TA 16

DEPARTMENT OF ENERGY
National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

May 26, 2005

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NMED Hazardous
Waste Bureau

John Kieling, Manager
RCRA Permits Management Program
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Dear Mr. Kieling:

Subject: Transmittal of the U.S. Department of Energy/University of California (DOE/UC) Technical Area 16 Closure Certification Report for the TA-16-401 and –406 Sand Filters

The purpose of this letter is to transmit three copies of the DOE-NNSA/UC Closure Certification Report for the TA-16-401 and –406 hazardous waste management units located at Los Alamos National Laboratory (LANL). Activities associated with this closure were conducted in accordance with an approved closure plan. The final revision to the closure plan incorporating NMED comments was submitted May 28, 2003.

If you have any comments or questions regarding this submittal, please contact either myself at (505) 667-5794 or Jack Ellvinger, UC, at (505) 667-0633.

Sincerely,

Gene Turner

Gene Turner
Environmental Permitting Manager
Office of Environmental Stewardship

ES: 2GT-006

Enclosure

cc w/enclosure:
Laurie King, Chief (6PD-N)
New Mexico/Federal Facilities Section
Environmental Protection Agency
Region 6 1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

cc w/o enclosure:
James Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

Lee Winn, Environmental Specialist
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303

E. Louderbough, LC-ESH, LANL, MS-A187
J. Ellvinger, RRES-SWRC, LANL, MS-K490
J. Carmichael, RRES-SWRC/NMT-7, LANL, MS-E501

LA-UR-05-3911
May 2005

Los Alamos National Laboratory Technical Area 16 Closure Certification Report for the TA-16-401 and -406 Sand Filters

Revision 0.0

Prepared by

Los Alamos National Laboratory
Environmental Stewardship
Solid Waste Regulatory Compliance Group (ENV-SWRC)
Los Alamos, New Mexico 87545

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 16
CLOSURE CERTIFICATION REPORT
FOR THE TA-16-401 and -406 SAND FILTERS

REVISION 0.0

Facility ID No.:	NM0890010515
Facility Name:	Los Alamos National Laboratory
Legal Owner:	U.S. Department of Energy
Legal Operators:	U.S. Department of Energy Los Alamos Site Office 528 35th Street Los Alamos, New Mexico 87544
	University of California P. O. Box 1663 Los Alamos, New Mexico 87545
Contact Person:	Gene E. Turner Environmental Permitting Manager Los Alamos Site Office National Nuclear Security Administration U.S. Department of Energy
Date:	May 2005

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ACRONYMS AND ABBREVIATIONS

2,4-DNT	2,4-dinitrotoluene
DX-2	Materials Dynamic Group
EPA	U.S. Environmental Protection Agency
ft	feet
HE	high explosives
HEWTF	High Explosives Wastewater Treatment Facility
HWB	Hazardous Waste Bureau
in.	inch
LANL	Los Alamos National Laboratory
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NDT	nondestructive testing
20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
NMED	New Mexico Environment Department
NOD	Notice of Deficiency
NPDES	National Pollutant Discharge Elimination System
OB	open burning
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SVOCs	semivolatile organic compounds
SWPPP	Storm Water Pollution Prevention Plan
TA	technical area
TC	toxicity characteristic
TCLP	Toxicity Characteristic Leaching Procedure
UT	ultrasonic testing
VOCs	volatile organic compounds

EXECUTIVE SUMMARY

This report summarizes activities performed to meet Resource Conservation and Recovery Act closure requirements for the sand filters located at Technical Area (TA) 16, Los Alamos National Laboratory (LANL). The closure plan, entitled "Los Alamos National Laboratory Technical Area 16 Closure Plan for the TA-16-401 and -406 Sand Filters" (LANL, 2003), was submitted to the New Mexico Environment Department (NMED) on April 3, 2003. The closure plan presented general closure information, descriptions of the units, sampling and analysis procedures, closure procedures for the sand filters, the closure schedule, and the intent for closure certification. NMED issued a Notice of Deficiency (NOD) on the closure plan on April 28, 2003. Replacement pages to the closure plan, addressing NMED's NOD comments, were submitted on May 28, 2003. The revised closure plan for the TA-16-401 and -406 sand filters was then approved by the NMED Hazardous Waste Bureau on January 14, 2004. The revised closure plan and approval letter are included in this report as Attachment A.

Closure of the TA-16-401 and -406 sand filters was performed in accordance with the revised closure plan. The sand, gravel, and firebrick were removed from the steel vessels. The sand, gravel, and firebrick from TA-16-401 were returned to the steel vessel. The sand, gravel, and firebrick from TA-16-406 were characterized and managed as nonhazardous waste. Visual inspections of the interiors of the steel vessels for structural integrity were conducted and no leaks or cracks were found. Therefore, no sampling of soil and tuff from the areas immediately surrounding the filters or repair/removal of the filters was required. Ultrasonic testing of each vessel was performed to ensure adequate thickness remained for continued use as pre-treatment filters for the High Explosives Waste Treatment Facility. The metal blowers and associated piping were removed and will be recycled as scrap metal.

LOS ALAMOS NATIONAL LABORATORY
TECHNICAL AREA 16
CLOSURE CERTIFICATION REPORT
FOR THE TA-16-401 AND -406 SAND FILTERS

1.0 INTRODUCTION

This report summarizes the activities performed to meet Resource Conservation and Recovery Act (RCRA) closure requirements for the sand filters located at Technical Area (TA) 16, Los Alamos National Laboratory (LANL). The TA-16-401 and -406 sand filters are used to filter wastewater from HE operations before it is treated at the TA-16 High Explosives Wastewater Treatment Facility (HEWTF), and are included in LANL's National Pollutant Discharge Elimination System (NPDES) permit (Permit Number NM0028355). The surface of each sand filter was also used to thermally treat wet high explosives (HE); these open burning (OB) treatment operations were conducted in accordance with New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart VI, Part 265, Subpart P requirements. Hazardous waste thermal treatment operations previously conducted on the sand filters' surfaces will now be performed at the TA-16-388 Flash Pad. The filters will continue to be used as NPDES-permitted pre-treatment filters for the HEWTF. Thus, LANL respectfully requests that the sand filters be excluded from consideration for LANL's RCRA permit renewal.

Descriptions of the sand filters and associated components, the sand filter process, and the HE waste treated on the surface of the sand filters are presented in the revised closure plan (LANL, 2003), provided herein as Attachment A. Section 2.0 of this report includes a description of the closure activities, results of sampling and analysis, details regarding disposition of nonhazardous waste and recycled materials, variances from the closure plan, location of supporting documentation, and a discussion of quality assurance (QA) and quality control (QC). Section 3.0 presents the certification of the accuracy of this report and the independent registered professional engineer's certification.

2.0 CLOSURE PERFORMANCE

2.1 Closure Activities

Closure activities for the sand filters at TA-16 began in May 2004. Closure activities were performed in accordance with the revised closure plan, except as noted in Section 2.2 of this report. The following provides a description of each closure activity presented in the revised closure plan.

2.1.1 Ash Removal

All ash residue was removed prior to initiation of closure activities. Thus, no ash was present for removal as part of the activities conducted for RCRA closure, as verified in May 2004.

2.1.2 Sand and Gravel Removal

Sand and gravel were removed from the TA-16-401 sand filter in June 2004. Photograph 1 shows the steel vessel before removal of the sand, gravel, and firebrick. Photograph 2 shows the empty steel vessel following sand, gravel, and firebrick removal. The sand and gravel were staged on site until the firebrick was removed, the steel vessel was inspected, and ultrasonic testing (UT) was conducted. The sand and gravel were subsequently placed back in the sand filter.

Sand and gravel were removed from the TA-16-406 sand filter in April 2005. Photograph 3 shows the empty sand filter following sand, gravel, and firebrick removal. A grab sample of sand in TA-16-406 was collected in situ and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and HE. The sand was also analyzed for Toxicity Characteristic Leaching Procedure (TCLP) VOCs, TCLP SVOCs, and TCLP metals for waste characterization purposes. LANL opted to sample and analyze for fixed-laboratory total analysis of HE rather than perform the Materials Dynamics Group (DX-2) HE Spot Test. The sand analytical data, which the closure plan stated would also apply to the gravel, are summarized in Table 1 and provided in Attachment B. The TCLP metals data indicate the presence of barium at a concentration of 4.4 milligrams per liter (mg/L), which is less than the regulatory level of 100.0 mg/L that would cause the sand to exhibit the toxicity characteristic (TC) for barium. The TCLP VOCs and SVOCs analyses all showed non-detect. Thus, the sand and gravel were

characterized as nonhazardous waste and will be sent to Waste Management of New Mexico Industrial Waste Landfill in Rio Rancho, New Mexico, for disposal.

2.1.3 Firebrick Removal

Firebricks, which surrounded the interior perimeter of each sand filter to protect their integrity during OB operations, were removed during the time periods discussed in Section 2.1.2. The firebrick from the TA-16-401 sand filter was sampled and analyzed for TCLP metals for waste characterization purposes. Firebrick waste characterization data are summarized in Table 2 and provided in Attachment C. These data indicate the presence of barium at 1.0 mg/L. This concentration is less than the regulatory level of 100.0 mg/L that would cause the firebrick to exhibit the TC for barium. After consultation with New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) representatives, the nonhazardous firebricks removed from the TA-16-401 sand filter were reused by placing them back in the bottom of the steel vessel in a concentric pattern, which will allow for improved drainage through the sand filter. The nonhazardous firebricks removed from the TA-16-406 sand filter were combined with the sand and gravel removed from the same vessel. The nonhazardous sand, gravel, and firebrick from the TA-16-406 sand filter will be sent to Waste Management of New Mexico Industrial Waste Landfill in Rio Rancho, New Mexico, for disposal.

2.1.4 Steel Vessel Inspections and Ultrasonic Testing

The TA-16-401 sand filter was visually inspected on June 22, 2004. No cracks were observed, and all welds and seams appeared intact. Although it did not appear that corrosion sufficient to require a UT inspection had occurred, UT was conducted to determine the thickness of the steel vessel and demonstrate its structural integrity for continued use as a NPDES-permitted pre-treatment filter for the HEWTF. Ultrasonic testing is a nondestructive testing (NDT) method that uses high frequency sound energy to make dimensional measurements. UT depth of penetration for dimensional measurement is superior to other NDT methods, only single-sided access is needed, and it is highly accurate in estimating thickness measurements. UT results are presented in Table 3 and indicate that corrosion does not extend more than ⅔ of the thickness of the steel filter (i.e., at least 0.17 inch [in.] remains). Sixteen readings using a calibrated UT instrument showed that the thickness of the steel vessel ranged from 0.192 to 0.548 in. Reading locations were selected based on the four cardinal points (north, east, south,

and west) at descending depths within the vessel. The inspections demonstrate that no leaks have occurred from this steel vessel.

The TA-16-406 sand filter was visually inspected on April 21, 2005. No cracks were observed, and all welds and seams appeared intact. Although it did not appear that corrosion sufficient to require a UT inspection had occurred, UT was also conducted on this vessel on May 17, 2005, to determine the thickness of the steel vessel and demonstrate its structural integrity for continued use as a NPDES-permitted pre-treatment filter for the HEWTF. UT results are presented in Table 4 and indicate that corrosion does not extend more than ⅔ of the thickness of the steel filter (i.e., at least 0.17 in. remains). Sixteen readings using a calibrated UT instrument showed that the thickness of this steel vessel ranged from 0.441 to 0.520 in. Reading locations were selected based on the four cardinal points (north, east, south, and west) at descending depths within the vessel. The inspections demonstrate that no leaks have occurred from this steel vessel.

2.1.5 Steel Vessels Assessment, Repair, or Removal

Because no leaks were found during the inspections discussed in Section 2.1.4, it was not necessary to assess the steel vessels to determine if repairs would be cost effective or if the steel vessels would be removed and replaced with another filter for pre-treatment of the wastewater entering the HEWTF.

2.1.6 Soil/Tuff Assessment and Removal

Because no leaks were found during the inspections discussed in Section 2.1.4, it was not necessary to assess the extent and level of soil/tuff contamination or to remove soil or tuff from the areas surrounding the steel vessels.

In accordance with the revised closure plan, three soil samples were collected from areas upslope of the sand filters. The first sample was taken from a location approximately 200 feet (ft) north of the filters. Two additional samples were collected at 100 ft intervals directly west of the first sample. The three soil samples were analyzed for dioxins and furans to put these potential legacy contaminants in perspective. The data are provided in Attachment D of this report for informational purposes. They have also been made available to LANL personnel involved in corrective actions at the TA-16 Burn Ground.

2.1.7 Metal Blowers Removal

The metal blowers and associated piping used to dry HE on the surface of the sand filters were removed in May 2005. The components were tested for HE using the DX-2 HE Spot Test. None of the components tested positive for HE; hence, they will be recycled as scrap metal by Ace Metals, Inc., in Albuquerque, New Mexico. Photograph 4 shows the blowers and associated piping before removal; Photograph 5 shows the area after removal.

2.1.8 Site Restoration

Because no leaks were found during the inspections discussed in Section 2.1.4, and because it was not necessary to remove soil or tuff, as noted in Section 2.1.6, restoring the areas surrounding the steel vessels was not required.

After discussions with the NMED HWB in May 2005, it was determined that berms were not needed in the area directly upslope of the sand filters to prevent run-on of legacy contaminants. Run-on into the units is prevented by the steel vessels, and erosion is controlled under the TA-16 Burn Ground Storm Water Pollution Prevention Plan (SWPPP). LANL will continue to maintain the SWPPP, sample in accordance with stormwater requirements, and perform inspections to ensure that additional measures are not needed for erosion control.

2.1.9 Disposal or Decontamination of Equipment, Structures, and Soils

Wastes generated as a result of closure activities (i.e., sand, gravel, and firebrick from the TA-16-406 sand filter; metal blowers and associated piping) were managed and will be disposed of as discussed in the Sections 2.1.2, 2.1.3, and 2.1.7 above. Scrap metal was certified as non-HE contaminated by the HE Certifying Agent, who performed the HE Spot Test prior to release of these materials from the HE area. Excavation of soil and tuff was not required as part of closure activities; thus, treatment and/or disposal of these media was not necessary. All sampling equipment used (i.e., scoops, personal protective equipment) was disposable (as nonhazardous waste) and did not require decontamination.

2.2 Variances from the Revised Closure Plan

RCRA closure of the sand filters at TA-16 was performed in accordance with the revised closure plan, with the exception of the following variances:

- Closure Plan, Section 2.3 and Table 1, Closure Schedule: The revised closure plan was approved on January 14, 2004, and a revised closure schedule was approved on April 20, 2004. The Laboratory-wide stand down, announced in July 2004, resulted in an approximate four-month delay in conducting closure activities. In addition, inclement winter weather further delayed conducting closure activities. An extension request was submitted to NMED on November 16, 2004, in accordance with the extension request requirements of 20.4.1 NMAC § 265.113(b). The extension request was approved on December 6, 2004, and required all necessary closure activities to be completed by June 1, 2005. Copies of the request for extension and the approval of the extension request are provided in Attachment A of this report.

- Closure Plan, Section 3.1, Structures Description, and Section 5.3, Sand Filter Inspections: It was discovered that the sand filters are contained in ½-in. nominal steel vessels, not in ¾-in. nominal steel vessels as indicated in the closure plan. As stated in that plan, if corrosion extends half an in. or more into the ¾-in. steel of a vessel, an ultrasonic thickness inspection would be used to determine whether the vessel had been breached. One half inch into ¾-in. steel is ⅔ of the steel thickness. To be consistent with the closure plan, the same "⅔ criterion" was applied to the ½-in. vessels. For the actual ½-in. steel vessels, ⅔ of the steel thickness is ⅓ (0.17) in. For the purpose of continued operations of the steel vessels as NPDES-permitted pre-treatment filters, LANL chose to conduct UT at both steel vessels, even though the corrosion extent did not exceed the "⅔ criterion" at either sand filter.

- Closure Plan, Section 5.0, Closure Procedures for the TA-16-401 and TA-16-406 Sand Filters: Berms were not placed in the area directly upslope of the sand filters, as called for in the closure plan. Instead, the TA-16 Burn Ground SWPPP will continue to be implemented, sampling will be conducted in accordance with stormwater requirements, and inspections will be performed to ensure erosion controls are maintained and additional controls are not needed. This approach was discussed with and agreed upon by NMED HWB personnel in May 2005.

- Closure Plan, Section 5.1, Sand, Gravel, and Firebrick Components Removal Segregation, Treatment and/or Disposal:

    - Sand and gravel from the TA-16-406 sand filter were not placed back in the steel vessel, even though the integrity of this vessel was found to be acceptable and did not require removal. To improve the future operation and inspection of both vessels as NPDES-permitted pre-treatment filters for the HEWTF, it was decided to leave this vessel temporarily empty rather than replace the sand and gravel. When TA-16-401 is emptied for inspection, TA-16-406 will be filled with sand and gravel (if reusable) from TA-16-401. Use of the filters will alternate, with transfer of sand and gravel (if reusable) from one to another, which will minimize waste generation. This approach was discussed with NMED HWB representatives in June 2004. If, in the future, the volume

of HE-contaminated wastewater increases substantially, both sand filters may be placed into service at the same time.

- Sand from the TA-16-406 sand filter was sampled and analyzed, even though the steel vessel was found to be acceptable and did not require removal. The sand was sampled and analyzed for waste characterization purposes, was determined to be nonhazardous waste, and the sand and gravel will be sent to Waste Management of New Mexico Industrial Waste Landfill in Rio Rancho, New Mexico, for disposal.

- Sand from the TA-16-406 sand filter was not analyzed using the DX-2 HE Spot Test. Instead, the sample was submitted for fixed-laboratory total analysis of HE using *SW-846* Method 8330.

- Firebrick removed from the TA-16-401 sand filter was reused in that steel vessel to improve drainage through the sand filter. The closure plan stated that if the firebrick could be reused, it would be used at the TA-16-388 Flash Pad and/or the TA-16-399 Burn Tray. Reusing the firebrick reduced the amount of waste generated during closure and helps to achieve LANL's waste minimization goals.

- Firebrick from the TA-16-406 sand filter was not segregated from the sand and gravel when these components were removed, as stated in the closure plan. The firebrick was analyzed for waste characterization purposes and, like the sand from the TA-16-406 sand filter, was found to be nonhazardous. As a result, the sand, gravel, and firebrick were packaged together and will be sent to Waste Management of New Mexico Industrial Waste Landfill in Rio Rancho, New Mexico, for disposal.

2.3 Location of Supporting Documentation

Field logs, analytical data, chain-of-custody documentation, and waste disposal records in support of the completed closure activities at the TA-16-401 and -406 sand filters will be maintained by the LANL Solid Waste Regulatory Compliance Group.

2.4 Quality Assurance/Quality Control

QA/QC and sampling activities during closure of the TA-16-401 and -406 sand filters were conducted in accordance with Section 4.0 of the closure plan. This included collection of QA/QC samples to assess the overall quality of the data and evaluate field sampling procedures and laboratory analysis. Attachments B, C, and D provide detection limits, dilution factors, and laboratory-assigned qualifiers associated with the analytical data from the sampling activities, as well as the analytical laboratory's QC summary.

3.0 CERTIFICATIONS

3.1 Certification of Accuracy

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Document Title: Los Alamos National Laboratory
Technical Area 16 Closure Certification Report for the
TA-16-401 and -406 Sand Filters
Revision 0.0

_____ Date: _____

Kenneth M. Hargis
Division Director
Environment Stewardship Division
Los Alamos National Laboratory
Operator

_____ Date: _____

Edwin L. Wilmot
Manager
Los Alamos Site Office
National Nuclear Security Administration
U.S. Department of Energy
Owner/Operator

3.2 Independent Registered Professional Engineer's Certification

This certification was prepared in accordance with generally accepted professional engineering principles and practice pursuant to the requirements of 20.4.1 NMAC, Subpart VI, §265.115 [10-1-03], for an independent registered professional engineer's certification. These services have been performed with the care and skill ordinarily exercised by members of the profession practicing under similar conditions at the same time and in the same manner or in a similar locality. No other warranty is either expressed or implied. The finding and certification are based on 1) reviewing the NMED-approved revised closure plan dated May 2003; 2) discussion with Engineering Sciences and Applications Division field representatives and PeaK Technical Consulting, Inc. personnel who were present during closure and sampling activities; 3) witnessing closure and sampling activities; and 4) reviewing the analytical results.

With the signature and seal below, I certify that, except for the variances presented in Section 2.2, the closure of the TA-16-401 and-406 Sand Filters at TA-16 was conducted in accordance with the NMED-approved revised closure plan. The information presented in this report is, to the best of my knowledge and belief, true, accurate, and complete.

Respectfully,

Highline Consultants, LLC

Darren W. Meadows
New Mexico Registered Professional Engineer No. 13876
Expires December 31, 2006

Date:

4.0 REFERENCES

LANL, 2003, "Los Alamos National Laboratory Technical Area 16 Closure Plan for the TA-16-401 and -406 Sand Filters," original date March 2003, LA-UR-03-2091, revised May 2003, LA-UR-03-3471, Los Alamos National Laboratory, Los Alamos, New Mexico.

TABLES

Table 1
TA-16-406 Sand Filter:
Summary of Sand Analytical Data

Sample ID	Sample Collection Date	Sample Type	VOC mg/Kg		SVOC mg/Kg		Metals mg/L		HE mg/Kg	
04SWRC483 04SWRC484 04SWRC485 04SWRC486	5/13/04	Grab Sand Sample	TCLP VOCs[1]	Not Detected (ND)	TCLP SVOCs[2]	ND	TCLP Metals[3] Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	 ND 4.4 ND ND ND ND ND ND	Total Analysis HE[4] 1,3,5-Trinitrobenzene 2,4,6-Trinitrotoluene 2,4-Dinotrotoluene[4a] 2-Amino-4,6-Dinitrotoluene HMX RDX	 76 420 2.2[4a] 8.7 1500 130
04SWRC483	5/13/04	Grab Sand Sample	Total Analysis VOCs[5] 1,1,2,2 Tetrachloroethane Naphthalene	 0.009 (B)* 0.027 (B)						
04SWRC484	5/13/04	Grab Sand Sample			Total Analysis SVOCs[6] Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b&k)flluoranthene Bis(2-Ethylhexyl)phthalate Chrysene di-n-Butylphthalate Fluloranthene Phenanthrene Pyrene	 0.14 0.073 0.066 0.15 11 0.091 2.9 0.15 0.060 0.16				
04SWRC472	5/13/04	Trip Blank (Water)		ND[5]						
04SWRC474	5/13/04	Field Blank (Water)		ND[5]						
04SWRC475	5/13/04	Field Blank (Water)				ND[6]				
04SWRC476	5/13/04	Field Blank (Water)						ND[7]		
04SWRC477	5/13/04	Field Blank (Water)								ND[4]

Table 1 (Continued)
TA-16-406 Sand Filter:
Summary of Sand Analytical Data

Shaded Area = Not Analyzed For
* (B) = Analyte Detected in Method Blank

1 Toxicity Characteristic Leaching Procedure (TCLP) Volatile Organic Compounds (VOC)
Method: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA-SW-846, 1986 and all approved updates, U.S. Government Printing Office, U.S. Environmental Protection Agency, Washington, D.C. (SW-846) 1311/8260B Purgeable VOCs by Gas Chromatography/Mass Spectrometry (GC/MS) TCLP.

2 TCLP Semivolatile Organic Compounds (SVOC)
Method: SW-846 1311/3510B/8270C SVOCs by GC/MS TCLP.

3 TCLP Metals
Methods: 1) SW-846 1311/3010A/6010B Inductivity Coupled Plasma (ICP) TCLP (for arsenic, barium, cadmium, chromium, selenium), 2) SW-846 1311/3010A/7000 series Flame Atomic Absorption (AA-FL) TCLP (for lead, silver), 3) SW-846 1311/7470A Cold Vapor Atomic Absorption TCLP (for mercury)
Detection Limits in milligrams per liter (mg/L): Ba 0.2.

4 Total Analysis High Explosives (HE)
Method: SW-846 8330 Explosives by High Performance Liquid Chromatography (HPLC). Units shown were converted from micrograms per kilogram to milligrams per kilogram.

4a This is a total value and was not used for making a hazardous waste determination. The TCLP analytical data were used in making this determination.

5 Total Analysis VOCs
Method: SW-846 8260B Purgeable VOCs by GC/MS. Units are micrograms per liter (µg/L).

6 Total Analysis SVOCs
Method: SW-846 3510B/8270C SVOCs by GC/MS. Units are µg/L.

7 Total Analysis Metals
Methods: 1) SW-846 1311/3010A/6010B ICP TCLP (for arsenic, barium, cadmium, chromium, lead, selenium), 2) SW-846 1311/3010A/7000 series AA-FL TCLP (for silver), 3) SW-846 1311/7470A CVAA TCLP (for mercury). Units are mg/L.

Table 2
TA-16-401 Sand Filter:
Summary of Firebrick Waste Characterization Data

Sample ID	Sample Collection Date	Metals[1] mg/L	
04SWRC482	5/13/04	Arsenic	Not Detected (ND)
		Barium	1.0
		Cadmium	ND
		Chromium	ND
		Lead	ND
		Mercury	ND
		Selenium	ND
		Silver	ND

[1] Toxicity Characteristic Leaching Procedure (TCLP) Metals
Methods: 1) SW-846 1311/3010A/6010B Inductively Coupled Plasma TCLP (for arsenic, barium, cadmium, lead, selenium), 2) SW-846 1311/3010A/7000 series Flame Atomic Absorption TCLP (for silver), 3) SW-846 1311/7470A Cold Vapor Atomic Absorption TCLP (for mercury).
Detection Limit in milligrams per liter : Barium 0.2.

Table 3
TA-16-401 Sand Filter: Summary of June 22, 2004, Ultrasonic Testing Data

Instrument: Krautkramer Thickness Gauge
Manufacturer: GE Inspection Technologies, LLC
Calibration Date: February 17, 2004
Calibration Results: Pass (In Tolerance)

Model Number: DMS2
Serial Number: 00TKNN
Calibration Frequency: Annually
Pre-Testing Reading to Standards: Std 0.5” = 0.501”; Std 0.2” = 0.201” Standards rechecked prior to obtaining floor readings and at end of procedure, and were the same as pre-testing readings.

No cracks observed. Welds and seams appear intact. All thicknesses exceed 0.17 inches (i.e., 1/3 of original thickness of 0.5 inches remains). Thickness testing conducted by Pat Ortiz of PS-1. Compass directions determined with Brunton compass.

Reading Location	Depth from Top of Vessel (in inches)	Internal Reading (in inches)	Notes
1	16	0.532	North side of vessel.
2	16	0.527	East side of vessel.
3	16	0.548	South side of vessel.
4	11	0.524	West side of vessel.
5	42	0.212	North side of vessel.
6	42	0.238	East side of vessel.
7	42	0.252	South side of vessel.
8	42	0.208	West side of vessel.
9	42	0.201	Northeast side of vessel.
10	42	0.192	Southeast side of vessel.
11	42	0.209	Southwest side of vessel.
12	42	0.244	Northwest side of vessel.
13	Floor (45)	0.514	North portion of vessel: reading taken 26.5” inward from vessel wall.
14	Floor (45)	0.532	East portion of vessel; reading taken 25” inward from vessel wall.
15	Floor (45)	0.541	South portion of vessel: reading taken 25” inward from vessel wall.
16	Floor (45)	0.541	West portion of vessel: reading taken 19” inward from vessel wall.

Table 4
TA-16-406 Sand Filter: Summary of May 17, 2005, Ultrasonic Testing Data

Instrument: Krautkramer Thickness Gauge
Manufacturer: GE Inspection Technologies, LLC
Calibration Date: May 6, 2005
Calibration Results: Pass (In Tolerance)

Model Number: DMS2
Serial Number: 011WXN
Calibration Frequency: Annually
Pre-Testing Reading to Standards: Std 0.5” = 0.500”; Std 0.2” = 0.199” Standards rechecked at end of procedure, and were the same as pre-testing readings.

No cracks observed. Welds and seams appear intact. All thicknesses exceed the minimum 0.17 inches (i.e., 1/3 of original thickness of 0.5 inches remains). Thickness testing conducted by Thomas Smouse of KSL. Compass directions determined with Brunton compass.

Reading Location	Depth from Top of Vessel (in inches)	Internal Reading (in inches)	Notes
1	1	0.443	North side of vessel.
2	1	0.456	East side of vessel.
3	1	0.451	South side of vessel.
4	1	0.451	West side of vessel.
5	34	0.520	South side of vessel.
6	34	0.512	East side of vessel.
7	34	0.511	North side of vessel.
8	34	0.514	West side of vessel.
9	42.5	0.508	South side of vessel.
10	42.5	0.519	East side of vessel.
11	42.5	0.497	North side of vessel.
12	42.5	0.481	West side of vessel.
13	Floor (45)	0.491	East portion of vessel; reading taken 36” inward from vessel wall.
14	Floor (45)	0.441	South portion of vessel; reading taken 36” inward from vessel wall.
15	Floor (45)	0.473	North portion of vessel; reading taken 36” inward from vessel wall.
16	Floor (45)	0.484	West portion of vessel; reading taken 36” inward from vessel wall.

FIGURES

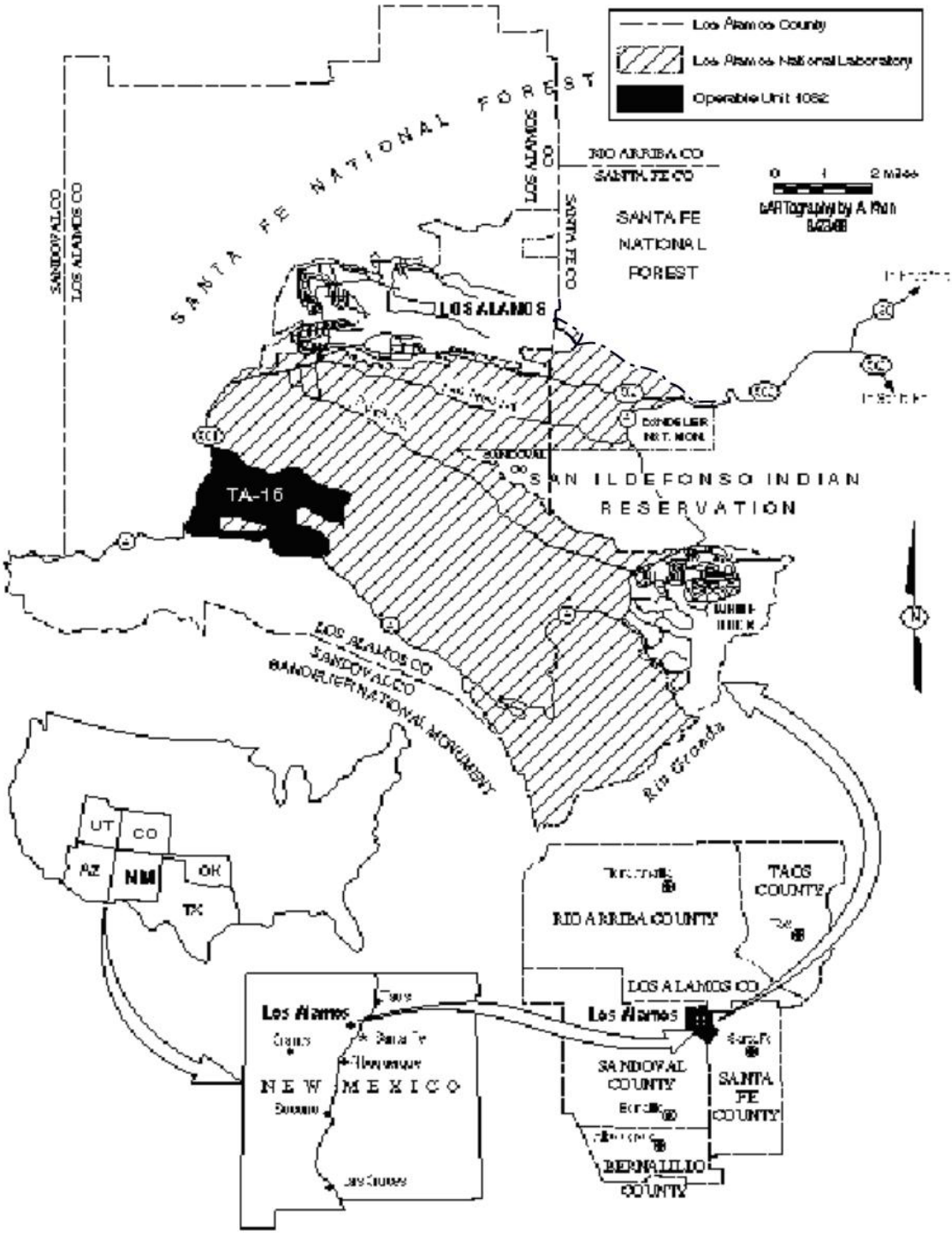

Figure 1
Location of TA-16

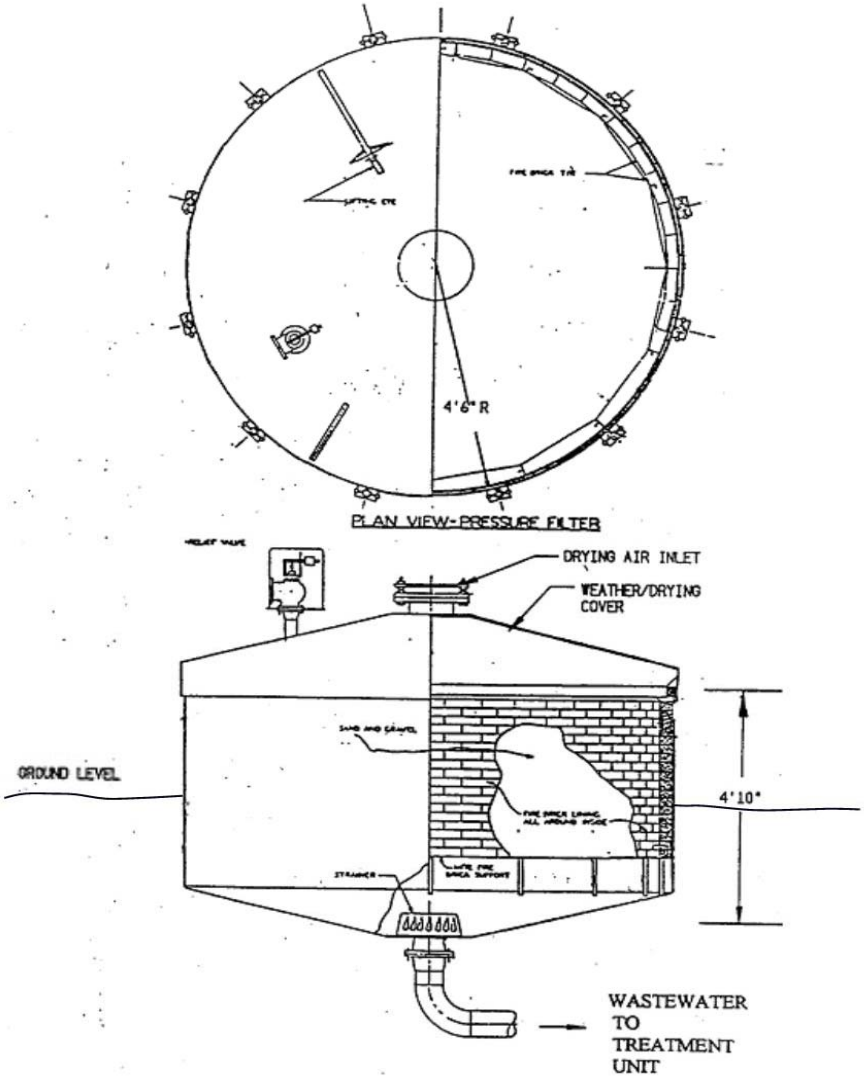

Figure 3
Schematic of the TA-16-401 and TA-16-406 Sand Filters

PHOTOGRAPHS

Photograph 1. TA-16-401 Sand Filter Prior to Removal of Sand, Gravel, and Firebrick

Photograph 2. TA-16-401 Sand Filter After Removal of Sand, Gravel, and Firebrick

Photograph 3. TA-16-406 Sand Filter After Removal of Sand, Gravel, and Firebrick

Photograph 4. Blowers and Piping Associated with the TA-16-401 and -406 Sand Filters Prior to Removal

Photograph 5. Area of Blowers and Piping Associated with the TA-16-401 and -406 Sand Filters After Removal

ATTACHMENT A

APPROVAL LETTER AND REVISED CLOSURE PLAN
FOR THE TA-16-401 AND -406 SAND FILTERS,
APPROVAL OF EXTENSION REQUEST,
AND REQUEST FOR EXTENSION

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

January 14, 2004

Mr. G. Pete Nanos
Director
Los Alamos National Laboratory
P. O. Box 1663, MS A100
Los Alamos, New Mexico 87545

Mr. Ralph Erickson
Manager
Los Alamos Site Office
Department of Energy
528 35th Street
Los Alamos, New Mexico 87544

SUBJECT: CLOSURE PLAN APPROVAL
TECHNICAL AREA 16 CLOSURE PLAN FOR THE
TA-16-401 AND -406 SAND FILTERS
MARCH 2003, REVISION 0.0, LA-UR-03-2091
LOS ALAMOS NATIONAL LABORATORY EPA ID NO. NM0890010515
HWB-LANL-03-004

Dear Messrs. Nanos and Erickson:

The U.S. Department of Energy and Los Alamos National Laboratory (Permittees) submitted the above-referenced Closure Plan to the New Mexico Environment Department (NMED) for NMED review on April 7, 2003. NMED issued a Notice of Deficiency (NOD) on the Closure Plan on April 28, 2003. The Permittees submitted revised Closure Plan pages to NMED on May 28, 2003, consisting of Section 4.3, Table 4, Table 5, and a certification page, revised to address soil sampling deficiencies identified in the NOD. The revised pages are included in the Closure Plan as Appendices A, B, and C.

