INTERIM STATUS CLOSURE PLAN
OPEN BURN TREATMENT UNIT
TECHNICAL AREA 16-388 FLASH PAD

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1.0 INTRODUCTION

This closure plan describes the activities necessary to close the hazardous waste open burning treatment unit at Technical Area 16 (TA-16-388) at the Los Alamos National Laboratory (Facility), hereinafter referred to as the unit. The information provided in this closure plan addresses the closure requirements specified in the Code of Federal Regulations (CFR), Title 40, Part 265, Subparts G and P for hazardous waste thermal treatment units at the Facility under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act.

Until closure is complete and has been certified in accordance with Section 8.0 of this closure plan and 40 CFR § 265.115, a copy of the approved closure plan, any approved revisions, and closure activity documentation associated with the closure will be on file with hazardous waste compliance personnel at the Facility and at the U.S. Department of Energy (DOE) Los Alamos Site Office. Prior to closure of the unit, this closure plan may be amended in accordance with Section 4.3 of this closure plan and 40 CFR § 265.112(c), as necessary and appropriate, to provide, at a minimum, updated sampling and analysis plans and to incorporate updated decontamination technologies. Amended closure plans shall be submitted to the New Mexico Environment Department (Department) for approval prior to implementing closure decontamination and sampling activities.

2.0 DESCRIPTION OF UNIT TO BE CLOSED

This section provides an overview of past facility operations and waste management practices at the unit. It includes the location of the unit, a description of the unit, and past operational and waste management practices associated with it.

TA-16 is located in the southwestern quadrant of the Facility at the west end of the Pajarito Plateau near the foothills of the Jemez Mountains (*see* Figure 1). The unit was managed by the owner/operator's high explosives engineering personnel who are responsible for the safe treatment, storage, and handling of high explosives (HE) waste and HE contaminated waste generated by the HE production facilities.

2.1 Description of the Wastes Treated at the Unit

The wastes treated at the unit consisted of detonable quantities of high explosives (HE) waste (*i.e.*, bulk wet, dry HE) and HE contaminated wastes (*i.e.*, combustible and non-combustible solids, oils and solvents from equipment, water). HE-contaminated combustible solids include HE filter socks, paper, and rags; HE contaminated non-combustible solids include metal piping, equipment, and concrete.

2.2 Description of the Treatment Unit

The unit (*see* Figure 2) is comprised of a 22 foot by 22 foot concrete pad set on a 45-mil Hypalon liner that is six inches below the pad. The pad is curved upwards to ground level on all four sides and extends out two feet from the pad perimeter. The liner acts as secondary containment. The base of the concrete pad is 12 inches thick. The pad is slanted down toward the back concrete wall providing secondary containment for spills and stormwater run-on and run-off. Inset one foot from the edge of the concrete pad along the two sides and back is a three foot high, eight inch thick, integrally-poured concrete wall.

2.3 Description of Treatments Conducted at the Unit

The heat source for the unit consisted of three five feet long, forced-air, propane burners equipped with adjustable mounts. The burners were positioned around the pad and were used to burn the HE waste and HE contaminated waste. Configuration of the unit is shown in Figure 3.

He waste and HE contaminated waste were treated at the unit in the following ways. The movable steel supports on the pad were used to stage pieces of large HE-contaminated equipment treated at the unit. Steel pallets were positioned in the middle of the pad and the materials treated were placed directly on the pallets; all three burners were used to treat the HE contaminated equipment.

Smaller metal items were moved manually for treatment. These types of items were positioned and treated in a steel tray lined on the bottom with sand and on the sides with firebrick. Combustible HE contaminated wastes were stacked on the steel trays and covered with a steel screen prior to treatment. Two of the three burners were used to thoroughly ignite the waste and then turned off when the burn was self-sustaining.

Small batches of HE contaminated water, solvents, and oils were placed in a steel tray, which was then placed into a second smaller steel tray, before treatment. These wastes were delivered to the unit in small polyethylene jars packed in a secondary container. These liquids were placed in the smaller tray and the burners were ignited until the liquids were consumed and the HE destroyed.

Residues from the TA-16-399 unit that required further treatment were also treated at the unit. This waste was placed in a tray which was then set on an open frame and covered with a steel plate. This assembly was set in the middle of another tray.

3.0 ESTIMATE OF MAXIMUM WASTE TREATED

Approximately 520,000 pounds of solids contaminated with HE and 840 gallons of liquids contaminated with HE have been treated at the unit since 1980.

4.0 GENERAL CLOSURE INFORMATION

4.1 Closure Performance Standard

The unit will be closed to meet the following performance standards:

a. remove all hazardous waste residues and hazardous constituents;

b. ensure contaminated media do not contain concentrations of hazardous constituents greater than the clean-up levels established in accordance with Section VIII of the March 1, 2005 *Compliance Order on Consent* (Order). For soils the cleanup levels shall be established based on residential use. The owner/operator must also demonstrate that there is no potential to contaminate groundwater.

If the owner/operator is unable to achieve any one of the clean closure standards in (a) or (b) above, they must:

c. control hazardous waste residues, hazardous constituents, and, as applicable, contaminated media such that they do not exceed a total excess cancer risk of 10^{-5} for carcinogenic substances and, for

non-carcinogenic substances, a target Hazard Index of 1.0 for human receptors, and meet Ecological Screening Levels established in Section VIII of the Order;

d. minimize the need for further maintenance;

e. control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground, groundwater, surface waters, or to the atmosphere; and

f. comply with the closure requirements of 40 CFR Part 265 Subparts G and P.

Closure of the unit will be deemed complete when: 1) all surfaces and equipment have been decontaminated, or otherwise properly managed as waste; 2) closure has been certified by an independent, professional engineer licensed in the State of New Mexico; and 3) closure certification has been submitted to, and approved by, the Department.

4.2 Closure Schedule

Interim status shall be terminated on December 31, 2010. (*See* 40 CFR § 270.73(a) and NMAC 20.4.1.901(A)(10)

The owner/operator shall begin closure activities no later than April 1, 2011. However, decontaminating or dismantling equipment, in accordance with this closure plan, may be conducted at any time after the loss of interim status.

The owner/operator shall complete the records review (review) and structural assessment (assessment), as described in Sections 5.1.1 and 5.1.2 of this closure plan, no later than May 10, 2011. The owner/operator shall notify the Department at least 20 days prior to the scheduled assessment so the Department may have the opportunity to participate in the assessment. The notification shall include the date on which the owner/operator expects to conduct the assessment.

The owner/operator shall complete all closure activities, including submittal of a final closure certification report to the Department for review and approval, in accordance with this closure plan and before September 27, 2011 (*see* 40 CFR § 265.113(b)). In the event that this timeframe can not be met, the owner/operator may request from the Department an extension in accordance with 40 CFR § 265.113(c)(2) (*see* 40 CFR § 265.113(b)(1)(i)).

4.3 Amendment of the Closure Plan

The owner/operator may amend this closure plan in accordance with the requirements in 40 CFR § 265.112(c), which is incorporated herein by reference. If results of the review or assessment require any changes to this closure plan (*e.g.*, the sampling and analysis plan), the owner/operator shall submit an amended closure plan to the Department, for review and approval, in accordance with this Section (4.3).

5.0 CLOSURE PROCEDURES

Closure activities at the unit shall include: a physical review of the unit and a review of the unit's records; proper management and disposal of hazardous waste residues, if applicable, and contaminated surfaces and equipment associated with the unit; sampling to verify the closure performance standards in Section

4.1 of this closure plan have been achieved; and submittal of a final closure certification report. The following sections describe more specifically these closure activities applicable to the unit.

5.1 Records Review and Structural Assessment

Before starting closure decontamination and sampling activities, the Operating and Inspection Records for the unit will be reviewed and a structural assessment will be conducted to determine any previous finding(s) or action(s) that may influence closure activities or potential sampling locations.

