the contaminants of concern for the project.

M6 propellant and CBI are Hazard Division 1.3 materials and are classified as toxic through dermal absorption, ingestion, and inhalation.

The M6 propellant is a mixture of nitrocellulose, dinitrotoluene, dibutylphthalate, and diphenylamine. This mixture, primarily due to the nitrocellulose, is extremely reactive and is characteristic hazardous waste, D003, as defined by LAC 33:V.4903.D. Dinitrotoluene and dibutylphthalate are listed as hazardous substances with reportable quantities for unauthorized discharges (40 CFR 302.4, incorporated by reference in LAC 33:I.3927). Wastes may also exhibit the characteristic of toxicity due to the presence of 2,4-dinitrotoluene (D030) and lead (D008) from lead foil used in the process. Nitrocellulose also has a low flash point (53^{o}F) and can auto-ignite or spontaneously combust, also defined under the characteristic of ignitability (D001) in LAC 33:V.4903.B. Diphenylamine is a stabilizer. Safety Data Sheets for M6 propellant and CBI are included in Attachments A and B, respectively.

2.2 ASH

2.2.1 Description

M6 and CBI propellant will be destroyed on-site by thermal treatment in a contained burn chamber (CBC), thus producing ash which will be collected.

2.2.2 Handling

The design of the CBC is engineered to produce minimal ash (<0.2% by volume) which will be collected for profiling and off-site disposal. At the completion of a burn cycle the tray will be blown out with compressed air to remove residual ash from the tray to inside the chamber floor. If any ash remains in the tray it will be removed to a covered "cooling" area where the ash will be collected. The ash will be placed into a suitable covered container. Most of the ash will be collected inside the thermal treatment chamber. Removal of ash from the thermal treatment chamber should only be required once at the completion of the project. This ash will be removed using an industrial vacuum equipped with an extension wand to allow cleanout to be performed without personnel entry.

All ash collected in the Pollution Abatement System (PAS) is automatically collected into sealed drum containers for subsequent characterization and disposal. Operators will monitor the ash level in these drums and when a drum is more than 75% full it will be sealed and replaced by an empty drum. Based on experience the drums will likely only require replacement every 1-3 months.

When full, each drum will be labeled as "Hazardous Waste – Pending Analysis". The label will include a description of the waste and the generation date. If analytical data confirms the material is non-hazardous, the Hazardous Waste Label will be removed and replaced with a Non-Hazardous label.

2.2.3 Disposal

This ash material will be sampled and will undergo hazardous waste determination classification to ascertain if the residues will be managed as RCRA hazardous waste or not. Based on ESI's experience this ash is expected to be classified as non-hazardous and suitable for disposal as an industrial solid waste.

2.3 M6 PROPELLANT

The M6 propellant consists of pellets approximately 7/8" by 3/8". M6 propellant is packaged in several methods:

- Fiberboard drums – fiberboard drums containing approximately 100-140 lbs. of M6 propellant, are placed on pallets with four (4) to six (6) drums per pallet;
- Supersacks – 880 lb. supersacks, contained in cardboard boxes, are placed on pallets; and
- Cardboard Boxes – 60 lb. boxes comprised of thick cardboard. Some boxes are equipped with an anti-static liner.

At the Materials Staging Area (MSA), the M6 propellant will be separated from the packaging material (see Section 5.0). The propellant materials will be placed in transfer bins for processing in the CBC and residues handled as ash.

2.4 CLEAN BURNING IGNITOR (CBI)

CBI is disc-shaped in appearance and is comprised of approximately 98% nitrocellulose. At the Site, CBI is packaged in cardboard boxes which are stored on pallets. Some boxes are lined with anti-static poly bags.

At the MSA, the CBI will be separated from the packaging material (see Section 5.0). The propellant materials will be placed in transfer bins for processing in the CBC and residues handled as ash.

2.5 CONTAMINATED ENVIRONMENTAL MEDIA

The CBC will be loaded in a covered area over a concrete pad. Sealed collection drums will be used in the PAS under the cyclone and the baghouse, again over a concrete pad. No dumping of drums into other containers is required. In the event that there is a release to soil, the contaminated soil will be cleaned up, sampled, and profiled for off-site disposal. Confirmatory soil samples will be taken as necessary from the excavation as described in the Spill Prevention Control and Countermeasures (SPCC) Plan to ensure that all contaminated soil has been removed.

2.6 INVESTIGATION DERIVED WASTE (IDW)

During groundwater sampling, purged groundwater is collected in appropriately sized Department of Transportation (DOT) approved drums pending analysis. The lid and gasket on the drum must be secured when not in active use. The drums are stored in a designated holding area at the Site pending analytical results. Each drum should be labeled:

- "Potentially Hazardous Waste – Analysis Pending";
- Accumulation Start Date; and
- Material type and location.

If analytical testing indicates that the material is non-hazardous, the material will be properly disposed. Should analytical testing indicate that the material is hazardous, the material will be handled in accordance with Section 4.1.

2.7 PPE AND DISPOSABLE SAMPLING EQUIPMENT WASTE

Excess solid and liquid waste should be removed from personal protective equipment (PPE) and disposable sampling equipment. All PPE and sampling equipment should be placed in sealed bags. The bags should be placed in DOT approved drums or containers and labeled accordingly. If analytical results of samples collected indicate the material is non-hazardous, the PPE may be disposed as non-hazardous waste.

2.8 PPE FROM M6 AND CBI HANDLING

During the handling of M6 and CBI, PPE may be contaminated with explosive residues. All PPE should be placed in sealed bags. The bags should be placed in DOT approved drums or containers. All contaminated PPE will be containerized for proper disposal. Each container should be labeled:

- "Potentially Hazardous Waste – Analysis Pending";

- Accumulation Start Date; and
- Material type and location.

3.0 TRAINING

All ESI employees participating in on-site operations will receive DOT Training in accordance with 49 CFR 172 and Hazardous Waste Training in accordance with LAC 33:V, prior to commencing work. The training will be conducted by the Explosive Service International (ESI) Health & Safety Officer.

This includes, but is not limited to, personnel who:

- Load, unload or handle hazardous materials;
- Prepare hazardous materials for transportation;
- Are responsible for safety of transporting hazardous materials; and
- Operate a vehicle used to transport hazardous materials.

4.0 DETERMINATION OF WASTE TYPES

4.1 HAZARDOUS WASTE

The definition of a hazardous waste may be found in LAC 33:V.109. A hazardous waste is any solid waste that is either listed in LAC 33:V.4901 or exhibits a hazardous characteristic as defined in LAC 33:V.4903. The characteristics and contaminants of concern for this project are discussed in Section 2.0.

When a solid waste is generated, the ESI Project Manager will determine if the waste is a hazardous waste considering:

- Whether the waste is excluded from regulation as a hazardous waste under LAC 33:V.105.D;
- Whether the waste is a listed hazardous waste; or
- Whether the waste exhibits a hazardous characteristic.

The characteristics of a waste must be determined by either testing by an outside laboratory or by applying process knowledge of the hazard characteristic in light of the materials or process used. When process knowledge is used in the hazard classification of a waste, the ESI Project Manager may consult with other personnel as necessary. If the hazards associated with a waste cannot be completely determined, then the waste must be tested. At a minimum, representative samples of wastes should be tested for ignitability, reactivity and toxicity using the Toxicity Characteristic Leaching Procedure (TCLP) to determine if the wastes are hazardous.