NMED approves the revised Closure Plan.

The Sand Filters were authorized to treat hazardous waste containing high explosives by open burning as interim status units under the federal Resource Conservation and Recovery Act, the New Mexico Hazardous Waste Act, and 20.4.1.600 NMAC (incorporating 40 C.F.R. Part 265).

On October 17, 2003, NMED published a public notice of intent to approve the Closure Plan, with a 30-day public comment period ending on November 17, 2003. NMED received no comments during the public comment period.

If you have any questions or need additional information regarding this approval, please contact Lee Winn of my staff at (505) 428-2541.

Sincerely,

John E. Kieling
Manager
Permits Management Program

JEK:lw

cc: S. Martin NMED HWB
C. Will, NMED HWB
L. Winn, NMED HWB
L. King, EPA Region 6 (6PD-N)
G. Turner, DOE OLASO, MS A316
J. Ellvinger, LANL RRES-SWRC, MS K490
G. Bacigalupa, LANL RRES-SWRC, MS K490
A. Sherrard, LANL RRES-SWRC, MS K490

file: reading and LANL TA-16

Response to April 28, 2003 Notice of Deficiency Technical Area (TA)-16 Closure Plan for The TA-16-401 and –406 Sand Filters, Revision 0.0

LA-UR-03-3471
May 2003

Prepared by:
Los Alamos National Laboratory
Solid Waste Regulatory Compliance Group (RRES-SWRC)
Los Alamos, New Mexico 87545

Response to NMED Attachment A

Notice of Deficiency, April 28, 2003
Technical Area (TA)-16 Closure Plan for
The TA-16-401 and –406 Sand Filters, Revision 0.0

Introduction

The following information is the response by Los Alamos National Laboratory (LANL) to a Notice of Deficiency (NOD) sent by the New Mexico Environment Department (NMED) on April 28, 2003. The full title of the NOD is Notice of Deficiency, Technical Area (TA)-16 Closure Plan for The TA-16-401 and –406 Sand Filters, Revision 0.0, April 28, 2003. The NOD was officially received by the U.S. Department of Energy (DOE) Los Alamos Site Office (LASO) on April 30, 2003. The NMED required that LANL respond to the comments by May 30, 2003.

The following section, "NOD Comments and Responses," provides the two NOD comments (in bold and italics) and LANL's responses.

NOD Comments and Responses

1. ***Permittees shall revise "Table 4 – Analytical Methods and Use of Data" of the Closure Plan to include data for dioxin, furan (SW-846 analytical method 9290 [actually 8290]) and Perchlorate (SW-846 analytical method 314.0). Permittees reason for not analyzing for dioxin and furan was that these constituents would only be generated from burning high explosives (HE). In past operations residual HE was open burned after the liquid passed through the sand filters. Therefore, a potential for these constituents to be deposited on the soil exists due to deposition from air emissions. The Closure Plan should be revised to conduct a minimum amount of sampling for dioxin and furan in the soil regardless of whether there is an evidence of a release from cracks in the metal sand filter structures.***

   LANL took the following actions to respond to this comment:

   - Table 4 was revised to add dioxin, furan, and perchlorate.
   - Perchlorate and dioxin/furan were added to the constituents to be analyzed in Section 4.3.1.
   - Section 4.3.1 was revised to include sampling of dioxin and furan upslope of the sand filters.

   The revised pages are included in Appendix A, with changes highlighted, and in Appendix B without highlights.

2. ***Permittees shall revise "Table 5 – Potential Contaminants and Their Associated SSLs and ESLs" to include dioxin, furan and perchlorate. Permittees' reason for not including perchlorate in Table 5 was that there was no screening level for perchlorate. Soil Screening levels for all three constituents are published in the most recent U.S. Environmental Protection Agency Region VI Human Health Medium-Specific Screening Levels. These screening levels may be obtained at the following web site: http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm***

   Table 5 was revised to add dioxin, furan, and perchlorate. The revised table is included in Appendix A, with changes highlighted, and in Appendix B without highlights.

APPENDIX A

REVISED CLOSURE PLAN PAGES WITH HIGHLIGHTED CHANGES

4.3 Analytical Requirements

The analytical techniques used depend on whether the sample is taken to characterize waste or to determine whether environmental media should be removed, as described in Section 4.3.1. Analytical laboratory requirements and QA/quality control (QC) procedures are discussed in Sections 4.3.2 and 4.3.3, respectively.

4.3.1 Proposed Analytical Methods

The types of samples to be collected are described in Section 5.0. The selection of the analytical testing methods identified in Table 4 is based on whether samples are taken to characterize waste or to determine whether contaminated environmental media must be removed. If samples are taken to characterize waste, they will be analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and toxicity characteristic (TC) metals and organics by the methods listed in Table 4. If the samples are taken to determine whether environmental media must be removed, they will be analyzed for total metals and organics, and the other constituents shown in Table 5 so that they can be compared to the SSLs and ESLs shown in the table. Only solids will be analyzed for the SSL/ESL comparisons, while both liquids and solids may require analysis for waste characterization purposes. The samples will also be initially analyzed using the DX-2 HE Spot Test, a method used to detect the presence of HE at low parts-per-million levels. If the Spot Test is positive (i.e., HE is present), the samples will be submitted to an off-site laboratory for HE analysis using the methods described in Table 4.

Constituents of concern that would be characteristic of leaks from the sand filters are presented with their respective SSLs and ESLs in Table 5. Except for HE and barium, which is present in legacy explosives formulations, most of the other constituents are present in the incoming wastewater in very low (parts-per-million) concentrations. The predominant types of HE treated at the sand filters are 2,4,6-trinitrotoluene (TNT), cyclotetramethylenetetranitramine (HMX), and cyclotrimethylenetrinitramine (RDX). Other explosives, such as pentaerythrioltetranitrate (PETN), listed in Table 5 would be expected only in trace amounts. Nitrocellulose would be present as a constituent of HE binders. Several other chemicals (e.g., 2,4-dinitrotoluene and 2,6-dinitrotoluene) are included in Table 5 because they are associated with HE. Perchlorate and polychlorinated biphenyls (PCB) are included in Table 5 to cover the possibility that traces of these ~~PCB~~ contaminants~~ed oils~~ may have been in wastewater treated at the sand filters- Dioxin and furan will also be analyzed. These compounds are byproducts of combustion and would not result from leaks. Therefore, they will be analyzed only for samples taken in the first foot of soil to be used to indicate impacts from burning activities, deposited either by airborne or stormwater mechanisms. Deposition may have occurred from past operations at the TA-16 Burn Ground as well as the Cerro Grande Fire. Although RCRA constituents have been measured throughout the TA-16 Burn

Ground area, dioxin and furan have not been measured. While it is not the intent of this closure to characterize contamination patterns from legacy operations (as discussed earlier this will be addressed through corrective action) a limited number of samples upslope would be useful to help put dioxin and furan into perspective. Therefore, three samples will be taken to the north across the face of the slope behind the sand filters, the primary direction that pollutants from the sand filters, as well as legacy burning in the same locations, should have deposited. The first will be taken approximately 200 feet north of the sand filters. Two additional samples will be taken at 100 ft intervals directly west of the first samples. This will provide a cross-section of the area impacted by stormwater upgradient of the sand filters. The data will be included in the Closure Report.

Table 5 is intended to represent the most likely constituents; however, samples will also be analyzed for the wide variety of VOCs and SVOCs in accordance with Table 4. If other chemicals are detected above soil background levels, they will also be compared to their SSLs and ESLs, as described in Section 5.5.

4.3.2 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Table 4, as needed. Analytical laboratories will have undergone audits by LANL to ensure that they have a documented comprehensive QA/QC program; technical analytical expertise; a document control/records management plan; and the capability to perform data reduction, validation, and reporting.

4.3.3 Quality Assurance/Quality Control

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. The types of field QC samples that will be collected include trip blanks, field blanks, and field duplicates, as appropriate. Table 6 presents a summary of QC sample types, analysis, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples.

Analytical data generated as a result of the activities described in this closure plan will be verified and validated by the analytical laboratory. Data reduction will involve 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. At a minimum, analytical reports will include: a listing of each analyte; the analytical result for each analyte; units; the dilution factor, if any; the detection limit; and any laboratory-assigned qualifiers or codes. The results from QC samples such as blanks, spikes, calibrations, and reference to standard methods will also be included.

Table 4
Analytical Methods and Use of Data

Parameter	Matrix[1]	Analytical Method[2]	Use of Data
HE and associated compounds	Solid and liquid	SW-8330 SW-8332	• Comparison to SSLs/ESLs • Waste characterization
PCBs	Solid	SW-8082	• Comparison to SSLs/ESLs
TC Metals (except mercury)	Solid	SW-1311/8270C	• Waste characterization
	Liquid	SW-8270C	
TC Metals[3] – mercury	Solid	SW-1311/7471A	• Waste characterization
	Liquid	SW-7470A	
Total Metals			• Comparison to SSLs/ESLs
Barium	Solid	SW-7080A or -7081	
Cadmium	Solid	SW-7130 or -7131A	
Chromium	Solid	SW-7190 or -7191	
Lead	Solid	SW-7420 or -7421	
Silver	Solid	SW-7760A or 7761	
Mercury	Solid	SW-7471A or 7470A	
TC Organics[3]	Solid	SW-1311/8270C	• Waste Characterization
	Liquid	SW-8270C	
VOCs	Solid and liquid	SW-8260B	• Comparison to SSLs/ESLs • Waste Characterization
SVOCs	Solid and liquid	SW-8270C	• Comparison to SSLs/ESLs • Waste characterization
Dioxin/Furan	Solid	SW-8290	• Comparison to EPA SSLs
Perchlorate	Solid	SW-314	• Comparison to EPA SSLs

[1] Only solids (soil and tuff) will be analyzed for comparison with SSLs and ESLs.
[2] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846.*
[3] If total metals and organics have already been analyzed and all fall below TC regulatory levels, the totals analysis may be used instead of performing the TC analysis. EPA allows the totals analyzed for solids to be divided by 20 to represent the TC regulatory limits. Totals for liquids are not adjusted.

Table 5
Potential Contaminants and Their Associated SSLs and ESLs

Parameter	SSL	ESL	Method[b] (Nominal[c] Detection Limit in mg/kg)
	(mg/kg)[a]		
Organics			
Acetone	None	3.7 E+00	SW-8260B (5 E-02)
Benzene	5.6 E+00	5.5 E+01	SW-8260B (5 E-03)
Chloroform	3.0 E-01	2.8 E+01	SW-8260B (5 E-03)
1,2-Dichloroethane	7.2 E+00	4.7 E+00	SW-8260B (5 E-03)
Methylene chloride	2.7 E+03	7.0 E+00	SW-8260B (1 E-02)
Methyl ethyl ketone	8.9 E+04	1.3 E+03	SW-8260B (2 E-02)
o-Xylene	6.3 E+01	1.1 E+00	SW-8260B (5 E-03)
m,p-Xylene	6.3 E+01	1.1 E+00	SW-8260B (1 E-02)
HE and Associated Compounds			
2,4-Dinitrotoluene	3.0 E+02	1.0 E+00	SW-8330 (5 E-02)
2,6-Dinitrotoluene	None	6.5 E-01	SW-8330 (5 E-02)
1,3-Dinitrobenzene	None	2.1 E-04	SW-8330 (5 E-02)
HMX	7.4 E+03	4.2 E+01	SW-8330 (5 E-02)
Nitrobenzene	2.1 E+01	2.2 E+00	SW-8330 (5 E-02)
Nitroglycerine	1.5 E+03	1.4 E+02	SW-8332 (5 E-02)
PETN	None	1.4 E+04	SW-8330 (2 E-01)
RDX	1.9 E+02	9.1 E+00	SW-8330 (5 E-02)
TNT	7.4 E+01	7.0 E-01	SW-8330 (5 E-02)
Tetryl	None	2.0 E+00	SW-8330 (5 E-02)
1,3,5-Trinitrobenzene (sym-TNB)	None	1.5 E+01	SW-8330 (5 E-02)
Metals			
Barium	1.5 E+04	2.4 E+00	SW-7080A or -7061A (2 E-01)
Cadmium	1.9 E+02	1.0 E-01	7130 or7131A (5 E-02)
Chromium	6.6 E+02	2.0 E-01	7190 or 7191(1 E-01)
Lead	1.0 E+03	5.6 E+01	7420 or 7421 (2 E-02)
Mercury	2.0 E+01	5.0 E-02	7471A (5 E-02)
Silver	1.2 E+03	5.0 E-02	7760 or 7761 (1 E-01)
PCBs			
Arochlor-1016	8.9 E+00	2.5 E-02	SW-8082 (1 E-02)
Arochlor-1221	9.2 E+00	None	SW-8082 (2 E-02)
Arochlor-1232	9.2 E+00	None	SW-8082 (1 E-02)
Arochlor-1242	9.2 E+00	4.1 E-02	SW-8082 (1 E-02)
Arochlor-1248	2.5 E+00	7.2 E-03	SW-8082 (1 E-02)
Arochlor-1254	2.5 E+00	2.2 E-02	SW-8082 (1 E-02)
Arochlor-1260	2.5 E+00	4.4 E-01	SW-8082 (1 E-02)
Miscellaneous[d]			
Dioxin	1.8 E-05	-	SW-8290 (1.3 E-07)
Furan	9.5 E-00	-	SO-8290 (1.3 E-07)
Perchlorate	1.1 E+02	-	SW-314 (4 E-03)

[a] mg/kg = milligrams per kilogram.

[b] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methocs," *SW-846*.

[c] The actual detection limit will be dependent on the composition of the matrix and any interfering compounds. Data are not considered valid unless the detected value is twice the detection limit, although some EPA standard methods suggest that the value should be 5-10 times the detection limit.

[d] NMED has requested that these chemicals be compared to screening levels published in the most recent U.S. Environmental Protection Agency Region VI Human Health Medium-Specific Screening Levels rather than the NMED SSLs. These screening levels may be obtained at http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm.

APPENDIX B

REVISED CLOSURE PLAN PAGES WITHOUT HIGHLIGHTS

4.3 Analytical Requirements

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dioxin and furan have not been measured. While it is not the intent of this closure to characterize contamination patterns from legacy operations (as discussed earlier this will be addressed through corrective action) a limited number of samples upslope would be useful to help put dioxin and furan into perspective. Therefore, three samples will be taken to the north across the face of the slope behind the sand filters, the primary direction that pollutants from the sand filters, as well as legacy burning in the same locations, should have deposited. The first will be taken approximately 200 feet north of the sand filters. Two additional samples will be taken at 100 ft intervals directly west of the first samples. This will provide a cross-section of the area impacted by stormwater upgradient of the sand filters. The data will be included in the Closure Report.

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4.3.2 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Table 4, as needed. Analytical laboratories will have undergone audits by LANL to ensure that they have a documented comprehensive QA/QC program; technical analytical expertise; a document control/records management plan; and the capability to perform data reduction, validation, and reporting.

4.3.3 Quality Assurance/Quality Control

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. The types of field QC samples that will be collected include trip blanks, field blanks, and field duplicates, as appropriate. Table 6 presents a summary of QC sample types, analysis, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples.

Analytical data generated as a result of the activities described in this closure plan will be verified and validated by the analytical laboratory. Data reduction will involve 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. At a minimum, analytical reports will include: a listing of each analyte; the analytical result for each analyte; units; the dilution factor, if any; the detection limit; and any laboratory-assigned qualifiers or codes. The results from QC samples such as blanks, spikes, calibrations, and reference to standard methods will also be included.

Table 4
Analytical Methods and Use of Data

Parameter	Matrix[1]	Analytical Method[2]	Use of Data
HE and associated compounds	Solid and liquid	SW-8330 SW-8332	• Comparison to SSLs/ESLs • Waste characterization
PCBs	Solid	SW-8082	• Comparison to SSLs/ESLs
TC Metals (except mercury)	Solid	SW-1311/8270C	• Waste characterization
	Liquid	SW-8270C	
TC Metals[3] – mercury	Solid	SW-1311/7471A	• Waste characterization
	Liquid	SW-7470A	
Total Metals			• Comparison to SSLs/ESLs
Barium	Solid	SW-7080A or -7081	
Cadmium	Solid	SW-7130 or -7131A	
Chromium	Solid	SW-7190 or -7191	
Lead	Solid	SW-7420 or -7421	
Silver	Solid	SW-7760A or 7761	
Mercury	Solid	SW-7471A or 7470A	
TC Organics[3]	Solid	SW-1311/8270C	• Waste Characterization
	Liquid	SW-8270C	
VOCs	Solid and liquid	SW-8260B	• Comparison to SSLs/ESLs • Waste Characterization
SVOCs	Solid and liquid	SW-8270C	• Comparison to SSLs/ESLs • Waste characterization
Dioxin/Furan	Solid	SW-8290	• Comparison to EPA SSLs
Perchlorate	Solid	SW-314	• Comparison to EPA SSLs

[1] Only solids (soil and tuff) will be analyzed for comparison with SSLs and ESLs.
[2] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[3] If total metals and organics have already been analyzed and all fall below TC regulatory levels, the totals analysis may be used instead of performing the TC analysis. EPA allows the totals analyzed for solids to be divided by 20 to represent the TC regulatory limits. Totals for liquids are not adjusted.

Table 5
Potential Contaminants and Their Associated SSLs and ESLs

Parameter	SSL	ESL	Method[b] (Nominal[c] Detection Limit in mg/kg)
	(mg/kg)[a]		
Organics			
Acetone	None	3.7 E+00	SW-8260B (5 E-02)
Benzene	5.6 E+00	5.5 E+01	SW-8260B (5 E-03)
Chloroform	3.0 E-01	2.8 E+01	SW-8260B (5 E-03)
1,2-Dichloroethane	7.2 E+00	4.7 E+00	SW-8260B (5 E-03)
Methylene chloride	2.7 E+03	7.0 E+00	SW-8260B (1 E-02)
Methyl ethyl ketone	8.9 E+04	1.3 E+03	SW-8260B (2 E-02)
o-Xylene	6.3 E+01	1.1 E+00	SW-8260B (5 E-03)
m,p-Xylene	6.3 E+01	1.1 E+00	SW-8260B (1 E-02)
HE and Associated Compounds			
2,4-Dinitrotoluene	3.0 E+02	1.0 E+00	SW-8330 (5 E-02)
2,6-Dinitrotoluene	None	6.5 E-01	SW-8330 (5 E-02)
1,3-Dinitrobenzene	None	2.1 E-04	SW-8330 (5 E-02)
HMX	7.4 E+03	4.2 E+01	SW-8330 (5 E-02)
Nitrobenzene	2.1 E+01	2.2 E+00	SW-8330 (5 E-02)
Nitroglycerine	1.5 E+03	1.4 E+02	SW-8332 (5 E-02)
PETN	None	1.4 E+04	SW-8330 (2 E-01)
RDX	1.9 E+02	9.1 E+00	SW-8330 (5 E-02)
TNT	7.4 E+01	7.0 E-01	SW-8330 (5 E-02)
Tetryl	None	2.0 E+00	SW-8330 (5 E-02)
1,3,5-Trinitrobenzene (sym-TNB)	None	1.5 E+01	SW-8330 (5 E-02)
Metals			
Barium	1.5 E+04	2.4 E+00	SW-7080A or -7061A (2 E-01)
Cadmium	1.9 E+02	1.0 E-01	7130 or7131A (5 E-02)
Chromium	6.6 E+02	2.0 E-01	7190 or 7191(1 E-01)
Lead	1.0 E+03	5.6 E+01	7420 or 7421 (2 E-02)
Mercury	2.0 E+01	5.0 E-02	7471A (5 E-02)
Silver	1.2 E+03	5.0 E-02	7760 or 7761 (1 E-01)
PCBs			
Arochlor-1016	8.9 E+00	2.5 E-02	SW-8082 (1 E-02)
Arochlor-1221	9.2 E+00	None	SW-8082 (2 E-02)
Arochlor-1232	9.2 E+00	None	SW-8082 (1 E-02)
Arochlor-1242	9.2 E+00	4.1 E-02	SW-8082 (1 E-02)
Arochlor-1248	2.5 E+00	7.2 E-03	SW-8082 (1 E-02)
Arochlor-1254	2.5 E+00	2.2 E-02	SW-8082 (1 E-02)
Arochlor-1260	2.5 E+00	4.4 E-01	SW-8082 (1 E-02)
Miscellaneous[d]			
Dioxin	1.8 E-05	-	SW-8290 (1.3 E-07)
Furan	9.5 E-00	-	SO-8290 (1.3 E-07)
Perchlorate	1.1 E+02	-	SW-314 (4 E-03)

[a] mg/kg = milligrams per kilogram.
[b] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methocs," *SW-846*.
[c] The actual detection limit will be dependent on the composition of the matrix and any interfering compounds. Data are not considered valid unless the detected value is twice the detection limit, although some EPA standard methods suggest that the value should be 5-10 times the detection limit.
[d] NMED has requested that these chemicals be compared to screening levels published in the most recent U.S. Environmental Protection Agency Region VI Human Health Medium-Specific Screening Levels rather than the NMED SSLs. These screening levels may be obtained at http://www.epa.gov/earth1r6/6pd/rcra_c/pd-n/screen.htm.

APPENDIX C

CERTIFICATION

CERTIFICATION

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Barbara A. Stone for

James L. Holt
Associate Director, Operations
Los Alamos National Laboratory
Operator

5/27/03
Date Signed

Ralph E. Erickson
Manager, Los Alamos Site Office
National Nuclear Security Administration
U.S. Department of Energy
Owner/Operator

5/28/03
Date Signed

LA-UR-03-2091
March 2003

Los Alamos National Laboratory Technical Area 16 Closure Plan for the TA-16-401 and -406 Sand Filters

Revision 0.0

Prepared by:

Los Alamos National Laboratory
Risk Reduction and Environmental Stewardship Division
Solid Waste Regulatory Compliance Group (RRES-SWRC)
Los Alamos, New Mexico 87545

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
°C	degrees Celsius
D&D	decontamination and decommissioning
DOE/NNSA	U.S. Department of Energy, National Nuclear Security Administration
DX	Dynamic Experimentation
EPA	U.S. Environmental Protection Agency
ER	environmental restoration
ESA	Engineering Sciences and Applications Division
ESL	Environmental Screening Level
ft	feet/foot
HE	high explosives
HEWTF	High Explosives Wastewater Treatment Facility
HMX	cyclotetramethylenetetranitramine
in.	inch(es)
LANL	Los Alamos National Laboratory
LASO	Los Alamos Site Office
lb	pound(s)
LDR	Land Disposal Restrictions
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
OB	open burning
PCB	polychlorinated biphenyls
PETN	pentaerythrioltetranitrate
PPE	personal protective equipment
QA	quality assurance
QC	quality control
R&D	research and development
RCRA	Resource Conservation and Recovery Act
RDX	cyclotrimethylenetrinitramine
SSL	Soil Screening Level

LIST OF ABBREVIATIONS/ACRONYMS (Continued)

SOP	standard operating procedure
SVOC	semivolatile organic compound
SWRC	Solid Waste Regulatory Compliance Group
TA	Technical Area
TC	toxicity characteristic
Tetryl	2,4,6-Trinitrophenylmethylnitramin
TNT	2,4,6-trinitrotoluene
VOC	volatile organic compound
WAC	Waste acceptance criteria

1.0 INTRODUCTION

The New Mexico Environment Department (NMED), the University of California at Los Alamos National Laboratory (LANL), and the U.S. Department of Energy, National Nuclear Security Administration (DOE/NNSA) have a joint goal to reduce the number of permitted treatment units at LANL. LANL's Engineering Sciences and Applications (ESA) Division has determined that thermal treatment of wet high explosives (HE) at two structures within the Technical Area (TA) 16 Burn Ground will be performed at another treatment structure (the TA-16-388 Flash Pad) at the Burn Ground. The two structures to be closed, the TA-16-401 and TA-16-406 Sand Filters, hereinafter referred to as *the sand filters*, filter wastewater from HE operations before it is treated at the TA-16 High Explosives Wastewater Treatment Facility (HEWTF). The sand filters are included in LANL's National Pollutant Discharge Elimination System (NPDES) Permit Number NM0028355. The surface of each filter is also used as a "burn tray" to thermally treat wet HE. Therefore, the sand filters have also been included in the "Los Alamos National Laboratory General Part A Permit Application," (LANL, 1998) and subsequent revisions, as open burning (OB) units regulated under the Resource Conservation and Recovery Act (RCRA).

When OB operations are discontinued at the sand filters, the structures will not be removed because they are needed as NPDES-permitted wastewater pre-treatment units for the HEWTF. In this plan, LANL has proposed a method of closure that will meet the RCRA closure performance standards while preserving the sand filters for continued use for wastewater treatment. The activities described in this closure plan are intended to meet the closure requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), Subpart VI, Part 265, Subparts G and P [6-14-00].

2.0 GENERAL CLOSURE INFORMATION [20.4.1 NMAC, SUBPART VI, PART 265, SUBPART G]

This section was prepared in accordance with the requirements of 20.4.1 NMAC, Subpart IV, Part 265, Subparts G and P, as applicable. Until closure is complete and has been certified in accordance with 20.4.1 NMAC, Subpart VI, § 265.115 [6-14-00], a copy of the approved closure plan and any approved revisions will be on file at LANL's Solid Waste Regulatory Compliance Group (SWRC) and at the DOE/NNSA Los Alamos Site Office (LASO).

2.1 Closure Performance Standard [20.4.1 NMAC § 265.111]

The sand filters will be closed to meet the following performance standards:

- Minimize the need for further maintenance;
- Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste, hazardous constituents, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or atmosphere; and
- Comply with 20.4.1 NMAC § 265.381 [6-14-00] for thermal treatment structures during the closure of the sand filters.

These standards will be met by performing the closure activities (as described in Section 5.0), which include removing wastes and residues associated with thermal treatment, as well as any components associated with thermal treatment. These consist of ash (if present) on the surface of the sand filters, the firebrick lining the filters, and the blowers that dry HE prior to OB. The sand and gravel filter media will be removed temporarily so that the integrity of each steel vessel can be determined before it is placed back in service as a NPDES-permitted treatment structure. Any soil or tuff contaminated as a result of leakage from the sand filters will be characterized, removed, and properly treated and disposed of, as described in Section 5.0. All wastes generated during closure operations will be decontaminated or otherwise treated, recycled, and/or disposed of properly. Closure will be complete when the closure performance standards have been met, closure certification has been submitted to the Secretary of the NMED (see Section 2.6), and the NMED has approved the closure.

2.2 Partial and Final Closure [20.4.1 NMAC §§ 265.112(b) and 265.112(d)]

This closure plan implements partial closure (referred to as *closure* within this plan), rather than closure of the entire LANL facility. For these purposes, closure will consist of closing the RCRA-treatment portion of the sand filters while leaving other RCRA-regulated hazardous waste management units at the TA-16 Burn Ground and at LANL in service. Final closure will occur when LANL's remaining RCRA-regulated hazardous waste management units have been closed. Because of the ongoing nature of waste management operations at TA-16, security and administrative controls will be maintained by the DOE/NNSA or another authorized federal agency for as long as necessary to prohibit public access. Security and/or administrative fences in the vicinity of the sand filters will be maintained to ensure that public access is prevented.

2.3 Closure Schedule [20.4.1 NMAC §§ 265.112(b), 264.112(d)(2) and 265.113]

Once NMED approves the closure plan, closure activities will begin, according to the requirements of 20.4.1 NMAC § 265.112(d)(2) [6-14-00]. Activities will follow the estimated schedule presented in Table 1. All hazardous wastes (such as surface ash and firebrick) will be removed from the sand filters within 90 days of closure plan approval, and closure activities and reporting requirements will then be completed within 180 days of closure plan approval, as required by 20.4.1 NMAC § 265.113(a) and (b) [6-14-00]. In the event that closure is delayed, LANL will notify the Secretary of the NMED in accordance with the extension request requirements of 20.4.1 NMAC § 265.113(b) [6-14-00]. In addition, the demonstrations in 20.4.1 NMAC § 265.113(a)(1) and (b)(1) [6-14-00] will be made in accordance with 20.4.1 NMAC § 265.113(c) [6-14-00].

2.4 Amendment of the Closure Plan [20.4.1 NMAC § 265.112(c)]

In accordance with 20.4.1 NMAC § 265.112(c) [6-14-00], LANL will submit a written request to NMED for authorizing a change in the approved closure plan whenever:

- there are changes in operating plans or facility design that affect the closure plan,
- there is a change in the expected year of closure, or
- unexpected events that occur during closure that require modification of the approved closure plan.

LANL will submit the written request, along with a copy of the amended closure plan, to the Secretary of the NMED for approval. Submittal of the request will occur at least 60 days prior to the proposed change in design or operation, and no later than 60 days after an occurrence of an unexpected event that affects the closure plan. If the unexpected event occurs during the closure, the request will be submitted within 30 days of the occurrence. If the Secretary of the NMED requests a modification of the approved closure plan, a plan modification (in accordance with the request) will be submitted within 60 days of notification or within 30 days of notification if a change in facility condition occurs during the closure process.

2.5 Closure Cost Estimate, Financial Assurance, and Liability Requirements [20.4.1 NMAC §§ 265.112(b) and 265.140(c)]

In accordance with 20.4.1 NMAC § 265.140(c), LANL, as a federal facility, is exempt from the requirements of 20.4.1 NMAC, Subpart VI, Part 265, Subpart H [6-14-00], to provide a cost estimate, financial assurance mechanisms, and liability insurance for closure actions.

2.6 Closure Certification [20.4.1 NMAC § 265.115]

Within 60 days after completing RCRA closure activities for the sand filters, LANL will submit to the Secretary of the NMED, via certified mail, a certification that the sand filters have been closed in accordance with the specifications of the approved closure plan. The certification will be signed by the appropriate DOE/NNSA and LANL officials and by an independent, registered professional engineer, in accordance with 20.4.1 NMAC § 265.115 [6-14-00]. A copy of the closure report containing documentation that supports the independent, registered professional engineer's certification will also be furnished to the Secretary of the NMED. Copies of the certification and supporting documentation will be maintained by both DOE/NNSA LASO and SWRC.

2.7 Closure Report [20.4.1 NMAC § 265.115]

Upon completion of RCRA closure activities for the sand filters, a closure report will be prepared and provided to the Secretary of the NMED. The report will document the closure and contain the following items:

- The certification described in Section 2.6,
- A general summary of closure activities,
- Any significant variance from the approved closure plan and the reason for the variance,
- A summary of all sampling data associated with the closure,
- The location of the file of supporting documentation (e.g., memos, logbooks, laboratory sample analysis data),
- Storage or disposal location of any regulated hazardous wastes resulting from closure activities, and
- A certification of the report's accuracy.

2.8 Survey Plat and Post-Closure Requirements [20.4.1 NMAC § 265.116, §§ 265.117 through 265.120]

As part of closure, LANL will empty and inspect the steel vessels to determine whether these units released hazardous waste or hazardous waste constituents to the environment. If the structural integrity of the steel vessels has been compromised, the vessels will either be repaired or removed. Samples of impacted soil/tuff potentially contaminated by leaks will be collected for analysis. If the contaminant levels in soil/tuff exceed the appropriate NMED Soil Screening Levels (SSLs) (NMED, 2000) and/or the LANL Ecological Screening Levels (ESLs) (LANL, 1999), the soil/tuff will be removed. If the steel vessels are intact or repaired, the sand, gravel, and filter vessels will continue to function as pre-treatment filters for the HEWTF regulated under LANL's NPDES permit. However, the firebrick and blowers will be removed to render the structures unusable for OB. Additionally, LANL will decontaminate all the equipment used during closure activities; any equipment that remains contaminated after the decontamination process will be managed and disposed of properly. No temporary structures will be constructed at the site. Legacy contamination in the surrounding soil/tuff will be addressed as part of future TA-16 Burn Ground corrective action activities, which include investigation, characterization, assessments, and potential remediation. Therefore, the requirements for filing a survey plat and notification of restriction on post-closure care are not applicable to the RCRA closure of these sand filters.

3.0 DESCRIPTIONS OF THE TA-16 OB UNITS

3.1 Structures Description

The sand filters are located within an area referred to as the TA-16 Burn Ground. Figure 1 shows the location of TA-16 at LANL and Figure 2 shows the location of the Burn Ground and sand filters at TA-16. The sand filters are contained in ¾-inch (in.) steel funnel-shaped vessels that are 8 feet (ft), 9 in. in diameter and approximately 4 ft high. About half of each vessel is below ground level (see Figure 3). The base of each vessel is welded to underground pipes leading to the HEWTF's manhole tank. The vessels are filled with gravel at the bottom and topped with sand. The steel vessels are lined with firebrick to protect the steel during OB operations. Wastewater from HE operations is collected in sumps, and then pumped into a truck and transported to the sand filters. The flow rate through the sand filters is typically several gallons per minute, and it generally takes a day to unload a full tank truck into the filters.

Two types of wastewater are pre-treated within the sand filters. The first type is wastewater with low levels of HE, which is generated during HE processing (e.g., washing down of machining or pressing bays), from cleanup activities of HE-contaminated materials (such as steam-cleaning contaminated equipment), and other processes. The second type is HE saturated with water (e.g., filters from the HE-machining facility or HE that has been collected during environmental restoration [ER] activities and stored in water for safety reasons). As the wastewater percolates through the sand and gravel, the solids are removed and the filtered wastewater is piped to the HEWTF's manhole tank. Large particles of wet HE remain on the surface of the sand filters and must be dried before burning. When OB operations were conducted at the sand filters, a heavy steel lid was placed over the filter and the HE was dried with heated forced air for 4 or 5 days. After burning, any ash and the top layer of sand was removed, characterized, and disposed of properly.

OB operations on the surfaces of the sand filters have been conducted in accordance with 20.4.1 NMAC, Subpart VI, Part 265, Subpart P requirements. However, as stated in Section 1.0, the wastewater treatment activities and the sand filters themselves are regulated under LANL's NPDES permit (Permit Number NM0028355) and operate in accordance with the conditions prescribed in the NPDES permit. LANL will cease OB treatment on the surface of the sand

filters while leaving them in place after RCRA closure to function as NPDES-permitted units. Wet HE burning operations will be transferred to the TA-16-388 Flash Pad, where the wet HE will be simultaneously dried and burned using the propane burners at that unit. Wastewater containing small amounts of HE will continue to be filtered at the sand filters and any HE residue on the filters will be transported to TA-16-388 for drying and burning.

Current operations at the sand filters have little environmental impact. All wastewater passes first through the sand filters and then into activated carbon filters at the HEWTF. The treated wastewater must meet water quality standards before discharge into the environment. The burning of HE also has low impacts because HE burns very energetically and has low air emissions (U.S. Environmental Protection Agency [EPA], 1998). The slow transfer rates from the trucks to the sand filters ensure that they do not overflow; standing water could destroy the integrity of the filter layers. As a result, there have been no spills from the filters that have contaminated the surrounding soil. However, contamination exists around the sand filters from discontinued operations at the Basket Wash Facility, TA-16-390. The sand filters are located in an area where filter beds received HE-contaminated wash water from the Basket Wash Facility, which operated from 1951 to 1966. HE- and solvent-contaminated wash water was conveyed to filter beds in open troughs. Trough overflows contaminated areas upgradient of the sand filters. After filtering through sand in the filter beds, the water drained through pipes into a ditch that led to an adjacent outfall area southwest of the filter beds. These contaminated areas (see Figure 4) are listed in Table A of the Hazardous and Solid Waste Amendments Module of LANL's current Hazardous Waste Facility Permit. They will be investigated, characterized, assessed (including human health and ecological assessments), and remediated, as necessary, as part of future corrective action activities at the TA-16 Burn Ground.

LANL will remove the contents of the sand filters to inspect the underground portion of the steel vessels for corrosion (the aboveground portion is inspected weekly to ensure there is no leakage) as part of LANL's ongoing program under NPDES to ensure the wastewater treatment units are functioning properly. If the vessels are intact or if any detected leaks can be repaired, the sand and gravel will be returned to the vessels so that they can be used as NPDES-permitted wastewater pre-treatment filters. The underground pipes from the sand filters to the HEWTF are also part of the NPDES-permitted wastewater treatment unit. They are periodically inspected using remotely operated video cameras. Because an inspection was conducted in April 2002 and

the piping was found to be intact, another inspection of the underground pipes is not proposed as part of this plan.

3.2 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste [20.4.1 NMAC § 265.112(b)]

At LANL, HE wastes and HE-contaminated wastes are generated primarily at TA-9 and TA-16 from HE research and development (R&D), HE production, and decontamination and decommissioning (D&D) activities. These waste streams include homogeneous and heterogeneous wastes. They are described in the "Waste Analysis Plan" included in LANL's "Response to Notice of Deficiency: General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; RCRA Permit Applications, Los Alamos National Laboratory, EPA ID # NM0890010515" (LANL, 2002). The following waste streams have been treated at the sand filters:

- Non-radioactive HE-contaminated water that may contain trace solvents and/or regulated hazardous metals from laboratory analysis; HE processing; ER, R&D, and D&D activities; drilling activities; and maintenance activities.
- Non-radioactive wet HE consisting of HE-machining chips, ER and D&D wastes, sludges, spent activated carbon, filters, and filter solids that result primarily from filtration of HE wastewater; ER, R&D, and D&D activities; and HE processing.