5.1.1 Records Review

The Facility Operating Record (including, but not limited to, inspection and contingency plan implementation records) shall be reviewed at the time of closure and in accordance with the schedule in Section 4.2 of this closure plan. The goals of the review will be to:

a. confirm the specific hazardous waste constituents of concern listed in Table 6 of this closure plan;

b. update the above-mentioned list as necessary; and

c. confirm additional sampling locations (*e.g.*, locations of spills or chronic conditions identified in the Facility Operating and Inspection Records).

The owner/operator shall determine whether any spills or releases, defects, deterioration, damage, or hazards (*e.g.*, damage to the asphalt or concrete pads or other unit materials) affecting waste containment or treatment occurred or developed during the operational life of the unit during which hazardous waste was treated. If the records indicate any such incidents, the owner/operator shall amend this closure plan (*see* Section 4.3) in order to update the SAP (*see* Section 6.0) to incorporate the locations of these incidents as additional sampling locations. All additional sampling procedures, as applicable, shall be included in the amended closure plan.

5.1.2 Structural Assessment

The structural assessment is an assessment of the unit's physical condition. The assessment will include inspecting the unit's concrete and asphalt pads and the concrete side walls (for any existing cracks or conditions that indicate a potential for release of hazardous constituents) and assessing the unit for evidence of any releases. If the assessment reveals any evidence of a release (*e.g.*, stains) or damage (*e.g.*, cracks, gaps, chips) to the pads or side walls, the owner/operator shall amend this closure plan (*see* Section 4.3) in order to update the SAP (*see* Section 6.0) to incorporate these additional sampling locations. All additional sampling procedures, as applicable, shall be included in the amended closure plan. This assessment will be documented with photographs and drawings, as necessary.

5.2 Decontamination and Removal of Structures and Equipment

In accordance with 40 CFR § 265.112(b)(4) (which is incorporated herein by reference), the unit's related equipment and materials (*e.g.*, concrete pad) will be decontaminated, or removed, or both and managed according to Section 7.0 of this closure plan. All surfaces and related equipment that are removed and not intended for recycle will not require decontamination, will be considered solid and potentially hazardous waste when removed, and will be disposed of in accordance with Section 7.0. Decontamination activities will ensure the removal of all hazardous waste residues and hazardous waste constituents from the unit to meet the closure performance standards in Section 4.1.

5.2.1 Removal of Structures and Related Equipment

The burn tray, the three propane burners, the metal retractable cover (and its mechanisms) will all be removed from the unit at closure (but after the structural assessment) and may be recycled.

5.2.2 Decontamination of Structures and Related Equipment

The unit's concrete pad and side walls will be decontaminated by steam cleaning or pressure washing with a solution consisting of a surfactant detergent (*e.g.*, Alconox®) and water mixed in accordance with the manufacturer's recommendations. Portable berms or other such devices (*e.g.*, absorbent socks, plastic sheeting, wading pools, existing secondary containment) will collect excess wash water and provide containment during the decontamination process. If results of the solid concrete chip or soil samples (*see* Section 6.1) from below the pad indicate contamination, the entire concrete pad, along with the 45 mil Hypalon liner under the pad, will be removed and disposed of according to Section 7.0.

No equipment at the unit is expected to be left in place. However, if equipment, identified during the assessment, is expected to be left in place, it will be decontaminated by pressure-washing or steam-cleaning and sampled according to Section 6.1.

5.2.3 Equipment Used During Decontamination Activities

Reusable protective clothing, tools, and equipment used during decontamination activities will be cleaned with a wash water solution. Residue, disposable equipment, and small reusable equipment that cannot be decontaminated will be containerized and managed as waste in accordance with Section 7.0.

6.0 SAMPLING AND ANALYSIS PLAN

This SAP identifies the specific sampling and analysis requirements for this unit and ensures the closure requirements of 40 CFR Part 265 Subparts G and P are met. It also describes the sampling, analysis, and quality assurance/quality control (QA/QC) methods that will be used to demonstrate that the owner/operator has met the closure performance standards in Section 4.1. The owner/operator shall comply with all the requirements in this closure plan section (6.0) as well as the requirements in Section IX of the Order.

This SAP is designed to:

1) verify decontamination of surfaces, equipment, and materials; and
2) determine whether a release of hazardous constituents to any environmental media has occurred.

It includes:

3) A list of hazardous constituents of concern (*see* Table 6) for which soil, surface water, wipe, and chip samples will be analyzed. This list includes all hazardous constituents defined as:

    a) any constituent identified in 40 CFR Part 261 Appendix VII that caused the United States Environmental Protection Agency (EPA) to list a hazardous waste in 40 CFR Part 261 Subpart D;

    b) any constituent identified in 40 CFR Part 261, Appendix VIII; or

    c) any constituent identified in 40 CFR Part 264 Appendix IX, perchlorate, and nitrates.

    The list of hazardous constituents of concern shall be utilized to select the analytical methods capable of detecting those constituents;

4) A site plan for verification and soil samples. The site plan shall include, as applicable:

    a) a figure depicting the boundaries of the unit and verification and soil sampling locations. The locations include:

        1. discharge points (*e.g*., storm water run-off location) (*see* Figure 7);
        2. secondary containment areas;
        3. conveyance systems (*e.g*., pipe drains, drainage swales);
        4. locations of known spills or other releases of hazardous waste or hazardous constituents during operation of the unit;
        5. one verification sample every 250 square feet or less in the unloading zone;
        6. one verification sample every 900 square feet or less on the concrete pad;
        7. other potential release locations;
        8. one concrete chip sample at each location identified on Figure 4; and
        9. one sample at each location identified on Figures 5 and 6;

    b) a rationale for the number and locations of samples.

5) Type of samples. The type of samples to be collected (*e.g.*, wipe, chip, soil, surface water) and the rationale for the selection of the sample type;

6) Sampling methods. A description of the approved EPA *SW-846* sampling methods and procedures that will be used to collect each type of sample;

7) Analytical methods. A description of the approved EPA *SW-846* laboratory analytical methods that will be used to measure hazardous constituent concentrations; and

8) quality assurance and quality control (QA/QC) procedures. This SAP includes a description of the QA/QC procedures that include, but are not limited to:

    a) duplicates, trip blanks, equipment blanks;

b) a description of methods for decontamination of re-usable sampling equipment; and

c) a description of all sample preservation, handling, labeling, and chain-of-custody procedures.

6.1 Sampling Activities

Sampling activities will be conducted to demonstrate that unit-related equipment, surfaces, surface water, and soils meet the closure performance standards in Section 4.1. All samples will be collected and analyzed in accordance with the procedures in Sections 6.2, 6.3, and 6.4 of this closure plan.

One wipe sample will be collected from each piece of decontaminated equipment related to the unit.

One verification solid concrete chip sample will be collected from a random location on the floor of the 22-foot by 22-foot concrete pad base and one will be collected from each of the three (the inner-facing sides) 3-foot-high, 8-inch-thick concrete side walls, for a minimum total of four solid chip samples (*see* Figure 4).

Soil samples shall be collected from the six sample locations indicated in Figure 5 and the 37 sample locations indicated in Figure 6. These locations include, but are not limited to, the following:

a. soils surrounding the unit;

b. soils in the vicinity of the unit;

c. soils from beneath the asphalt pad where waste was offloaded from vehicles for treatment; and

d. soils at the stormwater discharge point.

One surface water sample shall be collected at the stormwater sampling location identified in Figure 7; snow melt run-off shall not be substituted for storm water samples. The owner/operator shall collect a storm water sample (collected within the first 30 minutes of a measurable storm event) by taking a grab sample from a discharge. The sample shall be analyzed for total metals, explosive compounds, semi-volatile organic compounds, perchlorate, and dioxins/furans. If the precipitation event produces insufficient sample volume to perform all analyses, the owner/operator shall prioritize the list of analytes based on the sample volume collected as follows: 1) explosive compounds; 2) total metals; 3) semi-volatile organic compounds; and 4) perchlorate.