4.2 NON-HAZARDOUS WASTE

Non-hazardous waste (industrial solid waste) may consist of any process generated waste, any solid waste (including plant trash) that is contaminated by chemicals, oil, and/or any process generated waste, or any empty used container. This term does not apply to wastes that meet the definition of a hazardous waste.

4.3 WASTE PROFILE

Waste characterization information will be documented on a waste profile form provided by the designated treatment or disposal facility as part of the waste acceptance process. The profile will be approved and signed by authorized personnel. Signed profile(s) will then be submitted to the selected facility for acceptance.

The profile typically requires the following information, but is not limited to:

- Generator information including name, address, contact, and phone number;
- Site name including physical location and mailing address;
- Description of the process generating the waste;
- Source of contamination;
- Waste composition;
- Physical state of waste; and

- Applicable hazardous waste codes.

A copy of the approved waste profile will be received prior to scheduling transportation of the waste.

5.0 CONTAINER MANAGEMENT

Empty containers, as defined by LAC 33:V.109 and 49 CFR 171.8, may be disposed of as industrial solid waste at the Webster Parish Landfill.

RCRA Empty

In accordance with LAC 33:V.109, all waste must be removed so that:

- All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container;
- No more than one (1) inch of residue may remain on the bottom of the container or the inner liner;
- No more than 3% (by weight) of the container's total capacity remains in the container or inner liner (for containers less than or equal to 119 gallons in size); or
- No more than 0.3% (by weight) of the container's total capacity remains in the container or inner liner (for containers less than or equal to 119 gallons in size).

Containers that have held an acutely hazardous waste listed in LAC 33:V.4901.B or E must be managed in accordance with LAC 33:V.109. No acutely hazardous wastes are anticipated to be managed.

DOT Empty

Containers that are not "DOT Empty" shall be regulated under DOT and transported in accordance with DOT regulations. Under DOT regulations at 49 CFR 173.29, a container is empty if one of the following conditions applies. The package is:

- Unused;

- Sufficiently cleaned of residue and purged of vapors to remove any potential hazard; or
- Refilled with a material that is not hazardous to such an extent that any residue remaining in the packaging no longer poses a hazard.

An empty package must have all markings, labels, and placards removed, obliterated, or securely covered in transportation. This does not apply to transportation in a transport vehicle or a freight container if the packaging is not visible in transportation and the packaging is loaded by the shipper and unloaded by the shipper or consignee.

5.1 SUPERSACK HANDLING

Supersacks will be emptied by explosive technicians who will connect the choker straps on the forklift to the supersack and position over the transfer bins to allow access to the funnel sewn into the supersack. The supersack funnel is designed to restrict the flow and prevent the uncontrolled release of material. Explosive technicians will complete the emptying of the supersack into the transfer bins. Once empty, explosive technicians will remove the supersack from the choker strap on the forklift and invert the sack inside out to verify that it is completely empty. Additional visual inspection will be conducted, ensuring that a 200% Department of Defense (DOD) compliant inspection (inspected by two separate individuals) is completed on each supersack. This will ensure that the package is empty and that all hazards have been removed. Each supersack will be removed and stored in a roll-off container for off-site disposal. Exterior packaging (such as cardboard) and pallets will be inspected to ensure that it has not been contaminated and may be removed to a designated area for off-site recycling or disposal.

5.2 BOX HANDLING

A forklift will place a full pallet of boxes onto a level loader which is staffed by explosive technicians. The boxes will be separated and the material will be placed into the transfer bins. Anti-static bags from each box will be inverted to insure complete removal of material and undergo a 200% DOD compliant inspection before being removed for storage prior to off-site disposal. This will ensure that the package is empty and that all hazards have been removed. Exterior packaging (such as cardboard) and pallets will be inspected to ensure that it has not been contaminated and may be removed to a designated area for off-site recycling or disposal.

5.3 FIBERBOARD DRUM HANDLING

Explosive technicians will remove vertical banding straps and the drum lid and place the anti-static bag around the top of each drum. The drum will be inverted and emptied in a specially-designed drum area near the transfer bins. An explosive technician will rotate the drum slowly to empty the material into the transfer bins. The emptied drums will be returned to an upright position and the anti-static bag removed from each drum, ensuring all explosive material is placed in the transfer bins. Anti-static bags from each drum will be inverted to insure complete removal of material and undergo a 200% DOD compliant inspection before being removed for storage prior to off-site disposal. The drum (including metal band) and pallets will be inspected to ensure that the material has not been contaminated and may be removed to a designated area for off-site recycling or disposal.

5.4 ALTERNATE HANDLING OF CONTAINERS

There is no intention to burn packaging in the Contained Burn System under normal operation. If a condition arises with some of the propellant that presents an additional risk for handling and transportation, ESI will notify LMD and EPA of the risk and develop a plan for removal.

6.0 GENERAL WASTE MANAGEMENT REQUIREMENTS

All containers of wastes should be:

- Inspected prior to use to ensure the container is in good condition;
- Compatible with the waste being stored;
- Labeled;
- Closed except when material is being loaded or unloaded; and
- Positioned so that there is adequate aisle space for inspection and emergency equipment.

6.1 HAZARDOUS WASTE

Hazardous waste is not anticipated to be generated on this project. In the event that hazardous waste is generated, the waste will be segregated from non-hazardous wastes. Additionally, incompatible wastes (e.g., flammable and corrosive wastes) will be segregated. Wastes of the same matrix, contamination, and source may be aggregated to facilitate accumulation and disposal. Containers of hazardous waste must be stored in accordance with LAC 33:V.1109.

Any hazardous wastes that are generated will be profiled for offsite disposal at a permitted hazardous waste facility. Transporters must have an EPA hazardous waste identification number. All shipments of hazardous waste must be accompanied by a Manifest on EPA Form 8700-22. The manifest must be prepared by a properly trained individual. The manifest must contain the information in LAC 33:V.1107.

6.2 INDUSTRIAL SOLID WASTE

Non-hazardous waste generated during the project will be profiled and shipped off-site as Industrial Solid Waste.

Industrial Solid Waste will be sent to Webster Parish Landfill, a Type I/II Landfill (Solid Waste Permit No. P-0165R1). The transportation of industrial solid waste offsite will be in accordance with LAC 33:VII.505 and the notification requirements of LAC 33:VII.401.

6.3 RECYCLABLE AND REUSABLE MATERIALS

Packaging materials such as pallets and cardboard, which have not been contaminated by wastes, may be collected for recycle/reuse. These materials must be inspected prior to collection to ensure that no contaminated materials are collected.

Recyclable and reusable materials will be transported to Mekeebo Landfill, a Type III Segregation Facility (Solid Waste Permit No. P-0381). Mekeebo Landfill segregates waste materials that are recyclable or are items of value that may be sold. Recyclable materials include cardboard, metal, and plastic. Items of value include furniture, lumber, intact building materials such as doors, and other reusable items. Loads of wastes are dumped near the working face for segregation. Landfill personnel segregate materials and move them to storage areas adjacent to the disposal area. Metals, plastics, and cardboard are placed in roll-off boxes. Cardboard may be bailed using a mobile bailer. Lumber and other reusable materials are stacked neatly outside of the disposal area.