The maximum total capacity of hazardous waste that could be treated at each sand filter is 1,000 pounds (lb) of HE per burn. This process design capacity was specified in the "Los Alamos National Laboratory General Part A Permit Application," Revision 0.0 (LANL, 1998) and subsequent revisions. An estimate of the total maximum inventory of hazardous waste treated during the active life (1980 to present) of the TA-16-401 Sand Filter is 109,600 lb. An estimate of the total maximum inventory of hazardous waste treated over the active life (1980 to present) of the TA-16-406 Sand Filter is 97,500 lb.

4.0 SAMPLING AND ANALYSIS PROCEDURES [20.4.1 NMAC § 265.112(b)]

Established sampling and analysis procedures will be followed to ensure that samples are collected and analyzed using suitable methods and that samples are handled and transported correctly. Procedures will also ensure that proper quality assurance (QA) is conducted and appropriate records are kept.

4.1 Sample Collection

The types, locations, and quantities of samples to be collected are described in Section 5.0. These samples will be collected using the LANL standard operating procedures (SOP) referenced in Table 2. The types of media that may require sampling are sand and gravel, soil and tuff, and decontamination wastewater. The referenced sampling techniques assume that HE levels are low. Should areas of high concentrations of HE be found, these methods will be modified to ensure that workers are protected from the risk of explosion. Samples will not be taken from some materials, such as the blowers. Instead, these materials will tested using the Dynamic Experimentation (DX)-2 HE Spot Test at locations where HE may have collected (e.g., joints, seams, and the bottoms of pipes). If the Spot Test is positive, the material will be flashed.

4.2 Sample Management Procedures

Samples will be collected and transported using documented chain-of-custody and sample management procedures to ensure the integrity of the sample and provide an accurate and defensible written record of the possession and handling of a sample from the time of collection, through laboratory analysis. The following provides a description of chain-of-custody; sample documentation; sample handling, preservation, and storage; and sample packaging and transportation requirements that will be followed during the sampling activities associated with the closure.

4.2.1 Chain-of-Custody

A sample chain-of-custody form will be maintained by sampling personnel until the samples are relinquished to the analytical laboratory. The sample collector will be responsible for the integrity of the samples collected until transferred to another person. 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/chain-of-custody form. A chain-of-custody form will accompany the sample containers or coolers, including transport to the analytical laboratory.

4.2.2 Sample Documentation

Sampling personnel will complete and maintain records to document sampling and analysis activities. Sample documentation will include sample identification numbers, sample container labels and custody seals, chain-of-custody forms, analysis request forms, locations of sample logbooks detailing sample collection activities, and shipping forms, as necessary.

All pertinent information on the sampling effort will be recorded in a logbook. The sample logbook will include the following types of information:

- Date and time of sample collection
- The project name
- The project location
- The collector's name
- Possible sample hazards
- Sample identification number and a sketch or description of the sample location
- Volume/mass of sample taken
- Type of analysis for each sample
- Date and time of collection
- Observations, such as weather conditions, if any
- Sample history (e.g., media such as soil).

4.2.3 Sample Handling, Preservation, Storage, and Transportation

Samples will be collected and containerized in appropriate pre-cleaned sample containers. Table 3 presents the requirements for sample containers and preservation techniques. Samples that require cooling to 4 degrees Celsius (°C) will be placed in a cooler with ice or ice gel or in a refrigerator immediately upon collection and during transport. All packaging and transportation activities will meet all relevant local, state, and federal laws and internal LANL requirements.

4.3 Analytical Requirements

The analytical techniques used depend on whether the sample is taken to characterize waste or to determine whether environmental media should be removed, as described in Section 4.3.1. Analytical laboratory requirements and QA/quality control (QC) procedures are discussed in Sections 4.3.2 and 4.3.3, respectively.

4.3.1 Proposed Analytical Methods

The types of samples to be collected are described in Section 5.0. The selection of the analytical testing methods identified in Table 4 is based on whether samples are taken to characterize waste or to determine whether contaminated environmental media must be removed. If samples are taken to characterize waste, they will be analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and toxicity characteristic (TC) metals and organics by the methods listed in Table 4. If the samples are taken to determine whether environmental media must be removed, they will be analyzed for total metals and organics so that they can be compared to the SSLs and ESLs shown in Table 5. Only solids will be analyzed for the SSL/ESL comparisons, while both liquids and solids may require analysis for waste characterization purposes. The samples will also be initially analyzed using the DX-2 HE Spot Test, a method used to detect the presence of HE at low parts-per-million levels. If the Spot Test is positive (i.e., HE is present), the samples will be submitted to an off-site laboratory for HE analysis using the methods described in Table 4.

Constituents of concern that would be characteristic of leaks from the sand filters are presented with their respective SSLs and ESLs in Table 5. Except for HE and barium, which is present in legacy explosives formulations, all of the constituents are present in the incoming wastewater in very low (parts-per-million) concentrations. The predominant types of HE treated at the sand filters are 2,4,6-trinitrotoluene (TNT), cyclotetramethylenetetranitramine (HMX), and cyclotrimethylenetrinitramine (RDX). Other explosives, such as pentaerythrioltetranitrate (PETN), listed in Table 5 would be expected only in trace amounts. Nitrocellulose would be present as a constituent of HE binders. Several other chemicals (e.g., 2,4-dinitrotoluene and 2,6-dinitrotoluene) are included in Table 5 because they are associated with HE. Polychlorinated biphenyls (PCB) are included in Table 5 to cover the possibility that traces of PCB-contaminated oils may have been treated at the sand filters. Table 5 is intended to represent the most likely

constituents; however, samples will also be analyzed for the wide variety of VOCs and SVOCs in accordance with Table 4. If other chemicals are detected above soil background levels, they will also be compared to their SSLs and ESLs, as described in Section 5.5.

4.3.2 Analytical Laboratory Requirements

The analytical laboratory will perform the detailed qualitative and quantitative chemical analyses specified in Table 4, as needed. Analytical laboratories will have undergone audits by LANL to ensure that they have a documented comprehensive QA/QC program; technical analytical expertise; a document control/records management plan; and the capability to perform data reduction, validation, and reporting.

4.3.3 Quality Assurance/Quality Control

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. The types of field QC samples that will be collected include trip blanks, field blanks, and field duplicates, as appropriate. Table 6 presents a summary of QC sample types, analysis, frequency, and acceptance criteria. QC samples will be given a unique sample identification number and submitted to the analytical laboratory as blind samples.

Analytical data generated as a result of the activities described in this closure plan will be verified and validated by the analytical laboratory. Data reduction will involve 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. At a minimum, analytical reports will include: a listing of each analyte; the analytical result for each analyte; units; the dilution factor, if any; the detection limit; and any laboratory-assigned qualifiers or codes. The results from QC samples such as blanks, spikes, calibrations, and reference to standard methods will also be included.

5.0 CLOSURE PROCEDURES FOR THE TA-16-401 AND TA-16-406 SAND FILTERS [20.4.1 NMAC § 265.112(B)]

Closure activities will consist of:

1. Removing any ash, if present, from the sand filters and characterizing and properly disposing of the ash,;
2. Removing the firebrick and either reusing it in another TA-16 Burn Ground structure or, if it cannot be reused, properly treating, characterizing, and disposing of the firebrick;
3. Removing, decontaminating as necessary, and recycling the metal blowers;
4. Removing the sand and gravel from the steel vessels;
5. Inspecting the interiors of the steel vessels for structural integrity to determine if leaks have occurred;
6. If necessary, assessing the extent of repairs required and repairing or removing the steel vessels;
7. If leaks have occurred, assessing the extent and level of soil/tuff contamination and removing soil/tuff, if necessary;
8. Placing the sand and gravel filter media back into the steel vessels if no leaks are found or if leaks are repaired;
9. Restoring the site, if soil/tuff has been removed; and
10. Decontaminating and/or disposing of contaminated equipment, structures, and soils.

If the steel vessels have not leaked, only Steps 1-5 and 8 will be conducted and the area directly upslope of the sand filters will be bermed to prevent run-on of legacy contaminants. ESA-authorized HE personnel will follow TA-16 Burn Ground procedures to conduct Steps 1-5 and 8. Non-ESA workers needed to complete Steps 6-9, if performed, will operate under a worker protection plan to be developed as part of this project. Personnel will wear appropriate personal protective equipment (PPE), specified by an ESA-Facilities Management industrial hygienist or the Industrial Hygiene and Safety Group, and will follow good hygiene practices to protect themselves from exposure to hazards. Generally, activities at the sand filters have required PPE consisting of coveralls, steel-toed/composite-toed shoes, and safety glasses because the quantities of chemicals in the wastewater are very low. The level of PPE may change if unanticipated types or levels of chemicals are found (e.g., pieces of HE from legacy operations). Hard hats will be

worn if an overhead danger is present.. Workers will have appropriate training, including Hazardous Waste Operations and Emergency Response Training for general site workers (24-hour and 8-hour refresher) and HE Access Area site-specific training The elements of closure are presented in Sections 5.1 through 5.7.

5.1 Sand, Gravel, and Firebrick Components Removal, Segregation, Treatment, and/or Disposal

Before the interior of the steel vessels is inspected, the sand, gravel, and firebrick components of each sand filter will be removed and segregated using a combination of hand and possibly mechanized methods. After removal and segregation, the sand and gravel will be placed on bermed liners or in appropriate containers, which may include covered dumpsters or roll-off bins.

Because OB will no longer be conducted at the sand filters, the firebrick is no longer needed to protect the integrity of the filters and will be removed. If the firebrick can be reused (i.e., it is not too friable for reuse or damaged during removal), it will be used at the TA-16-388 Flash Pad and/or the TA-16-399 HE Burn Tray. This reduces the amount of waste generated during closure and helps to achieve LANL's waste minimization goals. However, if the firebrick must be disposed and is determined to have high enough levels of HE contamination to be reactive, it will be flashed at TA-16-388 or steam cleaned at TA-16-400 before shipment to an off-site treatment, storage, or disposal facility. If the firebrick must be disposed of, a sample of the firebrick will be collected in accordance with LANL-ER-SOP-6.28, "Chip Sampling of Porous Surfaces," and submitted for Toxicity Characteristic Leaching Procedure metals analysis using the methods shown in Table 4. The firebrick will be staged in a less-than-90-day storage area, pending analysis. Depending on the analytical results, LANL may request a determination that the firebricks [i.e., "debris" as defined in 20.4.1 NMAC § 268.2(g)] are no longer contaminated with hazardous waste, as allowed by the "Contained-In Rule" [see 20.4.1 NMAC § 261.3(f)(2)].

If the integrity of the steel vessels is found to be unacceptable and the decision is made to remove them, the sand and gravel will be placed in a less-than-90-day storage area pending receipt of analytical data. One grab sample of sand will be collected in accordance with LANL-ER-SOP-6.09, "Spade and Scoop Method for Collection of Soil Samples." The sample will be submitted for fixed-laboratory analyses (VOCs, SVOCs, and TC metals and organics) using the

waste analysis methods described in Table 4. One aliquot of the sample will be field-analyzed for HE (using the DX-2 HE Spot Test). If the HE Spot Test produces a positive HE result, the grab sample will be also be submitted for fixed-laboratory analysis of HE using the methods described in Table 4. The sand analysis will also be used to characterize the gravel for waste disposal because the sand layer filters the more concentrated wastewater before it comes into contact with the gravel layer (and is, therefore, more contaminated than the gravel) and because the gravel is a difficult media to analyze.

5.2 Blower Removal and Recycling

The blowers and the piping used to dry the HE on the surface of the sand filters will be removed. HE-contaminated portions, if any, will be flashed at the TA-16-388 Flash Pad or steam cleaned at TA-16-400 prior to recycling the metal.

5.3 Sand Filter Inspections

The sand, gravel, and firebrick components of the sand filters will be removed and managed as described above. LANL inspects the aboveground portion of the steel vessels weekly and have found no leaks. Therefore, the subsurface portion of the steel vessels (including any seams and connections) will be examined in this step to determine if leaks have occurred through cracks, weld breaks, and/or corroded areas. If corrosion extends half an inch or more into the ¾-in. steel of a vessel, an ultrasonic thickness inspection, magnetic flux, or other American Petroleum Institute-authorized method will be used to determine whether the vessel has been breached. These methods may also be required if small cracks are present.

5.4 Vessel Assessment, Repair, or Removal

If leaks are found during the inspections discussed in Section 5.3, the extent of any cracks, weld breaks, and/or corroded areas will be assessed to determine if repairs would be cost-effective. If minor repairs to the steel vessels are required, competent specialists that are certified to perform these activities will make the repairs. If extensive repairs are needed, a decision will be made to either make the necessary repairs or to remove the steel vessels and replace them with another filter for pre-treatment of the wastewater entering the HEWTF. If removed, the vessels will be tested for HE using the DX-2 HE Spot Test. If contaminated, they will be flashed or steam cleaned and the metal recycled. If not, they will be recycled without treatment.

5.5 Soil Sampling in the Event of Steel Vessel Leakage

If the inspections discussed in Section 5.3 indicate that leakage has occurred, samples of soil/tuff will be collected to characterize the nature and extent of contamination. Samples will be collected in accordance with the appropriate procedures referenced in Table 2.

A hand or mechanized auger will be used to collect samples in soil or soft tuff, unless the sample depth requires the use of a backhoe. If the tuff is highly indurated, a backhoe may be used to remove a ft or more of soil and then collect samples. If a steel vessel is not removed, the initial set of samples will be taken at the level of the leak and 1 ft above and below the leak (if the leak is at least 1 ft below the surface) and as close to the vessel as possible. If a steel vessel is removed, the initial sample will be collected from soil or tuff at locations where leaks have occurred and at the bottom of the excavation. Vessel removal will be conducted so that soil or tuff near the leak is not disturbed or, if disturbed, is kept segregated so that it can be sampled. The need for subsequent sampling is described in Table 7. Alternatively, if (1) the SSLs/ESLs are exceeded, (2) the contaminants are those that would be expected from the sand filters, and (3) contamination is visible, the visibly contaminated area may be excavated until it is no longer apparent. Samples would then be collected from the excavated material and the edges and bottom of the excavated area for analysis. This will avoid waiting for sampling results in the event of obvious contamination. A step-wise evaluation of the scope of soil/tuff removal activities will be evaluated based on the following criteria:

1. Soil/tuff surrounding the sand filters will not be removed if analytical results (VOCs, total metals, and HE) confirm that constituents are below their associated SSLs/ESLs.
2. If constituents are above their associated SSLs/ESLs and above soil background levels, LANL will determine whether the contamination is attributable to legacy operations (e.g., concentrations of contaminants are no different than those found upslope of the sand filters). Legacy contamination will be addressed as part of future corrective action activities. Background soil concentration values will be derived from studies developed under the LANL corrective action or other programs, or will be determined from samples taken as part of this closure project.
3. If contamination attributable to the sand filters exceeds SSLs/ESLs, soil/tuff will be removed from the area associated with that sample location. Additional sampling and soil/tuff removal, as described in Table 7, will be completed to ensure that all contaminated soil/tuff associated with leaks from the sand filters and exceeding the SSLs/ESLs has been removed. Depending on the analytical results, LANL may request a determination that the soil/tuff (i.e., "environmental media") are no longer contaminated

with hazardous waste, as allowed by the "Contained-In Rule" in 20.4.1 NMAC § 261.3(f)(2).

5.6 Site Restoration

If a sand filter is removed and soil/tuff excavation activities are conducted, the affected area will be backfilled to the original grade with clean material (e.g., soil, crushed tuff). Clean material will be placed so as to prevent erosion. Best management practices will also be employed at the site to prevent and/or control storm water run-on and runoff.

5.7 Disposal or Decontamination of Equipment, Structures, and Soils [20.4.1 NMAC § 265.114]

All potentially hazardous waste from closure activities will be transferred to containers, placed in a less-than-90-day storage area, and sampled and analyzed for the waste characterization parameters presented in Table 4, as appropriate. Wastes generated as a result of closure will be managed as shown in Table 8. Off-site treatment, storage, or disposal facility locations are dependent on the constituents present in the waste, and will be documented in the closure report.

Equipment that becomes contaminated during closure operations and any structures and contaminated soils removed as part of closure will be decontaminated or characterized and sent off-site for further treatment, storage, or disposal. Because HE is present in all waste streams treated at the sand filters and any equipment, structures, or soils impacted by the sand filters will be HE-contaminated, it will be the indicator tested to ensure decontamination has occurred. Removal of HE will also ensure removal of other contaminants that may be present at the sand filters. HE is removed from objects either by flashing at TA-16-388 or by cleaning with water. The method used will depend on the configuration of the contaminated material. If there are cracks or interstices that cannot be effectively steam cleaned, the item will be flashed. If the item does not have to be flashed and is large (e.g., a backhoe), it will be taken to TA-16-400 to be steam cleaned. If the object is small (e.g., a hand auger), it will be cleaned with compounds such as Fantastik® or Alconox® and water at the site. The decontamination step will be repeated until the HE Certifying Agent, who performs the DX-2 HE Spot Test, determines that the item is decontaminated and can be released from the HE area. Decontamination water generated at TA-16-400 is collected in a sump connected to the building. Decontamination water generated at the TA-16 Burn Ground will be placed in appropriate containers, and characterized to determine if it

meets the waste acceptance criteria (WAC) for the HEWTF. If so, it will be transported to that facility and treated. If not, it will be sent off-site for further treatment and/or disposal.

All excavated soil/tuff will be stored in less-than-90-day storage areas pending receipt of analytical results. Waste-characterization grab samples (1 per 20 cubic yards of excavated soil/tuff) will be collected in accordance with LANL-ER-SOP-6.09, "Spade and Scoop Method for Collection of Soil Samples." The samples will be analyzed for waste characterization purposes (VOCs, SVOCs, and TC metals and organics) using the methods presented in Table 4. The samples will be field-analyzed for HE (using the DX-2 HE Spot Test). If the HE Spot Test produces a positive HE result, the grab sample(s) will also be submitted for fixed-laboratory analysis of HE using the methods presented in Table 4. Additional analyses may be required prior to disposal in order to address the WAC of the disposal facility. Soil/tuff will be treated on site, sent off site for further treatment, and/or disposed, as appropriate, based on the waste characterization analytical results and the results of the determination, if any, that soil/tuff is no longer contaminated with hazardous waste, as allowed by the "Contained-In Rule" in 20.4.1 NMAC § 261.3(f)(2).

6.0 REFERENCES

EPA, 1998, "Emission Factors for the Disposal of Energetic Materials by Open Burning and Open Detonation (OB/OD), (EPA/600/R-98/103).

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LANL, 1999, "Screening Level Ecological Risk Assessment Methods," LA-UR-99-1406, Los Alamos National Laboratory, Los Alamos, New Mexico.

LANL, 1998, "Los Alamos National Laboratory General Part A Permit Application," Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

NMED, 2000, "Technical Background Document for Development of Soil Screening Levels," December 18, 2000.

CERTIFICATION

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

James L. Holt

4/1/03
Date Signed

James L. Holt
Associate Director, Operations
Los Alamos National Laboratory
Operator

4/03/03
Date Signed

Ralph E. Erickson
Manager, Los Alamos Site Office
National Nuclear Security Administration
U.S. Department of Energy
Owner/Operator

Table 1
Closure Schedule

An estimated total of 180 days will be required to accomplish closure procedures and reporting requirements. The year of closure for the sand filters is 2003. Closure will proceed according to the schedule below:

Activity	Maximum Time Allowed
Notify NMED by Submitting Closure Plan	-90 Days
Procure Equipment and Subcontractors	-45 Days
Final Receipt of Wastes	-10 Days
Final Treatment of Wastes	-5 Days
NMED Approval of Closure Plan	Day 0
Begin Closure Activities	Day 0
Remove Sand, Gravel, and Firebrick Components	Day 5
Segregate Sand, Gravel, and Firebrick	Day 10
Evaluate Firebrick for Reuse or Disposal	Day 10
Remove Metal Blowers	Day 15
Treat Firebrick (if necessary)	Day 20
Sample Firebrick and Submit for Analysis (if necessary)	Day 25
Treat Blowers	Day 25
Inspect Steel Vessels	Day 25
Sample Sand and Submit for Analysis (if necessary)	Day 40
Repair or Remove Steel Vessels (if necessary)	Day 40
Collect Soil/Tuff Samples for Analysis (if necessary)	Day 45
Treat Steel Vessels (if necessary)	Day 45
Replace Sand and Gravel (if vessels intact or repaired)	Day 50
Evaluate Soil/Tuff Analytical Data (if necessary)	Day 75
Remove Contaminated Soil/Tuff (if necessary)	Day 80
Collect Additional Soil/Tuff Samples for Analysis (if necessary)	Day 115
Decontaminate Equipment (if necessary)	Day 120
Evaluate Analytical/Waste Characterization Data (if necessary)	Day 125
Send Contaminated Media to Disposal Facility (if necessary)	Day 130
Restore Site (if necessary)	Day 140
Submit Closure Certification to NMED	Day 180

NOTE: The schedule above indicates the maximum number of calendar days, relative to Day 0, within which each activity will be completed. Some activities may be conducted simultaneously.

Table 2
Sampling Procedures

Media	Sampling Procedure
Firebrick	LANL-ER-SOP-6.28, "Chip Sampling of Porous Surfaces"
Soil and Tuff	LANL-ER-SOP-6.09, "Spade and Scoop Method for Collection of Soil Samples" or LANL-ER-SOP-6.10, "Hand Auger and Thin-Wall Tube Sampler"
Wastewater	LANL-ER-SOP-6.15, "Coliwasa Sampler for Liquids and Slurries"

Table 3
Sample Containers and Preservation Techniques

Parameter	Method[a]	Matrix	Container	Preservation
Inorganic Analytes				
All metals	SW-6000, -7000, and -8000 series	Water	Plastic, 500 mL	HNO_3 to pH<2 4 °C
		Solid/Other	Glass, 250 mL	None, 4 °C
Volatile Organic Analytes				
VOCs	SW-8260	Water	Amber Glass, 2 x 40 mL	4 °C; HCl to pH<2
		Solid/Other	Amber Glass, 125 mL or ENCORE samplers (2)	4 °C
Semivolatile Organic Analytes				
SVOCs	SW-8270	Water	Amber Glass, 4 L	4 °C
		Solid/Other	Glass, 250 mL	4 °C
PCBs				
PCBs	SW-8082	Water	Amber Glass, 4 L	4 °C
		Solid/Other	Glass, 250 mL	4 °C
High Explosives				
High Explosives	DX-2 Spot Test	Solid/Liquid	None	None
High Explosives and Associated Compounds: HMX, RDX, TNT, PETN, Tetryl, and Other Nitrobenzenes and Nitrotoluenes	SW-8330	Water	Amber Glass, 4 L	4 °C
		Solid/Other	Glass, 250 mL	4 °C
Nitroglycerine	SW-8332	Water	Amber Glass, 4 L	4 °C
		Solid/Other	Glass, 250 mL	4 °C

[a] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.

HCl = hydrochloric acid
HNO_3 = nitric acid
mL = milliliter
L = liter

Table 4
Analytical Methods and Use of Data

Parameter	Matrix[1]	Analytical Method[2]	Use of Data
HE and associated compounds	Solid and liquid	SW-8330 SW-8332	• Comparison to SSLs/ESLs • Waste characterization
PCBs	Solid	SW-8082	• Comparison to SSLs/ESLs
TC Metals (except mercury)	Solid	SW-1311/8270C	• Waste characterization
	Liquid	SW-8270C	
TC Metals[3] – mercury	Solid	SW-1311/7471A	• Waste characterization
	Liquid	SW-7470A	
Total Metals			• Comparison to SSLs/ESLs
Barium	Solid	SW-7080A or -7081	
Cadmium	Solid	SW-7130 or -7131A	
Chromium	Solid	SW-7190 or -7191	
Lead	Solid	SW-7420 or -7421	
Silver	Solid	SW-7760A or 7761	
Mercury	Solid	SW-7471A or 7470A	
TC Organics[3]	Solid	SW-1311/8270C	• Waste Characterization
	Liquid	SW-8270C	
VOCs	Solid and liquid	SW-8260B	• Comparison to SSLs/ESLs • Waste Characterization
SVOCs	Solid and liquid	SW-8270C	• Comparison to SSLs/ESLs • Waste characterization

[1] Only solids (soil and tuff) will be analyzed for comparison with SSLs and ESLs.
[2] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[3] If total metals and organics have already been analyzed and all fall below TC regulatory levels, the totals analysis may be used instead of performing the TC analysis. EPA allows the totals analyzed for solids to be divided by 20 to represent the TC regulatory limits. Totals for liquids are not adjusted.

Table 5
Potential Contaminants and Their Associated SSLs and ESLs

Parameter	SSL	ESL	Method[b] (Nominal[c] Detection Limit in mg/kg)
	(mg/kg)[a]		
Organics			
Acetone	None	3.7 E+00	SW-8260B (5 E-02)
Benzene	5.6 E+00	5.5 E+01	SW-8260B (5 E-03)
Chloroform	3.0 E-01	2.8 E+01	SW-8260B (5 E-03)
1,2-Dichloroethane	7.2 E+00	4.7 E+00	SW-8260B (5 E-03)
Methylene chloride	2.7 E+03	7.0 E+00	SW-8260B (1 E-02)
Methyl ethyl ketone	8.9 E+04	1.3 E+03	SW-8260B (2 E-02)
o-Xylene	6.3 E+01	1.1 E+00	SW-8260B (5 E-03)
m,p-Xylene	6.3 E+01	1.1 E+00	SW-8260B (1 E-02)
HE and Associated Compounds			
2,4-Dinitrotoluene	3.0 E+02	1.0 E+00	SW-8330 (5 E-02)
2,6-Dinitrotoluene	None	6.5 E-01	SW-8330 (5 E-02)
1,3-Dinitrobenzene	None	2.1 E-04	SW-8330 (5 E-02)
HMX	7.4 E+03	4.2 E+01	SW-8330 (5 E-02)
Nitrobenzene	2.1 E+01	2.2 E+00	SW-8330 (5 E-02)
Nitroglycerine	1.5 E+03	1.4 E+02	SW-8332 (5 E-02)
PETN	None	1.4 E+04	SW-8330 (2 E-01)
RDX	1.9 E+02	9.1 E+00	SW-8330 (5 E-02)
TNT	7.4 E+01	7.0 E-01	SW-8330 (5 E-02)
Tetryl	None	2.0 E+00	SW-8330 (5 E-02)
1,3,5-Trinitrobenzene (sym-TNB)	None	1.5 E+01	SW-8330 (5 E-02)
Metals			
Barium	1.5 E+04	2.4 E+00	SW-7080A or -7061A (2 E-01)
Cadmium	1.9 E+02	1.0 E-01	7130 or7131A (5 E-02)
Chromium	6.6 E+02	2.0 E-01	7190 or 7191(1 E-01)
Lead	1.0 E+03	5.6 E+01	7420 or 7421 (2 E-02)
Mercury	2.0 E+01	5.0 E-02	7471A (5 E-02)
Silver	1.2 E+03	5.0 E-02	7760 or 7761 (1 E-01)
PCBs			
Arochlor-1016	8.9 E+00	2.5 E-02	SW-8082 (1 E-02)
Arochlor-1221	9.2 E+00	None	SW-8082 (2 E-02)
Arochlor-1232	9.2 E+00	None	SW-8082 (1 E-02)
Arochlor-1242	9.2 E+00	4.1 E-02	SW-8082 (1 E-02)
Arochlor-1248	2.5 E+00	7.2 E-03	SW-8082 (1 E-02)
Arochlor-1254	2.5 E+00	2.2 E-02	SW-8082 (1 E-02)
Arochlor-1260	2.5 E+00	4.4 E-01	SW-8082 (1 E-02)

[a] mg/kg = milligrams per kilogram.
[b] "SW" refers to EPA, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methocs," *SW-846*.
[c] The actual detection limit will be dependent on the composition of the matrix and any interfering compounds. Data are not considered valid unless the detected value is twice the detection limit, although some EPA standard methods suggest that the value should be 5-10 times the detection limit.

Table 6
Recommended Quality Control Samples, 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, HE	One sample per sampling day	Not Applicable
Field Duplicate	Chemical	1 for each 10 samples of single media	Relative percent difference less than or equal to 20 percent

[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.

Table 7
Sampling and Soil/Tuff Removal Activities

Analytical Results	Action	
Contaminants are below SSLs/ESLs	• No soil/tuff removal required. • If steel vessel has been removed, backfill excavation with clean soil.	
Results of the sample analysis show that the contamination is attributable to legacy operations and is not attributable to leaks from the sand filters	• No soil/tuff removal required (will be accomplished under corrective action). • If steel vessel has been removed, backfill excavation with clean soil.	
Samples are above the SSLs/ESLs and contamination is attributable to leaks from the sand filters	Area is soil or soft tuff that can be sampled with an auger	• Sample using auger at one or more feet below and laterally from the previous sample locations. Excavate if contaminants are above SSLs/ESLs. • Continue sampling/excavating until contaminants are below SSLs/ESLs. • Backfill excavation with clean soil.
	Area is highly indurated tuff and difficult to sample using an auger	• Excavate one or more feet vertically and horizontally into the tuff and sample. • Continue excavating/sampling until contaminants are below SSLs/ESLs. • Backfill excavation with clean soil.

Table 8
Potential Waste Materials, Waste Types, and Disposal Options

Potential Waste Materials	Potential Waste Type (s)	Treatment or Disposal Options
PPE	Not hazardous Hazardous	Subtitle D landfill The PPE will be treated on- or off-site to meet Land Disposal Restriction (LDR) treatment standards, if necessary, and disposed in a Subtitle C or D landfill, as appropriate.
Decontamination wash water	Meets HEWTF or sanitary waste system WAC Does not meet the HEWTF WAC	HEWTF or sanitary sewer Characterize and send off site for further treatment and/or disposal.
Firebrick, sand, and/or gravel, if not reused	Not hazardous Hazardous	Subtitle D landfill Depending on constituents present, a no-longer-contained-in determination may be requested from NMED. If granted, the waste will be disposed in a Subtitle D landfill. Otherwise, the waste will be treated on- or off-site, if necessary, to meet LDR treatment standards and disposed in a Subtitle C or D landfill, as appropriate.
Sand or tuff, if removed	Not hazardous Hazardous	Subtitle D landfill Depending on constituents present, a no-longer-contained-in determination may be requested from NMED. If granted, the waste will be disposed in a Subtitle D landfill. Otherwise, the waste will be treated on- or off-site, if necessary, to meet LDR treatment standards and disposed in a Subtitle C or D landfill, as appropriate.

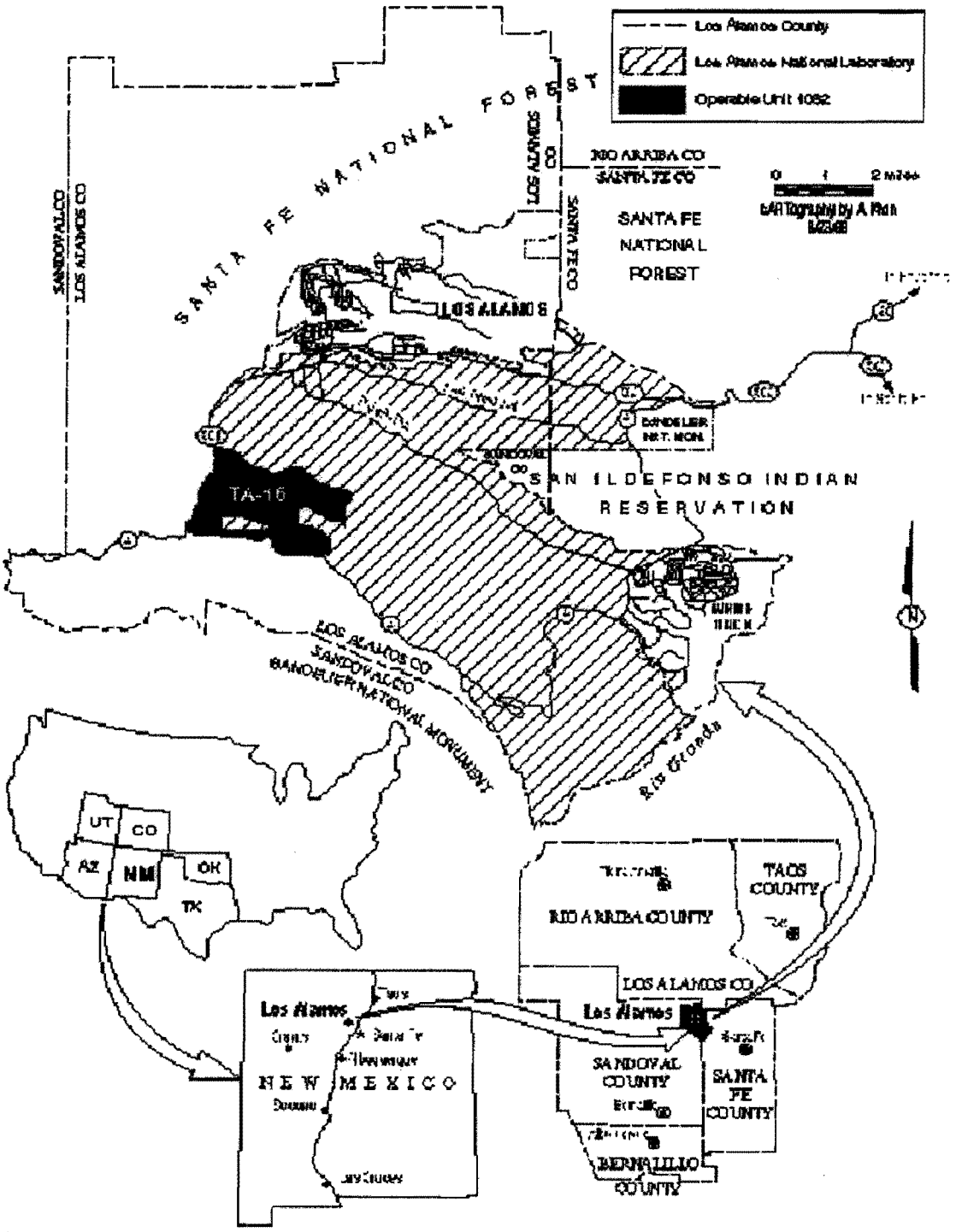

Figure 1
Location of TA-16

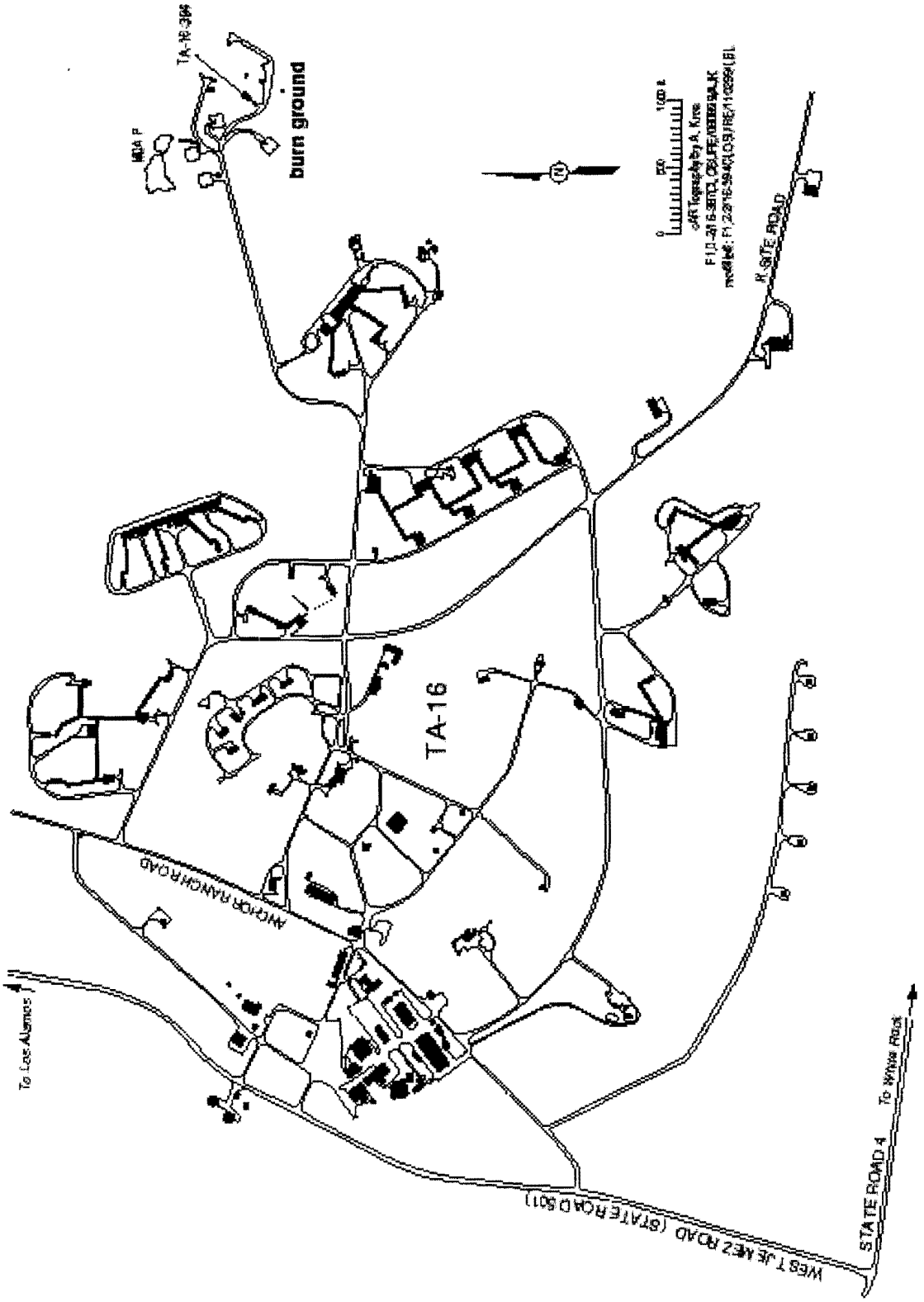

Figure 2
Site Map of TA-16 Showing the Location of the TA-16 Burn Ground and the TA-16-401 and TA-16-406 Sand Filters