If it is not possible to collect the sample within the first 30 minutes of a measurable storm event, the sample shall be collected as soon as practicable after the first 30 minutes. An explanation shall be provided in the closure report describing the adverse condition(s) and why it was not possible to take samples within the first 30 minutes.

6.2 Sample Collection Procedures

Samples will be collected in accordance with the procedures identified in this SAP which incorporates guidance from the EPA (EPA, 2002), DOE (DOE, 1995), and other Department-approved procedures.

6.2.1 Liquid Sampling

Liquid samples will be collected and analyzed to determine if hazardous constituents are present in surface waters as a result of run-off from the unit. Liquid samples will be collected using glass or plastic tubes, a composite liquid sampler, a bacon bomb, a bailer, or by pouring liquid in sample containers.

6.2.2 Soil Sampling

Soil samples will be collected from soils below the sub-grade and beneath the pad at the interface of fill and native soil or tuff. They shall be analyzed to determine if hazardous constituents are present in soils at, or in the vicinity of, the unit.

Soil samples will be collected using a spade, scoop, auger, trowel or other tool as specified in approved methods for the type of analyte to be sampled (*i.e.*, EPA 1996 or 2002). Samples will be kept at their at-depth temperature or lower, protected from ultraviolet light, sealed tightly in the recommended container, and analyzed within the specific holding times listed in Table 4.

6.2.3 Wipe Sampling

Surface wipe samples will be collected and analyzed to determine if residual hazardous constituents remain on surfaces and equipment at the unit. Samples will be collected in accordance with the National Institute of Occupational Safety and Health (NIOSH) *Manual of Analytical Methods* (NIOSH, 1994). The appropriate wipe sample method will consider the type of surface being sampled, the type of constituent being sampled, the solution used, and the desired constituent detection limit.

The NIOSH method includes wiping a 100 square centimeter area at each discrete location with a gauze wipe wetted with a liquid solution appropriate for the desired analysis (*e.g.*, deionized water for lead). For wipe sampling, guidance from the analytical laboratory shall be obtained prior to wipe verification sampling to confirm that the solution chosen for each analysis is appropriate for the analysis to be conducted and that wipe sampling is a proper technique for the analysis.

6.2.4 Solid Chip Sampling

Solid chip samples will be collected and analyzed to verify if residual hazardous constituents remain on the concrete pad and side walls of the unit. Any non-porous inclusions from the sampling location will be removed by brushing or wiping. Using a chisel, drill, hole saw, or similar tool, a minimum 100 grams of the sample will be collected to a depth of 2 centimeters or to an alternate depth specified in the assessment. The material will be transferred to an appropriate container and the holding time and the preservation techniques to be used for each analysis will be selected from those listed on Table 4.

6.2.5 Cleaning of Sampling Equipment

A disposable sampler is considered clean only when directly removed from a factory-sealed wrapper. Reusable decontamination equipment, including protective clothing and tools, and sampling equipment used during closure activities will be scraped, as necessary, to remove residue, cleaned prior to each use with a wash solution, rinsed several times with tap water, and air-dried to prevent cross-contamination of samples. Sampling equipment rinsate blanks will be collected and analyzed only if reusable sampling equipment is used.

6.3 Sample Management Procedures

The following sections provide a description of sample documentation, handling, preservation, storage, packaging, and transportation requirements that will be followed during the sampling activities associated with the closure.

6.3.1 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include: sample identification numbers; chain-of-custody forms; analysis requested; sample logbooks detailing sample collection activities; and shipping forms (if necessary).

6.3.1.1 Chain-of-Custody

Chain-of-custody forms will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. This will ensure the integrity of the samples and provide for an accurate and defensible written record of the sampling possession and handling from the time of collection until laboratory analysis. One chain-of-custody form may be used to document all of the samples collected from a single sampling event. The sample collector will be responsible for the integrity of the samples collected until properly transferred to another person. The EPA considers a sample to be in a person's custody if it is:

a. in a person's physical possession;

b. in view of the person in possession; or

c. secured by that person in a restricted access area to prevent tampering.

The sample collector will document all pertinent sample collection data. Individuals relinquishing or receiving custody of the samples will sign, date, and note the time on the analysis request and chain-of-custody form. A chain-of-custody form must accompany all samples from collection through laboratory analysis. The analytical laboratory will return the completed chain-of-custody form to the Facility and it will become part of the permanent sampling record documenting the sampling efforts.

6.3.1.2 Sample Labels and Custody Seals

A sample label will be affixed to each sample container. The sample label will include the following information:

a. a unique sample identification number;

b. name of the sample collector;

c. date and time of collection;

d. type of preservatives used, if any; and

e. location from which the sample was collected.

A custody seal will be placed on each sample container to detect unauthorized tampering with the samples. These labels must be initialed, dated, and affixed by the sample collector in such a manner that it is necessary to break the seal to open the container.

6.3.1.3 Sample Logbook

All pertinent information on the sampling effort must be recorded in a bound logbook. Information must be recorded in ink and any cross outs must be made with a single line and the change initialed and dated by the author. The sample logbook will include the following information:

a. the sample location;
b. suspected composition;
c. sample identification number;
d. volume/mass of sample taken;
e. purpose of sampling;
f. description of sample point and sampling methodology;
g. date and time of collection;
h. name of the sample collector;
i. sample destination and how it will be transported;
j. observations; and
k. name(s) of personnel responsible for the observations.

6.3.2 Sample Handling, Preservation, and Storage

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table 6 presents the requirements in *SW-846* (EPA, 1986) for sample containers, preservation techniques, and holding times. Samples that require cooling to 4 degrees Celsius will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection.

6.3.3 Packaging and Transportation of Samples

All packaging and transportation activities will meet safety expectations, QA requirements, DOE Orders, and relevant local, state, and federal laws (including 10 CFR and 49 CFR). Appropriate Facility documents establish the requirements for packaging design, testing, acquisition, acceptance, use, maintenance, and decommissioning and for on-site, intra-site, and off-site shipment preparation and transportation of general commodities, hazardous materials, substances, waste, and defense program materials.

Off-site transportation of samples will occur via private, contract, or common motor carrier, air carrier, or freight. All off-site transportation will be processed through the Facility packaging and transportation organization unless the shipper is specifically authorized through formal documentation by that organization to independently tender shipments to common motor or air carriers.

6.4 Sample Analysis Requirements

Samples will be analyzed for all hazardous constituents listed in Table 2; if at closure it has been determined that other constituents listed in Appendix VIII of 40 CFR Part 261 and in Appendix IX of 40 CFR Part 264 were managed or treated at the unit over its operational history, this closure plan shall be amended to include those constituents for sampling and analysis. Samples will be analyzed by an

independent laboratory using the methods outlined in Table 3. Analytes, test methods and instrumentation, target detection limits, and rationale for metals and organic analyses are presented in Table 3. If any of the information from these tables has changed at the time of closure, the owner/operator will amend this closure plan to update all methods in this SAP.

6.4.1 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Section 6.4.2. This analytical laboratory will have:

a. a documented comprehensive quality assurance/quality control (QA/QC) program;

b. technical analytical expertise;

c. a document control/records management plan; and

d. the capability to perform data reduction, validation, and reporting.

The selection of the analytical testing methods identified in Table 3 is based on the following considerations:

e. the physical form of the waste;

f. constituents of interest;

g. required detection limits (*e.g.*, regulatory thresholds); and

h. information requirements (*e.g.*, waste classification).