Records are maintained in the facility's computer software of the materials removed from the site for recycling and reuse. Materials such as scrap metal or cardboard are weighed at the scales prior to leaving the site with the scale readings recorded directly to the computer software. Records of other materials removed for recycling and reuse are documented in the facility's daily logs.

Any materials shipped to Mekeebo Landfill, which are unable to be recycled, will be disposed as Industrial Solid Waste.

7.0 WASTE SAMPLING

LAC 33:V.109.D defines a representative sample as "a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole." In order to obtain a representative sample, a single composite sample may be analyzed.

Sampling methods of non-homogeneous materials should take into account the variation of the material being sampled.

<u>Sampling a Waste Pile</u>

1. This sampling method may apply to sampling piles of excavated soil and the ash within the CBC.
2. Determine sampling points based on the amount of material in the piles.
3. Collect a composite sample by withdrawing samples through at least three (3) different points near the top of the pile to points diagonally opposite the point of entry.
4. Samples should be collected in wide-mouth glass jars supplied by the laboratory.

5. Samples may be further composited in the field or submitted to the laboratory to be composited.

<u>Sampling Solids in Containers</u>

1. This sampling method may apply to sampling drums.
2. Determine the minimum number of sampling points (ie containers to be sampled) by taking the square root of the number of containers and adding one (1).
3. Collect a composite sample at each sampling point by withdrawing samples, in equal amounts through at least three (3) different points through the top of the container, to points diagonally opposite the point of entry. Samples should be collected in wide-mouth glass jars supplied by the laboratory.
4. Samples may be further composited in the field or submitted to the laboratory to be composited.

8.0 ON-SITE WASTE TRANSPORTATION

ESI's approach to transporting the materials from the magazines was designed around the most efficient equipment available using only DOT compliant and properly licensed/endorsed drivers. ESI will require the use the DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Materials), for documenting and recording operator daily serviceability inspections of transport vehicles and equipment and this will be a requirement in the ESI Transportation Standard Operating Procedure (SOP).

All transportation related operations will be in accordance with 49 CFR regarding the transportation of hazardous material. Understanding that multiple magazines will be unloaded daily supplying material to the destruction site; it is imperative that flexibility meet efficiency. Three (3) curtain-side enclosed trailers will be utilized to transport material. These curtain-side trailers provide a secure all-weather means to transport the various forms of packaging associated with the materials.

Empty trailers will be staged at each magazine while the Ottawa terminal tractor transports full trailers to the destruction site. Again, this tractor is unique in that the tractor can quickly couple and uncouple from a trailer in minutes allowing the flexibility needed for this project. Throughout the day, the Ottawa tractor will be dispatched as needed to pick-up and deliver full and empty curtain-side trailers. Trailers coming from the magazine area in route to the destruction site will be manifested documenting the magazine number, type of package and quantity. This document will be retained as a record of the material removed from each individual magazine. This information is for accountability to document how much material was actually removed from each magazine throughout the course of the destruction activities. It is not intended for verification of invoicing. Net explosive weight used for invoicing purposes will be determined at the Area-I destruction site using a certified scale.

A designated and pre-determined route for material transportation will be strictly adhered to from each magazine area to the destruction site. This route will be reviewed and agreed upon with LMD prior to beginning the removal and destruction process.

9.0 RECORDKEEPING

ESI will maintain training records and transportation and offsite disposal records. Transportation and offsite disposal records include:

- Profiles and associated characterization data;
- Manifests, LDR notifications/certifications (for hazardous waste); and
- Offsite facility waste receipts, certificates of disposal/destruction.

10.0 DISPOSAL/RECYCLING FACILITIES

10.1 MEKEEBO LANDFILL

Description: Type III C&D/Woodwaste Landfill;
Type III Separation and Woodwaste Processing

Address:

8905 Dixie Blanchard Road
Shreveport, LA 71107

Solid Waste Facility No. D-017-12376

Agency Interest No. 117009

Solid Waste Permit No. P-0381

10.2 WEBSTER PARISH LANDFILL

Description: Type I/II Landfill

Address:

493 Landfill Road
Minden, LA 70055

Solid Waste Facility No. D-119-1916

Agency Interest No. 85534

Solid Waste Permit No. P-0165R1

11.0 REFERENCES

The following references were used in creating this WMP:

EPA Memorandum, "*Request for Approval of a Time-Critical Removal at the Explo Systems, Inc. Site*" signed June 28, 2014

ATTACHMENT A

SAFETY DATA SHEET – M6 PROPELLANT

M6

FORMULATION:

Nitrocellulose	87.00 +/- 2.00
Dinitrotoluene	10.00 +/- 2.00
Dibutyl Phthalate	3.00 +/- 1.00
Diphenylamine	1.00 +/- 0.20/0.10 added
Potassium sulfate	1.00 +/- 0.30 added

SHAPE

Multi-perforated cylinder

COLOR

Exterior: Yellow, light green, medium green, dark green, black green, bright blue (M119A2). Interior: Yellow to black green grains: Same as exterior. Bright blue grains: Green

DIMENSIONS

Usage	Length (in)	Dia. (in)	Perf Dia. (in)	Web Inner (in)	Web Outer (in)	Avg. Web (in)	Form
75MM	0.424	0.256	0.018	0.0525	0.0485	0.0505	cylinder
76MM	0.568	0.32	0.028	0.065	0.053	0.059	cylinder
90MM	0.667	0.394	0.037	0.072	0.0695	0.0708	cylinder
120MM	0.929	0.544	0.047	0.104	0.0975	0.1008	cylinder
155MM	0.732	0.3142	0.0293	0.0548	0.0584	0.0566	cylinder
240MM	0.9287	0.3989	0.0388	0.0699	0.0722	0.0711	cylinder
280MM	0.9567	0.402	0.0386	0.0722	0.0709	0.0716	cylinder

M6 Propellant for 40mm:

M6 Propellant for 75mm:

M6 Propellant for 76MM:

M6 Propellant for 90MM:

M6 Propellant for 155MM:

Photo depicts typical color changes noted with M6 propellant over time (newest to oldest, left to right). Top of grain is shown on far right. Color is an indication of age, not stability. Only a chemical analysis can determine the stability of any propellant.

M6 Propellant for 155mm (M119A2)

Photo depicts the bright blue color change that commonly occurs in the M6 propellant in the M119A2 propelling charges stored in Southwest Asia. This phenomenon has only been seen in M6 propellant in M119A2 propelling charge "Y" lots. This appears to be a surface phenomenon as when the grain is split (right) the normal green color of the propellant is present. The color change has no correlation to diminished stability.

M6 Propellant for 175MM:

M6 Propellant for 240MM:

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M6+2

FORMULATION:

Nitrocellulose	87.00 +/- 2.00
Dinitrotoluene	10.00 +/- 2.00
Dibutyl Phthalate	3.00 +/- 1.00
Diphenylamine	1.00 +/- 0.20 added
Potassium sulfate	2.00 +/- 0.30 added

SHAPE

Multi-perforated cylinder

COLOR

Exterior: Yellow, light green, medium green, dark green.

Interior: Same as exterior.