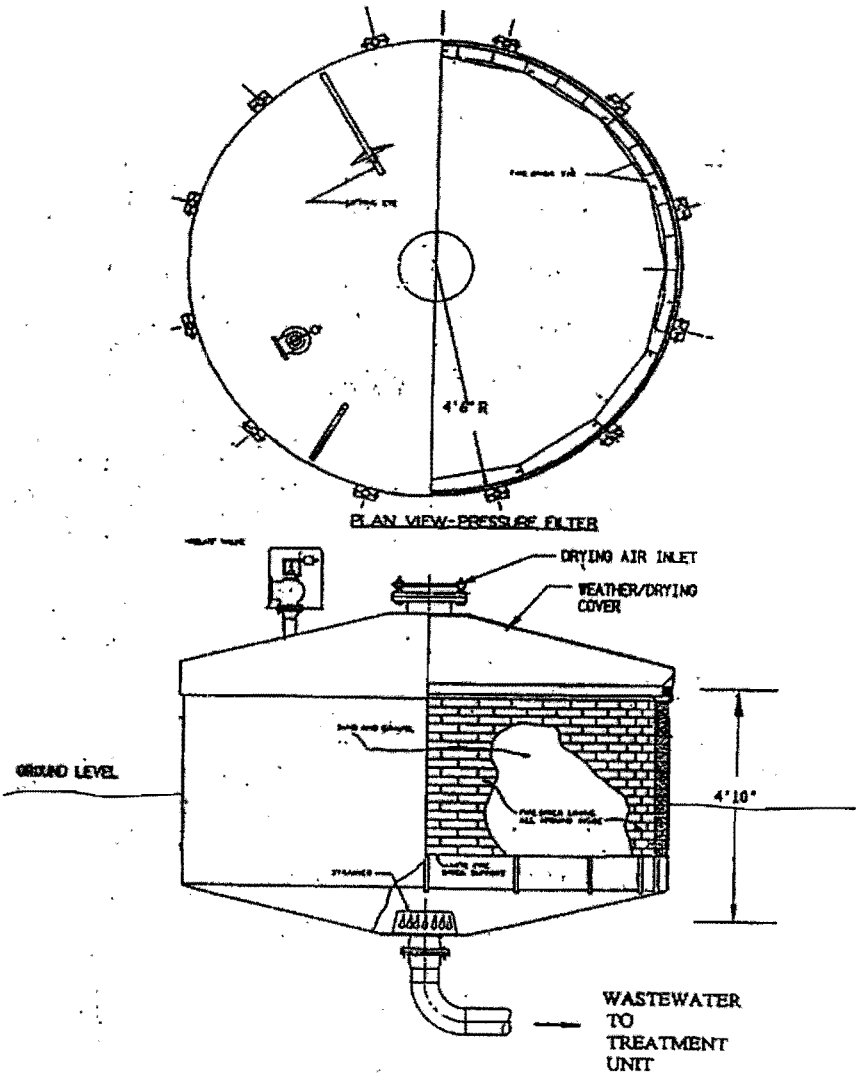

Figure 3
Schematic of the TA-16-401 and TA-16-406 Sand Filters

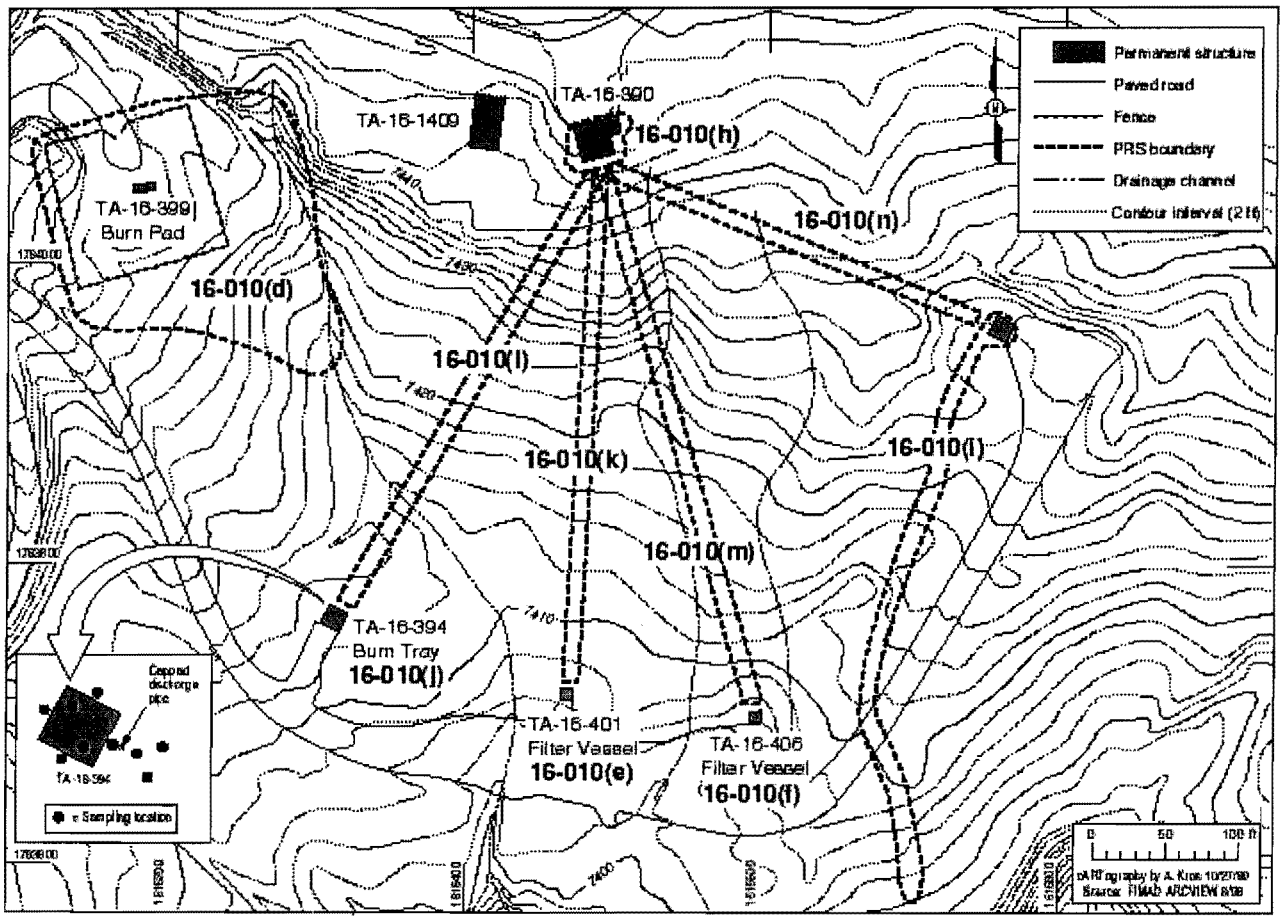

Figure 4

Location of TA-16-401 and TA-16-406 Sand Filters with Respect to Other Corrective Action Sites and Hazardous Waste Management Units at the TA-16 Burn Ground

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 6, 2004

Mr. G. Pete Nanos, Director
Los Alamos National Laboratory
P. O. Box 1663, MS A100
Los Alamos, NM 87545

Edwin L. Wilmot, Manager
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, New Mexico 87544

RE: APPROVAL OF TIME EXTENSION REQUEST FOR TECHNICAL AREA 16 CLOSURE PLAN FOR THE TA-16-401 AND -406 SAND FILTERS LOS ALAMOS NATIONAL LABORATORY NM0890010515 HWB-LANL-03-004

Dear Messrs. Nanos and Wilmot:

The New Mexico Environment Department (NMED) has received and reviewed the U. S. Department of Energy and the University of California (Permittees) Los Alamos National Laboratory's (LANL's) letter dated November 16, 2004 (ENV-SWRC:04-083). The subject of the letter was to request a time extension to the closure schedule of the Technical Area (TA) 16-401 and -406 closure plan. The reasons given for the request were the recent LANL stand down and additional delays expected because of inclement winter weather.

NMED approves the time extension request and requires all necessary closure activities, as outlined in Table 1 of Permittees' previously revised schedule dated April 20, 2004, be completed by June 1, 2005.

Should you have any questions regarding this letter please contact Lee Winn of my staff at (505) 428-2541.

Sincerely,

John E. Kieling
Manager
Permits Management Program

JEK:lw

cc: J. Bearzi, NMED HWB
D. Cobrain, NMED HWB
L.Winn, NMED HWB
L. King, EPA 6PD-N
T. Grieggs, LANL RRES-SWRC, MS K490
J. Ellvinger, LANL RRES-SWRC, MS K490
G. Bacigalupa, LANL RRES-SWRC, MS K490
A. Sherrard, LANL RRES-SWRC, MS C928
G. Turner, DOE LASO, MS A316

File: Reading and TA-16 2004

Los Alamos
NATIONAL LABORATORY

Solid Waste Regulatory Compliance
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-0666/Fax (505) 667-5224

Date: November 16, 2004
Refer To: ENV-SWRC:04-083

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. John Kieling
Permits Management Program
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

SUBJECT: Request for an Extension for Technical Area 16 Closure Plan for the TA-16-401 and –406 Sand Filters due to Laboratory Stand Down

Dear Mr. Kieling:

Due to the Los Alamos National Laboratory (LANL) stand down, the closure of the TA-16-401 and–406 sand filters is running behind schedule. Prior to the stand down, the sand and firebrick were analyzed in accordance with the closure plan and found to be non-hazardous. The soil, gravel, and firebrick were removed from TA-16-401 and the vessel was thickness tested; no leaks were found. We expect to resume closure operations soon, with an estimated four-month delay due to the shutdown. Additional delays are expected due to inclement winter weather. Therefore, please consider this request to extend the required completion date of the closure until June 2005, with the understanding that every effort will be made to work diligently to complete the closure before then, if possible.

We appreciate your assistance. If you have any comments or questions regarding the schedule, please contact either Tony Grieggs at (505) 665-0451 or Ann Sherrard at (505) 665-7226.

Sincerely,

Tony Grieggs
Group Leader

TG:AS:vc

Laurie King
New Mexico/Federal Facilities Section
Environmental Protection Agency
Region 6, 1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Lee Winn
RCRA Permits Management Program
Hazardous & Radioactive Materials Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

K Hargis, LANL, RRES-DO, MS J591
D. Hayden, LANL, ESA-WMM, MS C930
E. Louderbough, LANL, LC-ESH, MS A187
G. Turner, LASO, LANL, LANL, MS A316
J. Ellvinger, LANL, RRES-SWRC, MS K490
L. Vigil-Holterman, LANL, RRES-SWRC, MS K490
[redacted]
IM-5, LANL, MS A150
RRES-SWRC File, K490

ATTACHMENT B

ANALYTICAL DATA FOR SAND REMOVED FROM
THE TA-16-406 SAND FILTER

ASSAIGAI ANALYTICAL LABORATORIES, INC.
4301 Masthead NE • Albuquerque, New Mexico 87109 • (505) 345-8964 • FAX (505) 345-7259
3332 Wedgewood, Ste. N • El Paso, Texas 79925 • (915) 593-6000 • FAX (915) 593-7820
127 Eastgate Drive, 212-C • Los Alamos, New Mexico 87544 • (505) 662-2558

Explanation of codes	
B	analyte detected in Method Blank
E	result is estimated
H	analyzed out of hold time
N	tentatively identified compound
S	subcontracted
1-9	see footnote

LOS ALAMOS NATIONAL LABS
attn: **DUSTIE RICH**
P.O. BOX 1663, MS K490
LOS ALAMOS NM 87545

STANDARD

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17** Receipt: **05-14-04**

William P. Davis, President of Assaigai Analytical Laboratories, Inc.

Sample: ***04SWRC483*** Collected: *05-13-04 10:15:00* By: *DR*
Matrix: ***SOIL***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405328-01A		**SW846 8260B Purgeable VOCs by GC/MS**					By:	J/AZC		
X04608	XG.2004.932.8	75-34-3	1,1 Dichloroethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	75-35-4	1,1 Dichloroethene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	79-34-5	1,1,2,2 Tetrachloroethane	0.009	mg / Kg	1	0.005	B	05-27-04	05-27-04
X04608	XG.2004.932.8	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg	1	0.01		05-27-04	05-27-04
X04608	XG.2004.932.8	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	78-87-5	1,2 Dichloropropane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	95-63-6	1,2,4-Trimethylbenzene	ND	mg / Kg	1	0.01		05-27-04	05-27-04
X04608	XG.2004.932.8	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	108-67-8	1,3,5-Trimethylbenzene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg	1	0.05		05-27-04	05-27-04
X04608	XG.2004.932.8	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg	1	0.01		05-27-04	05-27-04
X04608	XG.2004.932.8	78-93-3	2-Butanone (MEK)	ND	mg / Kg	1	0.025		05-27-04	05-27-04
X04608	XG.2004.932.8	591-78-6	2-Hexanone (MBK)	ND	mg / Kg	1	0.025		05-27-04	05-27-04
X04608	XG.2004.932.8	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg	1	0.025		05-27-04	05-27-04
X04608	XG.2004.932.8	67-64-1	Acetone	ND	mg / Kg	1	0.05		05-27-04	05-27-04
X04608	XG.2004.932.8	107-02-8	Acrolein	ND	mg / Kg	1	0.1		05-27-04	05-27-04
X04608	XG.2004.932.8	107-13-1	Acrylonitrile	ND	mg / Kg	1	0.1		05-27-04	05-27-04
X04608	XG.2004.932.8	71-43-2	Benzene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
X04608	XG.2004.932.8	75-27-4	Bromodichloromethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04

ACCREDITED

REPRODUCTION OF THIS REPORT IN LESS THAN FULL REQUIRES THE WRITTEN CONSENT OF AAL.
THIS REPORT MAY NOT BE USED IN ANY MANNER BY THE CLIENT OR ANY OTHER THIRD PARTY TO CLAIM
PRODUCT ENDORSEMENT BY THE NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM.

Assalgai Analytical Laboratories, Inc.

Certificate of Analysis

lient: **LOS ALAMOS NATIONAL LABS**
roject: **8M02 X205 HEMR 0000**
rder: **0405328** **LOS17** Receipt: **05-14-04**

ample: ***04SWRC483*** Collected: *05-13-04 10:15:00* By: *DR*
latrix: ***SOIL***

C Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
405328-01A		**SW846 8260B Purgeable VOCs by GC/MS**					By:	J/AZC		
.04608	XG.2004.932.8	75-25-2	Bromoform	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	74-83-9	Bromomethane	ND	mg / Kg	1	0.05		05-27-04	05-27-04
.04608	XG.2004.932.8	75-15-0	Carbon disulfide	ND	mg / Kg	1	0.025		05-27-04	05-27-04
.04608	XG.2004.932.8	56-23-5	Carbon tetrachloride	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	108-90-7	Chlorobenzene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	124-48-1	Chlorodibromomethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	75-00-3	Chloroethane	ND	mg / Kg	1	0.025		05-27-04	05-27-04
.04608	XG.2004.932.8	67-66-3	Chloroform	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	74-87-3	Chloromethane	ND	mg / Kg	1	0.025		05-27-04	05-27-04
.04608	XG.2004.932.8	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8		cis-1,3 Dichloropropene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	74-95-3	Dibromomethane	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	97-63-2	Ethyl methacrylate	ND	mg / Kg	1	0.025		05-27-04	05-27-04
.04608	XG.2004.932.8	100-41-4	Ethylbenzene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8		Freon 113	ND	mg / Kg	1	0.035		05-27-04	05-27-04
.04608	XG.2004.932.8	75-71-8	Freon 12	ND	mg / Kg	1	0.05		05-27-04	05-27-04
.04608	XG.2004.932.8	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg	1	0.005		05-27-04	05-27-0
.04608	XG.2004.932.8	75-09-2	Methylene chloride	ND	mg / Kg	1	0.05		05-27-04	05-27-
.04608	XG.2004.932.8	91-20-3	Naphthalene	0.027	mg / Kg	1	0.025	B	05-27-04	05-27-04
.04608	XG.2004.932.8	95-47-6	o-Xylene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	108-38-3/106-42	p/m-Xylenes	ND	mg / Kg	1	0.01		05-27-04	05-27-04
.04608	XG.2004.932.8	100-42-5	Styrene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	127-18-4	Tetrachloroethene (PCE)	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	108-88-3	Toluene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	79-01-6	Trichloroethene	ND	mg / Kg	1	0.005		05-27-04	05-27-04
.04608	XG.2004.932.8	75-69-4	Trichlorofluoromethane	ND	mg / Kg	1	0.025		05-27-04	05-27-04
.04608	XG.2004.932.8	108-05-4	Vinyl acetate	ND	mg / Kg	1	0.025		05-27-04	05-27-04
.04608	XG.2004.932.8	75-01-4	Vinyl chloride	ND	mg / Kg	1	0.01		05-27-04	05-27-04
405328-01B		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**					By:	CWJ		
.04571	XG.2004.897.10	75-35-4	1,1 Dichloroethylene	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	71-43-2	Benzene	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	56-23-5	Carbon tetrachloride	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	108-90-7	Chlorobenzene	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	67-66-3	Chloroform	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	78-93-3	Methyl ethyl ketone	ND	mg / L	1	0.005		05-24-04	05-24-04
.04571	XG.2004.897.10	127-18-4	Tetrachloroethylene	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	79-01-6	Trichloroethylene	ND	mg / L	1	0.001		05-24-04	05-24-04
.04571	XG.2004.897.10	75-01-4	Vinyl chloride	ND	mg / L	1	0.005		05-24-04	05-24-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **LOS ALAMOS NATIONAL LABS**

Project: **8M02 X205 HEMR 0000**

Order: **0405328** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC484*** Collected: *05-13-04 10:15:00* By: *DR*

Matrix: ***SOIL***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405328-02A		**SW846 3550A/8270C SVOCs by GC/MS**					By:	DS		
X04604	XG.2004.939.11	120-82-1	1,2,4-Trichlorobenzene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	95-50-1	1,2-Dichlorobenzene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	541-73-1	1,3-Dichlorobenzene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	106-46-7	1,4-Dichlorobenzene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	90-12-0	1-Methylnaphthalene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	58-90-2	2,3,4,6-Tetrachlorophenol	ND	mg / Kg	1	1.5		05-27-04	05-27-04
X04604	XG.2004.939.11	95-95-4	2,4,5-Trichlorophenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	88-06-2	2,4,6-Trichlorophenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	120-83-2	2,4-Dichlorophenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	105-67-9	2,4-Dimethylphenol	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	51-28-5	2,4-Dinitrophenol	ND	mg / Kg	1	0.67		05-27-04	05-27-04
X04604	XG.2004.939.11	121-14-2	2,4-Dinitrotoluene	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	606-20-2	2,6-Dinitrotoluene	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	91-58-7	2-Chloronaphthalene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	95-57-8	2-Chlorophenol	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	91-57-6	2-Methylnaphthalene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	95-48-7	2-Methylphenol	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	88-74-4	2-Nitroaniline	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	88-75-5	2-Nitrophenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	91-94-1	3,3-Dichlorobenzidine	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11		3+4 Methylphenol	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	99-09-2	3-Nitroaniline	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	534-52-1	4,6-Dinitro-2-methylphenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	101-55-3	4-Bromophenyl-phenylether	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	59-50-7	4-Chloro-3-methylphenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	106-47-8	4-Chloroaniline	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	7005-72-3	4-Chlorophenyl-phenylether	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	100-01-6	4-Nitroaniline	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	100-02-7	4-Nitrophenol	ND	mg / Kg	1	0.6		05-27-04	05-27-04
X04604	XG.2004.939.11	83-32-9	Acenaphthene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	208-96-8	Acenaphthylene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	62-53-3	Aniline	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	120-12-7	Anthracene	0.14	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11		Azobenzene&1,2-Diphenylhydrazine	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	56-55-3	Benzo (a) anthracene	0.073	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	50-32-8	Benzo(a)pyrene	0.066	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11		Benzo(b & k)fluoranthene	0.15	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	191-24-2	Benzo(g,h,i)perylene	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	64-85-0	Benzoic acid	ND	mg / Kg	1	3		05-27-04	05-27-04
X04604	XG.2004.939.11	100-51-6	Benzyl alcohol	ND	mg / Kg	1	1.5		05-27-04	05-27-04
X04604	XG.2004.939.11	111-44-4	bis (2-Chloroethyl) ether	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	111-91-1	bis(2-Chloroethoxy)methane	ND	mg / Kg	1	0.03		05-27-04	05-27-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17** Receipt: **05-14-04**

Sample: ***04SWRC484*** Collected: *05-13-04 10:15:00* By: *DR*
Matrix: ***SOIL***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405328-02A		**SW846 3550A/8270C SVOCs by GC/MS**					By:	DS		
X04604	XG.2004.939.11	108-60-1	bis(2-Chloroisopropyl)ether	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	117-81-7	bis(2-Ethylhexyl)phthalate	11	mg / Kg	1	0.3	E	05-27-04	05-27-04
X04604	XG.2004.939.11	85-68-7	Butylbenzylphthalate	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	218-01-9	Chrysene	0.091	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	53-70-3	Dibenz(a,h)anthracene	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	132-64-9	Dibenzofuran	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	84-66-2	Diethylphthalate	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	131-11-3	Dimethylphthalate	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	84-74-2	di-n-Butylphthalate	2.9	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	117-84-0	di-n-Octylphthalate	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	206-44-0	Fluoranthene	0.15	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	86737	Fluorene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	118-74-1	Hexachlorobenzene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	87-68-3	Hexachlorobutadiene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	77-47-4	Hexachlorocyclopentadiene	ND	mg / Kg	1	1.5		05-27-04	05-27-04
X04604	XG.2004.939.11	67-72-1	Hexachloroethane	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	193-39-5	Indeno(1,2,3-cd)pyrene	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	78-59-1	Isophorone	ND	mg / Kg	1	0.03		05-27-04	05-27-
X04604	XG.2004.939.11	91-20-3	Naphthalene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	98-95-3	Nitrobenzene	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	62-75-9	n-Nitroso-dimethyl-amine	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	621-64-7	n-Nitroso-di-n-propylamine	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	86-30-6	n-Nitrosodiphenylamine	ND	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	87-86-5	Pentachlorophenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	85-01-8	Phenanthrene	0.060	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	108-95-2	Phenol	ND	mg / Kg	1	0.3		05-27-04	05-27-04
X04604	XG.2004.939.11	129-00-0	Pyrene	0.16	mg / Kg	1	0.03		05-27-04	05-27-04
X04604	XG.2004.939.11	110-86-1	Pyridine	ND	mg / Kg	1	0.3		05-27-04	05-27-04
0405328-02B		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**					By:	DS		
X04560	XG.2004.907.4	106-46-7	1,4-Dichlorobenzene	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4	95-95-4	2,4,5-Trichlorophenol	ND	mg / L	1	0.01		05-21-04	05-25-04
X04560	XG.2004.907.4	88-06-2	2,4,6-Trichlorophenol	ND	mg / L	1	0.01		05-21-04	05-25-04
X04560	XG.2004.907.4	121-14-2	2,4-Dinitrotoluene	ND	mg / L	1	0.01		05-21-04	05-25-04
X04560	XG.2004.907.4	118-74-1	Hexachlorobenzene	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4	87-68-3	Hexachlorobutadiene	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4	67-72-1	Hexachloroethane	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4		m-Cresol & p-Cresol	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4	98-95-3	Nitrobenzene	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4	95-48-7	o-Cresol	ND	mg / L	1	0.001		05-21-04	05-25-04
X04560	XG.2004.907.4	87-86-5	Pentachlorophenol	ND	mg / L	1	0.01		05-21-04	05-25-04
X04560	XG.2004.907.4	110-86-1	Pyridine	ND	mg / L	1	0.01		05-21-04	05-25-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

lient: **LOS ALAMOS NATIONAL LABS**

ject: **8M02 X205 HEMR 0000**

rder: **0405328** **LOS17** Receipt: **05-14-04**

ample: ***04SWRC485*** Collected: *05-13-04 10:15:00* By: *DR*

latrix: ***SOIL***

IC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
405328-03B		**SW846 1311/3010A/6010B ICP TCLP**					By:	KDW		
I04782	MT.2004.985.82	7440-38-2	Arsenic	ND	mg / L	1	0.2		05-24-04	05-26-04
I04782	MT.2004.985.82	7440-39-3	Barium	4.4	mg / L	1	0.2		05-24-04	05-26-04
I04782	MT.2004.985.82	7440-43-9	Cadmium	ND	mg / L	1	0.02		05-24-04	05-26-04
I04782	MT.2004.985.82	7440-47-3	Chromium	ND	mg / L	1	0.02		05-24-04	05-26-04
I04782	MT.2004.985.82	7782-49-2	Selenium	ND	mg / L	1	0.05		05-24-04	05-26-04
I405328-03B		**SW846 1311/3010A/7000 series AA-FL TCLP**					By:	BJM		
I04782	MT.2004.949.23	7439-92-1	Lead	ND	mg / L	1	0.1		05-24-04	05-25-04
I04782	MT.2004.969.99	7440-22-4	Silver	ND	mg / L	1	0.01		05-24-04	05-26-04
I405328-03B		**SW846 1311/7470A CVAA TCLP**					By:	BJM		
I04814	MT.2004.1004.27	7439-97-6	Mercury	ND	mg / L	1	0.0002		05-28-04	05-28-04

Sample: ***04SWRC486*** Collected: *05-13-04 10:15:00* By: *DR*

Matrix: ***SOIL***

C Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
I405328-04A		**SW846 8330 Explosives by HPLC**					By:	W/JWB		
X04550	XG.2004.956.7	99-35-4	1,3,5-Trinitrobenzene	76000	ug / kg	99	100		05-17-04	05-29-04
X04550	XG.2004.884.12	99-65-0	1,3-Dinitrobenzene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.956.7	118-96-7	2,4,6-Trinitrotoluene	420000	ug / kg	99	100		05-17-04	05-29-04
X04550	XG.2004.884.12	121-14-2	2,4-Dinitrotoluene	2200	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.884.12	606-20-2	2,6-Dinitrotoluene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.884.12	355-72-78-2	2-Amino-4,6-Dinitrotoluene	8700	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.884.12	88-72-2	2-Nitrotoluene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.884.12	99-08-1	3-Nitrotoluene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.884.12	1946-51-0	4-Amino-2,6-Dinitrotoluene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.884.12	99-99-0	4-Nitrotoluene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.956.7	2691-41-0	HMX	1500000	ug / kg	99	100		05-17-04	05-29-04
X04550	XG.2004.884.12	98-95-3	Nitrobenzene	ND	ug / kg	1	100		05-17-04	05-20-04
X04550	XG.2004.956.7		RDX	130000	ug / kg	99	100		05-17-04	05-29-04
X04550	XG.2004.884.12		Tetryl	ND	ug / kg	1	100		05-17-04	05-20-04

Unless otherwise noted, all samples were received in acceptable condition and all sampling was performed by client or client representative. Sample result of ND indicates Not Detected, ie result is less than the sample specific Detection Limit. Sample specific Detection Limit is determined by multiplying the sample Dilution Factor by the listed Reporting Detection Limit. All results relate only to the items tested. Any miscellaneous workorder information or foonotes will appear below.

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilutic*
L	*Not applicable due to MDL proximity*

Type: ***LCS: Lab Control Spike*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**					**X04604-002**		
XG.2004.939.3	120-82-1	1,2,4-Trichlorobenzene	92	% Recovery	64 - 103	1	NA		05-27-04
XG.2004.939.3	106-46-7	1,4-Dichlorobenzene	90	% Recovery	44 - 91	1	NA		05-27-04
XG.2004.939.3	121-14-2	2,4-Dinitrotoluene	97	% Recovery	61 - 118	1	NA		05-27-04
XG.2004.939.3	95-57-8	2-Chlorophenol	92	% Recovery	72 - 102	1	NA		05-27-04
XG.2004.939.3	99-09-2	3-Nitroaniline	74	% Recovery	80 - 120	1	NA		05-27-04
XG.2004.939.3	59-50-7	4-Chloro-3-methylphenol	94	% Recovery	67 - 110	1	NA		05-27-04
XG.2004.939.3	100-02-7	4-Nitrophenol	84	% Recovery	56 - 122	1	NA		05-27-04
XG.2004.939.3	117-84-0	di-n-Octylphthalate	125	% Recovery	69 - 127	1	NA		05-27-04
XG.2004.939.3	621-64-7	n-Nitroso-di-n-propylamine	104	% Recovery	64 - 111	1	NA		05-27-04
XG.2004.939.3	108-95-2	Phenol	104	% Recovery	66 - 98	1	NA		05-27-04
XG.2004.939.3	129-00-0	Pyrene	102	% Recovery	69 - 117	1	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**					**X04608-002**		
XG.2004.932.7	75-35-4	1,1 Dichloroethene	93	% Recovery	44 - 150	1	NA		05-27-04
XG.2004.932.7	106-46-7	1,4 Dichlorobenzene	92	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.7	71-43-2	Benzene	94	% Recovery	66 - 142	1	NA		05-27-04
XG.2004.932.7	108-90-7	Chlorobenzene	93	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.7	108-88-3	Toluene	92	% Recovery	59 - 139	1	NA		05-27-04
XG.2004.932.7	79-01-6	Trichloroethene	94	% Recovery	62 - 137	1	NA		05-2[illegible]
X04550		**SW846 8330 Explosives by HPLC**					**X04550-002**		
XG.2004.884.7	99-35-4	1,3,5-Trinitrobenzene	110	% Recovery	80 - 123	1	NA		05-20-04
XG.2004.884.7	99-65-0	1,3-Dinitrobenzene	102	% Recovery	83 - 120	1	NA		05-20-04
XG.2004.884.7	118-96-7	2,4,6-Trinitrotoluene	104	% Recovery	71 - 127	1	NA		05-20-04
XG.2004.884.7	121-14-2	2,4-Dinitrotoluene	109	% Recovery	85 - 132	1	NA		05-20-04
XG.2004.884.7	606-20-2	2,6-Dinitrotoluene	87	% Recovery	66 - 105	1	NA		05-20-04
XG.2004.884.7	355-72-78-2	2-Amino-4,6-Dinitrotoluene	101	% Recovery	81 - 124	1	NA		05-20-04
XG.2004.884.7	88-72-2	2-Nitrotoluene	102	% Recovery	73 - 123	1	NA		05-20-04
XG.2004.884.7	99-08-1	3-Nitrotoluene	101	% Recovery	73 - 124	1	NA		05-20-04
XG.2004.884.7	1946-51-0	4-Amino-2,6-Dinitrotoluene	97	% Recovery	78 - 115	1	NA		05-20-04
XG.2004.884.7	99-99-0	4-Nitrotoluene	102	% Recovery	74 - 124	1	NA		05-20-04
XG.2004.884.7	2691-41-0	HMX	101	% Recovery	77 - 120	1	NA		05-20-04
XG.2004.884.7	98-95-3	Nitrobenzene	100	% Recovery	82 - 116	1	NA		05-20-04
XG.2004.884.7		RDX	100	% Recovery	84 - 118	1	NA		05-20-04
XG.2004.884.7		Tetryl	134	% Recovery	50 - 144	1	NA		05-20-04

Type: ***LCS: Lab Control Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**					**M04782-003**		
MT.2004.985.81	7440-38-2	Arsenic	82	% Recovery	80 - 120	1	NA		05-26-04
MT.2004.985.81	7440-39-3	Barium	106	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.985.81	7440-43-9	Cadmium	94	% Recovery	92 - 117	1	NA		05-26-04
MT.2004.985.81	7440-47-3	Chromium	96	% Recovery	88 - 114	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

:lient: **LOS ALAMOS NATIONAL LABS**
ɔject: **8M02 X205 HEMR 0000**
)rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***LCS: Lab Control Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-003**	
MT.2004.985.81	7782-49-2	Selenium	108	% Recovery	93 - 120	1	NA		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04782-003**	
MT.2004.949.22	7439-92-1	Lead	98	% Recovery	80 - 120	1	NA		05-25-04
MT.2004.969.96	7440-22-4	Silver	95	% Recovery	80 - 120	1	NA		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-002**	
XG.2004.907.3	106-46-7	1,4-Dichlorobenzene	66	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	95-95-4	2,4,5-Trichlorophenol	78	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	88-06-2	2,4,6-Trichlorophenol	76	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	121-14-2	2,4-Dinitrotoluene	85	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	118-74-1	Hexachlorobenzene	60	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	87-68-3	Hexachlorobutadiene	46	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	67-72-1	Hexachloroethane	56	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3		m-Cresol & p-Cresol	58	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	98-95-3	Nitrobenzene	93	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	95-48-7	o-Cresol	69	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	87-86-5	Pentachlorophenol	66	% Recovery	20 - 120	1	NA		05-25-04
G.2004.907.3	110-86-1	Pyridine	59	% Recovery	20 - 120	1	NA		05-25-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-002**	
MT.2004.1004.10	7439-97-6	Mercury	98	% Recovery	80 - 120	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-002**	
XG.2004.897.5	75-35-4	1,1 Dichloroethylene	70	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	107-06-2	1,2 Dichloroethane (EDC)	83	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	71-43-2	Benzene	89	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	56-23-5	Carbon tetrachloride	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	108-90-7	Chlorobenzene	95	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	67-66-3	Chloroform	88	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	78-93-3	Methyl ethyl ketone	65	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	127-18-4	Tetrachloroethylene	98	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	79-01-6	Trichloroethylene	91	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	75-01-4	Vinyl chloride	86	% Recovery	60 - 140	1	NA		05-24-04