6.4.2 Quality Assurance/Quality Control

All sampling and analysis will be conducted in accordance with QA/QC procedures defined by the latest revision of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (*SW-846*) (EPA, 1986) or other Department-approved procedures. Field sampling procedures and laboratory analyses will be evaluated through the use of QA/QC samples to assess the overall quality of the data produced. QC samples evaluate precision, accuracy, and the potential for sample contamination associated with the sampling and analysis process which is described in the following sections. Information on calculations necessary to evaluate the QC results is also described below.

6.4.2.1 Field Quality Control

The field QC samples that may be collected include trip blanks, field blanks, field duplicates, and equipment rinsate blanks. Table 5 presents a summary of QC sample types, applicable analyses, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples. QC samples will be identified on the applicable forms so that the results can be applied to the associated sample.

6.4.2.2 Analytical Laboratory Quality Control Samples

QA/QC considerations are an integral part of analytical laboratory operations. Laboratory QA ensures that analytical methods generate data that are technically sound, statistically valid, and that can be documented. QC procedures are the tools employed to measure the degree to which these QA objectives are met.

6.4.3 Data Reduction, Verification, Validation, and Reporting

Analytical data generated by the activities described in this closure plan will be verified and validated. Data reduction is the conversion of raw data to reportable units, transfer of data between recording media, and computation of summary statistics, standard errors, confidence intervals, and statistical tests.

6.4.4 Data Reporting Requirements

Analytical results will include all pertinent information about the condition and appearance of the sample-as-received. Analytical reports will include:

a. a summary of analytical results for each sample;

b. results from QC samples such as blanks, spikes, and calibrations;

c. reference to standard methods or a detailed description of analytical procedures; and

d. raw data printouts for comparison with summaries.

The laboratory will describe the analysis in sufficient detail so that the data user can understand how the sample was analyzed.

7.0 WASTE MANAGEMENT

By removing any hazardous waste or hazardous waste constituents during closure, the owner/operator may become a generator of hazardous waste. The owner/operator shall control, handle, characterize, and dispose of all wastes generated during closure activities in accordance with this Section (7.0), Facility waste management procedures, and in compliance with applicable state, federal, and local requirements (*see* 40 CFR § 265.114). These wastes include, but are not limited to:

(a) demolition debris;

(b) concrete;

(c) containerized waste;

(d) decontamination wash water; and

d) decontamination waste.

The different types of wastes generated at closure, including the unit's decontaminated structures and related equipment, and their disposition options (*e.g.*, reuse, recycling, or disposal) are listed in Table 2 of this closure plan.

8.0 CLOSURE CERTIFICATION REPORT

Upon completion of the closure activities at the unit, the owner/operator shall submit, by registered mail, a closure certification report (Report) for Department review and approval. The Report shall document that the unit has been closed in compliance with the specifications in this closure plan. The Report shall summarize all activities conducted during closure including, but not limited to:

a) the results of all investigations;

b) remediation waste management;

c) decontamination;

d) decontamination verification and soil sampling activities; and

e) results of all chemical analyses and other characterization activities.

The owner/operator shall submit the Report to the Department no later than 60 days after completion of closure of the unit. The Department may require interim reports that document the progress of closure. The certification must be signed by the owner/operator and by an independent professional engineer registered in the State of New Mexico (*see* 40 CFR § 265.115).

The report shall document the unit's closure and contain, at a minimum, the following information:

f) a copy of the certification pursuant to 40 CFR § 265.115;

g) any variance, and the reason for the variance, from the activities approved in this closure plan;

h) documentation of the records review and structural assessment conducted;

i) a summary of all sampling results, showing:

1. sample identification;
2. sampling location;
3. data reported;
4. detection limit for each analyte;
5. a measure of analytical precision (*e.g.*, uncertainty, range, variance);
6. identification of analytical procedure;
7. identification of analytical laboratory;

j) a QA/QC statement on analytical data validation and decontamination verification;

k) the location of the file of supporting documentation, including:

1. field logbooks;
2. laboratory sample analysis reports;
3. QA/QC documentation; and
4. chain-of-custody forms;

l) storage or disposal location of hazardous waste resulting from closure activities;

m) a copy of the Human Health and Ecological Risk Assessment Reports, if a site-specific risk assessment was conducted pursuant to Sections 1.4 and 1.5 in Appendix III, for the unit; and

n) a certification statement of the accuracy of the Closure Report.

Documentation supporting the independent registered professional engineer's certification must be furnished to the Department before the owner/operator is released from the closure financial assurance requirements in 40 CFR § 265.143.

If the owner/operator leaves waste in place, they shall submit to the Department a survey plat as required by 40 CFR § 265.116 in conjunction with the closure certification report.

9.0 REFERENCES

DOE, 1995. "DOE Methods for Evaluating Environmental and Waste Management Samples," DOE/EM-0089T, Rev. 2. Prepared for the U.S. Department of Energy by Pacific Northwest Laboratory, Richland, Washington.

EPA, 1986 and all approved updates. “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,” EPA-*SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

EPA, 2002. "RCRA Waste Sampling Draft Technical Guidance Planning, Implementation, and Assessment," EPA530-D-02-002, August 2002, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, DC.

NIOSH, 1994. The National Institute for Occupational Health and Safety (NIOSH) *Manual of Analytical Methods*, 4th ed. Issue 1. 1994.

Table 1

Closure Schedule for the Technical Area 16-388 Open Burn Treatment Unit

Activity	Maximum Time Required
Begin closure activities.	April 1, 2011
Complete records review and structural assessment.	May 10, 2011
Complete all closure activities	September 27, 2011
Submit final closure certification report to the Department.	September 27, 2011

Table 2

Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Waste Types	Disposal Options
Personal protective equipment (PPE)	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	The PPE will be treated to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Decontamination water	Non-regulated liquid waste	High Explosives Waste Treatment Facility (HEWTF) or sanitary sewer
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Firebrick	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Metal covers/trays	Non-regulated solid waste	Recycled
	Hazardous waste	Treated if necessary to remove HE and recycled.
Soil and tuff	Non-regulated solid waste	Subtitle D landfill

Potential Waste Materials	Waste Types	Disposal Options
	Hazardous waste	Waste will be treated to LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded waste management equipment	Non-regulated solid waste	Recycled, salvaged, or sent to a Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded concrete	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded liner	Non-regulated solid waste	Subtitle D landfill or reuse
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Discarded sampling and decontamination equipment	Non-regulated solid waste	Subtitle D landfill
	Hazardous waste	Waste will be treated to meet LDR treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.

Table 3

Summary of Analytical Methods

Analyte	EPA SW-846 Analytical Method [a]	Test Methods/ Instrumentation	Target Detection Limit [b]	Rationale
Metal Analysis				
Antimony	6010, 7010	ICP-AES, GFAA	20 ug/L	Determine the metal concentration in the samples.
Arsenic	6010, 7010, 7061A	ICP-AES, GFAA, CVAA	10 ug/L	
Barium	6010, 7010	ICP-AES,GFAA	200 ug/L	
Beryllium	6010, 7010	ICP-AES, GFAA	0.2 ug/L	
Cadmium	6010, 7010	ICP-AES, GFAA	2 ug/L	
Chromium	6010, 7010	ICP-AES, GFAA	10 ug/L	
Cobalt	6010, 7010	ICP-AES, GFAA	5 ug/L	
Copper	6010, 7010	ICP-AES, GFAA	5 ug/L	
Lead	6010, 7010	ICP-AES, GFAA	5 ug/L	
Mercury	6010, 7470A, 7471B	ICP-AES, CVAA	0.2 ug/L	
Selenium	6010, 7010, 7741A	ICP-AES, GFAA, CVAA	5 ug/L	
Silver	6010, 7010	ICP-AES, GFAA	10 ug/L	
Thallium	6010, 7010	ICP-AES, GFAA	30 ug/L	
Vanadium	6010, 7010	ICP-AES, GFAA	5 ug/L	
Zinc	6010, 7010	ICP-AES, GFAA	1 ug/L	
Organic Analysis				
Target compound list VOCs plus ten tentatively identified	8260B	GC/MS	10 mg/L	Determine the VOCs concentration in the samples.

compounds (TIC)				
Target compound list SVOCs plus 20 TICs	8270D, 8275	GC/MS	10 mg/L	Determine the SVOCs concentration in the samples.
Other Parameters				
Cyanide	9010, 9012	Colorimetric	20 ug/L	Determine cyanide concentration
Other Analysis				
Dioxins/Furans	8290	GC/MS	1.0 to 200 µg/L	Determine the dioxin/furan concentration in the samples

[a] U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846.