DIMENSIONS

Usage	Length (in)	Dia. (in)	Perf Dia. (in)	Web Inner (in)	Web Outer (in)	Avg. Web (in)	Form
76MM	0.568	0.32	0.028	0.065	0.053	0.059	cylinder
5-INH, 54 CAL	0.929	0.64	0.062	0.116	0.111	0.114	cylinder

M6+2 Propellant for 76MM:

M6+2 Propellant for 5”/54:

ATTACHMENT B

SAFETY DATA SHEET – CLEAN BURNING IGNITOR (CBI)

CBI

CLEAN BURNING IGNITOR (CBI)

FORMULATION:

Nitrocellulose	98.0 min.
Diphenylamine	1.50 +/- 1.0
Potassium Nitrate	0.1max.
Graphite glaze	0.2 added

SHAPE

Single perforated flake

COLOR

Yellow, green, blue

DIMENSIONS

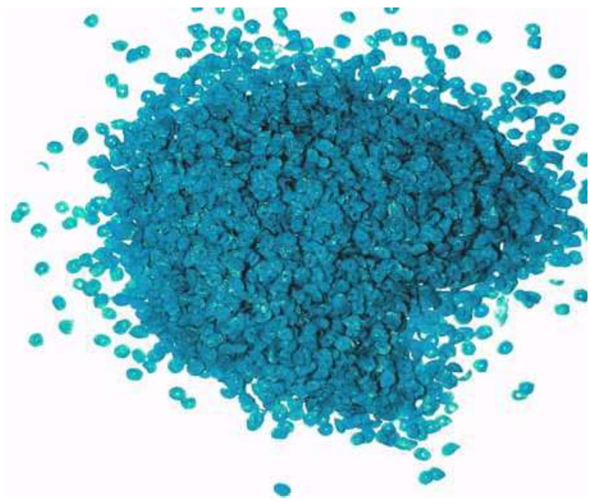
Usage	Length (in)	Diameter (in)	Perf Diameter (in)	Inner (in)	Web Outer (in)	Average (in)	# of Perfs	Shape
155MM	0.0040	0.0800	0.0180	n/a	n/a	n/a	1	flake
Igniter Charge	0.0040	0.0550	0.0100	n/a	n/a	n/a	1	flake

CBI Flake:

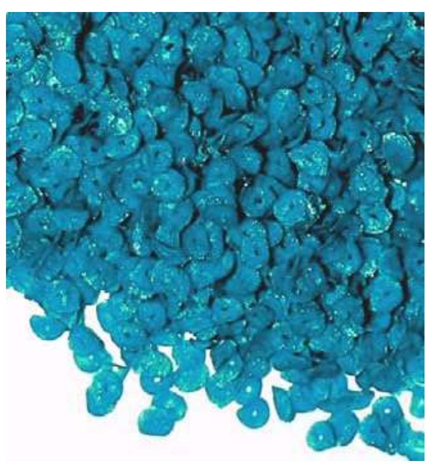
Photos depict the color variation normally seen with CBI Flake Propellant

CLOSE-UP OF CBI FLAKE

Blue Colored CBI Flake: A blue color change has been observed in the CBI igniter propellant in the M119A2 propelling charges stored in Southwest Asia. This phenomenon has only been seen in the M119A2 propelling charge "Y" lots. The color change has no correlation to diminished stability.



Actual size



Close-up of Blue CBI

ATTACHMENT C

EXCERPT OF LABORATORY REPORT FOR PAS ASH

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 05/05/2016

GCAL Report 216042538

Project Camp Minden-M6 Destruction

Deliver To	***Additional Recipients***
Dean Schellhase Explosive Service International 9985 Barringer Foreman Rd. Baton Rouge, LA 70809 225-275-2152	NONE

PJLA Testing DoD ELAP

ISO 17025

NELAP ACCREDITED TNI LABORATORY

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
P	RPD between primary and confirmation result is greater than 40

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature
GCAL Report 216042538

Certifications

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Explosive Service International **Report:** 216042538

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 1311/8260B analysis, a dilution factor of 40 was performed for sample 21604253801 (ASH). The reporting limits are at or below the regulatory limits at this dilution.

METALS

In the EPA 1311/6020A analysis, sample 21604253801 (ASH) was prepped and analyzed at a dilution. The reporting limits are at or below the regulatory limits at this dilution.

In the EPA 1311/6020A analysis for prep batch 584803, Barium was detected in the method blank at a concentration > LOQ. This analyte was not detected at a reportable concentration in the associated sample.

CONVENTIONALS

The Flashpoint analysis was performed by EPA Method 1010; although, solid samples do not fall within the scope of this method. These samples could not be analyzed by EPA Method 1030.

In the EPA 7.3.3.2/9034 analysis for prep batch 584758, the LCS recovery is above the upper control limit. Reactivity Sulfide was not detected in the sample.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21604253801	ASH	Solid	04/24/2016 10:00	04/25/2016 13:20

Test Summary

GCAL ID	Client ID	Matrix	Procedure
21604253801	ASH	S	EPA 1010 Flashpoint Solid
21604253801	ASH	S	Sec. 7.3.3.2 Reactivity Prep
21604253801	ASH	S	Sec. 7.3.4.2 Reactivity Prep
21604253801	ASH	S	EPA 9034 Reactivity Sulfide Solid
21604253801	ASH	S	EPA 9045 pH
21604253801	ASH	S	EPA 9012A Reactivity Cyanide Solid
21604253801	ASH	S	EPA 1311/6020A TCLP
21604253801	ASH	S	EPA 6020A TCLP Prep
21604253801	ASH	S	EPA 7470A TCLP
21604253801	ASH	S	EPA 7470A TCLP Prep
21604253801	ASH	S	EPA 8270C TCLP
21604253801	ASH	S	EPA 3510C TCLP Prep
21604253801	ASH	S	EPA 8260B TCLP
21604253801	ASH	S	EPA 8260B TCLP Prep
21604253801	ASH	S	TCLP Procedure Soils

Manual Integrations

No Manual Integrations Performed By GCAL.

Summary of Compounds Detected

ASH	**Collect Date**	04/24/2016 10:00	**GCAL ID**	21604253801
	Receive Date	04/25/2016 13:20	**Matrix**	Solid

EPA 1311/6020A

CAS#	Parameter	Result	LOQ	Reg Limit	Units
7440-47-3	Chromium	0.66	0.10	5	mg/L
7439-92-1	Lead	0.23	0.10	5	mg/L

EPA 9045D

CAS#	Parameter	Result	LOQ	Reg Limit	Units
pH	pH	10.5	1.00		pH unit

General Chemistry

ASH	Collect Date	04/24/2016 10:00	GCAL ID	21604253801
	Receive Date	04/25/2016 13:20	Matrix	Solid

EPA 1010A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	05/04/2016 15:45	RXJ	585482

CAS#	Parameter	Result	LOQ	Reg Limit	Units
000000-01-3	FlashPoint	>170	50		Deg F

EPA 9012B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
04/26/2016 16:30	584757	EPA 7.3.3.2	1	04/27/2016 10:05	SMR	584884

CAS#	Parameter	Result	LOQ	Reg Limit	Units
57-12-5R	Reactivity Cyanide	<250	250		mg/kg