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-001**	
XG.2004.939.2	120-82-1	1,2,4-Trichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	95-50-1	1,2-Dichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	541-73-1	1,3-Dichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	106-46-7	1,4-Dichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	90-12-0	1-Methylnaphthalene	ND	mg / Kg		1	0.03		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		SW846 3550A/8270C SVOCs by GC/MS					X04604-001		
XG.2004.939.2	58-90-2	2,3,4,6-Tetrachlorophenol	ND	mg / Kg		1	1.5		05-27-04
XG.2004.939.2	95-95-4	2,4,5-Trichlorophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	88-06-2	2,4,6-Trichlorophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	120-83-2	2,4-Dichlorophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	105-67-9	2,4-Dimethylphenol	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	51-28-5	2,4-Dinitrophenol	ND	mg / Kg		1	0.67		05-27-04
XG.2004.939.2	121-14-2	2,4-Dinitrotoluene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	606-20-2	2,6-Dinitrotoluene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	91-58-7	2-Chloronaphthalene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	95-57-8	2-Chlorophenol	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	91-57-6	2-Methylnaphthalene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	95-48-7	2-Methylphenol	0.061	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	88-74-4	2-Nitroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	88-75-5	2-Nitrophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	91-94-1	3,3-Dichlorobenzidine	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2		3+4 Methylphenol	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	99-09-2	3-Nitroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	534-52-1	4,6-Dinitro-2-methylphenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	101-55-3	4-Bromophenyl-phenylether	ND	mg / Kg		1	0.03		05-27
XG.2004.939.2	59-50-7	4-Chloro-3-methylphenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	106-47-8	4-Chloroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	7005-72-3	4-Chlorophenyl-phenylether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	100-01-6	4-Nitroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	100-02-7	4-Nitrophenol	ND	mg / Kg		1	0.6		05-27-04
XG.2004.939.2	83-32-9	Acenaphthene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	208-96-8	Acenaphthylene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	62-53-3	Aniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	120-12-7	Anthracene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2		Azobenzene&1,2-Diphenylhydrazine	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	56-55-3	Benzo (a) anthracene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	50-32-8	Benzo(a)pyrene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2		Benzo(b & k)fluoranthene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	191-24-2	Benzo(g,h,i)perylene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	64-85-0	Benzoic acid	ND	mg / Kg		1	3		05-27-04
XG.2004.939.2	100-51-6	Benzyl alcohol	ND	mg / Kg		1	1.5		05-27-04
XG.2004.939.2	111-44-4	bis (2-Chloroethyl) ether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	111-91-1	bis(2-Chloroethoxy)methane	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	108-60-1	bis(2-Chloroisopropyl)ether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	117-81-7	bis(2-Ethylhexyl)phthalate	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	85-68-7	Butylbenzylphthalate	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	218-01-9	Chrysene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	53-70-3	Dibenz(a,h)anthracene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	132-64-9	Dibenzofuran	ND	mg / Kg		1	0.03		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
ject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
:04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-001**	
.G.2004.939.2	84-66-2	Diethylphthalate	ND	mg / Kg		1	0.03		05-27-04
.G.2004.939.2	131-11-3	Dimethylphthalate	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	84-74-2	di-n-Butylphthalate	ND	mg / Kg		1	0.3		05-27-04
:G.2004.939.2	117-84-0	di-n-Octylphthalate	ND	mg / Kg		1	0.3		05-27-04
:G.2004.939.2	206-44-0	Fluoranthene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	86737	Fluorene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	118-74-1	Hexachlorobenzene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	87-68-3	Hexachlorobutadiene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	77-47-4	Hexachlorocyclopentadiene	ND	mg / Kg		1	1.5		05-27-04
:G.2004.939.2	67-72-1	Hexachloroethane	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	193-39-5	Indeno(1,2,3-cd)pyrene	ND	mg / Kg		1	0.3		05-27-04
:G.2004.939.2	78-59-1	Isophorone	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	91-20-3	Naphthalene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	98-95-3	Nitrobenzene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	62-75-9	n-Nitroso-dimethyl-amine	ND	mg / Kg		1	0.3		05-27-04
:G.2004.939.2	621-64-7	n-Nitroso-di-n-propylamine	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	86-30-6	n-Nitrosodiphenylamine	ND	mg / Kg		1	0.03		05-27-04
;.2004.939.2	87-86-5	Pentachlorophenol	ND	mg / Kg		1	0.3		05-27-04
.2004.939.2	85-01-8	Phenanthrene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	108-95-2	Phenol	ND	mg / Kg		1	0.3		05-27-04
:G.2004.939.2	129-00-0	Pyrene	ND	mg / Kg		1	0.03		05-27-04
:G.2004.939.2	110-86-1	Pyridine	ND	mg / Kg		1	0.3		05-27-04
K04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-001**	
:G.2004.932.6	75-34-3	1,1 Dichloroethane	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	75-35-4	1,1 Dichloroethene	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	79-34-5	1,1,2,2 Tetrachloroethane	0.008	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg		1	0.01		05-27-04
:G.2004.932.6	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	78-87-5	1,2 Dichloropropane	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	95-63-6	1,2,4-Trimethylbenzene	ND	mg / Kg		1	0.01		05-27-04
:G.2004.932.6	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	108-67-8	1,3,5-Trimethylbenzene	ND	mg / Kg		1	0.005		05-27-04
:G.2004.932.6	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg		1	0.05		05-27-04
:G.2004.932.6	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg		1	0.01		05-27-04
:G.2004.932.6	78-93-3	2-Butanone (MEK)	ND	mg / Kg		1	0.025		05-27-04
:G.2004.932.6	591-78-6	2-Hexanone (MBK)	ND	mg / Kg		1	0.025		05-27-04
:G.2004.932.6	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg		1	0.025		05-27-04
:G.2004.932.6	67-64-1	Acetone	ND	mg / Kg		1	0.05		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
roject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
:04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-001**	
G.2004.932.6	107-02-8	Acrolein	ND	mg / Kg		1	0.1		05-27-04
G.2004.932.6	107-13-1	Acrylonitrile	ND	mg / Kg		1	0.1		05-27-04
G.2004.932.6	71-43-2	Benzene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	75-27-4	Bromodichloromethane	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	75-25-2	Bromoform	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	74-83-9	Bromomethane	ND	mg / Kg		1	0.05		05-27-04
G.2004.932.6	75-15-0	Carbon disulfide	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	56-23-5	Carbon tetrachloride	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	108-90-7	Chlorobenzene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	124-48-1	Chlorodibromomethane	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	75-00-3	Chloroethane	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	67-66-3	Chloroform	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	74-87-3	Chloromethane	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6		cis-1,3 Dichloropropene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	74-95-3	Dibromomethane	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	97-63-2	Ethyl methacrylate	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	100-41-4	Ethylbenzene	ND	mg / Kg		1	0.005		05-27-
G.2004.932.6		Freon 113	ND	mg / Kg		1	0.035		05-27-
G.2004.932.6	75-71-8	Freon 12	ND	mg / Kg		1	0.05		05-27-04
G.2004.932.6	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	75-09-2	Methylene chloride	ND	mg / Kg		1	0.05		05-27-04
G.2004.932.6	91-20-3	Naphthalene	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	95-47-6	o-Xylene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	108-38-3/106-42	p/m-Xylenes	ND	mg / Kg		1	0.01		05-27-04
G.2004.932.6	100-42-5	Styrene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	127-18-4	Tetrachloroethene (PCE)	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	108-88-3	Toluene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	79-01-6	Trichloroethene	ND	mg / Kg		1	0.005		05-27-04
G.2004.932.6	75-69-4	Trichlorofluoromethane	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	108-05-4	Vinyl acetate	ND	mg / Kg		1	0.025		05-27-04
G.2004.932.6	75-01-4	Vinyl chloride	ND	mg / Kg		1	0.01		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-001**	
XG.2004.884.6	99-35-4	1,3,5-Trinitrobenzene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	99-65-0	1,3-Dinitrobenzene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	118-96-7	2,4,6-Trinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	121-14-2	2,4-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	606-20-2	2,6-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	355-72-78-2	2-Amino-4,6-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	88-72-2	2-Nitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	99-08-1	3-Nitrotoluene	ND	ug / kg		1	100		05-20-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04550		**SW846 8330 Explosives by HPLC**						**X04550-001**	
XG.2004.884.6	1946-51-0	4-Amino-2,6-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	99-99-0	4-Nitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	2691-41-0	HMX	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	98-95-3	Nitrobenzene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6		RDX	ND	ug / kg		1	100		05-20-04
XG.2004.884.6		Tetryl	ND	ug / kg		1	100		05-20-04

Type: ***MB: Method Blank*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-001**	
MT.2004.985.79	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-26-04
MT.2004.985.79	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.985.79	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.79	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.79	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-002**	
MT.2004.985.80	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-26-04
MT.2004.985.80	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.985.80	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.80	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.80	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04782-001**	
MT.2004.949.20	7439-92-1	Lead	ND	mg / L		1	0.1		05-25-04
MT.2004.969.94	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04782-002**	
MT.2004.949.21	7439-92-1	Lead	ND	mg / L		1	0.1		05-25-04
MT.2004.969.95	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-001**	
XG.2004.907.2	106-46-7	1,4-Dichlorobenzene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	95-95-4	2,4,5-Trichlorophenol	ND	mg / L		1	0.01		05-25-04
XG.2004.907.2	88-06-2	2,4,6-Trichlorophenol	ND	mg / L		1	0.01		05-25-04
XG.2004.907.2	121-14-2	2,4-Dinitrotoluene	ND	mg / L		1	0.01		05-25-04
XG.2004.907.2	118-74-1	Hexachlorobenzene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	87-68-3	Hexachlorobutadiene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	67-72-1	Hexachloroethane	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2		m-Cresol & p-Cresol	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	98-95-3	Nitrobenzene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	95-48-7	o-Cresol	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	87-86-5	Pentachlorophenol	ND	mg / L		1	0.01		05-25-04
XG.2004.907.2	110-86-1	Pyridine	ND	mg / L		1	0.01		05-25-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilutio...*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-001**	
MT.2004.1004.9	7439-97-6	Mercury	ND	mg / L		1	0.0002		05-28-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-007**	
MT.2004.1004.23	7439-97-6	Mercury	ND	mg / L		1	0.0002		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-001**	
XG.2004.897.4	75-35-4	1,1 Dichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	71-43-2	Benzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	56-23-5	Carbon tetrachloride	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	108-90-7	Chlorobenzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	67-66-3	Chloroform	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	78-93-3	Methyl ethyl ketone	0.006	mg / L		1	0.005		05-24-04
XG.2004.897.4	127-18-4	Tetrachloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	79-01-6	Trichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	75-01-4	Vinyl chloride	ND	mg / L		1	0.005		05-24-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-004**	
XG.2004.897.7	75-35-4	1,1 Dichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L		1	0.001		05-2
XG.2004.897.7	71-43-2	Benzene	ND	mg / L		1	0.001		05-24-0
XG.2004.897.7	56-23-5	Carbon tetrachloride	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	108-90-7	Chlorobenzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	67-66-3	Chloroform	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	78-93-3	Methyl ethyl ketone	0.013	mg / L		1	0.005		05-24-04
XG.2004.897.7	127-18-4	Tetrachloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	79-01-6	Trichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	75-01-4	Vinyl chloride	ND	mg / L		1	0.005		05-24-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-006**	
XG.2004.897.9	75-35-4	1,1 Dichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	71-43-2	Benzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	56-23-5	Carbon tetrachloride	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	108-90-7	Chlorobenzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	67-66-3	Chloroform	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	78-93-3	Methyl ethyl ketone	ND	mg / L		1	0.005		05-24-04
XG.2004.897.9	127-18-4	Tetrachloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	79-01-6	Trichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	75-01-4	Vinyl chloride	ND	mg / L		1	0.005		05-24-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
ject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MD: Matrix Duplicate*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**					**M04782-007**		
IT.2004.985.87	7440-38-2	Arsenic	NA	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.87	7440-39-3	Barium	2	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.87	7440-43-9	Cadmium	7	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.87	7440-47-3	Chromium	NA	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.87	7782-49-2	Selenium	16	RPD	0 - 20	1	NA		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**					**M04782-007**		
IT.2004.949.26	7439-92-1	Lead	NA	RPD	0 - 20	1	NA		05-25-04
IT.2004.969.102	7440-22-4	Silver	NA	RPD	0 - 20	1	NA		05-26-04

ype: ***MS: Matrix Spike*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**					**X04604-004**		
XG.2004.939.5	120-82-1	1,2,4-Trichlorobenzene	101	% Recovery	64 - 103	5	NA		05-27-04
XG.2004.939.5	106-46-7	1,4-Dichlorobenzene	94	% Recovery	44 - 91	5	NA		05-27-04
2004.939.5	121-14-2	2,4-Dinitrotoluene	66	% Recovery	61 - 118	5	NA		05-27-04
G.2004.939.5	95-57-8	2-Chlorophenol	100	% Recovery	72 - 102	5	NA		05-27-04
XG.2004.939.5	59-50-7	4-Chloro-3-methylphenol	113	% Recovery	67 - 110	5	NA		05-27-04
XG.2004.939.5	100-02-7	4-Nitrophenol	< 1	% Recovery	56 - 122	5	NA		05-27-04
XG.2004.939.5	83-32-9	Acenaphthene	104	% Recovery	72 - 109	5	NA		05-27-04
XG.2004.939.5	117-84-0	di-n-Octylphthalate	332	% Recovery	69 - 127	5	NA		05-27-04
XG.2004.939.5	621-64-7	n-Nitroso-di-n-propylamine	133	% Recovery	64 - 111	5	NA		05-27-04
XG.2004.939.5	87-86-5	Pentachlorophenol	105	% Recovery	64 - 105	5	NA		05-27-04
XG.2004.939.5	108-95-2	Phenol	98	% Recovery	66 - 98	5	NA		05-27-04
XG.2004.939.5	129-00-0	Pyrene	109	% Recovery	69 - 117	5	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**					**X04608-005**		
XG.2004.932.10	75-35-4	1,1 Dichloroethene	94	% Recovery	44 - 150	1	NA		05-27-04
XG.2004.932.10	106-46-7	1,4 Dichlorobenzene	95	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.10	71-43-2	Benzene	95	% Recovery	66 - 142	1	NA		05-27-04
XG.2004.932.10	108-90-7	Chlorobenzene	94	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.10	108-88-3	Toluene	92	% Recovery	59 - 139	1	NA		05-27-04
XG.2004.932.10	79-01-6	Trichloroethene	98	% Recovery	62 - 137	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**					**X04550-004**		
XG.2004.884.9	99-35-4	1,3,5-Trinitrobenzene	6	% Recovery	80 - 123	1	NA		05-20-04
XG.2004.884.9	99-65-0	1,3-Dinitrobenzene	100	% Recovery	83 - 120	1	NA		05-20-04
XG.2004.884.9	118-96-7	2,4,6-Trinitrotoluene	39	% Recovery	71 - 127	1	NA		05-20-04
XG.2004.884.9	121-14-2	2,4-Dinitrotoluene	103	% Recovery	85 - 132	1	NA		05-20-04
XG.2004.884.9	606-20-2	2,6-Dinitrotoluene	89	% Recovery	66 - 105	1	NA		05-20-04
XG.2004.884.9	355-72-78-2	2-Amino-4,6-Dinitrotoluene	96	% Recovery	81 - 124	1	NA		05-20-04
XG.2004.884.9	88-72-2	2-Nitrotoluene	98	% Recovery	73 - 123	1	NA		05-20-04
XG.2004.884.9	99-08-1	3-Nitrotoluene	96	% Recovery	73 - 124	1	NA		05-20-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
roject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MS: Matrix Spike*** Matrix: ***SOLID***

un Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
04550		**SW846 8330 Explosives by HPLC**						**X04550-004**	
G.2004.884.9	1946-51-0	4-Amino-2,6-Dinitrotoluene	104	% Recovery	78 - 115	1	NA		05-20-04
G.2004.884.9	99-99-0	4-Nitrotoluene	97	% Recovery	74 - 124	1	NA		05-20-04
G.2004.884.9	2691-41-0	HMX	105	% Recovery	77 - 120	1	NA		05-20-04
G.2004.884.9	98-95-3	Nitrobenzene	108	% Recovery	82 - 116	1	NA		05-20-04
G.2004.884.9		RDX	105	% Recovery	84 - 118	1	NA		05-20-04
G.2004.884.9		Tetryl	34	% Recovery	50 - 144	1	NA		05-20-04

ype: ***MS: Matrix Spike*** Matrix: ***TCLP***

un Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-005**	
MT.2004.985.85	7440-38-2	Arsenic	83	% Recovery	75 - 124	1	NA		05-26-04
MT.2004.985.85	7440-39-3	Barium	104	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.985.85	7440-43-9	Cadmium	96	% Recovery	92 - 117	1	NA		05-26-04
MT.2004.985.85	7440-47-3	Chromium	100	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.85	7782-49-2	Selenium	104	% Recovery	93 - 121	1	NA		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04782-005**	
MT.2004.949.24	7439-92-1	Lead	96	% Recovery	80 - 120	1	NA		05-25-0-
MT.2004.969.100	7440-22-4	Silver	96	% Recovery	80 - 120	1	NA		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-004**	
XG.2004.907.7	106-46-7	1,4-Dichlorobenzene	74	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	95-95-4	2,4,5-Trichlorophenol	60	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	88-06-2	2,4,6-Trichlorophenol	69	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	121-14-2	2,4-Dinitrotoluene	90	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	118-74-1	Hexachlorobenzene	57	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	87-68-3	Hexachlorobutadiene	63	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	67-72-1	Hexachloroethane	63	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7		m-Cresol & p-Cresol	53	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	98-95-3	Nitrobenzene	98	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	95-48-7	o-Cresol	69	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	87-86-5	Pentachlorophenol	24	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	110-86-1	Pyridine	55	% Recovery	20 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-004**	
MT.2004.1004.20	7439-97-6	Mercury	91	% Recovery	80 - 120	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-009**	
XG.2004.897.12	75-35-4	1,1 Dichloroethylene	72	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	107-06-2	1,2 Dichloroethane (EDC)	84	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	71-43-2	Benzene	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	56-23-5	Carbon tetrachloride	92	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	108-90-7	Chlorobenzene	96	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	67-66-3	Chloroform	86	% Recovery	60 - 140	1	NA		05-24-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
ıject: **8M02 X205 HEMR 0000**
ırder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MS: Matrix Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
:04571		SW846 1311/8260B Purgeable VOCs by GC/MS TCLP						X04571-009	
.G.2004.897.12	78-93-3	Methyl ethyl ketone	75	% Recovery	60 - 140	1	NA		05-24-04
.G.2004.897.12	127-18-4	Tetrachloroethylene	98	% Recovery	60 - 140	1	NA		05-24-04
:G.2004.897.12	79-01-6	Trichloroethylene	91	% Recovery	60 - 140	1	NA		05-24-04
:G.2004.897.12	75-01-4	Vinyl chloride	84	% Recovery	60 - 140	1	NA		05-24-04

'ype: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
(04604		SW846 3550A/8270C SVOCs by GC/MS						X04604-005	
(G.2004.939.6	120-82-1	1,2,4-Trichlorobenzene	< 1	RPD	0 - 16	5	NA		05-27-04
(G.2004.939.6	106-46-7	1,4-Dichlorobenzene	4	RPD	0 - 15	5	NA		05-27-04
(G.2004.939.6	121-14-2	2,4-Dinitrotoluene	7	RPD	0 - 12	5	NA		05-27-04
(G.2004.939.6	95-57-8	2-Chlorophenol	2	RPD	0 - 11	5	NA		05-27-04
(G.2004.939.6	59-50-7	4-Chloro-3-methylphenol	1	RPD	0 - 8	5	NA		05-27-04
(G.2004.939.6	100-02-7	4-Nitrophenol	8	RPD	0 - 9	5	NA		05-27-04
'G.2004.939.6	83-32-9	Acenaphthene	4	RPD	0 - 16	5	NA		05-27-04
.2004.939.6	117-84-0	di-n-Octylphthalate	13	RPD	0 - 20	5	NA		05-27-04
(G.2004.939.6	621-64-7	n-Nitroso-di-n-propylamine	5	RPD	0 - 10	5	NA		05-27-04
(G.2004.939.6	87-86-5	Pentachlorophenol	9	RPD	0 - 10	5	NA		05-27-04
(G.2004.939.6	108-95-2	Phenol	8	RPD	0 - 9	5	NA		05-27-04
(G.2004.939.6	129-00-0	Pyrene	2	RPD	0 - 7	5	NA		05-27-04
X04608		SW846 8260B Purgeable VOCs by GC/MS						X04608-006	
XG.2004.932.11	75-35-4	1,1 Dichloroethene	< 1	RPD	0 - 22	1	NA		05-27-04
XG.2004.932.11	106-46-7	1,4 Dichlorobenzene	2	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	71-43-2	Benzene	< 1	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	108-90-7	Chlorobenzene	< 1	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	108-88-3	Toluene	< 1	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	79-01-6	Trichloroethene	2	RPD	0 - 24	1	NA		05-27-04
X04550		SW846 8330 Explosives by HPLC						X04550-005	
XG.2004.884.10	99-35-4	1,3,5-Trinitrobenzene	< 1	RPD	0 - 7	1	NA		05-20-04
XG.2004.884.10	99-65-0	1,3-Dinitrobenzene	< 1	RPD	0 - 7	1	NA		05-20-04
XG.2004.884.10	118-96-7	2,4,6-Trinitrotoluene	16	RPD	0 - 9	1	NA		05-20-04
XG.2004.884.10	121-14-2	2,4-Dinitrotoluene	3	RPD	0 - 10	1	NA		05-20-04
XG.2004.884.10	606-20-2	2,6-Dinitrotoluene	2	RPD	0 - 11	1	NA		05-20-04
XG.2004.884.10	355-72-78-2	2-Amino-4,6-Dinitrotoluene	1	RPD	0 - 8	1	NA		05-20-04
XG.2004.884.10	88-72-2	2-Nitrotoluene	1	RPD	0 - 8	1	NA		05-20-04
XG.2004.884.10	99-08-1	3-Nitrotoluene	2	RPD	0 - 7	1	NA		05-20-04
XG.2004.884.10	1946-51-0	4-Amino-2,6-Dinitrotoluene	2	RPD	0 - 10	1	NA		05-20-04
XG.2004.884.10	99-99-0	4-Nitrotoluene	2	RPD	0 - 8	1	NA		05-20-04
XG.2004.884.10	2691-41-0	HMX	2	RPD	0 - 16	1	NA		05-20-04
XG.2004.884.10	98-95-3	Nitrobenzene	< 1	RPD	0 - 9	1	NA		05-20-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
roject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***SOLID***

un Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
04550		**SW846 8330 Explosives by HPLC**						**X04550-005**	
G.2004.884.10		RDX	< 1	RPD	0 - 6	1	NA		05-20-04
G.2004.884.10		Tetryl	1	RPD	0 - 27	1	NA		05-20-04

ype: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***TCLP***

un Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-006**	
IT.2004.985.86	7440-38-2	Arsenic	< 1	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.86	7440-39-3	Barium	2	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.86	7440-43-9	Cadmium	3	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.86	7440-47-3	Chromium	3	RPD	0 - 20	1	NA		05-26-04
IT.2004.985.86	7782-49-2	Selenium	< 1	RPD	0 - 20	1	NA		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04782-006**	
IT.2004.949.25	7439-92-1	Lead	< 1	RPD	0 - 20	1	NA		05-25-04
IT.2004.969.101	7440-22-4	Silver	2	RPD	0 - 20	1	NA		05-26-04
(04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-005**	
(G.2004.907.8	106-46-7	1,4-Dichlorobenzene	1	RPD	0 - 40	1	NA		05-26-
(G.2004.907.8	95-95-4	2,4,5-Trichlorophenol	2	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	88-06-2	2,4,6-Trichlorophenol	< 1	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	121-14-2	2,4-Dinitrotoluene	< 1	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	118-74-1	Hexachlorobenzene	3	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	87-68-3	Hexachlorobutadiene	5	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	67-72-1	Hexachloroethane	< 1	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8		m-Cresol & p-Cresol	< 1	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	98-95-3	Nitrobenzene	< 1	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	95-48-7	o-Cresol	< 1	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	87-86-5	Pentachlorophenol	7	RPD	0 - 40	1	NA		05-26-04
(G.2004.907.8	110-86-1	Pyridine	10	RPD	0 - 40	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-005**	
MT.2004.1004.21	7439-97-6	Mercury	< 1	RPD	0 - 20	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-010**	
XG.2004.897.13	75-35-4	1,1 Dichloroethylene	4	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	107-06-2	1,2 Dichloroethane (EDC)	< 1	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	71-43-2	Benzene	2	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	56-23-5	Carbon tetrachloride	2	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	108-90-7	Chlorobenzene	2	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	67-66-3	Chloroform	3	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	78-93-3	Methyl ethyl ketone	3	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	127-18-4	Tetrachloroethylene	3	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	79-01-6	Trichloroethylene	< 1	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	75-01-4	Vinyl chloride	< 1	RPD	0 - 20	1	NA		05-24-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

'lient: **LOS ALAMOS NATIONAL LABS**
ɔject: **8M02 X205 HEMR 0000**
ɔrder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

'ype: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-005**	
XG.2004.939.6	120-82-1	1,2,4-Trichlorobenzene	101	% Recovery	64 - 103	5	NA		05-27-04
XG.2004.939.6	106-46-7	1,4-Dichlorobenzene	90	% Recovery	44 - 91	5	NA		05-27-04
XG.2004.939.6	121-14-2	2,4-Dinitrotoluene	62	% Recovery	61 - 118	5	NA		05-27-04
XG.2004.939.6	95-57-8	2-Chlorophenol	98	% Recovery	72 - 102	5	NA		05-27-04
XG.2004.939.6	59-50-7	4-Chloro-3-methylphenol	112	% Recovery	67 - 110	5	NA		05-27-04
XG.2004.939.6	100-02-7	4-Nitrophenol	< 1	% Recovery	56 - 122	5	NA		05-27-04
XG.2004.939.6	83-32-9	Acenaphthene	99	% Recovery	72 - 109	5	NA		05-27-04
XG.2004.939.6	117-84-0	di-n-Octylphthalate	380	% Recovery	69 - 127	5	NA		05-27-04
XG.2004.939.6	621-64-7	n-Nitroso-di-n-propylamine	126	% Recovery	64 - 111	5	NA		05-27-04
XG.2004.939.6	87-86-5	Pentachlorophenol	96	% Recovery	64 - 105	5	NA		05-27-04
XG.2004.939.6	108-95-2	Phenol	106	% Recovery	66 - 98	5	NA		05-27-04
XG.2004.939.6	129-00-0	Pyrene	106	% Recovery	69 - 117	5	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-006**	
XG.2004.932.11	75-35-4	1,1 Dichloroethene	94	% Recovery	44 - 150	1	NA		05-27-04
XG.2004.932.11	106-46-7	1,4 Dichlorobenzene	93	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.11	71-43-2	Benzene	95	% Recovery	66 - 142	1	NA		05-27-04
:.2004.932.11	108-90-7	Chlorobenzene	94	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.11	108-88-3	Toluene	92	% Recovery	59 - 139	1	NA		05-27-04
XG.2004.932.11	79-01-6	Trichloroethene	99	% Recovery	62 - 137	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-005**	
XG.2004.884.10	99-35-4	1,3,5-Trinitrobenzene	6	% Recovery	80 - 123	1	NA		05-20-04
XG.2004.884.10	99-65-0	1,3-Dinitrobenzene	101	% Recovery	83 - 120	1	NA		05-20-04
XG.2004.884.10	118-96-7	2,4,6-Trinitrotoluene	46	% Recovery	71 - 127	1	NA		05-20-04
XG.2004.884.10	121-14-2	2,4-Dinitrotoluene	106	% Recovery	85 - 132	1	NA		05-20-04
XG.2004.884.10	606-20-2	2,6-Dinitrotoluene	87	% Recovery	66 - 105	1	NA		05-20-04
XG.2004.884.10	355-72-78-2	2-Amino-4,6-Dinitrotoluene	98	% Recovery	81 - 124	1	NA		05-20-04
XG.2004.884.10	88-72-2	2-Nitrotoluene	99	% Recovery	73 - 123	1	NA		05-20-04
XG.2004.884.10	99-08-1	3-Nitrotoluene	98	% Recovery	73 - 124	1	NA		05-20-04
XG.2004.884.10	1946-51-0	4-Amino-2,6-Dinitrotoluene	102	% Recovery	78 - 115	1	NA		05-20-04
XG.2004.884.10	99-99-0	4-Nitrotoluene	98	% Recovery	74 - 124	1	NA		05-20-04
XG.2004.884.10	2691-41-0	HMX	108	% Recovery	77 - 120	1	NA		05-20-04
XG.2004.884.10	98-95-3	Nitrobenzene	107	% Recovery	82 - 116	1	NA		05-20-04
XG.2004.884.10		RDX	106	% Recovery	84 - 118	1	NA		05-20-04
XG.2004.884.10		Tetryl	35	% Recovery	50 - 144	1	NA		05-20-04

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-006**	
MT.2004.985.86	7440-38-2	Arsenic	83	% Recovery	75 - 124	1	NA		05-26-04
MT.2004.985.86	7440-39-3	Barium	108	% Recovery	87 - 116	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

lient: **LOS ALAMOS NATIONAL LABS**
roject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ype: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04782		**SW846 1311/3010A/6010B ICP TCLP**						**M04782-006**	
MT.2004.985.86	7440-43-9	Cadmium	93	% Recovery	92 - 117	1	NA		05-26-04
MT.2004.985.86	7440-47-3	Chromium	97	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.86	7782-49-2	Selenium	104	% Recovery	93 - 121	1	NA		05-26-04
M04782		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04782-006**	
MT.2004.949.25	7439-92-1	Lead	97	% Recovery	80 - 120	1	NA		05-25-04
MT.2004.969.101	7440-22-4	Silver	94	% Recovery	80 - 120	1	NA		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-005**	
XG.2004.907.8	106-46-7	1,4-Dichlorobenzene	73	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	95-95-4	2,4,5-Trichlorophenol	61	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	88-06-2	2,4,6-Trichlorophenol	69	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	121-14-2	2,4-Dinitrotoluene	91	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	118-74-1	Hexachlorobenzene	59	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	87-68-3	Hexachlorobutadiene	60	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	67-72-1	Hexachloroethane	63	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8		m-Cresol & p-Cresol	54	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	98-95-3	Nitrobenzene	98	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	95-48-7	o-Cresol	70	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	87-86-5	Pentachlorophenol	23	% Recovery	20 - 120	1	NA		05-26
XG.2004.907.8	110-86-1	Pyridine	61	% Recovery	20 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-005**	
MT.2004.1004.21	7439-97-6	Mercury	90	% Recovery	80 - 120	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-010**	
XG.2004.897.13	75-35-4	1,1 Dichloroethylene	69	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	107-06-2	1,2 Dichloroethane (EDC)	83	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	71-43-2	Benzene	88	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	56-23-5	Carbon tetrachloride	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	108-90-7	Chlorobenzene	95	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	67-66-3	Chloroform	89	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	78-93-3	Methyl ethyl ketone	78	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	127-18-4	Tetrachloroethylene	95	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	79-01-6	Trichloroethylene	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	75-01-4	Vinyl chloride	84	% Recovery	60 - 140	1	NA		05-24-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

:lient: **LOS ALAMOS NATIONAL LABS**
ɔject: **8M02 X205 HEMR 0000**
)rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ɜample: ***0405328-01A*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		8260						X04608-003	
XG.2004.932.8		1,2 Dichloroethane-D4 (SS)	99	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.8		4-Bromofluorobenzene (SS)	94	% Recovery	60 - 120	1	NA		05-27-04
XG.2004.932.8		Dibromofluoromethane (SS)	106	% Recovery	90 - 111	1	NA		05-27-04
XG.2004.932.8		Toluene-D8 (SS)	99	% Recovery	78 - 111	1	NA		05-27-04

ɜample: ***0405328-01B*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		T8240						X04571-007	
XG.2004.897.10		1,2 Dichloroethane-D4 (SS)	100	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.10		4-Bromofluorobenzene (SS)	99	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.10		Dibromofluoromethane (SS)	107	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.10		Toluene-D8 (SS)	100	% Recovery	88 - 110	1	NA		05-24-04

Sample: ***0405328-02A*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		8270						X04604-013	
XG.2004.939.11		*2,4,6-TRIBROMOPHENOL	100	% Recovery	24 - 132	1	NA		05-27-04
XG.2004.939.11		*2-FLUOROBIPHENYL	92	% Recovery	53 - 126	1	NA		05-27-04
XG.2004.939.11		*2-FLUOROPHENOL	85	% Recovery	44 - 104	1	NA		05-27-04
XG.2004.939.11		*NITROBENZENE-D5	90	% Recovery	34 - 127	1	NA		05-27-04
XG.2004.939.11		*PHENOL-D6	88	% Recovery	40 - 115	1	NA		05-27-04
XG.2004.939.11		*TERPHENYL-D14	108	% Recovery	47 - 116	1	NA		05-27-04

Sample: ***0405328-02B*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04560		T8270						X04560-003	
XG.2004.907.4		*2,4,6-TRIBROMOPHENOL	75	% Recovery	10 - 123	1	NA		05-25-04
XG.2004.907.4		*2-FLUOROBIPHENYL	75	% Recovery	43 - 116	1	NA		05-25-04
XG.2004.907.4		*2-FLUOROPHENOL	38	% Recovery	21 - 100	1	NA		05-25-04
XG.2004.907.4		*NITROBENZENE-D5	86	% Recovery	35 - 114	1	NA		05-25-04
XG.2004.907.4		*PHENOL-D6	26	% Recovery	10 - 94	1	NA		05-25-04
XG.2004.907.4		*TERPHENYL-D14	43	% Recovery	33 - 141	1	NA		05-25-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

:lient: **LOS ALAMOS NATIONAL LABS**
'roject: **8M02 X205 HEMR 0000**
)rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

:ample: ***0405328-04A*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
:04550		SW846 8330 Explosives by HPLC						X04550-007	
:G.2004.884.12	610-39-9	3,4-Dinitrotoluene	101	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***LCS*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
(04608		8260						X04608-002	
(G.2004.932.7		1,2 Dichloroethane-D4 (SS)	101	% Recovery	69 - 118	1	NA		05-27-04
(G.2004.932.7		4-Bromofluorobenzene (SS)	99	% Recovery	60 - 120	1	NA		05-27-04
(G.2004.932.7		Dibromofluoromethane (SS)	103	% Recovery	90 - 111	1	NA		05-27-04
(G.2004.932.7		Toluene-D8 (SS)	100	% Recovery	78 - 111	1	NA		05-27-04
(04604		8270						X04604-002	
(G.2004.939.3		*2,4,6-TRIBROMOPHENOL	123	% Recovery	24 - 132	1	NA		05-27-04
(G.2004.939.3		*2-FLUOROBIPHENYL	98	% Recovery	53 - 126	1	NA		05-27-04
(G.2004.939.3		*2-FLUOROPHENOL	96	% Recovery	44 - 104	1	NA		05-27-04
(G.2004.939.3		*NITROBENZENE-D5	95	% Recovery	34 - 127	1	NA		05-27-04
(G.2004.939.3		*PHENOL-D6	100	% Recovery	40 - 115	1	NA		05-27-0
(G.2004.939.3		*TERPHENYL-D14	109	% Recovery	47 - 116	1	NA		05-27
(04550		SW846 8330 Explosives by HPLC						X04550-002	
(G.2004.884.7	610-39-9	3,4-Dinitrotoluene	104	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***LCS*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		T8240						X04571-002	
XG.2004.897.5		1,2 Dichloroethane-D4 (SS)	97	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.5		4-Bromofluorobenzene (SS)	103	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.5		Dibromofluoromethane (SS)	99	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.5		Toluene-D8 (SS)	98	% Recovery	88 - 110	1	NA		05-24-04
X04560		T8270						X04560-002	
XG.2004.907.3		*2,4,6-TRIBROMOPHENOL	93	% Recovery	10 - 123	1	NA		05-25-04
XG.2004.907.3		*2-FLUOROBIPHENYL	85	% Recovery	43 - 116	1	NA		05-25-04
XG.2004.907.3		*2-FLUOROPHENOL	54	% Recovery	21 - 100	1	NA		05-25-04
XG.2004.907.3		*NITROBENZENE-D5	95	% Recovery	35 - 114	1	NA		05-25-04
XG.2004.907.3		*PHENOL-D6	34	% Recovery	10 - 94	1	NA		05-25-04
XG.2004.907.3		*TERPHENYL-D14	77	% Recovery	33 - 141	1	NA		05-25-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

'lient: **LOS ALAMOS NATIONAL LABS**
ɔject: **8M02 X205 HEMR 0000**
)rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ample: ***MB*** Matrix: ***SOLID***

tun Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
:04608		8260						X04608-001	
:G.2004.932.6		1,2 Dichloroethane-D4 (SS)	97	% Recovery	69 - 118	1	NA		05-27-04
:G.2004.932.6		4-Bromofluorobenzene (SS)	97	% Recovery	60 - 120	1	NA		05-27-04
:G.2004.932.6		Dibromofluoromethane (SS)	106	% Recovery	90 - 111	1	NA		05-27-04
:G.2004.932.6		Toluene-D8 (SS)	100	% Recovery	78 - 111	1	NA		05-27-04
(04604		8270						X04604-001	
:G.2004.939.2		*2,4,6-TRIBROMOPHENOL	98	% Recovery	24 - 132	1	NA		05-27-04
:G.2004.939.2		*2-FLUOROBIPHENYL	94	% Recovery	53 - 126	1	NA		05-27-04
(G.2004.939.2		*2-FLUOROPHENOL	89	% Recovery	44 - 104	1	NA		05-27-04
(G.2004.939.2		*NITROBENZENE-D5	93	% Recovery	34 - 127	1	NA		05-27-04
(G.2004.939.2		*PHENOL-D6	94	% Recovery	40 - 115	1	NA		05-27-04
(G.2004.939.2		*TERPHENYL-D14	109	% Recovery	47 - 116	1	NA		05-27-04
(04550		SW846 8330 Explosives by HPLC						X04550-001	
(G.2004.884.6	610-39-9	3,4-Dinitrotoluene	103	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***MB*** Matrix: ***TCLP***

·n Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		T8240						X04571-001	
XG.2004.897.4		1,2 Dichloroethane-D4 (SS)	96	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.4		4-Bromofluorobenzene (SS)	100	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.4		Dibromofluoromethane (SS)	104	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.4		Toluene-D8 (SS)	106	% Recovery	88 - 110	1	NA		05-24-04
X04571		T8240						X04571-004	
XG.2004.897.7		1,2 Dichloroethane-D4 (SS)	97	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.7		4-Bromofluorobenzene (SS)	97	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.7		Dibromofluoromethane (SS)	94	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.7		Toluene-D8 (SS)	100	% Recovery	88 - 110	1	NA		05-24-04
X04571		T8240						X04571-006	
XG.2004.897.9		1,2 Dichloroethane-D4 (SS)	99	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.9		4-Bromofluorobenzene (SS)	100	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.9		Dibromofluoromethane (SS)	106	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.9		Toluene-D8 (SS)	101	% Recovery	88 - 110	1	NA		05-24-04
X04560		T8270						X04560-001	
XG.2004.907.2		*2,4,6-TRIBROMOPHENOL	96	% Recovery	10 - 123	1	NA		05-25-04
XG.2004.907.2		*2-FLUOROBIPHENYL	78	% Recovery	43 - 116	1	NA		05-25-04
XG.2004.907.2		*2-FLUOROPHENOL	47	% Recovery	21 - 100	1	NA		05-25-04
XG.2004.907.2		*NITROBENZENE-D5	86	% Recovery	35 - 114	1	NA		05-25-04
XG.2004.907.2		*PHENOL-D6	30	% Recovery	10 - 94	1	NA		05-25-04
XG.2004.907.2		*TERPHENYL-D14	75	% Recovery	33 - 141	1	NA		05-25-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

lient: **LOS ALAMOS NATIONAL LABS**
roject: **8M02 X205 HEMR 0000**
rder: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

ample: ***MS*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
.04608		**8260**						**X04608-005**	
G.2004.932.10		1,2 Dichloroethane-D4 (SS)	106	% Recovery	69 - 118	1	NA		05-27-04
G.2004.932.10		4-Bromofluorobenzene (SS)	101	% Recovery	60 - 120	1	NA		05-27-04
G.2004.932.10		Dibromofluoromethane (SS)	104	% Recovery	90 - 111	1	NA		05-27-04
G.2004.932.10		Toluene-D8 (SS)	98	% Recovery	78 - 111	1	NA		05-27-04
:04604		**8270**						**X04604-004**	
.G.2004.939.5		*2,4,6-TRIBROMOPHENOL	132	% Recovery	24 - 132	5	NA		05-27-04
.G.2004.939.5		*2-FLUOROBIPHENYL	99	% Recovery	53 - 126	5	NA		05-27-04
:G.2004.939.5		*2-FLUOROPHENOL	93	% Recovery	44 - 104	5	NA		05-27-04
:G.2004.939.5		*NITROBENZENE-D5	103	% Recovery	34 - 127	5	NA		05-27-04
:G.2004.939.5		*PHENOL-D6	122	% Recovery	40 - 115	5	NA		05-27-04
:G.2004.939.5		*TERPHENYL-D14	131	% Recovery	47 - 116	5	NA		05-27-04
:04550		**SW846 8330 Explosives by HPLC**						**X04550-004**	
:G.2004.884.9	610-39-9	3,4-Dinitrotoluene	102	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***MS*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
:04571		**T8240**						**X04571-009**	
:G.2004.897.12		1,2 Dichloroethane-D4 (SS)	97	% Recovery	76 - 114	1	NA		05-24-04
:G.2004.897.12		4-Bromofluorobenzene (SS)	101	% Recovery	75 - 125	1	NA		05-24-04
:G.2004.897.12		Dibromofluoromethane (SS)	100	% Recovery	75 - 125	1	NA		05-24-04
:G.2004.897.12		Toluene-D8 (SS)	98	% Recovery	88 - 110	1	NA		05-24-04
X04560		**T8270**						**X04560-004**	
XG.2004.907.7		*2,4,6-TRIBROMOPHENOL	69	% Recovery	10 - 123	1	NA		05-26-04
XG.2004.907.7		*2-FLUOROBIPHENYL	87	% Recovery	43 - 116	1	NA		05-26-04
XG.2004.907.7		*2-FLUOROPHENOL	49	% Recovery	21 - 100	1	NA		05-26-04
XG.2004.907.7		*NITROBENZENE-D5	96	% Recovery	35 - 114	1	NA		05-26-04
XG.2004.907.7		*PHENOL-D6	32	% Recovery	10 - 94	1	NA		05-26-04
XG.2004.907.7		*TERPHENYL-D14	59	% Recovery	33 - 141	1	NA		05-26-04