[b] Detection limits listed for metals are for clean water. Detection limits for organics are expressed as practical quantitation limits. Actual detection limits may be higher depending on sample composition and matrix type.

CVAA = Cold-vapor atomic absorption spectroscopy
FLAA = Flame atomic absorption spectroscopy
GC/MS = Gas chromatography/mass spectrometry
GFAA = Graphite furnace atomic absorption spectroscopy
ICP-AES = Inductively coupled plasma-atomic emission spectrometry
mg/L = milligrams per liter

Table 4

Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container Type and Materials	Preservation	Holding Time
Metals			
TCLP/Total Metals: Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	180 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
TCLP/Total Mercury	Aqueous Media: 500-mL Wide Mouth-Polyethylene or Glass with Teflon Liner	Aqueous Media: HNO_3 to pH <2 Cool to 4 °C	28 Days
	Solid Media: 125-mL Glass	Solid Media: Cool to 4 °C	
Volatile Organic Compounds			
Target Compound Volatile Organic Compounds	Aqueous Media: Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Aqueous Media: HCl to pH<2 Cool to 4 °C	14 days
	Solid Media: 125-mL Glass or Two 40-mL Amber Glass Vials with Teflon-Lined Septa	Solid Media Cool to 4 °C Add 5 mL Methanol or Other Water Miscible Organic Solvent to 40-mL Glass Vials	

Semi-Volatile Organic Compounds			
Target Compound Semi-volatile Organic Compounds	Aqueous Media: Four 1-L Amber Glass with Teflon-Lined Lid	Aqueous Media: Cool to 4 °C	Seven days from field collection to preparative extraction. 40 days from preparative extraction to determinative analysis.
	Solid Media: 250-mL Glass	Solid Media: Cool to 4 °C	

[a] Smaller sample containers may be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.

[b] Information obtained from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, U.S. Environmental Protection Agency, 1986 and all approved updates.

°C = degrees Celsius
HCl = hydrochloric acid
mL = milliter
HNO_3 = nitric acid
L = Liter
TCLP = Toxicity Characteristic Leaching Procedure

Table 5

Recommended Quality Control Sample Types, Applicable Analyses, Frequency, and Acceptance Criteria

QC Sample Type	Applicable Analysis [a]	Frequency	Acceptance Criteria
Trip Blank	VOC	One set per shipping cooler containing samples to be analyzed for VOCs	Not Applicable
Field Blank	VOC/SVOC, metals	One sample daily per analysis	Not Applicable
Field Duplicate	Chemical	One for each sampling sequence	Relative percent difference less than or equal to 20 percent
Equipment Rinsate Blank[b]	VOC/SVOC, metals	One sample daily	Not Applicable

[a] For VOC and SVOC analysis, if blank shows detectable levels of any common laboratory contaminant (*e.g.*, methylene chloride, acetone, 2-butanone, toluene, and/or any phthalate ester), sample must exhibit that contaminant at a level 10 times the quantitation limit to be considered detectable. For all other contaminants, sample must exhibit the contaminant at a level 5 times the quantitation level to be considered detectable.

[b] Collected only if reusable sampling equipment used.

Table 6

Hazardous Waste Constituents of Concern at the TA-16-388 Outdoor Treatment Unit[a]

Category	EPA Hazardous Waste Numbers	Specific Constituents
HE and associated compounds	D003	HMX, RDX, TNT, PETN, Tetryl, and Other Nitrobenzenes and Nitrotoluenes
Toxic Metals	D004, D005, D006, D007, D008, D009, D010, D011	Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Semi-volatile Organic Compounds	D030, D036, F004	2,4-Dinitrotoluene, Nitrobenzene
Volatile Organic Compounds	F002, F003, F004, F005	Acetone, Ethanol, Benzene, MEK, Methylene Chloride, Toluene, MIBK, Xylene, Ethyl Acetate, Methanol
Other constituents of concern		Dioxins/Furans, Perchlorate

[a] Based on the unit operating record.

PETN = pentaerythrioltetranitrate (2,2-bis[(nitroxy)methyl]-1,3-propanediol dinitrate)
HMX = cyclotetramethylenetetranitramine RDX = cyclonite MEK= methyl ethyl ketone
TNT = trinitrotoluene MIBK = 4-methyl-2-pentanone