EPA 9034

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
04/26/2016 16:30	584758	EPA 7.3.4.2	1	04/28/2016 16:37	RYC	585043

CAS#	Parameter	Result	LOQ	Reg Limit	Units
18496-25-8R	Reactivity Sulfide	<250	250		mg/kg

EPA 9045D

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	04/25/2016 15:35	MOS	584730

CAS#	Parameter	Result	LOQ	Reg Limit	Units
pH	**pH**	**10.5**	**1.00**		**pH unit**

General Chemistry QC Summary

Analytical Batch 585407	Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	LCS585407 1566970 LCS NA 05/03/2016 11:10 Solid			
EPA 1010A		Spike Added	Result	%R	Control Limits%R
FlashPoint	000000-01-3	90	91	101	97.8 - 102.2

Analytical Batch 585043 **Prep Batch** 584758 **Prep Method** EPA 7.3.4.2	Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	MB584758 1563932 MB 04/26/2016 16:30 04/28/2016 16:37 Solid		LCS584758 1563933 LCS 04/26/2016 16:30 04/28/2016 16:37 Solid			
EPA 9034		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R
Reactivity Sulfide	18496-25-8R	<250	250	1000	1226	123*	47 - 120

Analytical Batch 585043 **Prep Batch** 584758 **Prep Method** EPA 7.3.4.2	Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	RO-V251506D-0416 21604200804 SAMPLE 04/26/2016 16:30 04/28/2016 16:37 Solid		1561914DUP 1563934 DUP 04/26/2016 16:30 04/28/2016 16:37 Solid		
EPA 9034		Units Result	mg/kg LOQ	Result	RPD	RPD Limit
Reactivity Sulfide	18496-25-8R	0	250	0	0	25

Analytical Batch 584884 **Prep Batch** 584757 **Prep Method** EPA 7.3.3.2	Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	MB584757 1563929 MB 04/26/2016 16:30 04/27/2016 09:56 Solid		LCS584757 1563930 LCS 04/26/2016 16:30 04/27/2016 09:58 Solid			
EPA 9012B		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R
Reactivity Cyanide	57-12-5R	<250	250	250	20.2	8	1 - 25

Analytical Batch 584884 **Prep Batch** 584757 **Prep Method** EPA 7.3.3.2	Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	RO-V251506D-0416 21604200804 SAMPLE 04/26/2016 16:30 04/27/2016 10:01 Solid		1561914DUP 1563931 DUP 04/26/2016 16:30 04/27/2016 10:03 Solid		
EPA 9012B		Units Result	mg/kg LOQ	Result	RPD	RPD Limit
Reactivity Cyanide	57-12-5R	0.0	250	0.0	0	20

Analytical Batch 584730	Client ID GCAL ID Sample Type Prep Date Analysis Date Matrix	RO-V251506D-0416 21604200804 SAMPLE NA 04/25/2016 15:35 Solid		1561914DUP 1563840 DUP NA 04/25/2016 15:35 Solid		
EPA 9045D		Units Result	pH unit LOQ	Result	RPD	RPD Limit
pH	pH	8.44	1.00	8.45	0	6

I

INORGANIC ANALYSIS DATA SHEET

Report No:	216042538	Client Sample ID:	ASH
Collect Date:	04/24/16 Time: 1000	GCAL Sample ID:	21604253801
Matrix:	Solid % Solids: NA	Instrument ID:	ICPMS2
Sample Amt:	5 mL	Lab File ID:	2160427A_MS2.b\196SMPL.d
Prep Vol.:	50 (mL)	Dilution Factor:	10 Analyst: LWZ
Prep Date:	04/26/16	Analysis Date:	04/27/16 Time: 1926
Prep Batch:	584803	Analytical Batch:	584901
Prep Method:	1311/3010A	Analytical Method:	EPA 1311/6020A

ANALYTE	RESULT	UNITS	Q	DL	LOQ
Arsenic	0.10	mg/L	U	0.025	0.10
Barium	0.10	mg/L	U	0.025	0.10
Cadmium	0.10	mg/L	U	0.025	0.10
Chromium	0.66	mg/L		0.025	0.10
Lead	0.23	mg/L		0.025	0.10
Selenium	0.10	mg/L	U	0.025	0.10
Silver	0.10	mg/L	U	0.025	0.10

FORM I - IN

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	216042538	Client Sample ID:	ASH
Collect Date:	04/24/16 Time: 1000	GCAL Sample ID:	21604253801
Matrix:	Solid % Moisture: NA	Instrument ID:	MSSV7
Sample Amt:	200 mL	Lab File ID:	2160428/b8031
Injection Vol.:	1.0 (µL)	GC Column:	RTX-5MS-30 ID .25 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	1 Analyst: BLY
Prep Date:	04/27/16	Analysis Date:	04/28/16 Time: 1352
Prep Batch:	584872	Analytical Batch:	584987
Prep Method:	1311/3510	Analytical Method:	EPA 1311/8270C

CONCENTRATION UNITS: mg/L

CAS	ANALYTE	RESULT	Q	DL	LOQ
106-46-7	1,4-Dichlorobenzene	<0.0500	U	0.00250	0.050
95-95-4	2,4,5-Trichlorophenol	<0.0500	U	0.00250	0.050
88-06-2	2,4,6-Trichlorophenol	<0.0500	U	0.00250	0.050
121-14-2	2,4-Dinitrotoluene	<0.0100	U	0.00250	0.010
1319-77-3	Cresols	<0.1000	U	0.00500	0.100
118-74-1	Hexachlorobenzene	<0.0100	U	0.00250	0.010
87-68-3	Hexachlorobutadiene	<0.0500	U	0.00250	0.050
67-72-1	Hexachloroethane	<0.0500	U	0.00250	0.050
1319-77-3MP	m,p-Cresol	<0.0500	U	0.00250	0.050
98-95-3	Nitrobenzene	<0.0500	U	0.00250	0.050
95-48-7	o-Cresol	<0.0500	U	0.00250	0.050
87-86-5	Pentachlorophenol	<0.0500	U	0.00250	0.050
110-86-1	Pyridine	<0.0500	U	0.00750	0.050

FORM I SV-1

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	216042538	Client Sample ID:	ASH
Collect Date:	04/24/16 Time: 1000	GCAL Sample ID:	21604253801
Matrix:	Solid % Moisture: NA	Instrument ID:	MSV12
Sample Amt:	5 mL	Lab File ID:	2160429/n8298
Injection Vol.:	1.0 (µL)	GC Column:	RTX-VMS-30 ID .25 (mm)
Dilution Factor:	40 Analyst: JCK	Analytical Batch:	585103
Analysis Date:	04/29/16 Time: 1820	Analytical Method:	EPA 1311/8260B

CONCENTRATION UNITS: mg/L

CAS	***ANALYTE***	***RESULT***	***Q***	***DL***	***LOQ***
75-35-4	1,1-Dichloroethene	<0.040	U	0.00800	0.040
107-06-2	1,2-Dichloroethane	<0.040	U	0.00800	0.040
78-93-3	2-Butanone	<1.00	U	0.00800	1.00
71-43-2	Benzene	<0.040	U	0.00800	0.040
56-23-5	Carbon tetrachloride	<0.040	U	0.010	0.040
108-90-7	Chlorobenzene	<0.040	U	0.00800	0.040
67-66-3	Chloroform	<0.040	U	0.00800	0.040
127-18-4	Tetrachloroethene	<0.040	U	0.00800	0.040
79-01-6	Trichloroethene	<0.040	U	0.00800	0.040
75-01-4	Vinyl chloride	<0.040	U	0.00800	0.040