Sample: ***MSD*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**8260**						**X04608-006**	
XG.2004.932.11		1,2 Dichloroethane-D4 (SS)	106	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.11		4-Bromofluorobenzene (SS)	100	% Recovery	60 - 120	1	NA		05-27-04
XG.2004.932.11		Dibromofluoromethane (SS)	104	% Recovery	90 - 111	1	NA		05-27-04
XG.2004.932.11		Toluene-D8 (SS)	98	% Recovery	78 - 111	1	NA		05-27-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405328 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***MSD*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**8270**						**X04604-005**	
XG.2004.939.6		*2,4,6-TRIBROMOPHENOL	132	% Recovery	24 - 132	5	NA		05-27-04
XG.2004.939.6		*2-FLUOROBIPHENYL	99	% Recovery	53 - 126	5	NA		05-27-04
XG.2004.939.6		*2-FLUOROPHENOL	91	% Recovery	44 - 104	5	NA		05-27-04
XG.2004.939.6		*NITROBENZENE-D5	100	% Recovery	34 - 127	5	NA		05-27-04
XG.2004.939.6		*PHENOL-D6	122	% Recovery	40 - 115	5	NA		05-27-04
XG.2004.939.6		*TERPHENYL-D14	132	% Recovery	47 - 116	5	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-005**	
XG.2004.884.10	610-39-9	3,4-Dinitrotoluene	103	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***MSD*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**						**X04571-010**	
XG.2004.897.13		1,2 Dichloroethane-D4 (SS)	98	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.13		4-Bromofluorobenzene (SS)	101	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.13		Dibromofluoromethane (SS)	101	% Recovery	75 - 125	1	NA		05-24-04
G.2004.897.13		Toluene-D8 (SS)	99	% Recovery	88 - 110	1	NA		05-24-04
X04560		**T8270**						**X04560-005**	
XG.2004.907.8		*2,4,6-TRIBROMOPHENOL	74	% Recovery	10 - 123	1	NA		05-26-04
XG.2004.907.8		*2-FLUOROBIPHENYL	89	% Recovery	43 - 116	1	NA		05-26-04
XG.2004.907.8		*2-FLUOROPHENOL	52	% Recovery	21 - 100	1	NA		05-26-04
XG.2004.907.8		*NITROBENZENE-D5	97	% Recovery	35 - 114	1	NA		05-26-04
XG.2004.907.8		*PHENOL-D6	35	% Recovery	10 - 94	1	NA		05-26-04
XG.2004.907.8		*TERPHENYL-D14	63	% Recovery	33 - 141	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

C[redacted] **LOS ALAMOS NATIONAL LABS**

Pr[redacted] **8M02 X205 HEMR 0000**

Order: **0405336** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC472*** Collected: *05-13-04 9:30:00* By: *DR*

Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-03A		**SW846 8260B Purgeable VOCs by GC/MS**					By:	CWJ		
X04554	XG.2004.894.12	75-34-3	1,1 Dichloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	75-35-4	1,1 Dichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	71-55-6	1,1,1 Trichloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	630-20-6	1,1,1,2 Tetrachloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	79-00-5	1,1,2 Trichloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	79-34-5	1,1,2,2 Tetrachloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	106-93-4	1,2 Dibromoethane (EDB)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	95-50-1	1,2 Dichlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	107-06-2	1,2 Dichloroethane (EDC)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	78-87-5	1,2 Dichloropropane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	96-18-4	1,2,3 Trichloropropane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	95-63-6	1,2,4-Trimethylbenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	541-73-1	1,3 Dichlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	108-67-8	1,3,5-Trimethylbenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	764-41-0	1,4 Dichloro-2-butene	ND	ug / L	1	10		05-20-04	05-20-04
[redacted]	XG.2004.894.12	106-46-7	1,4 Dichlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
[redacted]	XG.2004.894.12	78-93-3	2-Butanone (MEK)	ND	ug / L	1	5		05-20-04	05-[illegible]
X04554	XG.2004.894.12	591-78-6	2-Hexanone (MBK)	ND	ug / L	1	5		05-20-04	05-[illegible]
X04554	XG.2004.894.12	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	67-64-1	Acetone	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.12	107-02-8	Acrolein	ND	ug / L	1	20		05-20-04	05-20-04
X04554	XG.2004.894.12	107-13-1	Acrylonitrile	ND	ug / L	1	20		05-20-04	05-20-04
X04554	XG.2004.894.12	71-43-2	Benzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	75-27-4	Bromodichloromethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	75-25-2	Bromoform	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	74-83-9	Bromomethane	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.12	75-15-0	Carbon disulfide	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	56-23-5	Carbon tetrachloride	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	108-90-7	Chlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	124-48-1	Chlorodibromomethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	75-00-3	Chloroethane	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	67-66-3	Chloroform	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	74-87-3	Chloromethane	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	156-59-2	cis-1,2 dichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12		cis-1,3 Dichloropropene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	74-95-3	Dibromomethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	97-63-2	Ethyl methacrylate	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	100-41-4	Ethylbenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12		Freon 113	ND	ug / L	1	5		05-20-04	05-20-04
[redacted]	XG.2004.894.12	75-71-8	Freon 12	ND	ug / L	1	10		05-20-04	05-20-04
[redacted]	XG.2004.894.12	1634-04-4	Methyl t-butyl ether (MTBE)	ND	ug / L	1	1		05-20-04	05-20-04
[redacted]	XG.2004.894.12	75-09-2	Methylene chloride	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.12	91-20-3	Naphthalene	ND	ug / L	1	5		05-20-04	05-20-[illegible]

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC472*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-03A		**SW846 8260B Purgeable VOCs by GC/MS**						By: CWJ		
X04554	XG.2004.894.12	95-47-6	o-Xylene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	108-38-3/106-42	p/m-Xylenes	ND	ug / L	1	2		05-20-04	05-20-04
X04554	XG.2004.894.12	100-42-5	Styrene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	156-60-5	t-1,2 Dichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	10061-02-6	t-1,3 Dichloropropene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	127-18-4	Tetrachloroethene (PCE)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	108-88-3	Toluene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	79-01-6	Trichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.12	75-69-4	Trichlorofluoromethane	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	108-05-4	Vinyl acetate	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.12	75-01-4	Vinyl chloride	ND	ug / L	1	5		05-20-04	05-20-04

Sample: ***04SWRC473*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***SOIL***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-04B		**SW846 1311/3010A/6010B ICP TCLP**						By: KDW		
M04795	MT.2004.985.76	7440-38-2	Arsenic	ND	mg / L	1	0.2		05-25-04	05-26-04
M04795	MT.2004.985.76	7440-39-3	Barium	3.7	mg / L	1	0.2		05-25-04	05-26-04
M04795	MT.2004.1002.25	7440-43-9	Cadmium	ND	mg / L	10	0.02		05-25-04	05-28-04
M04795	MT.2004.985.76	7440-47-3	Chromium	ND	mg / L	1	0.02		05-25-04	05-26-04
M04795	MT.2004.985.76	7439-92-1	Lead	ND	mg / L	1	0.1		05-25-04	05-26-04
M04795	MT.2004.985.76	7782-49-2	Selenium	ND	mg / L	1	0.05		05-25-04	05-26-04
0405336-04B		**SW846 1311/3010A/7000 series AA-FL TCLP**						By: KDW		
M04795	MT.2004.969.91	7440-22-4	Silver	ND	mg / L	1	0.01		05-25-04	05-26-04
0405336-04B		**SW846 1311/7470A CVAA TCLP**						By: BJM		
M04814	MT.2004.1004.19	7439-97-6	Mercury	ND	mg / L	1	0.0002		05-28-04	05-28-04

Sample: ***04SWRC474*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-05A		**SW846 8260B Purgeable VOCs by GC/MS**						By: CWJ		
X04554	XG.2004.894.13	75-34-3	1,1 Dichloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	75-35-4	1,1 Dichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
[illegible]54	XG.2004.894.13	71-55-6	1,1,1 Trichloroethane	ND	ug / L	1	1		05-20-04	05-20-04
[illegible]54	XG.2004.894.13	630-20-6	1,1,1,2 Tetrachloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	79-00-5	1,1,2 Trichloroethane	ND	ug / L	1	1		05-20-04	05-20-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

LOS ALAMOS NATIONAL LABS

8M02 X205 HEMR 0000

Order: **0405336** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC474*** Collected: *05-13-04 9:30:00* By: *DR*

Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-05A		**SW846 8260B Purgeable VOCs by GC/MS**					By:	CWJ		
X04554	XG.2004.894.13	79-34-5	1,1,2,2 Tetrachloroethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	106-93-4	1,2 Dibromoethane (EDB)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	95-50-1	1,2 Dichlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	107-06-2	1,2 Dichloroethane (EDC)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	78-87-5	1,2 Dichloropropane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	96-18-4	1,2,3 Trichloropropane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	95-63-6	1,2,4-Trimethylbenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	541-73-1	1,3 Dichlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	108-67-8	1,3,5-Trimethylbenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	764-41-0	1,4 Dichloro-2-butene	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.13	106-46-7	1,4 Dichlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	78-93-3	2-Butanone (MEK)	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	591-78-6	2-Hexanone (MBK)	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	67-64-1	Acetone	ND	ug / L	1	10		05-20-04	05-20-04
[illegible]	XG.2004.894.13	107-02-8	Acrolein	ND	ug / L	1	20		05-20-04	05-20-04
X04554	XG.2004.894.13	107-13-1	Acrylonitrile	ND	ug / L	1	20		05-20-04	05-
X04554	XG.2004.894.13	71-43-2	Benzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	75-27-4	Bromodichloromethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	75-25-2	Bromoform	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	74-83-9	Bromomethane	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.13	75-15-0	Carbon disulfide	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	56-23-5	Carbon tetrachloride	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	108-90-7	Chlorobenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	124-48-1	Chlorodibromomethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	75-00-3	Chloroethane	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	67-66-3	Chloroform	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	74-87-3	Chloromethane	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	156-59-2	cis-1,2 dichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13		cis-1,3 Dichloropropene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	74-95-3	Dibromomethane	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	97-63-2	Ethyl methacrylate	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	100-41-4	Ethylbenzene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13		Freon 113	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	75-71-8	Freon 12	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.13	1634-04-4	Methyl t-butyl ether (MTBE)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	75-09-2	Methylene chloride	ND	ug / L	1	10		05-20-04	05-20-04
X04554	XG.2004.894.13	91-20-3	Naphthalene	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	95-47-6	o-Xylene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	108-38-3/106-42	p/m-Xylenes	ND	ug / L	1	2		05-20-04	05-20-04
[illegible]	XG.2004.894.13	100-42-5	Styrene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	156-60-5	t-1,2 Dichloroethene	ND	ug / L	1	1		05-20-04	05-20-04

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Certificate of Analysis

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC474*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-05A		**SW846 8260B Purgeable VOCs by GC/MS**					By:	CWJ		
X04554	XG.2004.894.13	10061-02-6	t-1,3 Dichloropropene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	127-18-4	Tetrachloroethene (PCE)	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	108-88-3	Toluene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	79-01-6	Trichloroethene	ND	ug / L	1	1		05-20-04	05-20-04
X04554	XG.2004.894.13	75-69-4	Trichlorofluoromethane	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	108-05-4	Vinyl acetate	ND	ug / L	1	5		05-20-04	05-20-04
X04554	XG.2004.894.13	75-01-4	Vinyl chloride	ND	ug / L	1	5		05-20-04	05-20-04

Sample: ***04SWRC475*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-06A		**SW846 3510B/8270C SVOCs by GC/MS**					By:	DS		
X04557	XG.2004.920.8	120-82-1	1,2,4-Trichlorobenzene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	95-50-1	1,2-Dichlorobenzene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	541-73-1	1,3-Dichlorobenzene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	106-46-7	1,4-Dichlorobenzene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	90-12-0	1-Methylnaphthalene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	58-90-2	2,3,4,6-Tetrachlorophenol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	95-95-4	2,4,5-Trichlorophenol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	88-06-2	2,4,6-Trichlorophenol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	120-83-2	2,4-Dichlorophenol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	105-67-9	2,4-Dimethylphenol	ND	ug / L	1	0.2	1	05-18-04	05-24-04
X04557	XG.2004.920.8	51-28-5	2,4-Dinitrophenol	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	121-14-2	2,4-Dinitrotoluene	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	606-20-2	2,6-Dinitrotoluene	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	91-58-7	2-Chloronaphthalene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	95-57-8	2-Chlorophenol	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	91-57-6	2-Methylnaphthalene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	95-48-7	2-Methylphenol	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	88-74-4	2-Nitroaniline	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	88-75-5	2-Nitrophenol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	91-94-1	3,3-Dichlorobenzidine	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8		3+4 Methylphenol	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	99-09-2	3-Nitroaniline	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	534-52-1	4,6-Dinitro-2-methylphenol	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	101-55-3	4-Bromophenyl-phenylether	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	59-50-7	4-Chloro-3-methylphenol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	106-47-8	4-Chloroaniline	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	7005-72-3	4-Chlorophenyl-phenylether	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	100-01-6	4-Nitroaniline	ND	ug / L	1	5	1	05-18-04	05-24-04

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Certificate of Analysis

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC475*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-06A		**SW846 3510B/8270C SVOCs by GC/MS**						By: DS		
X04557	XG.2004.920.8	100-02-7	4-Nitrophenol	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	83-32-9	Acenaphthene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	208-96-8	Acenaphthylene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	62-53-3	Aniline	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	120-12-7	Anthracene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8		Azobenzene&1,2-Diphenylhydrazine	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	56-55-3	Benzo (a) anthracene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	50-32-8	Benzo(a)pyrene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8		Benzo(b & k)fluoranthene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	191-24-2	Benzo(g,h,i)perylene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	64-85-0	Benzoic acid	ND	ug / L	1	25	1	05-18-04	05-24-04
X04557	XG.2004.920.8	100-51-6	Benzyl alcohol	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	111-44-4	bis (2-Chloroethyl) ether	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	111-91-1	bis(2-Chloroethoxy)methane	ND	ug / L	1	1	1	05-18-04	05-24-04
[redacted]	XG.2004.920.8	108-60-1	bis(2-Chloroisopropyl)ether	ND	ug / L	1	1	1	05-18-04	05-24-04
[redacted]	XG.2004.920.8	117-81-7	bis(2-Ethylhexyl)phthalate	28	ug / L	1	5	1	05-18-04	05-2[illegible]
X04557	XG.2004.920.8	85-68-7	Butylbenzylphthalate	ND	ug / L	1	1	1	05-18-04	05-[illegible]
X04557	XG.2004.920.8	218-01-9	Chrysene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	53-70-3	Dibenz(a,h)anthracene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	132-64-9	Dibenzofuran	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	84-66-2	Diethylphthalate	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	131-11-3	Dimethylphthalate	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	84-74-2	di-n-Butylphthalate	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	117-84-0	di-n-Octylphthalate	4.3	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	206-44-0	Fluoranthene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	86737	Fluorene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	118-74-1	Hexachlorobenzene	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	87-68-3	Hexachlorobutadiene	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	77-47-4	Hexachlorocyclopentadiene	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	67-72-1	Hexachloroethane	ND	ug / L	1	5	1	05-18-04	05-24-04
X04557	XG.2004.920.8	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	78-59-1	Isophorone	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	91-20-3	Naphthalene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	98-95-3	Nitrobenzene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	62-75-9	n-Nitroso-dimethyl-amine	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	621-64-7	n-Nitroso-di-n-propylamine	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	86-30-6	n-Nitrosodiphenylamine	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	87-86-5	Pentachlorophenol	ND	ug / L	1	10	1	05-18-04	05-24-04
X04557	XG.2004.920.8	85-01-8	Phenanthrene	ND	ug / L	1	1	1	05-18-04	05-24-04
[redacted]	XG.2004.920.8	108-95-2	Phenol	ND	ug / L	1	10	1	05-18-04	05-24-04
[redacted]	XG.2004.920.8	129-00-0	Pyrene	ND	ug / L	1	1	1	05-18-04	05-24-04
X04557	XG.2004.920.8	110-86-1	Pyridine	ND	ug / L	1	10	1	05-18-04	05-24-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000

Order: **0405336** **LOS17** Receipt: **05-14-04**

Sample: ***04SWRC475*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date

Sample: ***04SWRC476*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-07B		**SW846 1311/3010A/6010B ICP TCLP**					By:	KDW		
M04795	MT.2004.985.78	7440-38-2	Arsenic	ND	mg / L	1	0.2		05-25-04	05-26-04
M04795	MT.2004.985.78	7440-39-3	Barium	ND	mg / L	1	0.2		05-25-04	05-26-04
M04795	MT.2004.1002.27	7440-43-9	Cadmium	ND	mg / L	1	0.02		05-25-04	05-28-04
M04795	MT.2004.985.78	7440-47-3	Chromium	ND	mg / L	1	0.02		05-25-04	05-26-04
M04795	MT.2004.985.78	7439-92-1	Lead	ND	mg / L	1	0.1		05-25-04	05-26-04
M04795	MT.2004.985.78	7782-49-2	Selenium	ND	mg / L	1	0.05		05-25-04	05-26-04
0405336-07B		**SW846 1311/3010A/7000 series AA-FL TCLP**					By:	KDW		
M04795	MT.2004.969.93	7440-22-4	Silver	ND	mg / L	1	0.01		05-25-04	05-26-04
[illegible]6-07B		**SW846 1311/7470A CVAA TCLP**					By:	BJM		
[illegible]	MT.2004.1004.22	7439-97-6	Mercury	ND	mg / L	1	0.0002		05-28-04	05-28-04

Sample: ***04SWRC477*** Collected: *05-13-04 9:30:00* By: *DR*
Matrix: ***H2O***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405336-08A		**SW846 8330 Explosives by HPLC**					By:	W/JWB		
X04551	XG.2004.884.19	99-35-4	1,3,5-Trinitrobenzene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	99-65-0	1,3-Dinitrobenzene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	118-96-7	2,4,6-Trinitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	121-14-2	2,4-Dinitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	606-20-2	2,6-Dinitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	355-72-78-2	2-Amino-4,6-Dinitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	88-72-2	2-Nitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	99-08-1	3-Nitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	1946-51-0	4-Amino-2,6-Dinitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	99-99-0	4-Nitrotoluene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	2691-41-0	HMX	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	98-95-3	Nitrobenzene	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	121-82-4	RDX	ND	ug / L	1	0.25		05-19-04	05-21-04
X04551	XG.2004.884.19	479-45-8	Tetryl	ND	ug / L	1	0.25		05-19-04	05-21-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilu*
L	*Not applicable due to MDL proximity*

Type: ***LCS: Lab Control Spike*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**					**X04604-002**		
XG.2004.939.3	120-82-1	1,2,4-Trichlorobenzene	92	% Recovery	64 - 103	1	NA		05-27-04
XG.2004.939.3	106-46-7	1,4-Dichlorobenzene	90	% Recovery	44 - 91	1	NA		05-27-04
XG.2004.939.3	121-14-2	2,4-Dinitrotoluene	97	% Recovery	61 - 118	1	NA		05-27-04
XG.2004.939.3	95-57-8	2-Chlorophenol	92	% Recovery	72 - 102	1	NA		05-27-04
XG.2004.939.3	99-09-2	3-Nitroaniline	74	% Recovery	80 - 120	1	NA		05-27-04
XG.2004.939.3	59-50-7	4-Chloro-3-methylphenol	94	% Recovery	67 - 110	1	NA		05-27-04
XG.2004.939.3	100-02-7	4-Nitrophenol	84	% Recovery	56 - 122	1	NA		05-27-04
XG.2004.939.3	117-84-0	di-n-Octylphthalate	125	% Recovery	69 - 127	1	NA		05-27-04
XG.2004.939.3	621-64-7	n-Nitroso-di-n-propylamine	104	% Recovery	64 - 111	1	NA		05-27-04
XG.2004.939.3	108-95-2	Phenol	104	% Recovery	66 - 98	1	NA		05-27-04
XG.2004.939.3	129-00-0	Pyrene	102	% Recovery	69 - 117	1	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**					**X04608-002**		
XG.2004.932.7	75-35-4	1,1 Dichloroethene	93	% Recovery	44 - 150	1	NA		05-27-04
XG.2004.932.7	106-46-7	1,4 Dichlorobenzene	92	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.7	71-43-2	Benzene	94	% Recovery	66 - 142	1	NA		05-27-04
[illegible].932.7	108-90-7	Chlorobenzene	93	% Recovery	60 - 133	1	NA		05-27-04
[illegible].932.7	108-88-3	Toluene	92	% Recovery	59 - 139	1	NA		05-27-04
XG.2004.932.7	79-01-6	Trichloroethene	94	% Recovery	62 - 137	1	NA		05-
X04550		**SW846 8330 Explosives by HPLC**					**X04550-002**		
XG.2004.884.7	99-35-4	1,3,5-Trinitrobenzene	110	% Recovery	80 - 123	1	NA		05-20-04
XG.2004.884.7	99-65-0	1,3-Dinitrobenzene	102	% Recovery	83 - 120	1	NA		05-20-04
XG.2004.884.7	118-96-7	2,4,6-Trinitrotoluene	104	% Recovery	71 - 127	1	NA		05-20-04
XG.2004.884.7	121-14-2	2,4-Dinitrotoluene	109	% Recovery	85 - 132	1	NA		05-20-04
XG.2004.884.7	606-20-2	2,6-Dinitrotoluene	87	% Recovery	66 - 105	1	NA		05-20-04
XG.2004.884.7	355-72-78-2	2-Amino-4,6-Dinitrotoluene	101	% Recovery	81 - 124	1	NA		05-20-04
XG.2004.884.7	88-72-2	2-Nitrotoluene	102	% Recovery	73 - 123	1	NA		05-20-04
XG.2004.884.7	99-08-1	3-Nitrotoluene	101	% Recovery	73 - 124	1	NA		05-20-04
XG.2004.884.7	1946-51-0	4-Amino-2,6-Dinitrotoluene	97	% Recovery	78 - 115	1	NA		05-20-04
XG.2004.884.7	99-99-0	4-Nitrotoluene	102	% Recovery	74 - 124	1	NA		05-20-04
XG.2004.884.7	2691-41-0	HMX	101	% Recovery	77 - 120	1	NA		05-20-04
XG.2004.884.7	98-95-3	Nitrobenzene	100	% Recovery	82 - 116	1	NA		05-20-04
XG.2004.884.7		RDX	100	% Recovery	84 - 118	1	NA		05-20-04
XG.2004.884.7		Tetryl	134	% Recovery	50 - 144	1	NA		05-20-04

Type: ***LCS: Lab Control Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**					**M04795-003**		
MT.2004.985.65	7440-38-2	Arsenic	90	% Recovery	80 - 120	1	NA		05-26-04
[illegible]04.985.65	7440-39-3	Barium	107	% Recovery	87 - 116	1	NA		05-26-04
[illegible].2004.1002.14	7440-43-9	Cadmium	93	% Recovery	92 - 117	1	NA		05-28-04
MT.2004.985.65	7440-47-3	Chromium	91	% Recovery	88 - 114	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***LCS: Lab Control Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-003**	
MT.2004.985.65	7439-92-1	Lead	96	% Recovery	88 - 119	1	NA		05-26-04
MT.2004.985.65	7782-49-2	Selenium	105	% Recovery	93 - 120	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-003**	
MT.2004.969.80	7440-22-4	Silver	96	% Recovery	80 - 120	1	NA		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-002**	
XG.2004.907.3	106-46-7	1,4-Dichlorobenzene	66	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	95-95-4	2,4,5-Trichlorophenol	78	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	88-06-2	2,4,6-Trichlorophenol	76	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	121-14-2	2,4-Dinitrotoluene	85	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	118-74-1	Hexachlorobenzene	60	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	87-68-3	Hexachlorobutadiene	46	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	67-72-1	Hexachloroethane	56	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3		m-Cresol & p-Cresol	58	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	98-95-3	Nitrobenzene	93	% Recovery	20 - 120	1	NA		05-25-04
XG.2004.907.3	95-48-7	o-Cresol	69	% Recovery	20 - 120	1	NA		05-25-04
[illegible].907.3	87-86-5	Pentachlorophenol	66	% Recovery	20 - 120	1	NA		05-25-04
[illegible].2004.907.3	110-86-1	Pyridine	59	% Recovery	20 - 120	1	NA		05-25-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-002**	
MT.2004.1004.10	7439-97-6	Mercury	98	% Recovery	80 - 120	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-002**	
XG.2004.897.5	75-35-4	1,1 Dichloroethylene	70	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	107-06-2	1,2 Dichloroethane (EDC)	83	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	71-43-2	Benzene	89	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	56-23-5	Carbon tetrachloride	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	108-90-7	Chlorobenzene	95	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	67-66-3	Chloroform	88	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	78-93-3	Methyl ethyl ketone	65	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	127-18-4	Tetrachloroethylene	98	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	79-01-6	Trichloroethylene	91	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.5	75-01-4	Vinyl chloride	86	% Recovery	60 - 140	1	NA		05-24-04

Type: ***LCS: Lab Control Spike*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-002**	
XG.2004.920.3	120-82-1	1,2,4-Trichlorobenzene	71	% Recovery	47 - 101	1	NA		05-24-04
XG.2004.920.3	106-46-7	1,4-Dichlorobenzene	67	% Recovery	42 - 95	1	NA		05-24-04
XG.2004.920.3	121-14-2	2,4-Dinitrotoluene	87	% Recovery	71 - 117	1	NA		05-24-04
[illegible]04.920.3	95-57-8	2-Chlorophenol	75	% Recovery	68 - 109	1	NA		05-24-04
[illegible].2004.920.3	59-50-7	4-Chloro-3-methylphenol	80	% Recovery	66 - 116	1	NA		05-24-04
XG.2004.920.3	100-02-7	4-Nitrophenol	42	% Recovery	12 - 56	1	NA		05-24-04

Assalgal Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***LCS: Lab Control Spike*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-002**	
XG.2004.920.3	83-32-9	Acenaphthene	86	% Recovery	70 - 117	1	NA		05-24-04
XG.2004.920.3	117-84-0	di-n-Octylphthalate	90	% Recovery	68 - 135	1	NA		05-24-04
XG.2004.920.3	621-64-7	n-Nitroso-di-n-propylamine	92	% Recovery	64 - 114	1	NA		05-24-04
XG.2004.920.3	87-86-5	Pentachlorophenol	77	% Recovery	49 - 130	1	NA		05-24-04
XG.2004.920.3	108-95-2	Phenol	43	% Recovery	17 - 56	1	NA		05-24-04
XG.2004.920.3	129-00-0	Pyrene	85	% Recovery	78 - 126	1	NA		05-24-04
X04554		**SW846 8260B Purgeable VOCs by GC/MS**						**X04554-002**	
XG.2004.894.4	75-35-4	1,1 Dichloroethene	79	% Recovery	61 - 145	1	NA		05-20-04
XG.2004.894.4	106-46-7	1,4 Dichlorobenzene	91	% Recovery	75 - 130	1	NA		05-20-04
XG.2004.894.4	71-43-2	Benzene	89	% Recovery	76 - 127	1	NA		05-20-04
XG.2004.894.4	108-90-7	Chlorobenzene	92	% Recovery	75 - 130	1	NA		05-20-04
XG.2004.894.4	108-88-3	Toluene	92	% Recovery	76 - 125	1	NA		05-20-04
XG.2004.894.4	79-01-6	Trichloroethene	94	% Recovery	71 - 120	1	NA		05-20-04
X04551		**SW846 8330 Explosives by HPLC**						**X04551-002**	
XG.2004.884.18	99-35-4	1,3,5-Trinitrobenzene	102	% Recovery	77 - 115	1	NA		05-21-04
[illegible].884.18	99-65-0	1,3-Dinitrobenzene	90	% Recovery	80 - 101	1	NA		05-21-04
[illegible]004.884.18	118-96-7	2,4,6-Trinitrotoluene	101	% Recovery	87 - 113	1	NA		05-
XG.2004.884.18	121-14-2	2,4-Dinitrotoluene	101	% Recovery	92 - 116	1	NA		05-2[illegible]
XG.2004.884.18	606-20-2	2,6-Dinitrotoluene	89	% Recovery	70 - 100	1	NA		05-21-04
XG.2004.884.18	355-72-78-2	2-Amino-4,6-Dinitrotoluene	94	% Recovery	87 - 108	1	NA		05-21-04
XG.2004.884.18	88-72-2	2-Nitrotoluene	91	% Recovery	74 - 103	1	NA		05-21-04
XG.2004.884.18	99-08-1	3-Nitrotoluene	92	% Recovery	77 - 103	1	NA		05-21-04
XG.2004.884.18	1946-51-0	4-Amino-2,6-Dinitrotoluene	96	% Recovery	84 - 106	1	NA		05-21-04
XG.2004.884.18	99-99-0	4-Nitrotoluene	93	% Recovery	79 - 103	1	NA		05-21-04
XG.2004.884.18	2691-41-0	HMX	90	% Recovery	80 - 103	1	NA		05-21-04
XG.2004.884.18	98-95-3	Nitrobenzene	82	% Recovery	68 - 97	1	NA		05-21-04
XG.2004.884.18	121-82-4	RDX	84	% Recovery	77 - 96	1	NA		05-21-04
XG.2004.884.18	479-45-8	Tetryl	124	% Recovery	68 - 131	1	NA		05-21-04

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-001**	
XG.2004.939.2	120-82-1	1,2,4-Trichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	95-50-1	1,2-Dichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	541-73-1	1,3-Dichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	106-46-7	1,4-Dichlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	90-12-0	1-Methylnaphthalene	ND	mg / Kg		1	0.03		05-27-04
[illegible]004.939.2	58-90-2	2,3,4,6-Tetrachlorophenol	ND	mg / Kg		1	1.5		05-27-04
[illegible]04.939.2	95-95-4	2,4,5-Trichlorophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	88-06-2	2,4,6-Trichlorophenol	ND	mg / Kg		1	0.3		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-001**	
XG.2004.939.2	120-83-2	2,4-Dichlorophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	105-67-9	2,4-Dimethylphenol	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	51-28-5	2,4-Dinitrophenol	ND	mg / Kg		1	0.67		05-27-04
XG.2004.939.2	121-14-2	2,4-Dinitrotoluene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	606-20-2	2,6-Dinitrotoluene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	91-58-7	2-Chloronaphthalene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	95-57-8	2-Chlorophenol	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	91-57-6	2-Methylnaphthalene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	95-48-7	2-Methylphenol	0.061	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	88-74-4	2-Nitroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	88-75-5	2-Nitrophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	91-94-1	3,3-Dichlorobenzidine	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2		3+4 Methylphenol	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	99-09-2	3-Nitroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	534-52-1	4,6-Dinitro-2-methylphenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	101-55-3	4-Bromophenyl-phenylether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	59-50-7	4-Chloro-3-methylphenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	106-47-8	4-Chloroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	7005-72-3	4-Chlorophenyl-phenylether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	100-01-6	4-Nitroaniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	100-02-7	4-Nitrophenol	ND	mg / Kg		1	0.6		05-27-04
XG.2004.939.2	83-32-9	Acenaphthene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	208-96-8	Acenaphthylene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	62-53-3	Aniline	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	120-12-7	Anthracene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2		Azobenzene&1,2-Diphenylhydrazine	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	56-55-3	Benzo (a) anthracene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	50-32-8	Benzo(a)pyrene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2		Benzo(b & k)fluoranthene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	191-24-2	Benzo(g,h,i)perylene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	64-85-0	Benzoic acid	ND	mg / Kg		1	3		05-27-04
XG.2004.939.2	100-51-6	Benzyl alcohol	ND	mg / Kg		1	1.5		05-27-04
XG.2004.939.2	111-44-4	bis (2-Chloroethyl) ether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	111-91-1	bis(2-Chloroethoxy)methane	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	108-60-1	bis(2-Chloroisopropyl)ether	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	117-81-7	bis(2-Ethylhexyl)phthalate	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	85-68-7	Butylbenzylphthalate	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	218-01-9	Chrysene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	53-70-3	Dibenz(a,h)anthracene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	132-64-9	Dibenzofuran	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	84-66-2	Diethylphthalate	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	131-11-3	Dimethylphthalate	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	84-74-2	di-n-Butylphthalate	ND	mg / Kg		1	0.3		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-001**	
XG.2004.939.2	117-84-0	di-n-Octylphthalate	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	206-44-0	Fluoranthene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	86737	Fluorene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	118-74-1	Hexachlorobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	87-68-3	Hexachlorobutadiene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	77-47-4	Hexachlorocyclopentadiene	ND	mg / Kg		1	1.5		05-27-04
XG.2004.939.2	67-72-1	Hexachloroethane	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	193-39-5	Indeno(1,2,3-cd)pyrene	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	78-59-1	Isophorone	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	91-20-3	Naphthalene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	98-95-3	Nitrobenzene	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	62-75-9	n-Nitroso-dimethyl-amine	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	621-64-7	n-Nitroso-di-n-propylamine	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	86-30-6	n-Nitrosodiphenylamine	ND	mg / Kg		1	0.03		05-27-04
XG.2004.939.2	87-86-5	Pentachlorophenol	ND	mg / Kg		1	0.3		05-27-04
XG.2004.939.2	85-01-8	Phenanthrene	ND	mg / Kg		1	0.03		05-27-04
[illegible].939.2	108-95-2	Phenol	ND	mg / Kg		1	0.3		05-27-04
[illegible]04.939.2	129-00-0	Pyrene	ND	mg / Kg		1	0.03		05-[illegible]
XG.2004.939.2	110-86-1	Pyridine	ND	mg / Kg		1	0.3		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-001**	
XG.2004.932.6	75-34-3	1,1 Dichloroethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	75-35-4	1,1 Dichloroethene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	71-55-6	1,1,1 Trichloroethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	630-20-6	1,1,1,2 Tetrachloroethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	79-00-5	1,1,2 Trichloroethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	79-34-5	1,1,2,2 Tetrachloroethane	0.008	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	106-93-4	1,2 Dibromoethane (EDB)	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	95-50-1	1,2 Dichlorobenzene	ND	mg / Kg		1	0.01		05-27-04
XG.2004.932.6	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	78-87-5	1,2 Dichloropropane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	96-18-4	1,2,3 Trichloropropane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	95-63-6	1,2,4-Trimethylbenzene	ND	mg / Kg		1	0.01		05-27-04
XG.2004.932.6	541-73-1	1,3 Dichlorobenzene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	108-67-8	1,3,5-Trimethylbenzene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	764-41-0	1,4 Dichloro-2-butene	ND	mg / Kg		1	0.05		05-27-04
XG.2004.932.6	106-46-7	1,4 Dichlorobenzene	ND	mg / Kg		1	0.01		05-27-04
XG.2004.932.6	78-93-3	2-Butanone (MEK)	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	591-78-6	2-Hexanone (MBK)	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	67-64-1	Acetone	ND	mg / Kg		1	0.05		05-27-04
[illegible]004.932.6	107-02-8	Acrolein	ND	mg / Kg		1	0.1		05-27-04
[illegible]04.932.6	107-13-1	Acrylonitrile	ND	mg / Kg		1	0.1		05-27-04
XG.2004.932.6	71-43-2	Benzene	ND	mg / Kg		1	0.005		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
Project: **8M02 X2O5 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-001**	
XG.2004.932.6	75-27-4	Bromodichloromethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	75-25-2	Bromoform	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	74-83-9	Bromomethane	ND	mg / Kg		1	0.05		05-27-04
XG.2004.932.6	75-15-0	Carbon disulfide	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	56-23-5	Carbon tetrachloride	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	108-90-7	Chlorobenzene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	124-48-1	Chlorodibromomethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	75-00-3	Chloroethane	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	67-66-3	Chloroform	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	74-87-3	Chloromethane	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	156-59-2	cis-1,2 dichloroethene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6		cis-1,3 Dichloropropene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	74-95-3	Dibromomethane	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	97-63-2	Ethyl methacrylate	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	100-41-4	Ethylbenzene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6		Freon 113	ND	mg / Kg		1	0.035		05-27-04
XG.2004.932.6	75-71-8	Freon 12	ND	mg / Kg		1	0.05		05-27-04
XG.2004.932.6	1634-04-4	Methyl t-butyl ether (MTBE)	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	75-09-2	Methylene chloride	ND	mg / Kg		1	0.05		05-27-04
XG.2004.932.6	91-20-3	Naphthalene	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	95-47-6	o-Xylene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	108-38-3/106-42	p/m-Xylenes	ND	mg / Kg		1	0.01		05-27-04
XG.2004.932.6	100-42-5	Styrene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	156-60-5	t-1,2 Dichloroethene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	10061-02-6	t-1,3 Dichloropropene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	127-18-4	Tetrachloroethene (PCE)	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	108-88-3	Toluene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	79-01-6	Trichloroethene	ND	mg / Kg		1	0.005		05-27-04
XG.2004.932.6	75-69-4	Trichlorofluoromethane	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	108-05-4	Vinyl acetate	ND	mg / Kg		1	0.025		05-27-04
XG.2004.932.6	75-01-4	Vinyl chloride	ND	mg / Kg		1	0.01		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-001**	
XG.2004.884.6	99-35-4	1,3,5-Trinitrobenzene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	99-65-0	1,3-Dinitrobenzene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	118-96-7	2,4,6-Trinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	121-14-2	2,4-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	606-20-2	2,6-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	355-72-78-2	2-Amino-4,6-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	88-72-2	2-Nitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	99-08-1	3-Nitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	1946-51-0	4-Amino-2,6-Dinitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	99-99-0	4-Nitrotoluene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6	2691-41-0	HMX	ND	ug / kg		1	100		05-20-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04550		**SW846 8330 Explosives by HPLC**						**X04550-001**	
XG.2004.884.6	98-95-3	Nitrobenzene	ND	ug / kg		1	100		05-20-04
XG.2004.884.6		RDX	ND	ug / kg		1	100		05-20-04
XG.2004.884.6		Tetryl	ND	ug / kg		1	100		05-20-04