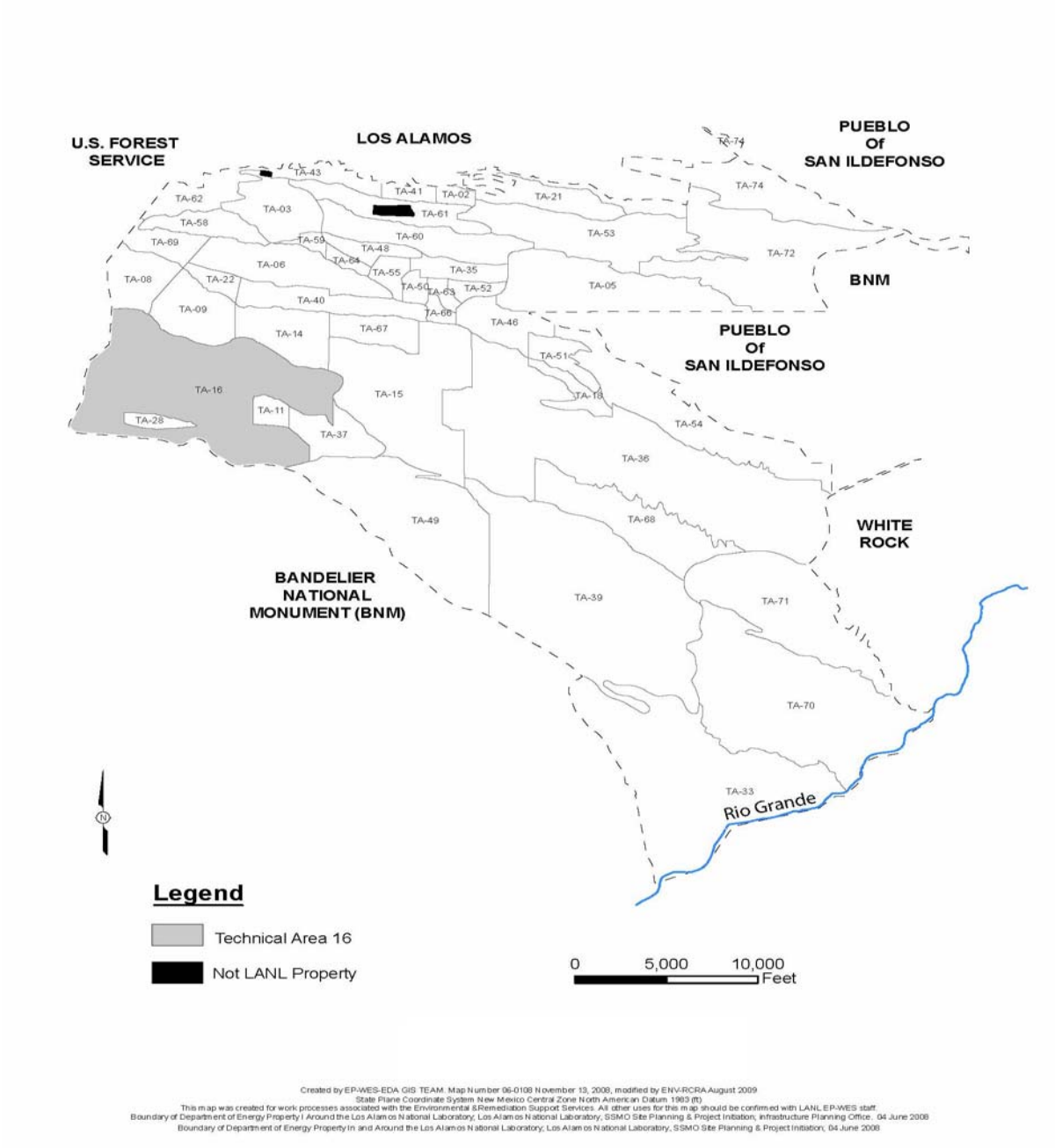

Figure 1: Technical Area 16 Location Map

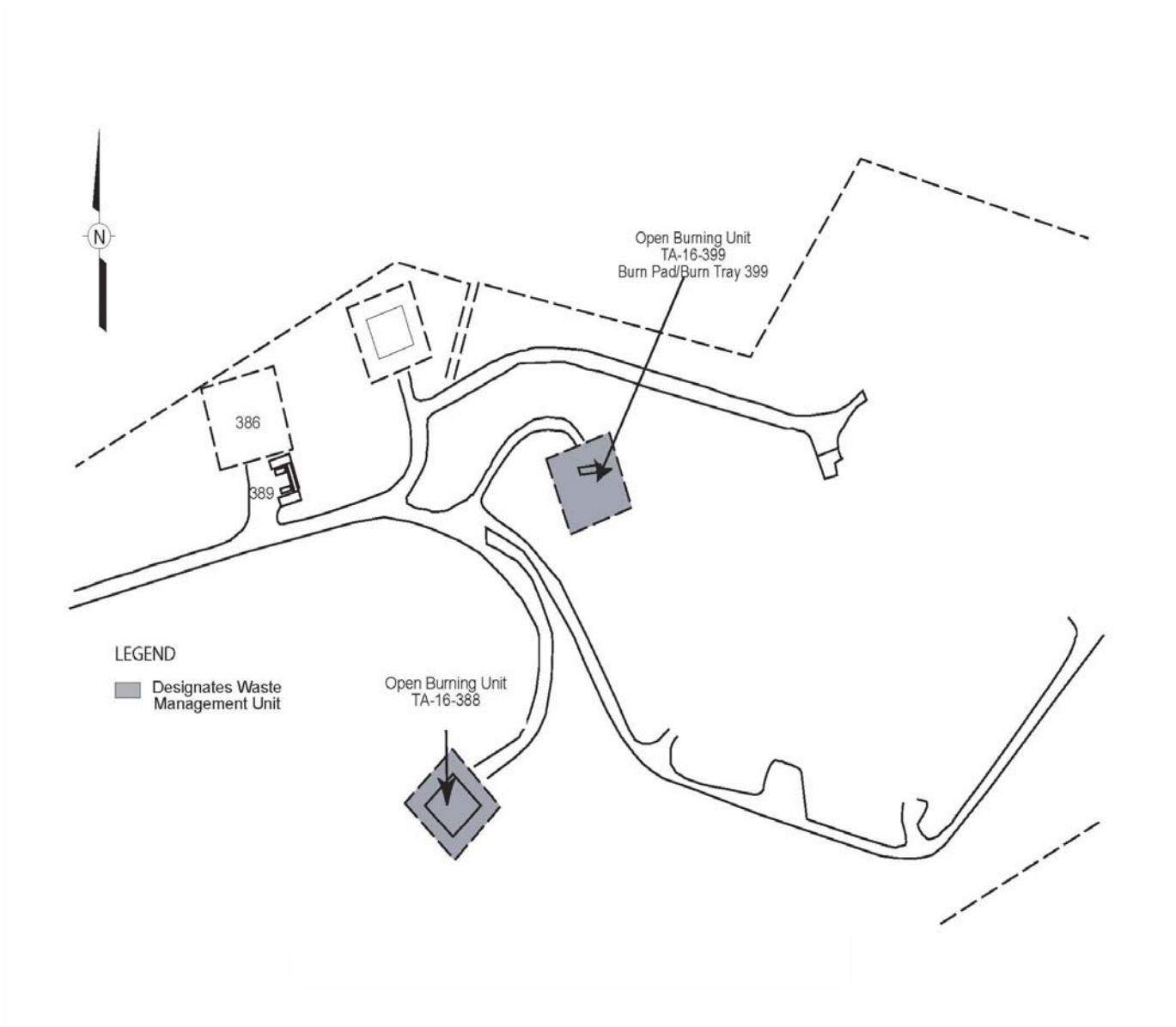

Figure 2: TA-16-388 Open Burn Treatment Unit Layout

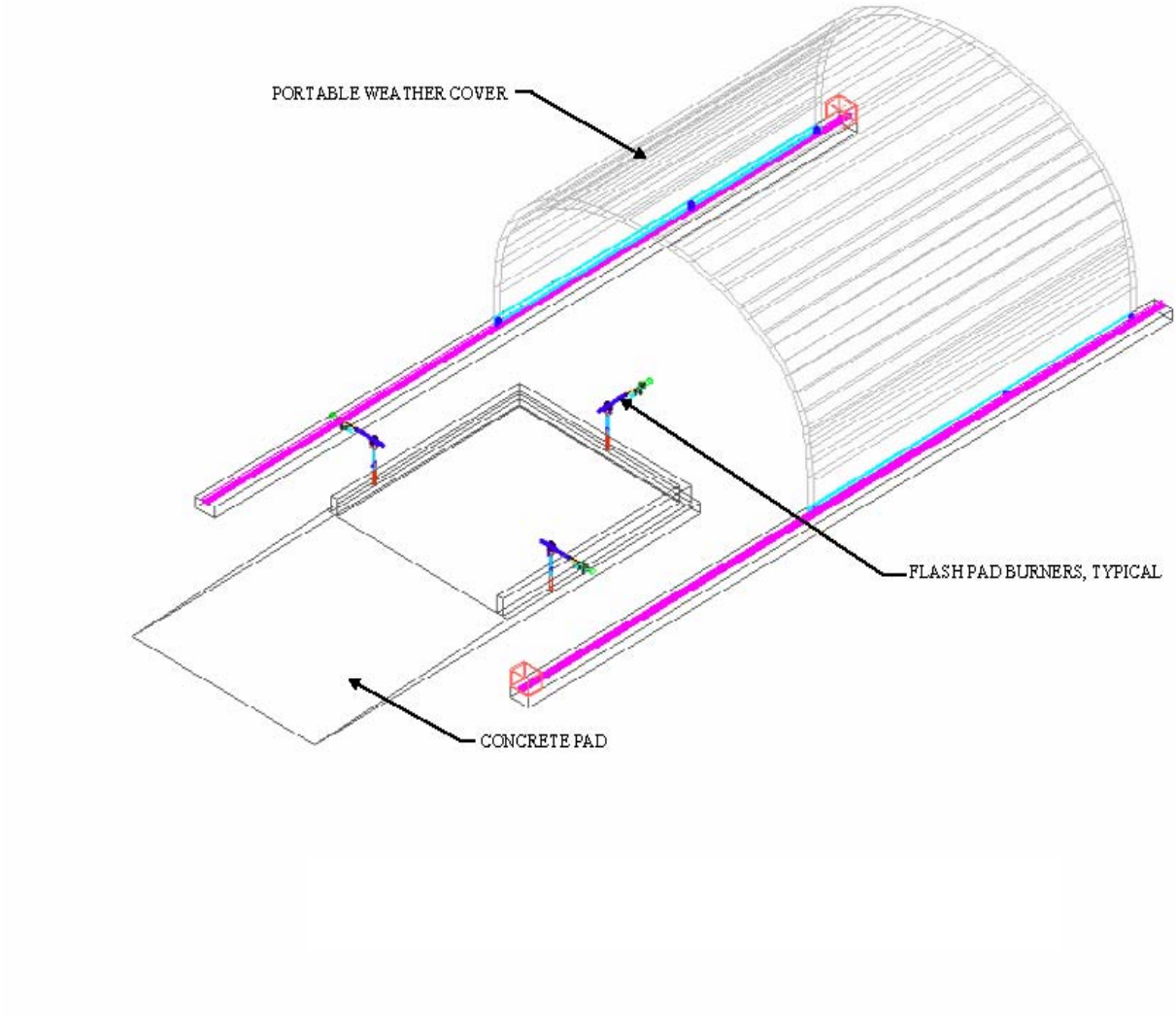