FORM I VOA

ATTACHMENT D

EPA LETTER DATED 15 APRIL 2016

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202 – 2733

April 15, 2016

Mr. Chris Alderete, Manufacturing and Environmental Services
Republic Services
Post Office Box 1139
2815 State Highway 42 N
Kilgore, Texas 75663
caderete@republicservices.com

Letter of Authorization
Special Waste Profile – Empty Containers
Louisiana State Military Department
Camp Minden M6 Destruction
Minden, Webster Parish, Louisiana

Dear Mr. Alderete:

It is our understanding that Republic Services has requested the EPA to confirm that the M6 and CBI propellant packaging containers from Camp Minden comply with 40 CFR 261.7(b)(1). According to the hazardous waste regulations, these empty containers are exempt from the regulations. Empty containers, as defined by 40 CFR 261.7(b)(1), may be disposed of as industrial solid waste.

In accordance with 40 CFR 261.7(b)(1), a container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in §§ 261.31 or 261.33(e) is empty if:

(i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, *and*
(ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, *or*
(iii) **(A)** No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 119 gallons in size; or
(B) No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 119 gallons in size.

I hereby authorize that the containers coming from the Camp Minden M6 Destruction Project are 40 CFR 261.7(b)(1) as defined by the above definition. Should you have any questions or require additional information, please contact the me at 214-665-6773.

Sincerely,

Gregory E. Fife
Federal On-Scene Coordinator

ATTACHMENT E

EXCERPT OF LABORATORY REPORT FOR CBC ASH

NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 04/13/2017

GCAL Report 217040457

Project M6 Destruction Project

Deliver To	*Additional Recipients*
Dean Schellhase Explosive Service International 9985 Barringer Foreman Rd. Baton Rouge, LA 70809 225-275-2152	Maghee Shaw, SEMS, Inc.

PJLA
Testing
DoD ELAP

ISO
17025

NELAP ACCREDITED
TNI
LABORATORY

Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
NO	Indicates the sample did not ignite when preliminary test performed for EPA Method 1030
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*****	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % diference for the serial dilution is > 10%
P	RPD between primary and confirmation result is greater than 40

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Curtis Ekker/Mgr of Data Del
Authorized Signature
GCAL Report 217040457

Certifications

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Explosive Service International **Report:** 217040457

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

VOLATILES MASS SPECTROMETRY

In the EPA 1311/8260B analysis, a dilution factor of 40 was performed for sample 21704045701 (CHAMBER ASH) . The reporting limits are at or below the regulatory limits at this dilution.

SEMI-VOLATILES MASS SPECTROMETRY

In the EPA 1311/8270C analysis, sample 21704045701 (CHAMBER ASH) was analyzed at a dilution. The reporting limits are at or below the regulatory limit at this dilution. The recoveries for the surrogates are reported as D, diluted out.

METALS

In the EPA 1311/6020A analysis, sample 21704045701 (CHAMBER ASH) was prepped and analyzed at a dilution. The reporting limits are at or below the regulatory limits at this dilution.

GENERAL CHEMISTRY

The Flashpoint analysis for sample 21704045701 (CHAMBER ASH) was performed by EPA Method 1010; although, solid samples do not fall within the scope of this method. This sample could not be analyzed by EPA Method 1030.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21704045701	CHAMBER ASH	Solid	04/03/2017 09:00	04/04/2017 09:25

Test Summary

GCAL ID	Client ID	Matrix	Procedure
21704045701	CHAMBER ASH	S	EPA 1010 Flashpoint Solid
21704045701	CHAMBER ASH	S	Sec. 7.3.3.2 Reactivity Prep
21704045701	CHAMBER ASH	S	Sec. 7.3.4.2 Reactivity Prep
21704045701	CHAMBER ASH	S	EPA 8330B Solid
21704045701	CHAMBER ASH	S	EPA 8330B Prep Solid
21704045701	CHAMBER ASH	S	EPA 9034 Reactivity Sulfide Solid
21704045701	CHAMBER ASH	S	EPA 9045 pH
21704045701	CHAMBER ASH	S	EPA 9012A Reactivity Cyanide Solid
21704045701	CHAMBER ASH	S	EPA 1311/6020A TCLP
21704045701	CHAMBER ASH	S	EPA 6020A TCLP Prep
21704045701	CHAMBER ASH	S	EPA 7470A TCLP
21704045701	CHAMBER ASH	S	EPA 7470A TCLP Prep
21704045701	CHAMBER ASH	S	EPA 8270C TCLP
21704045701	CHAMBER ASH	S	EPA 3510C TCLP Prep
21704045701	CHAMBER ASH	S	EPA 8260B TCLP
21704045701	CHAMBER ASH	S	EPA 8260B TCLP Prep
21704045701	CHAMBER ASH	S	TCLP Procedure Soils

Manual Integrations

No Manual Integrations Performed By GCAL.

Summary of Compounds Detected

CHAMBER ASH	Collect Date	04/03/2017 09:00	GCAL ID	21704045701
	Receive Date	04/04/2017 09:25	Matrix	Solid

EPA 1311/6020A

CAS#	Parameter	Result	LOQ	Reg Limit	Units
7440-39-3	Barium	0.43	0.10	100	mg/L
7440-47-3	Chromium	0.21	0.10	5	mg/L
7439-92-1	Lead	0.13	0.10	5	mg/L

EPA 9045D

CAS#	Parameter	Result	LOQ	Reg Limit	Units
pH	pH	12.0	1.00		pH unit

General Chemistry

CHAMBER ASH	Collect Date	04/03/2017 09:00	GCAL ID	21704045701
	Receive Date	04/04/2017 09:25	Matrix	Solid

EPA 1010A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	04/07/2017 16:40	DMT	607980

CAS#	Parameter	Result	LOQ	Reg Limit	Units
000000-01-3	Flash point	>170	50		Deg F

EPA 9012B

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
04/08/2017 14:00	607916	EPA 7.3.3.2	1	04/10/2017 14:32	SOW	608066

CAS#	Parameter	Result	LOQ	Reg Limit	Units
57-12-5R	Reactivity Cyanide	<250	250		mg/kg

EPA 9034

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
04/08/2017 14:00	607917	EPA 7.3.4.2	1	04/10/2017 10:20	JEM	608067

CAS#	Parameter	Result	LOQ	Reg Limit	Units
18496-25-8R	Reactivity Sulfide	<250	250		mg/kg

EPA 9045D

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
NA	NA	NA	1	04/05/2017 14:00	DLS	607798

CAS#	Parameter	Result	LOQ	Reg Limit	Units
pH	**pH**	**12.0**	**1.00**		**pH unit**

General Chemistry QC Summary

Analytical Batch 607980	Client ID	LCS607980			
	GCAL ID	1672580			
	Sample Type	LCS			
	Prep Date	NA			
	Analysis Date	04/07/2017 11:12			
	Matrix	Solid			
EPA 1010A		Spike Added	Result	%R	Control Limits%R
Flash point	000000-01-3	90	91	101	97.8 - 102.2