Type: ***MB: Method Blank*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-001**	
MT.2004.985.63	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-26-04
MT.2004.985.63	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.1002.12	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-28-04
MT.2004.985.63	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.63	7439-92-1	Lead	ND	mg / L		1	0.1		05-26-04
MT.2004.985.63	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-002**	
[illegible]985.64	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-2[illegible]
[illegible].985.64	7440-39-3	Barium	ND	mg / L		1	0.2		05-[illegible]
MT.2004.1002.13	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-28-04
MT.2004.985.64	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.64	7439-92-1	Lead	ND	mg / L		1	0.1		05-26-04
MT.2004.985.64	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-011**	
MT.2004.985.75	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-26-04
MT.2004.985.75	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.1002.24	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-28-04
MT.2004.985.75	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.75	7439-92-1	Lead	ND	mg / L		1	0.1		05-26-04
MT.2004.985.75	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-001**	
MT.2004.969.78	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-002**	
MT.2004.969.79	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-011**	
MT.2004.969.90	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-001**	
XG.2004.907.2	106-46-7	1,4-Dichlorobenzene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	95-95-4	2,4,5-Trichlorophenol	ND	mg / L		1	0.01		05-25-04
[illegible]04.907.2	88-06-2	2,4,6-Trichlorophenol	ND	mg / L		1	0.01		05-25-04
[illegible]04.907.2	121-14-2	2,4-Dinitrotoluene	ND	mg / L		1	0.01		05-25-04
XG.2004.907.2	118-74-1	Hexachlorobenzene	ND	mg / L		1	0.001		05-25-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405336 LOS17

Explanation of codes	
D	Not applicable due to sample dilution
L	Not applicable due to MDL proximity

Type: ***MB: Method Blank*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-001**	
XG.2004.907.2	87-68-3	Hexachlorobutadiene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	67-72-1	Hexachloroethane	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2		m-Cresol & p-Cresol	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	98-95-3	Nitrobenzene	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	95-48-7	o-Cresol	ND	mg / L		1	0.001		05-25-04
XG.2004.907.2	87-86-5	Pentachlorophenol	ND	mg / L		1	0.01		05-25-04
XG.2004.907.2	110-86-1	Pyridine	ND	mg / L		1	0.01		05-25-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-001**	
MT.2004.1004.9	7439-97-6	Mercury	ND	mg / L		1	0.0002		05-28-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-007**	
MT.2004.1004.23	7439-97-6	Mercury	ND	mg / L		1	0.0002		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-001**	
XG.2004.897.4	75-35-4	1,1 Dichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	71-43-2	Benzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	56-23-5	Carbon tetrachloride	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	108-90-7	Chlorobenzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	67-66-3	Chloroform	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	78-93-3	Methyl ethyl ketone	0.006	mg / L		1	0.005		05-24-04
XG.2004.897.4	127-18-4	Tetrachloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	79-01-6	Trichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.4	75-01-4	Vinyl chloride	ND	mg / L		1	0.005		05-24-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-004**	
XG.2004.897.7	75-35-4	1,1 Dichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	71-43-2	Benzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	56-23-5	Carbon tetrachloride	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	108-90-7	Chlorobenzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	67-66-3	Chloroform	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	78-93-3	Methyl ethyl ketone	0.013	mg / L		1	0.005		05-24-04
XG.2004.897.7	127-18-4	Tetrachloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	79-01-6	Trichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.7	75-01-4	Vinyl chloride	ND	mg / L		1	0.005		05-24-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-006**	
XG.2004.897.9	75-35-4	1,1 Dichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	107-06-2	1,2 Dichloroethane (EDC)	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	71-43-2	Benzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	56-23-5	Carbon tetrachloride	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	108-90-7	Chlorobenzene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	67-66-3	Chloroform	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	78-93-3	Methyl ethyl ketone	ND	mg / L		1	0.005		05-24-04

Assalgal Analytical Laboratories, Inc.

Quality Control Summary

C[redacted] **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-006**	
XG.2004.897.9	127-18-4	Tetrachloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	79-01-6	Trichloroethylene	ND	mg / L		1	0.001		05-24-04
XG.2004.897.9	75-01-4	Vinyl chloride	ND	mg / L		1	0.005		05-24-04

Type: ***MB: Method Blank*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-001**	
XG.2004.920.2	120-82-1	1,2,4-Trichlorobenzene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	95-50-1	1,2-Dichlorobenzene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	541-73-1	1,3-Dichlorobenzene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	106-46-7	1,4-Dichlorobenzene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	90-12-0	1-Methylnaphthalene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	58-90-2	2,3,4,6-Tetrachlorophenol	ND	ug / L		1	5		05-24-04
X[redacted]04.920.2	95-95-4	2,4,5-Trichlorophenol	ND	ug / L		1	5		05-24-04
[redacted].920.2	88-06-2	2,4,6-Trichlorophenol	ND	ug / L		1	5		05-24-04
XG.2004.920.2	120-83-2	2,4-Dichlorophenol	ND	ug / L		1	5		05-[illegible]
XG.2004.920.2	105-67-9	2,4-Dimethylphenol	ND	ug / L		1	0.2		05-[illegible]
XG.2004.920.2	51-28-5	2,4-Dinitrophenol	ND	ug / L		1	10		05-24-04
XG.2004.920.2	121-14-2	2,4-Dinitrotoluene	ND	ug / L		1	5		05-24-04
XG.2004.920.2	606-20-2	2,6-Dinitrotoluene	ND	ug / L		1	5		05-24-04
XG.2004.920.2	91-58-7	2-Chloronaphthalene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	95-57-8	2-Chlorophenol	ND	ug / L		1	1		05-24-04
XG.2004.920.2	91-57-6	2-Methylnaphthalene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	95-48-7	2-Methylphenol	ND	ug / L		1	1		05-24-04
XG.2004.920.2	88-74-4	2-Nitroaniline	ND	ug / L		1	5		05-24-04
XG.2004.920.2	88-75-5	2-Nitrophenol	ND	ug / L		1	5		05-24-04
XG.2004.920.2	91-94-1	3,3-Dichlorobenzidine	ND	ug / L		1	10		05-24-04
XG.2004.920.2		3+4 Methylphenol	ND	ug / L		1	1		05-24-04
XG.2004.920.2	99-09-2	3-Nitroaniline	ND	ug / L		1	5		05-24-04
XG.2004.920.2	534-52-1	4,6-Dinitro-2-methylphenol	ND	ug / L		1	10		05-24-04
XG.2004.920.2	101-55-3	4-Bromophenyl-phenylether	ND	ug / L		1	1		05-24-04
XG.2004.920.2	59-50-7	4-Chloro-3-methylphenol	ND	ug / L		1	5		05-24-04
XG.2004.920.2	106-47-8	4-Chloroaniline	ND	ug / L		1	5		05-24-04
XG.2004.920.2	7005-72-3	4-Chlorophenyl-phenylether	ND	ug / L		1	1		05-24-04
XG.2004.920.2	100-01-6	4-Nitroaniline	ND	ug / L		1	5		05-24-04
XG.2004.920.2	100-02-7	4-Nitrophenol	ND	ug / L		1	10		05-24-04
XG.2004.920.2	83-32-9	Acenaphthene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	208-96-8	Acenaphthylene	ND	ug / L		1	1		05-24-04
[redacted]004.920.2	62-53-3	Aniline	ND	ug / L		1	10		05-24-04
[redacted]04.920.2	120-12-7	Anthracene	ND	ug / L		1	1		05-24-04
X[redacted].2004.920.2		Azobenzene&1,2-Diphenylhydrazine	ND	ug / L		1	1		05-24-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X2O5 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-001**	
XG.2004.920.2	56-55-3	Benzo (a) anthracene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	50-32-8	Benzo(a)pyrene	ND	ug / L		1	1		05-24-04
XG.2004.920.2		Benzo(b & k)fluoranthene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	191-24-2	Benzo(g,h,i)perylene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	64-85-0	Benzoic acid	ND	ug / L		1	25		05-24-04
XG.2004.920.2	100-51-6	Benzyl alcohol	ND	ug / L		1	5		05-24-04
XG.2004.920.2	111-44-4	bis (2-Chloroethyl) ether	ND	ug / L		1	1		05-24-04
XG.2004.920.2	111-91-1	bis(2-Chloroethoxy)methane	ND	ug / L		1	1		05-24-04
XG.2004.920.2	108-60-1	bis(2-Chloroisopropyl)ether	ND	ug / L		1	1		05-24-04
XG.2004.920.2	117-81-7	bis(2-Ethylhexyl)phthalate	ND	ug / L		1	5		05-24-04
XG.2004.920.2	85-68-7	Butylbenzylphthalate	ND	ug / L		1	1		05-24-04
XG.2004.920.2	218-01-9	Chrysene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	53-70-3	Dibenz(a,h)anthracene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	132-64-9	Dibenzofuran	ND	ug / L		1	1		05-24-04
XG.2004.920.2	84-66-2	Diethylphthalate	ND	ug / L		1	1		05-24-04
XG.2004.920.2	131-11-3	Dimethylphthalate	ND	ug / L		1	1		05-24-04
[illegible]4.920.2	84-74-2	di-n-Butylphthalate	ND	ug / L		1	1		05-24-04
[illegible]04.920.2	117-84-0	di-n-Octylphthalate	ND	ug / L		1	1		05-24-04
XG.2004.920.2	206-44-0	Fluoranthene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	86737	Fluorene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	118-74-1	Hexachlorobenzene	ND	ug / L		1	10		05-24-04
XG.2004.920.2	87-68-3	Hexachlorobutadiene	ND	ug / L		1	10		05-24-04
XG.2004.920.2	77-47-4	Hexachlorocyclopentadiene	ND	ug / L		1	10		05-24-04
XG.2004.920.2	67-72-1	Hexachloroethane	ND	ug / L		1	5		05-24-04
XG.2004.920.2	193-39-5	Indeno(1,2,3-cd)pyrene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	78-59-1	Isophorone	ND	ug / L		1	1		05-24-04
XG.2004.920.2	91-20-3	Naphthalene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	98-95-3	Nitrobenzene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	62-75-9	n-Nitroso-dimethyl-amine	ND	ug / L		1	10		05-24-04
XG.2004.920.2	621-64-7	n-Nitroso-di-n-propylamine	ND	ug / L		1	1		05-24-04
XG.2004.920.2	86-30-6	n-Nitrosodiphenylamine	ND	ug / L		1	1		05-24-04
XG.2004.920.2	87-86-5	Pentachlorophenol	ND	ug / L		1	10		05-24-04
XG.2004.920.2	85-01-8	Phenanthrene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	108-95-2	Phenol	ND	ug / L		1	10		05-24-04
XG.2004.920.2	129-00-0	Pyrene	ND	ug / L		1	1		05-24-04
XG.2004.920.2	110-86-1	Pyridine	ND	ug / L		1	10		05-24-04
X04554		**SW846 8260B Purgeable VOCs by GC/MS**						**X04554-001**	
XG.2004.894.3	75-34-3	1,1 Dichloroethane	ND	ug / L		1	1		05-20-04
XG.2004.894.3	75-35-4	1,1 Dichloroethene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	71-55-6	1,1,1 Trichloroethane	ND	ug / L		1	1		05-20-04
[illegible]004.894.3	630-20-6	1,1,1,2 Tetrachloroethane	ND	ug / L		1	1		05-20-04
[illegible]04.894.3	79-00-5	1,1,2 Trichloroethane	ND	ug / L		1	1		05-20-04
XG.2004.894.3	79-34-5	1,1,2,2 Tetrachloroethane	ND	ug / L		1	1		05-20-04

Assalgai Analytical Laboratories, Inc.

Quality Control Summary

t: **LOS ALAMOS NATIONAL LABS**
ct: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilut*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**SW846 8260B Purgeable VOCs by GC/MS**					**X04554-001**		
XG.2004.894.3	106-93-4	1,2 Dibromoethane (EDB)	ND	ug / L		1	1		05-20-04
XG.2004.894.3	95-50-1	1,2 Dichlorobenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	107-06-2	1,2 Dichloroethane (EDC)	ND	ug / L		1	1		05-20-04
XG.2004.894.3	78-87-5	1,2 Dichloropropane	ND	ug / L		1	1		05-20-04
XG.2004.894.3	96-18-4	1,2,3 Trichloropropane	ND	ug / L		1	1		05-20-04
XG.2004.894.3	95-63-6	1,2,4-Trimethylbenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	541-73-1	1,3 Dichlorobenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	108-67-8	1,3,5-Trimethylbenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	764-41-0	1,4 Dichloro-2-butene	ND	ug / L		1	10		05-20-04
XG.2004.894.3	106-46-7	1,4 Dichlorobenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	78-93-3	2-Butanone (MEK)	ND	ug / L		1	5		05-20-04
XG.2004.894.3	591-78-6	2-Hexanone (MBK)	ND	ug / L		1	5		05-20-04
XG.2004.894.3	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	ug / L		1	5		05-20-04
XG.2004.894.3	67-64-1	Acetone	ND	ug / L		1	10		05-20-04
XG.2004.894.3	107-02-8	Acrolein	ND	ug / L		1	20		05-20-04
XG.2004.894.3	107-13-1	Acrylonitrile	ND	ug / L		1	20		05-20-04
[redacted]4.894.3	71-43-2	Benzene	ND	ug / L		1	1		05-20-04
[redacted]04.894.3	75-27-4	Bromodichloromethane	ND	ug / L		1	1		05-[illegible]
XG.2004.894.3	75-25-2	Bromoform	ND	ug / L		1	1		05-2[illegible]
XG.2004.894.3	74-83-9	Bromomethane	ND	ug / L		1	10		05-20-04
XG.2004.894.3	75-15-0	Carbon disulfide	ND	ug / L		1	5		05-20-04
XG.2004.894.3	56-23-5	Carbon tetrachloride	ND	ug / L		1	1		05-20-04
XG.2004.894.3	108-90-7	Chlorobenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	124-48-1	Chlorodibromomethane	ND	ug / L		1	1		05-20-04
XG.2004.894.3	75-00-3	Chloroethane	ND	ug / L		1	5		05-20-04
XG.2004.894.3	67-66-3	Chloroform	ND	ug / L		1	1		05-20-04
XG.2004.894.3	74-87-3	Chloromethane	ND	ug / L		1	5		05-20-04
XG.2004.894.3	156-59-2	cis-1,2 dichloroethene	ND	ug / L		1	1		05-20-04
XG.2004.894.3		cis-1,3 Dichloropropene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	74-95-3	Dibromomethane	ND	ug / L		1	1		05-20-04
XG.2004.894.3	97-63-2	Ethyl methacrylate	ND	ug / L		1	5		05-20-04
XG.2004.894.3	100-41-4	Ethylbenzene	ND	ug / L		1	1		05-20-04
XG.2004.894.3		Freon 113	ND	ug / L		1	5		05-20-04
XG.2004.894.3	75-71-8	Freon 12	ND	ug / L		1	10		05-20-04
XG.2004.894.3	1634-04-4	Methyl t-butyl ether (MTBE)	ND	ug / L		1	1		05-20-04
XG.2004.894.3	75-09-2	Methylene chloride	ND	ug / L		1	10		05-20-04
XG.2004.894.3	91-20-3	Naphthalene	ND	ug / L		1	5		05-20-04
XG.2004.894.3	95-47-6	o-Xylene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	108-38-3/106-42	p/m-Xylenes	ND	ug / L		1	2		05-20-04
XG.2004.894.3	100-42-5	Styrene	ND	ug / L		1	1		05-20-04
[redacted]004.894.3	156-60-5	t-1,2 Dichloroethene	ND	ug / L		1	1		05-20-04
[redacted]04.894.3	10061-02-6	t-1,3 Dichloropropene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	127-18-4	Tetrachloroethene (PCE)	ND	ug / L		1	1		05-20-04

Assaigal Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**SW846 8260B Purgeable VOCs by GC/MS**						**X04554-001**	
XG.2004.894.3	108-88-3	Toluene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	79-01-6	Trichloroethene	ND	ug / L		1	1		05-20-04
XG.2004.894.3	75-69-4	Trichlorofluoromethane	ND	ug / L		1	5		05-20-04
XG.2004.894.3	108-05-4	Vinyl acetate	ND	ug / L		1	5		05-20-04
XG.2004.894.3	75-01-4	Vinyl chloride	ND	ug / L		1	5		05-20-04
X04551		**SW846 8330 Explosives by HPLC**						**X04551-001**	
XG.2004.884.17	99-35-4	1,3,5-Trinitrobenzene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	99-65-0	1,3-Dinitrobenzene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	118-96-7	2,4,6-Trinitrotoluene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	121-14-2	2,4-Dinitrotoluene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	606-20-2	2,6-Dinitrotoluene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	355-72-78-2	2-Amino-4,6-Dinitrotoluene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	88-72-2	2-Nitrotoluene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	99-08-1	3-Nitrotoluene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	1946-51-0	4-Amino-2,6-Dinitrotoluene	ND	ug / L		1	0.25		05-21-04
X[illegible]04.884.17	99-99-0	4-Nitrotoluene	ND	ug / L		1	0.25		05-21-04
[illegible].884.17	2691-41-0	HMX	ND	ug / L		1	0.25		05-21-04
G.2004.884.17	98-95-3	Nitrobenzene	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	121-82-4	RDX	ND	ug / L		1	0.25		05-21-04
XG.2004.884.17	479-45-8	Tetryl	ND	ug / L		1	0.25		05-21-04

Type: ***MD: Matrix Duplicate*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-007**	
MT.2004.985.69	7440-38-2	Arsenic	NA	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.69	7440-39-3	Barium	30	RPD	0 - 20	1	NA		05-26-04
MT.2004.1002.18	7440-43-9	Cadmium	33	RPD	0 - 20	1	NA		05-28-04
MT.2004.985.69	7440-47-3	Chromium	158	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.69	7439-92-1	Lead	36	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.69	7782-49-2	Selenium	45	RPD	0 - 20	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-007**	
MT.2004.969.84	7440-22-4	Silver	NA	RPD	0 - 20	1	NA		05-26-04

Type: ***MS: Matrix Spike*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
[illegible]04		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-004**	
X[illegible]2004.939.5	120-82-1	1,2,4-Trichlorobenzene	101	% Recovery	64 - 103	5	NA		05-27-04
XG.2004.939.5	106-46-7	1,4-Dichlorobenzene	94	% Recovery	44 - 91	5	NA		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MS: Matrix Spike*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**					**X04604-004**		
XG.2004.939.5	121-14-2	2,4-Dinitrotoluene	66	% Recovery	61 - 118	5	NA		05-27-04
XG.2004.939.5	95-57-8	2-Chlorophenol	100	% Recovery	72 - 102	5	NA		05-27-04
XG.2004.939.5	59-50-7	4-Chloro-3-methylphenol	113	% Recovery	67 - 110	5	NA		05-27-04
XG.2004.939.5	100-02-7	4-Nitrophenol	< 1	% Recovery	56 - 122	5	NA		05-27-04
XG.2004.939.5	83-32-9	Acenaphthene	104	% Recovery	72 - 109	5	NA		05-27-04
XG.2004.939.5	117-84-0	di-n-Octylphthalate	332	% Recovery	69 - 127	5	NA		05-27-04
XG.2004.939.5	621-64-7	n-Nitroso-di-n-propylamine	133	% Recovery	64 - 111	5	NA		05-27-04
XG.2004.939.5	87-86-5	Pentachlorophenol	105	% Recovery	64 - 105	5	NA		05-27-04
XG.2004.939.5	108-95-2	Phenol	98	% Recovery	66 - 98	5	NA		05-27-04
XG.2004.939.5	129-00-0	Pyrene	109	% Recovery	69 - 117	5	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**					**X04608-005**		
XG.2004.932.10	75-35-4	1,1 Dichloroethene	94	% Recovery	44 - 150	1	NA		05-27-04
XG.2004.932.10	106-46-7	1,4 Dichlorobenzene	95	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.10	71-43-2	Benzene	95	% Recovery	66 - 142	1	NA		05-27-04
XG.2004.932.10	108-90-7	Chlorobenzene	94	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.10	108-88-3	Toluene	92	% Recovery	59 - 139	1	NA		05-27-04
XG.2004.932.10	79-01-6	Trichloroethene	98	% Recovery	62 - 137	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**					**X04550-004**		
XG.2004.884.9	99-35-4	1,3,5-Trinitrobenzene	6	% Recovery	80 - 123	1	NA		05-20-04
XG.2004.884.9	99-65-0	1,3-Dinitrobenzene	100	% Recovery	83 - 120	1	NA		05-20-04
XG.2004.884.9	118-96-7	2,4,6-Trinitrotoluene	39	% Recovery	71 - 127	1	NA		05-20-04
XG.2004.884.9	121-14-2	2,4-Dinitrotoluene	103	% Recovery	85 - 132	1	NA		05-20-04
XG.2004.884.9	606-20-2	2,6-Dinitrotoluene	89	% Recovery	66 - 105	1	NA		05-20-04
XG.2004.884.9	355-72-78-2	2-Amino-4,6-Dinitrotoluene	96	% Recovery	81 - 124	1	NA		05-20-04
XG.2004.884.9	88-72-2	2-Nitrotoluene	98	% Recovery	73 - 123	1	NA		05-20-04
XG.2004.884.9	99-08-1	3-Nitrotoluene	96	% Recovery	73 - 124	1	NA		05-20-04
XG.2004.884.9	1946-51-0	4-Amino-2,6-Dinitrotoluene	104	% Recovery	78 - 115	1	NA		05-20-04
XG.2004.884.9	99-99-0	4-Nitrotoluene	97	% Recovery	74 - 124	1	NA		05-20-04
XG.2004.884.9	2691-41-0	HMX	105	% Recovery	77 - 120	1	NA		05-20-04
XG.2004.884.9	98-95-3	Nitrobenzene	108	% Recovery	82 - 116	1	NA		05-20-04
XG.2004.884.9		RDX	105	% Recovery	84 - 118	1	NA		05-20-04
XG.2004.884.9		Tetryl	34	% Recovery	50 - 144	1	NA		05-20-04

Type: ***MS: Matrix Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**					**M04795-005**		
MT.2004.985.67	7440-38-2	Arsenic	79	% Recovery	75 - 124	1	NA		05-26-04
MT.2004.985.67	7440-39-3	Barium	108	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.1002.16	7440-43-9	Cadmium	96	% Recovery	92 - 117	1	NA		05-28-04
MT.2004.985.67	7440-47-3	Chromium	96	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.67	7439-92-1	Lead	98	% Recovery	88 - 119	1	NA		05-26-04

Assalgal Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MS: Matrix Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-005**	
MT.2004.985.67	7782-49-2	Selenium	104	% Recovery	93 - 121	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-005**	
MT.2004.969.82	7440-22-4	Silver	92	% Recovery	80 - 120	1	NA		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-004**	
XG.2004.907.7	106-46-7	1,4-Dichlorobenzene	74	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	95-95-4	2,4,5-Trichlorophenol	60	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	88-06-2	2,4,6-Trichlorophenol	69	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	121-14-2	2,4-Dinitrotoluene	90	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	118-74-1	Hexachlorobenzene	57	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	87-68-3	Hexachlorobutadiene	63	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	67-72-1	Hexachloroethane	63	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7		m-Cresol & p-Cresol	53	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	98-95-3	Nitrobenzene	98	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	95-48-7	o-Cresol	69	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	87-86-5	Pentachlorophenol	24	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.7	110-86-1	Pyridine	55	% Recovery	20 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-004**	
MT.2004.1004.20	7439-97-6	Mercury	91	% Recovery	80 - 120	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-009**	
XG.2004.897.12	75-35-4	1,1 Dichloroethylene	72	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	107-06-2	1,2 Dichloroethane (EDC)	84	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	71-43-2	Benzene	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	56-23-5	Carbon tetrachloride	92	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	108-90-7	Chlorobenzene	96	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	67-66-3	Chloroform	86	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	78-93-3	Methyl ethyl ketone	75	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	127-18-4	Tetrachloroethylene	98	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	79-01-6	Trichloroethylene	91	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.12	75-01-4	Vinyl chloride	84	% Recovery	60 - 140	1	NA		05-24-04

Type: ***MS: Matrix Spike*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-004**	
XG.2004.920.5	120-82-1	1,2,4-Trichlorobenzene	72	% Recovery	47 - 101	2	NA		05-24-04
XG.2004.920.5	106-46-7	1,4-Dichlorobenzene	68	% Recovery	42 - 95	2	NA		05-24-04
XG.2004.920.5	121-14-2	2,4-Dinitrotoluene	82	% Recovery	71 - 117	2	NA		05-24-04
XG.2004.920.5	95-57-8	2-Chlorophenol	60	% Recovery	68 - 109	2	NA		05-24-04
XG.2004.920.5	59-50-7	4-Chloro-3-methylphenol	64	% Recovery	66 - 116	2	NA		05-24-04
XG.2004.920.5	100-02-7	4-Nitrophenol	32	% Recovery	12 - 56	2	NA		05-24-04
XG.2004.920.5	83-32-9	Acenaphthene	83	% Recovery	70 - 117	2	NA		05-24-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MS: Matrix Spike*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**					**X04557-004**		
XG.2004.920.5	117-84-0	di-n-Octylphthalate	75	% Recovery	68 - 135	2	NA		05-24-04
XG.2004.920.5	621-64-7	n-Nitroso-di-n-propylamine	86	% Recovery	64 - 114	2	NA		05-24-04
XG.2004.920.5	87-86-5	Pentachlorophenol	65	% Recovery	49 - 130	2	NA		05-24-04
XG.2004.920.5	108-95-2	Phenol	38	% Recovery	17 - 56	2	NA		05-24-04
XG.2004.920.5	129-00-0	Pyrene	79	% Recovery	78 - 126	2	NA		05-24-04
X04554		**SW846 8260B Purgeable VOCs by GC/MS**					**X04554-017**		
XG.2004.894.19	75-35-4	1,1 Dichloroethene	76	% Recovery	61 - 145	1	NA		05-20-04
XG.2004.894.19	106-46-7	1,4 Dichlorobenzene	87	% Recovery	75 - 130	1	NA		05-20-04
XG.2004.894.19	71-43-2	Benzene	88	% Recovery	76 - 127	1	NA		05-20-04
XG.2004.894.19	108-90-7	Chlorobenzene	90	% Recovery	75 - 130	1	NA		05-20-04
XG.2004.894.19	108-88-3	Toluene	89	% Recovery	76 - 125	1	NA		05-20-04
XG.2004.894.19	79-01-6	Trichloroethene	93	% Recovery	71 - 120	1	NA		05-20-04
X04551		**SW846 8330 Explosives by HPLC**					**X04551-004**		
XG.2004.884.20	99-35-4	1,3,5-Trinitrobenzene	98	% Recovery	77 - 115	2	NA		05-21-04
XG.2004.884.20	99-65-0	1,3-Dinitrobenzene	88	% Recovery	80 - 101	2	NA		05-21-04
[illegible]4.884.20	118-96-7	2,4,6-Trinitrotoluene	95	% Recovery	87 - 113	2	NA		05-21-04
[illegible]004.884.20	121-14-2	2,4-Dinitrotoluene	98	% Recovery	92 - 116	2	NA		05-[illegible]
XG.2004.884.20	606-20-2	2,6-Dinitrotoluene	80	% Recovery	70 - 100	2	NA		05-[illegible]
XG.2004.884.20	355-72-78-2	2-Amino-4,6-Dinitrotoluene	89	% Recovery	87 - 108	2	NA		05-21-04
XG.2004.884.20	88-72-2	2-Nitrotoluene	90	% Recovery	74 - 103	2	NA		05-21-04
XG.2004.884.20	99-08-1	3-Nitrotoluene	91	% Recovery	77 - 103	2	NA		05-21-04
XG.2004.884.20	1946-51-0	4-Amino-2,6-Dinitrotoluene	90	% Recovery	84 - 106	2	NA		05-21-04
XG.2004.884.20	99-99-0	4-Nitrotoluene	90	% Recovery	79 - 103	2	NA		05-21-04
XG.2004.884.20	2691-41-0	HMX	90	% Recovery	80 - 103	2	NA		05-21-04
XG.2004.884.20	98-95-3	Nitrobenzene	96	% Recovery	68 - 97	2	NA		05-21-04
XG.2004.884.20	121-82-4	RDX	81	% Recovery	77 - 96	2	NA		05-21-04
XG.2004.884.20	479-45-8	Tetryl	126	% Recovery	68 - 131	2	NA		05-21-04

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**					**X04604-005**		
XG.2004.939.6	120-82-1	1,2,4-Trichlorobenzene	< 1	RPD	0 - 16	5	NA		05-27-04
XG.2004.939.6	106-46-7	1,4-Dichlorobenzene	4	RPD	0 - 15	5	NA		05-27-04
XG.2004.939.6	121-14-2	2,4-Dinitrotoluene	7	RPD	0 - 12	5	NA		05-27-04
XG.2004.939.6	95-57-8	2-Chlorophenol	2	RPD	0 - 11	5	NA		05-27-04
XG.2004.939.6	59-50-7	4-Chloro-3-methylphenol	1	RPD	0 - 8	5	NA		05-27-04
XG.2004.939.6	100-02-7	4-Nitrophenol	8	RPD	0 - 9	5	NA		05-27-04
[illegible]004.939.6	83-32-9	Acenaphthene	4	RPD	0 - 16	5	NA		05-27-04
[illegible]004.939.6	117-84-0	di-n-Octylphthalate	13	RPD	0 - 20	5	NA		05-27-04
XG.2004.939.6	621-64-7	n-Nitroso-di-n-propylamine	5	RPD	0 - 10	5	NA		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-005**	
XG.2004.939.6	87-86-5	Pentachlorophenol	9	RPD	0 - 10	5	NA		05-27-04
XG.2004.939.6	108-95-2	Phenol	8	RPD	0 - 9	5	NA		05-27-04
XG.2004.939.6	129-00-0	Pyrene	2	RPD	0 - 7	5	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-006**	
XG.2004.932.11	75-35-4	1,1 Dichloroethene	< 1	RPD	0 - 22	1	NA		05-27-04
XG.2004.932.11	106-46-7	1,4 Dichlorobenzene	2	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	71-43-2	Benzene	< 1	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	108-90-7	Chlorobenzene	< 1	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	108-88-3	Toluene	< 1	RPD	0 - 21	1	NA		05-27-04
XG.2004.932.11	79-01-6	Trichloroethene	2	RPD	0 - 24	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-005**	
XG.2004.884.10	99-35-4	1,3,5-Trinitrobenzene	< 1	RPD	0 - 7	1	NA		05-20-04
XG.2004.884.10	99-65-0	1,3-Dinitrobenzene	< 1	RPD	0 - 7	1	NA		05-20-04
XG.2004.884.10	118-96-7	2,4,6-Trinitrotoluene	16	RPD	0 - 9	1	NA		05-20-04
XG.2004.884.10	121-14-2	2,4-Dinitrotoluene	3	RPD	0 - 10	1	NA		05-20-04
[illegible].884.10	606-20-2	2,6-Dinitrotoluene	2	RPD	0 - 11	1	NA		05-20-04
[illegible]2004.884.10	355-72-78-2	2-Amino-4,6-Dinitrotoluene	1	RPD	0 - 8	1	NA		05-20-04
XG.2004.884.10	88-72-2	2-Nitrotoluene	1	RPD	0 - 8	1	NA		05-20-04
XG.2004.884.10	99-08-1	3-Nitrotoluene	2	RPD	0 - 7	1	NA		05-20-04
XG.2004.884.10	1946-51-0	4-Amino-2,6-Dinitrotoluene	2	RPD	0 - 10	1	NA		05-20-04
XG.2004.884.10	99-99-0	4-Nitrotoluene	2	RPD	0 - 8	1	NA		05-20-04
XG.2004.884.10	2691-41-0	HMX	2	RPD	0 - 16	1	NA		05-20-04
XG.2004.884.10	98-95-3	Nitrobenzene	< 1	RPD	0 - 9	1	NA		05-20-04
XG.2004.884.10		RDX	< 1	RPD	0 - 6	1	NA		05-20-04
XG.2004.884.10		Tetryl	1	RPD	0 - 27	1	NA		05-20-04

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-006**	
MT.2004.985.68	7440-38-2	Arsenic	2	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.68	7440-39-3	Barium	< 1	RPD	0 - 20	1	NA		05-26-04
MT.2004.1002.17	7440-43-9	Cadmium	< 1	RPD	0 - 20	1	NA		05-28-04
MT.2004.985.68	7440-47-3	Chromium	< 1	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.68	7439-92-1	Lead	< 1	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.68	7782-49-2	Selenium	< 1	RPD	0 - 20	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-006**	
MT.2004.969.83	7440-22-4	Silver	< 1	RPD	0 - 20	1	NA		05-26-04
[illegible]60		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-005**	
[illegible]2004.907.8	106-46-7	1,4-Dichlorobenzene	1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	95-95-4	2,4,5-Trichlorophenol	2	RPD	0 - 40	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-005**	
XG.2004.907.8	88-06-2	2,4,6-Trichlorophenol	< 1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	121-14-2	2,4-Dinitrotoluene	< 1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	118-74-1	Hexachlorobenzene	3	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	87-68-3	Hexachlorobutadiene	5	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	67-72-1	Hexachloroethane	< 1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8		m-Cresol & p-Cresol	< 1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	98-95-3	Nitrobenzene	< 1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	95-48-7	o-Cresol	< 1	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	87-86-5	Pentachlorophenol	7	RPD	0 - 40	1	NA		05-26-04
XG.2004.907.8	110-86-1	Pyridine	10	RPD	0 - 40	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-005**	
MT.2004.1004.21	7439-97-6	Mercury	< 1	RPD	0 - 20	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-010**	
XG.2004.897.13	75-35-4	1,1 Dichloroethylene	4	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	107-06-2	1,2 Dichloroethane (EDC)	< 1	RPD	0 - 20	1	NA		05-24-04
[illegible].897.13	71-43-2	Benzene	2	RPD	0 - 20	1	NA		05-24-04
[illegible]04.897.13	56-23-5	Carbon tetrachloride	2	RPD	0 - 20	1	NA		05-[illegible]
XG.2004.897.13	108-90-7	Chlorobenzene	2	RPD	0 - 20	1	NA		05-2[illegible]
XG.2004.897.13	67-66-3	Chloroform	3	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	78-93-3	Methyl ethyl ketone	3	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	127-18-4	Tetrachloroethylene	3	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	79-01-6	Trichloroethylene	< 1	RPD	0 - 20	1	NA		05-24-04
XG.2004.897.13	75-01-4	Vinyl chloride	< 1	RPD	0 - 20	1	NA		05-24-04