Figure 3: TA-16-388 Open Burn Treatment Unit Configuration

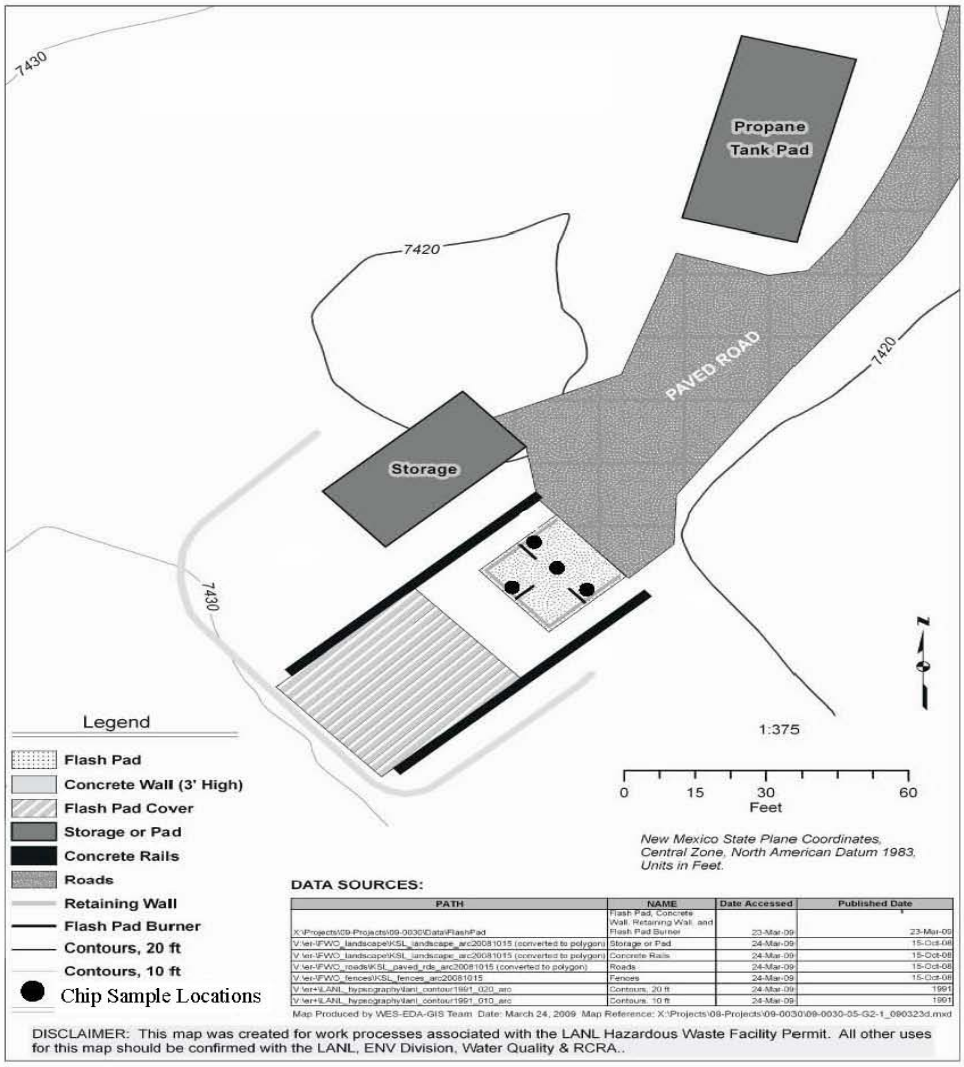

Figure 4: TA-16-388 Open Burn Treatment Unit Solid Concrete Chip Sampling Locations