Analytical Batch 607980	Client ID	SAV 14002		1670100DUP		
	GCAL ID	21703311601		1672581		
	Sample Type	SAMPLE		DUP		
	Prep Date	NA		NA		
	Analysis Date	04/07/2017 11:41		04/07/2017 11:41		
	Matrix	Solid		Solid		
EPA 1010A		Units Result	Deg F LOQ	Result	RPD	RPD Limit
Flash point	000000-01-3	160	50	159	1	25

Analytical Batch 608067	Client ID	MB607917		LCS607917			
Prep Batch 607917	GCAL ID	1672270		1672271			
Prep Method EPA 7.3.4.2	Sample Type	MB		LCS			
	Prep Date	04/08/2017 14:00		04/08/2017 14:00			
	Analysis Date	04/10/2017 10:20		04/10/2017 10:20			
	Matrix	Solid		Solid			
EPA 9034		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R
Reactivity Sulfide	18496-25-8R	<250	250	1000	930	93	47 - 135

Analytical Batch 608067	Client ID	SAV 14002		1670100DUP		
Prep Batch 607917	GCAL ID	21703311601		1672272		
Prep Method EPA 7.3.4.2	Sample Type	SAMPLE		DUP		
	Prep Date	04/08/2017 14:00		04/08/2017 14:00		
	Analysis Date	04/10/2017 10:20		04/10/2017 10:20		
	Matrix	Solid		Solid		
EPA 9034		Units Result	mg/kg LOQ	Result	RPD	RPD Limit
Reactivity Sulfide	18496-25-8R	0	250	0	0	25

Analytical Batch 608066	Client ID	MB607916		LCS607916			
Prep Batch 607916	GCAL ID	1672267		1672268			
Prep Method EPA 7.3.3.2	Sample Type	MB		LCS			
	Prep Date	04/08/2017 14:00		04/08/2017 14:00			
	Analysis Date	04/10/2017 14:22		04/10/2017 14:25			
	Matrix	Solid		Solid			
EPA 9012B		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R
Reactivity Cyanide	57-12-5R	<250	250	250	5.6	2	1 - 25

Analytical Batch 608066	Client ID	SAV 14002		1670100DUP		
Prep Batch 607916	GCAL ID	21703311601		1672269		
Prep Method EPA 7.3.3.2	Sample Type	SAMPLE		DUP		
	Prep Date	04/08/2017 14:00		04/08/2017 14:00		
	Analysis Date	04/10/2017 14:27		04/10/2017 14:29		
	Matrix	Solid		Solid		
EPA 9012B		Units Result	mg/kg LOQ	Result	RPD	RPD Limit
Reactivity Cyanide	57-12-5R	0.0	250	0.0	0	20

General Chemistry QC Summary

Analytical Batch 607798		Client ID	CHAMBER ASH		1671185DUP		
		GCAL ID	21704045701		1671581		
		Sample Type	SAMPLE		DUP		
		Prep Date	NA		NA		
		Analysis Date	04/05/2017 14:00		04/05/2017 14:00		
		Matrix	Solid		Solid		
EPA 9045D			Units Result	pH unit LOQ	Result	RPD	RPD Limit
pH	pH		12.0	1.00	12.0	0	6

I

INORGANIC ANALYSIS DATA SHEET

Report No:	217040457	Client Sample ID:	CHAMBER ASH
Collect Date:	04/03/17 Time: 0900	GCAL Sample ID:	21704045701
Matrix:	Solid % Solids: NA	Instrument ID:	ICPMS2
Sample Amt:	5 mL	Lab File ID:	2170407A_MS2.b\051SMPL.d
Prep Vol.:	50 (mL)	Dilution Factor:	10 Analyst: AWG
Prep Date:	04/06/17	Analysis Date:	04/07/17 Time: 1217
Prep Batch:	607823	Analytical Batch:	607928
Prep Method:	1311/3010A	Analytical Method:	EPA 1311/6020A

ANALYTE	*RESULT*	*UNITS*	*Q*	*DL*	*LOQ*
Arsenic	0.10	mg/L	U	0.025	0.10
Barium	0.43	mg/L		0.025	0.10
Cadmium	0.10	mg/L	U	0.025	0.10
Chromium	0.21	mg/L		0.025	0.10
Lead	0.13	mg/L		0.025	0.10
Selenium	0.10	mg/L	U	0.025	0.10
Silver	0.10	mg/L	U	0.025	0.10

FORM I - IN

I

INORGANIC ANALYSIS DATA SHEET

Report No:	217040457	Client Sample ID:	CHAMBER ASH
Collect Date:	04/03/17 Time: 0900	GCAL Sample ID:	21704045701
Matrix:	Solid % Solids: NA	Instrument ID:	HYDRA
Sample Amt:	20 mL	Lab File ID:	HYDRA
Prep Vol.:	20 (mL)	Dilution Factor:	1 Analyst: JLN
Prep Date:	04/06/17	Analysis Date:	04/07/17 Time: 1011
Prep Batch:	607824	Analytical Batch:	607869
Prep Method:	EPA 1311/7470A	Analytical Method:	EPA 1311/7470A

ANALYTE	*RESULT*	*UNITS*	*Q*	*DL*	*LOQ*
Mercury	0.0020	mg/L	U	0.000070	0.0020

FORM I - IN

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	217040457			Client Sample ID:	CHAMBER ASH
Collect Date:	04/03/17	Time:	0900	GCAL Sample ID:	21704045701
Matrix:	Solid	% Moisture:	NA	Instrument ID:	MSV14
Sample Amt:	5	mL		Lab File ID:	2170406/b1815
Injection Vol.:	1.0		(µL)	GC Column:	RTX-VMS-30 ID .25 (mm)
Dilution Factor:	40	Analyst:	JCK	Analytical Batch:	607831
Analysis Date:	04/06/17	Time:	1700	Analytical Method:	EPA 1311/8260B

CONCENTRATION UNITS: mg/L

CAS	*ANALYTE*	*RESULT*	*Q*	*DL*	*LOQ*
75-35-4	1,1-Dichloroethene	<0.040	U	0.00800	0.040
107-06-2	1,2-Dichloroethane	<0.040	U	0.00800	0.040
78-93-3	2-Butanone	<1.00	U	0.00800	1.00
71-43-2	Benzene	<0.040	U	0.00800	0.040
56-23-5	Carbon tetrachloride	<0.040	U	0.010	0.040
108-90-7	Chlorobenzene	<0.040	U	0.00800	0.040
67-66-3	Chloroform	<0.040	U	0.00800	0.040
127-18-4	Tetrachloroethene	<0.040	U	0.00800	0.040
79-01-6	Trichloroethene	<0.040	U	0.00800	0.040
75-01-4	Vinyl chloride	<0.040	U	0.00800	0.040

FORM I VOA

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Report No:	217040457	Client Sample ID:	CHAMBER ASH
Collect Date:	04/03/17 Time: 0900	GCAL Sample ID:	21704045701
Matrix:	Solid % Moisture: NA	Instrument ID:	MSSV6
Sample Amt:	200 mL	Lab File ID:	2170407/h4630
Injection Vol.:	1.0 (µL)	GC Column:	RTX-5MS-30 ID .25 (mm)
Prep Final Vol.:	1000 (µL)	Dilution Factor:	10 Analyst: DLB
Prep Date:	04/06/17	Analysis Date:	04/07/17 Time: 1345
Prep Batch:	607819	Analytical Batch:	607936
Prep Method:	1311/3510	Analytical Method:	EPA 1311/8270C