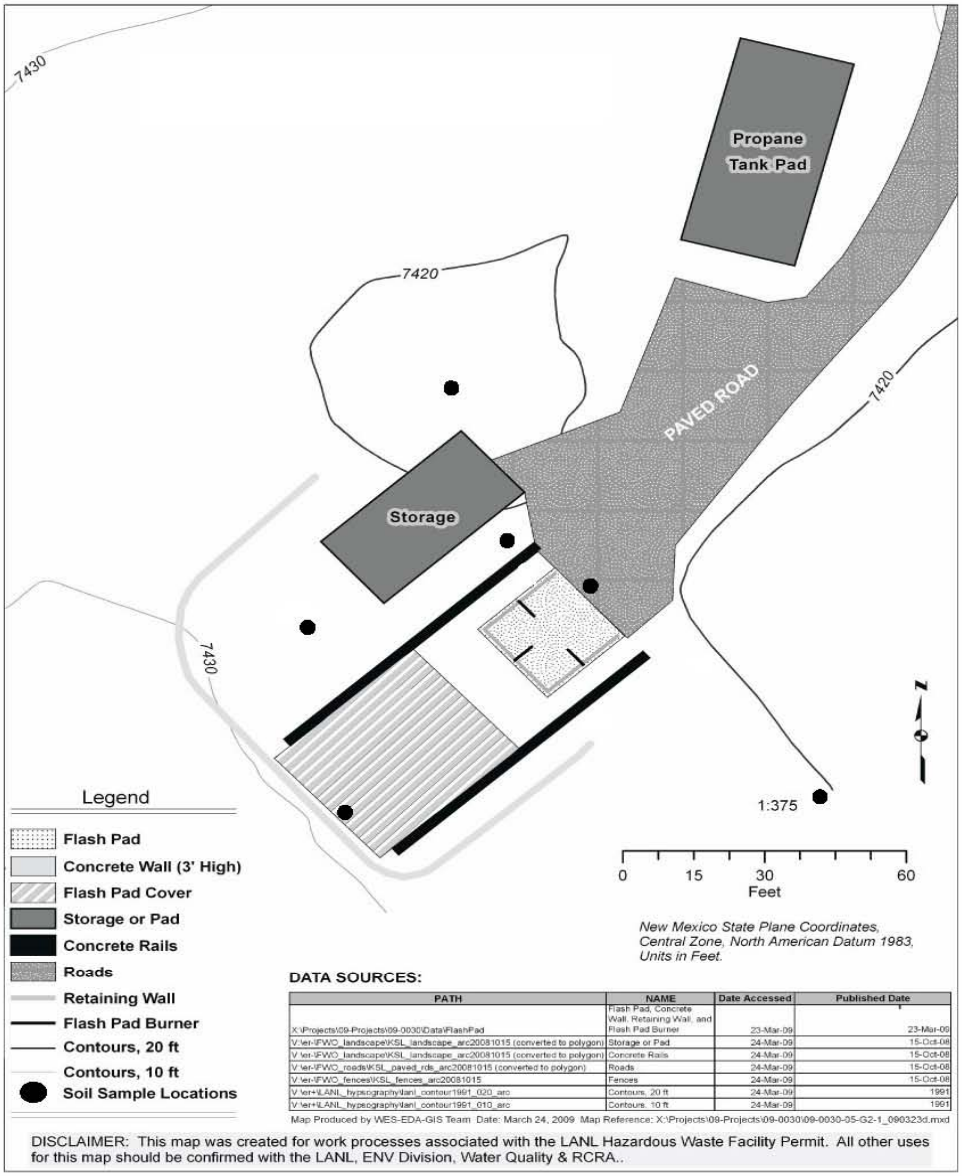

Figure 5: TA-16-388 Open Burn Treatment Unit Soil Sampling Locations

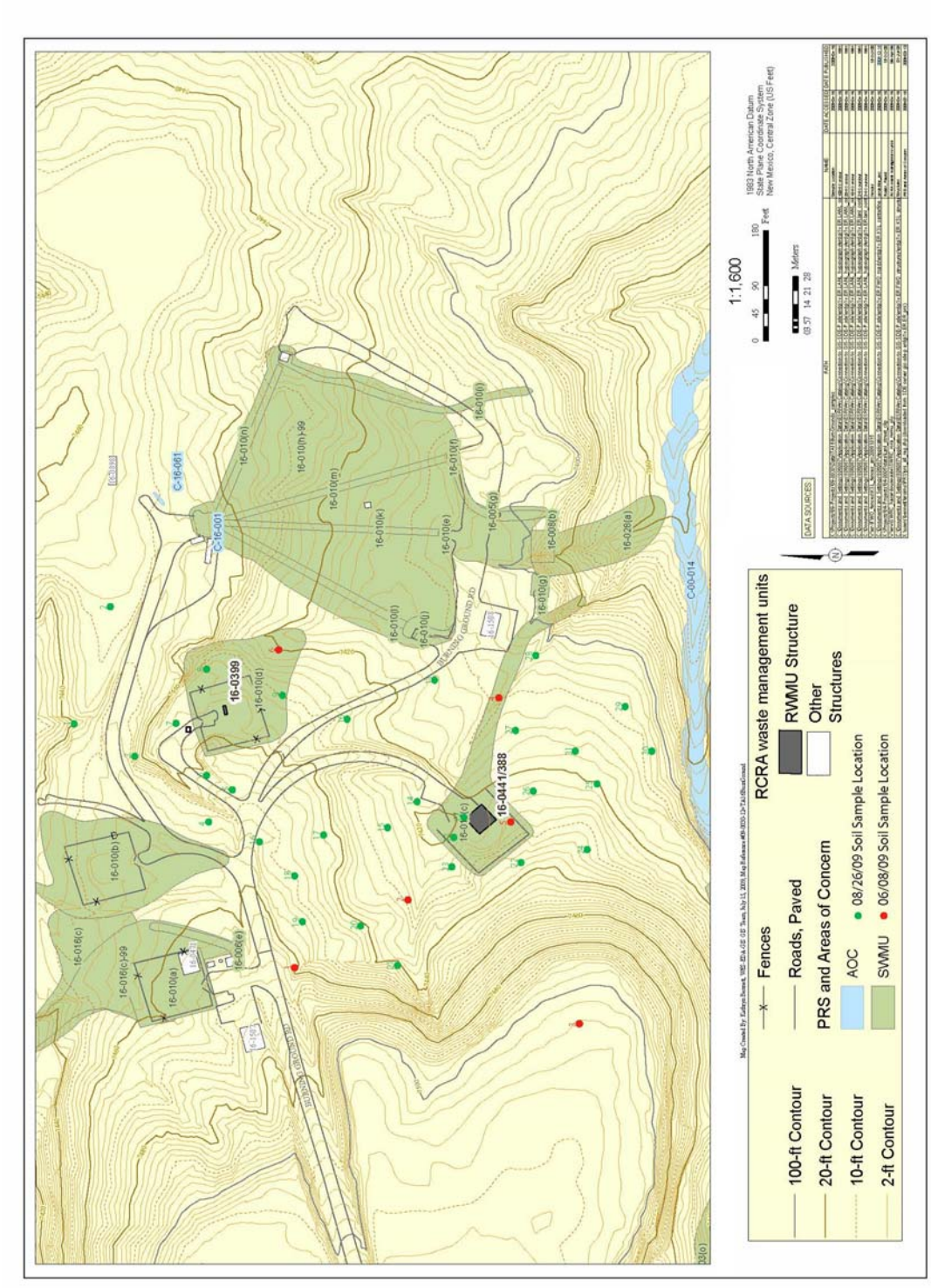

Figure 6: Additional TA-16-388 Open Burn Treatment Unit Soil Sampling Locations

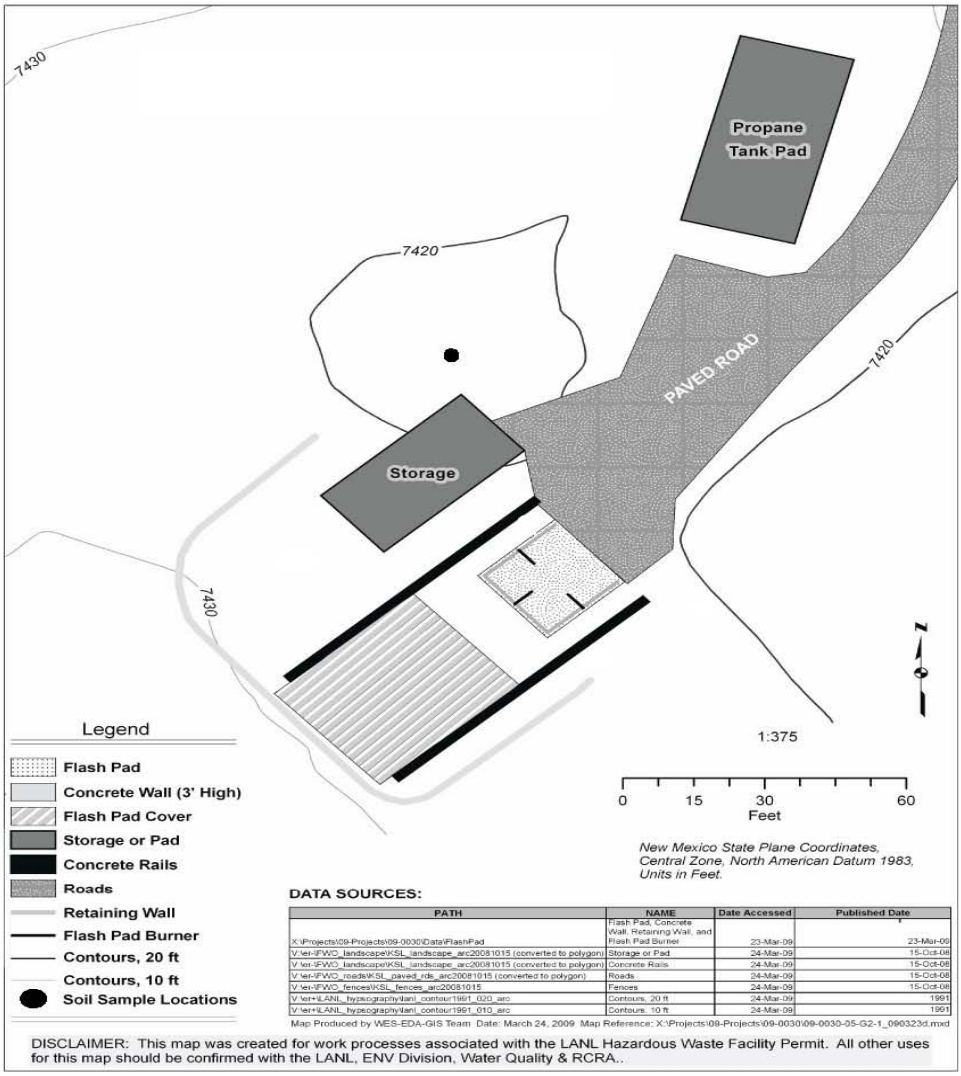

Figure 7: TA-16-388 Open Burn Treatment Unit Surface Water Sampling Location