CONCENTRATION UNITS: mg/L

CAS	ANALYTE	RESULT	Q	DL	LOQ
106-46-7	1,4-Dichlorobenzene	<0.5000	U	0.025	0.500
95-95-4	2,4,5-Trichlorophenol	<0.5000	U	0.025	0.500
88-06-2	2,4,6-Trichlorophenol	<0.5000	U	0.025	0.500
121-14-2	2,4-Dinitrotoluene	<0.1000	U	0.025	0.100
1319-77-3	Cresols	<1.00	U	0.050	1.00
118-74-1	Hexachlorobenzene	<0.1000	U	0.025	0.100
87-68-3	Hexachlorobutadiene	<0.5000	U	0.025	0.500
67-72-1	Hexachloroethane	<0.5000	U	0.025	0.500
1319-77-3MP	m,p-Cresol	<0.5000	U	0.025	0.500
98-95-3	Nitrobenzene	<0.5000	U	0.025	0.500
95-48-7	o-Cresol	<0.5000	U	0.025	0.500
87-86-5	Pentachlorophenol	<0.5000	U	0.025	0.500
110-86-1	Pyridine	<0.5000	U	0.075	0.500

FORM I SV-1

1D

ORGANICS ANALYSIS DATA SHEET

Report No:	217040457	Client Sample ID:	CHAMBER ASH
Collect Date:	04/03/17 Time: 0900	GCAL Sample ID:	21704045701
Matrix:	Solid % Moisture: NA	Instrument ID:	HPLC3A
Sample Amt:	10 g	Lab File ID:	2170410\A19
Injection Vol.:	1.0 (µL)	GC Column:	ID (mm)
Prep Final Vol.:	40000 (µL)	Dilution Factor:	1 Analyst: DLB
Prep Date:	04/07/17	Analysis Date:	04/10/17 Time: 1644
Prep Batch:	607801	Analytical Batch:	608048
Prep Method:	8330A	Analytical Method:	EPA 8330B

CONCENTRATION UNITS: ug/kg

CAS	ANALYTE	RESULT	Q	DL	LOQ
99-35-4	1,3,5-Trinitrobenzene	<200	U	42.0	200
99-65-0	1,3-Dinitrobenzene	<200	U	77.0	200
118-96-7	2,4,6-Trinitrotoluene	<200	U	51.0	200
121-14-2	2,4-Dinitrotoluene	<200	U	99.0	200
606-20-2	2,6-Dinitrotoluene	<200	U	61.0	200
35572-78-2	2-Amino-4,6-dinitrotoluene	<200	U	98.0	200
88-72-2	2-Nitrotoluene	<200	U	64.0	200
618-87-1	3,5-Dinitroaniline	<200	U	83.0	200
99-08-1	3-Nitrotoluene	<200	U	125	200
19406-51-0	4-Amino-2,6-dinitrotoluene	<200	U	77.0	200
99-99-0	4-Nitrotoluene	<200	U	77.0	200
2691-41-0	HMX	<200	U	26.0	200
98-95-3	Nitrobenzene	<200	U	36.0	200
55-63-0	Nitroglycerin	<200	U	74.0	200
78-11-5	Pentaerythritol Tetranitrate	<200	U	122	200
121-82-4	RDX	<200	U	18.0	200
479-45-8	Tetryl	<200	U	41.0	200

FORM I ORG-1

ATTACHMENT F

COMMUNITY AIR SAMPLING PLAN

Corporate Office
9985 Baringer Foreman Rd.
Baton Rouge, LA 70809

April 26, 2017

SGM Winston Matejowsky
Project Coordinator
Louisiana Military Department
100 Louisiana Blvd.
Camp Minden, LA 71055

Ref: Post Removal Activity – Community Air Sampling M6 Destruction Project, Camp Minden, LA

Dear Sir,

Attached is a proposed sampling approach for the four (4) community air monitoring locations where the CTEH trailers have been located throughout the duration of the M6 removal action at Camp Minden. It is important to remember that there were no recorded releases from our destruction/removal action recorded through any of the monitoring and sampling.

We are requesting an expedient review of this portion of the closure plan to avoid unnecessary cost to operate the community air monitoring and sampling trailers any longer than necessary in support of this project. We are working on the comprehensive closure plan to which this "Attachment A" will be included. If you have any questions on the attached letter or need additional information please let us know.

Sincerely,
Explosive Service International, Inc.

Dean S. Schellhase
Project Manager
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cc: William J. Poe

Attachment

Corporate Office
9985 Baringer Foreman Rd.
Baton Rouge, LA 70809

ATTACHMENT A

Post Removal – Community Air Sampling Plan

M6 Destruction Project Camp Minden

Minden, LA

April 26, 2017

Re: M6 Destruction Project Post-Acceptance Sampling Clarification

CTEH is proposing the following information and clarification concerning the post-acceptance sampling event planned following the completion of burn activities in the contained burn unit located at Camp Minden, Louisiana.

The purpose of post-acceptance sampling is defined in the approved CTEH® Quality Assurance Sampling Plan (QASP) data quality objectives (QASP, Appendix A) accepted prior to project commencement[1]:

- *"If air sampling results during Contained Burn Unit operations and post-acceptance testing are comparable to initial acceptance testing (baseline), then it will be determined that the Contained Burn System operations were sufficient for removing hazardous chemicals in the environment.*
- *If air sampling results during post-acceptance testing are comparable to initial acceptance testing, then it will be determined that the Contained Burn System operations did not pose an increased human-health or environmental risk."*

Sampling

The sampling strategy for the pre-acceptance and post-burn phases was derived from the "EPA Camp Minden Baseline Air and Soil QASP" final version dated April 30, 2015. Section 3.2 states that samples be collected using two full sets of equipment over a three-day period rotated through the background locations. As CTEH® is only equipped with a single full set of equipment per location, acceptance sampling was divided into two weeks to match the sample quantity collected during the EPA baseline study using a single set of equipment.

As requested, we have changed the sampling to adjust the post-burn completion to a single full round of sampling, including corresponding quality control samples. The sampling strategy is outlined below.

Seven-day continuous monitoring for carbon dioxide, carbon monoxide, oxides of nitrogen, sulfur dioxide, and particulates less than 2.5 micron.

Day 1

6 – (4 field, 1 collocated field, 1 blank) SVOC by EPA TO-13
6 – (4 field, 1 collocated field, 1 blank) PM2.5 by 40 CFR 50
6 – (4 field, 1 collocated field, 1 blank) PM10 by 40 CFR 50
5 – (4 field, 1 duplicate field) VOC by EPA TO-15

[1] CTEH QASP, pdf page 43 of 60. Data quality objectives: Step 2.

Day 2
6 – (4 field, 1 collocated field, 1 blank) Dioxin/Furan by EPA TO-9A

Quality Assurance

Quality assurance and quality control objectives will continue to be governed by the processes provided in the CTEH® QASP and ESI QAPP.