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-005**	
XG.2004.920.6	120-82-1	1,2,4-Trichlorobenzene	1	RPD	0 - 28	2	NA		05-24-04
XG.2004.920.6	106-46-7	1,4-Dichlorobenzene	< 1	RPD	0 - 28	2	NA		05-24-04
XG.2004.920.6	121-14-2	2,4-Dinitrotoluene	5	RPD	0 - 38	2	NA		05-24-04
XG.2004.920.6	95-57-8	2-Chlorophenol	4	RPD	0 - 40	2	NA		05-24-04
XG.2004.920.6	59-50-7	4-Chloro-3-methylphenol	5	RPD	0 - 42	2	NA		05-24-04
XG.2004.920.6	100-02-7	4-Nitrophenol	17	RPD	0 - 50	2	NA		05-24-04
XG.2004.920.6	83-32-9	Acenaphthene	3	RPD	0 - 31	2	NA		05-24-04
XG.2004.920.6	117-84-0	di-n-Octylphthalate	54	RPD	0 - 20	2	NA		05-24-04
XG.2004.920.6	621-64-7	n-Nitroso-di-n-propylamine	< 1	RPD	0 - 38	2	NA		05-24-04
XG.2004.920.6	87-86-5	Pentachlorophenol	11	RPD	0 - 50	2	NA		05-24-04
XG.2004.920.6	108-95-2	Phenol	< 1	RPD	0 - 42	2	NA		05-24-04
[illegible]54		**SW846 8260B Purgeable VOCs by GC/MS**						**X04554-018**	
XG.2004.894.20	75-35-4	1,1 Dichloroethene	< 1	RPD	0 - 14	1	NA		05-20-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**SW846 8260B Purgeable VOCs by GC/MS**						**X04554-018**	
XG.2004.894.20	106-46-7	1,4 Dichlorobenzene	< 1	RPD	0 - 11	1	NA		05-20-04
XG.2004.894.20	71-43-2	Benzene	2	RPD	0 - 13	1	NA		05-20-04
XG.2004.894.20	108-90-7	Chlorobenzene	< 1	RPD	0 - 11	1	NA		05-20-04
XG.2004.894.20	108-88-3	Toluene	< 1	RPD	0 - 13	1	NA		05-20-04
XG.2004.894.20	79-01-6	Trichloroethene	1	RPD	0 - 14	1	NA		05-20-04
X04551		**SW846 8330 Explosives by HPLC**						**X04551-005**	
XG.2004.884.21	99-35-4	1,3,5-Trinitrobenzene	17	RPD	0 - 17	2	NA		05-21-04
XG.2004.884.21	99-65-0	1,3-Dinitrobenzene	16	RPD	0 - 14	2	NA		05-21-04
XG.2004.884.21	118-96-7	2,4,6-Trinitrotoluene	16	RPD	0 - 12	2	NA		05-21-04
XG.2004.884.21	121-14-2	2,4-Dinitrotoluene	17	RPD	0 - 12	2	NA		05-21-04
XG.2004.884.21	606-20-2	2,6-Dinitrotoluene	15	RPD	0 - 12	2	NA		05-21-04
XG.2004.884.21	355-72-78-2	2-Amino-4,6-Dinitrotoluene	16	RPD	0 - 16	2	NA		05-21-04
XG.2004.884.21	88-72-2	2-Nitrotoluene	23	RPD	0 - 13	2	NA		05-21-04
XG.2004.884.21	99-08-1	3-Nitrotoluene	22	RPD	0 - 12	2	NA		05-21-04
XG.2004.884.21	1946-51-0	4-Amino-2,6-Dinitrotoluene	14	RPD	0 - 14	2	NA		05-21-04
[illegible]004.884.21	99-99-0	4-Nitrotoluene	22	RPD	0 - 13	2	NA		05-21-04
[illegible]04.884.21	2691-41-0	HMX	17	RPD	0 - 17	2	NA		05-21-04
[illegible]G.2004.884.21	98-95-3	Nitrobenzene	27	RPD	0 - 19	2	NA		05-21-04
XG.2004.884.21	121-82-4	RDX	16	RPD	0 - 18	2	NA		05-21-04
XG.2004.884.21	479-45-8	Tetryl	20	RPD	0 - 15	2	NA		05-21-04

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**SW846 3550A/8270C SVOCs by GC/MS**						**X04604-005**	
XG.2004.939.6	120-82-1	1,2,4-Trichlorobenzene	101	% Recovery	64 - 103	5	NA		05-27-04
XG.2004.939.6	106-46-7	1,4-Dichlorobenzene	90	% Recovery	44 - 91	5	NA		05-27-04
XG.2004.939.6	121-14-2	2,4-Dinitrotoluene	62	% Recovery	61 - 118	5	NA		05-27-04
XG.2004.939.6	95-57-8	2-Chlorophenol	98	% Recovery	72 - 102	5	NA		05-27-04
XG.2004.939.6	59-50-7	4-Chloro-3-methylphenol	112	% Recovery	67 - 110	5	NA		05-27-04
XG.2004.939.6	100-02-7	4-Nitrophenol	< 1	% Recovery	56 - 122	5	NA		05-27-04
XG.2004.939.6	83-32-9	Acenaphthene	99	% Recovery	72 - 109	5	NA		05-27-04
XG.2004.939.6	117-84-0	di-n-Octylphthalate	380	% Recovery	69 - 127	5	NA		05-27-04
XG.2004.939.6	621-64-7	n-Nitroso-di-n-propylamine	126	% Recovery	64 - 111	5	NA		05-27-04
XG.2004.939.6	87-86-5	Pentachlorophenol	96	% Recovery	64 - 105	5	NA		05-27-04
XG.2004.939.6	108-95-2	Phenol	106	% Recovery	66 - 98	5	NA		05-27-04
XG.2004.939.6	129-00-0	Pyrene	106	% Recovery	69 - 117	5	NA		05-27-04
X04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-006**	
[illegible]004.932.11	75-35-4	1,1 Dichloroethene	94	% Recovery	44 - 150	1	NA		05-27-04
[illegible]004.932.11	106-46-7	1,4 Dichlorobenzene	93	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.11	71-43-2	Benzene	95	% Recovery	66 - 142	1	NA		05-27-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405336 LOS17

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**SW846 8260B Purgeable VOCs by GC/MS**						**X04608-006**	
XG.2004.932.11	108-90-7	Chlorobenzene	94	% Recovery	60 - 133	1	NA		05-27-04
XG.2004.932.11	108-88-3	Toluene	92	% Recovery	59 - 139	1	NA		05-27-04
XG.2004.932.11	79-01-6	Trichloroethene	99	% Recovery	62 - 137	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-005**	
XG.2004.884.10	99-35-4	1,3,5-Trinitrobenzene	6	% Recovery	80 - 123	1	NA		05-20-04
XG.2004.884.10	99-65-0	1,3-Dinitrobenzene	101	% Recovery	83 - 120	1	NA		05-20-04
XG.2004.884.10	118-96-7	2,4,6-Trinitrotoluene	46	% Recovery	71 - 127	1	NA		05-20-04
XG.2004.884.10	121-14-2	2,4-Dinitrotoluene	106	% Recovery	85 - 132	1	NA		05-20-04
XG.2004.884.10	606-20-2	2,6-Dinitrotoluene	87	% Recovery	66 - 105	1	NA		05-20-04
XG.2004.884.10	355-72-78-2	2-Amino-4,6-Dinitrotoluene	98	% Recovery	81 - 124	1	NA		05-20-04
XG.2004.884.10	88-72-2	2-Nitrotoluene	99	% Recovery	73 - 123	1	NA		05-20-04
XG.2004.884.10	99-08-1	3-Nitrotoluene	98	% Recovery	73 - 124	1	NA		05-20-04
XG.2004.884.10	1946-51-0	4-Amino-2,6-Dinitrotoluene	102	% Recovery	78 - 115	1	NA		05-20-04
XG.2004.884.10	99-99-0	4-Nitrotoluene	98	% Recovery	74 - 124	1	NA		05-20-04
XG.2004.884.10	2691-41-0	HMX	108	% Recovery	77 - 120	1	NA		05-20-04
[illegible]04.884.10	98-95-3	Nitrobenzene	107	% Recovery	82 - 116	1	NA		05-20-04
[illegible]04.884.10		RDX	106	% Recovery	84 - 118	1	NA		05-2[illegible]
XG.2004.884.10		Tetryl	35	% Recovery	50 - 144	1	NA		05-[illegible]

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-006**	
MT.2004.985.68	7440-38-2	Arsenic	80	% Recovery	75 - 124	1	NA		05-26-04
MT.2004.985.68	7440-39-3	Barium	108	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.1002.17	7440-43-9	Cadmium	96	% Recovery	92 - 117	1	NA		05-28-04
MT.2004.985.68	7440-47-3	Chromium	96	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.68	7439-92-1	Lead	98	% Recovery	88 - 119	1	NA		05-26-04
MT.2004.985.68	7782-49-2	Selenium	104	% Recovery	93 - 121	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-006**	
MT.2004.969.83	7440-22-4	Silver	92	% Recovery	80 - 120	1	NA		05-26-04
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-005**	
XG.2004.907.8	106-46-7	1,4-Dichlorobenzene	73	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	95-95-4	2,4,5-Trichlorophenol	61	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	88-06-2	2,4,6-Trichlorophenol	69	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	121-14-2	2,4-Dinitrotoluene	91	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	118-74-1	Hexachlorobenzene	59	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	87-68-3	Hexachlorobutadiene	60	% Recovery	20 - 120	1	NA		05-26-04
[illegible]004.907.8	67-72-1	Hexachloroethane	63	% Recovery	20 - 120	1	NA		05-26-04
[illegible]04.907.8		m-Cresol & p-Cresol	54	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	98-95-3	Nitrobenzene	98	% Recovery	20 - 120	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04560		**SW846 1311/3510B/8270C SVOCs by GC/MS TCLP**						**X04560-005**	
XG.2004.907.8	95-48-7	o-Cresol	70	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	87-86-5	Pentachlorophenol	23	% Recovery	20 - 120	1	NA		05-26-04
XG.2004.907.8	110-86-1	Pyridine	61	% Recovery	20 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-005**	
MT.2004.1004.21	7439-97-6	Mercury	90	% Recovery	80 - 120	1	NA		05-28-04
X04571		**SW846 1311/8260B Purgeable VOCs by GC/MS TCLP**						**X04571-010**	
XG.2004.897.13	75-35-4	1,1 Dichloroethylene	69	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	107-06-2	1,2 Dichloroethane (EDC)	83	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	71-43-2	Benzene	88	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	56-23-5	Carbon tetrachloride	90	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	108-90-7	Chlorobenzene	95	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	67-66-3	Chloroform	89	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	78-93-3	Methyl ethyl ketone	78	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	127-18-4	Tetrachloroethylene	95	% Recovery	60 - 140	1	NA		05-24-04
XG.2004.897.13	79-01-6	Trichloroethylene	90	% Recovery	60 - 140	1	NA		05-24-04
[illegible]04.897.13	75-01-4	Vinyl chloride	84	% Recovery	60 - 140	1	NA		05-24-04

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**SW846 3510B/8270C SVOCs by GC/MS**						**X04557-005**	
XG.2004.920.6	120-82-1	1,2,4-Trichlorobenzene	73	% Recovery	47 - 101	2	NA		05-24-04
XG.2004.920.6	106-46-7	1,4-Dichlorobenzene	67	% Recovery	42 - 95	2	NA		05-24-04
XG.2004.920.6	121-14-2	2,4-Dinitrotoluene	86	% Recovery	71 - 117	2	NA		05-24-04
XG.2004.920.6	95-57-8	2-Chlorophenol	63	% Recovery	68 - 109	2	NA		05-24-04
XG.2004.920.6	59-50-7	4-Chloro-3-methylphenol	67	% Recovery	66 - 116	2	NA		05-24-04
XG.2004.920.6	100-02-7	4-Nitrophenol	38	% Recovery	12 - 56	2	NA		05-24-04
XG.2004.920.6	83-32-9	Acenaphthene	86	% Recovery	70 - 117	2	NA		05-24-04
XG.2004.920.6	117-84-0	di-n-Octylphthalate	132	% Recovery	68 - 135	2	NA		05-24-04
XG.2004.920.6	621-64-7	n-Nitroso-di-n-propylamine	86	% Recovery	64 - 114	2	NA		05-24-04
XG.2004.920.6	87-86-5	Pentachlorophenol	72	% Recovery	49 - 130	2	NA		05-24-04
XG.2004.920.6	108-95-2	Phenol	39	% Recovery	17 - 56	2	NA		05-24-04
XG.2004.920.6	129-00-0	Pyrene	81	% Recovery	78 - 126	2	NA		05-24-04
X04554		**SW846 8260B Purgeable VOCs by GC/MS**						**X04554-018**	
XG.2004.894.20	75-35-4	1,1 Dichloroethene	77	% Recovery	61 - 145	1	NA		05-20-04
XG.2004.894.20	106-46-7	1,4 Dichlorobenzene	88	% Recovery	75 - 130	1	NA		05-20-04
XG.2004.894.20	71-43-2	Benzene	90	% Recovery	76 - 127	1	NA		05-20-04
XG.2004.894.20	108-90-7	Chlorobenzene	90	% Recovery	75 - 130	1	NA		05-20-04
[illegible]2004.894.20	108-88-3	Toluene	89	% Recovery	76 - 125	1	NA		05-20-04
[illegible]04.894.20	79-01-6	Trichloroethene	92	% Recovery	71 - 120	1	NA		05-20-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

Client: LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405336 LOS17

Explanation of codes	
D	*Not applicable due to sample dilu*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04551		**SW846 8330 Explosives by HPLC**					**X04551-005**		
XG.2004.884.21	99-35-4	1,3,5-Trinitrobenzene	83	% Recovery	77 - 115	2	NA		05-21-04
XG.2004.884.21	99-65-0	1,3-Dinitrobenzene	75	% Recovery	80 - 101	2	NA		05-21-04
XG.2004.884.21	118-96-7	2,4,6-Trinitrotoluene	81	% Recovery	87 - 113	2	NA		05-21-04
XG.2004.884.21	121-14-2	2,4-Dinitrotoluene	83	% Recovery	92 - 116	2	NA		05-21-04
XG.2004.884.21	606-20-2	2,6-Dinitrotoluene	69	% Recovery	70 - 100	2	NA		05-21-04
XG.2004.884.21	355-72-78-2	2-Amino-4,6-Dinitrotoluene	76	% Recovery	87 - 108	2	NA		05-21-04
XG.2004.884.21	88-72-2	2-Nitrotoluene	71	% Recovery	74 - 103	2	NA		05-21-04
XG.2004.884.21	99-08-1	3-Nitrotoluene	72	% Recovery	77 - 103	2	NA		05-21-04
XG.2004.884.21	1946-51-0	4-Amino-2,6-Dinitrotoluene	78	% Recovery	84 - 106	2	NA		05-21-04
XG.2004.884.21	99-99-0	4-Nitrotoluene	73	% Recovery	79 - 103	2	NA		05-21-04
XG.2004.884.21	2691-41-0	HMX	75	% Recovery	80 - 103	2	NA		05-21-04
XG.2004.884.21	98-95-3	Nitrobenzene	73	% Recovery	68 - 97	2	NA		05-21-04
XG.2004.884.21	121-82-4	RDX	69	% Recovery	77 - 96	2	NA		05-21-04
XG.2004.884.21	479-45-8	Tetryl	104	% Recovery	68 - 131	2	NA		05-21-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405336 LOS17

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***0405336-01A*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**8260**						**X04608-004**	
XG.2004.932.9		1,2 Dichloroethane-D4 (SS)	103	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.9		4-Bromofluorobenzene (SS)	95	% Recovery	60 - 120	1	NA		05-27-04
XG.2004.932.9		Dibromofluoromethane (SS)	108	% Recovery	90 - 111	1	NA		05-27-04
XG.2004.932.9		Toluene-D8 (SS)	100	% Recovery	78 - 111	1	NA		05-27-04

Sample: ***0405336-01B*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**						**X04571-008**	
XG.2004.897.11		1,2 Dichloroethane-D4 (SS)	100	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.11		4-Bromofluorobenzene (SS)	96	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.11		Dibromofluoromethane (SS)	106	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.11		Toluene-D8 (SS)	101	% Recovery	88 - 110	1	NA		05-24-04

Sample: ***0405336-02A*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**8270**						**X04604-014**	
XG.2004.939.12		*2,4,6-TRIBROMOPHENOL	82	% Recovery	24 - 132	1	NA		05-27-04
XG.2004.939.12		*2-FLUOROBIPHENYL	95	% Recovery	53 - 126	1	NA		05-27-04
XG.2004.939.12		*2-FLUOROPHENOL	80	% Recovery	44 - 104	1	NA		05-27-04
XG.2004.939.12		*NITROBENZENE-D5	88	% Recovery	34 - 127	1	NA		05-27-04
XG.2004.939.12		*PHENOL-D6	85	% Recovery	40 - 115	1	NA		05-27-04
XG.2004.939.12		*TERPHENYL-D14	115	% Recovery	47 - 116	1	NA		05-27-04

Sample: ***0405336-02B*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04560		**T8270**						**X04560-006**	
XG.2004.907.5		*2,4,6-TRIBROMOPHENOL	94	% Recovery	10 - 123	1	NA		05-25-04
XG.2004.907.5		*2-FLUOROBIPHENYL	87	% Recovery	43 - 116	1	NA		05-25-04
XG.2004.907.5		*2-FLUOROPHENOL	52	% Recovery	21 - 100	1	NA		05-25-04
XG.2004.907.5		*NITROBENZENE-D5	91	% Recovery	35 - 114	1	NA		05-25-04
XG.2004.907.5		*PHENOL-D6	32	% Recovery	10 - 94	1	NA		05-25-04
XG.2004.907.5		*TERPHENYL-D14	72	% Recovery	33 - 141	1	NA		05-25-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

[redacted]: **LOS ALAMOS NATIONAL LABS**
[redacted]ct: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilu[redacted]*
L	*Not applicable due to MDL proximity*

Sample: ***0405336-03A*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**8260**						**X04554-010**	
XG.2004.894.12		1,2 Dichloroethane-D4 (SS)	90	% Recovery	76 - 114	1	NA		05-20-04
XG.2004.894.12		4-Bromofluorobenzene (SS)	100	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.12		Dibromofluoromethane (SS)	93	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.12		Toluene-D8 (SS)	97	% Recovery	88 - 110	1	NA		05-20-04

Sample: ***0405336-05A*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**8260**						**X04554-011**	
XG.2004.894.13		1,2 Dichloroethane-D4 (SS)	92	% Recovery	76 - 114	1	NA		05-20-04
XG.2004.894.13		4-Bromofluorobenzene (SS)	100	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.13		Dibromofluoromethane (SS)	94	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.13		Toluene-D8 (SS)	98	% Recovery	88 - 110	1	NA		05-20-04

[redacted]le: ***0405336-06A*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**8270**						**X04557-009**	
XG.2004.920.8		*2,4,6-TRIBROMOPHENOL	87	% Recovery	64 - 123	1	NA		05-24-04
XG.2004.920.8		*2-FLUOROBIPHENYL	78	% Recovery	73 - 104	1	NA		05-24-04
XG.2004.920.8		*2-FLUOROPHENOL	47	% Recovery	50 - 116	1	NA		05-24-04
XG.2004.920.8		*NITROBENZENE-D5	79	% Recovery	46 - 123	1	NA		05-24-04
XG.2004.920.8		*PHENOL-D6	25	% Recovery	24 - 52	1	NA		05-24-04
XG.2004.920.8		*TERPHENYL-D14	76	% Recovery	48 - 110	1	NA		05-24-04

Sample: ***0405336-08A*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04551		**SW846 8330 Explosives by HPLC**						**X04551-003**	
XG.2004.884.19	610-39-9	3,4-Dinitrotoluene	100	% Recovery	74 - 127	1	NA		05-21-04

Sample: ***0405336-09A*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04550		**SW846 8330 Explosives by HPLC**						**X04550-008**	
[redacted]004.884.13	610-39-9	3,4-Dinitrotoluene	104	% Recovery	80 - 136	1	NA		05-20-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

LOS ALAMOS NATIONAL LABS
8M02 X205 HEMR 0000
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***LCS*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**8260**						**X04608-002**	
XG.2004.932.7		1,2 Dichloroethane-D4 (SS)	101	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.7		4-Bromofluorobenzene (SS)	99	% Recovery	60 - 120	1	NA		05-27-04
XG.2004.932.7		Dibromofluoromethane (SS)	103	% Recovery	90 - 111	1	NA		05-27-04
XG.2004.932.7		Toluene-D8 (SS)	100	% Recovery	78 - 111	1	NA		05-27-04
X04604		**8270**						**X04604-002**	
XG.2004.939.3		*2,4,6-TRIBROMOPHENOL	123	% Recovery	24 - 132	1	NA		05-27-04
XG.2004.939.3		*2-FLUOROBIPHENYL	98	% Recovery	53 - 126	1	NA		05-27-04
XG.2004.939.3		*2-FLUOROPHENOL	96	% Recovery	44 - 104	1	NA		05-27-04
XG.2004.939.3		*NITROBENZENE-D5	95	% Recovery	34 - 127	1	NA		05-27-04
XG.2004.939.3		*PHENOL-D6	100	% Recovery	40 - 115	1	NA		05-27-04
XG.2004.939.3		*TERPHENYL-D14	109	% Recovery	47 - 116	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-002**	
XG.2004.884.7	610-39-9	3,4-Dinitrotoluene	104	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***LCS*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**						**X04571-002**	
XG.2004.897.5		1,2 Dichloroethane-D4 (SS)	97	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.5		4-Bromofluorobenzene (SS)	103	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.5		Dibromofluoromethane (SS)	99	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.5		Toluene-D8 (SS)	98	% Recovery	88 - 110	1	NA		05-24-04
X04560		**T8270**						**X04560-002**	
XG.2004.907.3		*2,4,6-TRIBROMOPHENOL	93	% Recovery	10 - 123	1	NA		05-25-04
XG.2004.907.3		*2-FLUOROBIPHENYL	85	% Recovery	43 - 116	1	NA		05-25-04
XG.2004.907.3		*2-FLUOROPHENOL	54	% Recovery	21 - 100	1	NA		05-25-04
XG.2004.907.3		*NITROBENZENE-D5	95	% Recovery	35 - 114	1	NA		05-25-04
XG.2004.907.3		*PHENOL-D6	34	% Recovery	10 - 94	1	NA		05-25-04
XG.2004.907.3		*TERPHENYL-D14	77	% Recovery	33 - 141	1	NA		05-25-04

Sample: ***LCS*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**8260**						**X04554-002**	
XG.2004.894.4		1,2 Dichloroethane-D4 (SS)	106	% Recovery	76 - 114	1	NA		05-20-04
XG.2004.894.4		4-Bromofluorobenzene (SS)	101	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.4		Dibromofluoromethane (SS)	101	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.4		Toluene-D8 (SS)	100	% Recovery	88 - 110	1	NA		05-20-04
X04557		**8270**						**X04557-002**	
XG.2004.920.3		*2,4,6-TRIBROMOPHENOL	103	% Recovery	64 - 123	1	NA		05-24-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***LCS*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04557		**8270**					**X04557-002**		
XG.2004.920.3		*2-FLUOROBIPHENYL	80	% Recovery	73 - 104	1	NA		05-24-04
XG.2004.920.3		*2-FLUOROPHENOL	51	% Recovery	50 - 116	1	NA		05-24-04
XG.2004.920.3		*NITROBENZENE-D5	85	% Recovery	46 - 123	1	NA		05-24-04
XG.2004.920.3		*PHENOL-D6	36	% Recovery	24 - 52	1	NA		05-24-04
XG.2004.920.3		*TERPHENYL-D14	83	% Recovery	48 - 110	1	NA		05-24-04
X04551		**SW846 8330 Explosives by HPLC**					**X04551-002**		
XG.2004.884.18	610-39-9	3,4-Dinitrotoluene	100	% Recovery	74 - 127	1	NA		05-21-04

Sample: ***MB*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**8260**					**X04608-001**		
XG.2004.932.6		1,2 Dichloroethane-D4 (SS)	97	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.6		4-Bromofluorobenzene (SS)	97	% Recovery	60 - 120	1	NA		05-27-04
[illegible]04.932.6		Dibromofluoromethane (SS)	106	% Recovery	90 - 111	1	NA		05-27-04
[illegible]04.932.6		Toluene-D8 (SS)	100	% Recovery	78 - 111	1	NA		05-[illegible]
X04604		**8270**					**X04604-001**		
XG.2004.939.2		*2,4,6-TRIBROMOPHENOL	98	% Recovery	24 - 132	1	NA		05-27-04
XG.2004.939.2		*2-FLUOROBIPHENYL	94	% Recovery	53 - 126	1	NA		05-27-04
XG.2004.939.2		*2-FLUOROPHENOL	89	% Recovery	44 - 104	1	NA		05-27-04
XG.2004.939.2		*NITROBENZENE-D5	93	% Recovery	34 - 127	1	NA		05-27-04
XG.2004.939.2		*PHENOL-D6	94	% Recovery	40 - 115	1	NA		05-27-04
XG.2004.939.2		*TERPHENYL-D14	109	% Recovery	47 - 116	1	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**					**X04550-001**		
XG.2004.884.6	610-39-9	3,4-Dinitrotoluene	103	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***MB*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**					**X04571-001**		
XG.2004.897.4		1,2 Dichloroethane-D4 (SS)	96	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.4		4-Bromofluorobenzene (SS)	100	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.4		Dibromofluoromethane (SS)	104	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.4		Toluene-D8 (SS)	106	% Recovery	88 - 110	1	NA		05-24-04
X04571		**T8240**					**X04571-004**		
XG.2004.897.7		1,2 Dichloroethane-D4 (SS)	97	% Recovery	76 - 114	1	NA		05-24-04
[illegible]2004.897.7		4-Bromofluorobenzene (SS)	97	% Recovery	75 - 125	1	NA		05-24-04
[illegible]004.897.7		Dibromofluoromethane (SS)	94	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.7		Toluene-D8 (SS)	100	% Recovery	88 - 110	1	NA		05-24-04

Assalgal Analytical Laboratories, Inc.

QC Surrogate Summary

Client: LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405336 LOS17

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***MB*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**						**X04571-006**	
XG.2004.897.9		1,2 Dichloroethane-D4 (SS)	99	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.9		4-Bromofluorobenzene (SS)	100	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.9		Dibromofluoromethane (SS)	106	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.9		Toluene-D8 (SS)	101	% Recovery	88 - 110	1	NA		05-24-04
X04560		**T8270**						**X04560-001**	
XG.2004.907.2		*2,4,6-TRIBROMOPHENOL	96	% Recovery	10 - 123	1	NA		05-25-04
XG.2004.907.2		*2-FLUOROBIPHENYL	78	% Recovery	43 - 116	1	NA		05-25-04
XG.2004.907.2		*2-FLUOROPHENOL	47	% Recovery	21 - 100	1	NA		05-25-04
XG.2004.907.2		*NITROBENZENE-D5	86	% Recovery	35 - 114	1	NA		05-25-04
XG.2004.907.2		*PHENOL-D6	30	% Recovery	10 - 94	1	NA		05-25-04
XG.2004.907.2		*TERPHENYL-D14	75	% Recovery	33 - 141	1	NA		05-25-04

Sample: ***MB*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**8260**						**X04554-001**	
XG.2004.894.3		1,2 Dichloroethane-D4 (SS)	93	% Recovery	76 - 114	1	NA		05-20-04
XG.2004.894.3		4-Bromofluorobenzene (SS)	98	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.3		Dibromofluoromethane (SS)	97	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.3		Toluene-D8 (SS)	98	% Recovery	88 - 110	1	NA		05-20-04
X04557		**8270**						**X04557-001**	
XG.2004.920.2		*2,4,6-TRIBROMOPHENOL	94	% Recovery	64 - 123	1	NA		05-24-04
XG.2004.920.2		*2-FLUOROBIPHENYL	82	% Recovery	73 - 104	1	NA		05-24-04
XG.2004.920.2		*2-FLUOROPHENOL	52	% Recovery	50 - 116	1	NA		05-24-04
XG.2004.920.2		*NITROBENZENE-D5	84	% Recovery	46 - 123	1	NA		05-24-04
XG.2004.920.2		*PHENOL-D6	30	% Recovery	24 - 52	1	NA		05-24-04
XG.2004.920.2		*TERPHENYL-D14	77	% Recovery	48 - 110	1	NA		05-24-04
X04551		**SW846 8330 Explosives by HPLC**						**X04551-001**	
XG.2004.884.17	610-39-9	3,4-Dinitrotoluene	99	% Recovery	74 - 127	1	NA		05-21-04

Sample: ***MS*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**8260**						**X04608-005**	
XG.2004.932.10		1,2 Dichloroethane-D4 (SS)	106	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.10		4-Bromofluorobenzene (SS)	101	% Recovery	60 - 120	1	NA		05-27-04
XG.2004.932.10		Dibromofluoromethane (SS)	104	% Recovery	90 - 111	1	NA		05-27-04
XG.2004.932.10		Toluene-D8 (SS)	98	% Recovery	78 - 111	1	NA		05-27-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***MS*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04604		**8270**						**X04604-004**	
XG.2004.939.5		*2,4,6-TRIBROMOPHENOL	132	% Recovery	24 - 132	5	NA		05-27-04
XG.2004.939.5		*2-FLUOROBIPHENYL	99	% Recovery	53 - 126	5	NA		05-27-04
XG.2004.939.5		*2-FLUOROPHENOL	93	% Recovery	44 - 104	5	NA		05-27-04
XG.2004.939.5		*NITROBENZENE-D5	103	% Recovery	34 - 127	5	NA		05-27-04
XG.2004.939.5		*PHENOL-D6	122	% Recovery	40 - 115	5	NA		05-27-04
XG.2004.939.5		*TERPHENYL-D14	131	% Recovery	47 - 116	5	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-004**	
XG.2004.884.9	610-39-9	3,4-Dinitrotoluene	102	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***MS*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**						**X04571-009**	
XG.2004.897.12		1,2 Dichloroethane-D4 (SS)	97	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.12		4-Bromofluorobenzene (SS)	101	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.12		Dibromofluoromethane (SS)	100	% Recovery	75 - 125	1	NA		05-24
XG.2004.897.12		Toluene-D8 (SS)	98	% Recovery	88 - 110	1	NA		05-
X04560		**T8270**						**X04560-004**	
XG.2004.907.7		*2,4,6-TRIBROMOPHENOL	69	% Recovery	10 - 123	1	NA		05-26-04
XG.2004.907.7		*2-FLUOROBIPHENYL	87	% Recovery	43 - 116	1	NA		05-26-04
XG.2004.907.7		*2-FLUOROPHENOL	49	% Recovery	21 - 100	1	NA		05-26-04
XG.2004.907.7		*NITROBENZENE-D5	96	% Recovery	35 - 114	1	NA		05-26-04
XG.2004.907.7		*PHENOL-D6	32	% Recovery	10 - 94	1	NA		05-26-04
XG.2004.907.7		*TERPHENYL-D14	59	% Recovery	33 - 141	1	NA		05-26-04

Sample: ***MS*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**8260**						**X04554-017**	
XG.2004.894.19		1,2 Dichloroethane-D4 (SS)	93	% Recovery	76 - 114	1	NA		05-20-04
XG.2004.894.19		4-Bromofluorobenzene (SS)	99	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.19		Dibromofluoromethane (SS)	104	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.19		Toluene-D8 (SS)	100	% Recovery	88 - 110	1	NA		05-20-04
X04557		**8270**						**X04557-004**	
XG.2004.920.5		*2,4,6-TRIBROMOPHENOL	86	% Recovery	64 - 123	2	NA		05-24-04
XG.2004.920.5		*2-FLUOROBIPHENYL	80	% Recovery	73 - 104	2	NA		05-24-04
XG.2004.920.5		*2-FLUOROPHENOL	43	% Recovery	50 - 116	2	NA		05-24-04
XG.2004.920.5		*NITROBENZENE-D5	82	% Recovery	46 - 123	2	NA		05-24-04
XG.2004.920.5		*PHENOL-D6	31	% Recovery	24 - 52	2	NA		05-24-04
XG.2004.920.5		*TERPHENYL-D14	67	% Recovery	48 - 110	2	NA		05-24-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

Client: LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405336 LOS17

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***MS*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04551		**SW846 8330 Explosives by HPLC**						**X04551-004**	
XG.2004.884.20	610-39-9	3,4-Dinitrotoluene	92	% Recovery	74 - 127	2	NA		05-21-04

Sample: ***MSD*** Matrix: ***SOLID***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04608		**8260**						**X04608-006**	
XG.2004.932.11		1,2 Dichloroethane-D4 (SS)	106	% Recovery	69 - 118	1	NA		05-27-04
XG.2004.932.11		4-Bromofluorobenzene (SS)	100	% Recovery	60 - 120	1	NA		05-27-04
XG.2004.932.11		Dibromofluoromethane (SS)	104	% Recovery	90 - 111	1	NA		05-27-04
XG.2004.932.11		Toluene-D8 (SS)	98	% Recovery	78 - 111	1	NA		05-27-04
X04604		**8270**						**X04604-005**	
XG.2004.939.6		*2,4,6-TRIBROMOPHENOL	132	% Recovery	24 - 132	5	NA		05-27-04
XG.2004.939.6		*2-FLUOROBIPHENYL	99	% Recovery	53 - 126	5	NA		05-27-04
XG.2004.939.6		*2-FLUOROPHENOL	91	% Recovery	44 - 104	5	NA		05-27-04
[illegible]04.939.6		*NITROBENZENE-D5	100	% Recovery	34 - 127	5	NA		05-27-04
[illegible]04.939.6		*PHENOL-D6	122	% Recovery	40 - 115	5	NA		05-27-04
XG.2004.939.6		*TERPHENYL-D14	132	% Recovery	47 - 116	5	NA		05-27-04
X04550		**SW846 8330 Explosives by HPLC**						**X04550-005**	
XG.2004.884.10	610-39-9	3,4-Dinitrotoluene	103	% Recovery	80 - 136	1	NA		05-20-04

Sample: ***MSD*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04571		**T8240**						**X04571-010**	
XG.2004.897.13		1,2 Dichloroethane-D4 (SS)	98	% Recovery	76 - 114	1	NA		05-24-04
XG.2004.897.13		4-Bromofluorobenzene (SS)	101	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.13		Dibromofluoromethane (SS)	101	% Recovery	75 - 125	1	NA		05-24-04
XG.2004.897.13		Toluene-D8 (SS)	99	% Recovery	88 - 110	1	NA		05-24-04
X04560		**T8270**						**X04560-005**	
XG.2004.907.8		*2,4,6-TRIBROMOPHENOL	74	% Recovery	10 - 123	1	NA		05-26-04
XG.2004.907.8		*2-FLUOROBIPHENYL	89	% Recovery	43 - 116	1	NA		05-26-04
XG.2004.907.8		*2-FLUOROPHENOL	52	% Recovery	21 - 100	1	NA		05-26-04
XG.2004.907.8		*NITROBENZENE-D5	97	% Recovery	35 - 114	1	NA		05-26-04
XG.2004.907.8		*PHENOL-D6	35	% Recovery	10 - 94	1	NA		05-26-04
XG.2004.907.8		*TERPHENYL-D14	63	% Recovery	33 - 141	1	NA		05-26-04

Assaigai Analytical Laboratories, Inc.

QC Surrogate Summary

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405336 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Sample: ***MSD*** Matrix: ***WATER***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
X04554		**8260**					**X04554-018**		
XG.2004.894.20		1,2 Dichloroethane-D4 (SS)	101	% Recovery	76 - 114	1	NA		05-20-04
XG.2004.894.20		4-Bromofluorobenzene (SS)	101	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.20		Dibromofluoromethane (SS)	103	% Recovery	75 - 125	1	NA		05-20-04
XG.2004.894.20		Toluene-D8 (SS)	101	% Recovery	88 - 110	1	NA		05-20-04
X04557		**8270**					**X04557-005**		
XG.2004.920.6		*2,4,6-TRIBROMOPHENOL	96	% Recovery	64 - 123	2	NA		05-24-04
XG.2004.920.6		*2-FLUOROBIPHENYL	82	% Recovery	73 - 104	2	NA		05-24-04
XG.2004.920.6		*2-FLUOROPHENOL	46	% Recovery	50 - 116	2	NA		05-24-04
XG.2004.920.6		*NITROBENZENE-D5	85	% Recovery	46 - 123	2	NA		05-24-04
XG.2004.920.6		*PHENOL-D6	33	% Recovery	24 - 52	2	NA		05-24-04
XG.2004.920.6		*TERPHENYL-D14	71	% Recovery	48 - 110	2	NA		05-24-04
X04551		**SW846 8330 Explosives by HPLC**					**X04551-005**		
XG.2004.884.21	610-39-9	3,4-Dinitrotoluene	81	% Recovery	74 - 127	2	NA		05-21-04

ATTACHMENT C

ANALYTICAL DATA FOR FIREBRICK REMOVED FROM THE TA-16-401 SAND FILTER

ASSAIGAI ANALYTICAL LABORATORIES, INC.
4301 Masthead NE • Albuquerque, New Mexico 87109 • (505) 345-8964 • FAX (505) 345-7259
3332 Wedgewood, Ste. N • El Paso, Texas 79925 • (915) 593-6000 • FAX (915) 593-7820
127 Eastgate Drive, 212-C • Los Alamos, New Mexico 87544 • (505) 662-2558

Explanation of codes	
B	analyte detected in Method Blank
E	result is estimated
H	analyzed out of hold time
N	tentatively identified compound
S	subcontracted
1-9	see footnote

LOS ALAMOS NATIONAL LABS
attn: **DUSTIE RICH**
P.O. BOX 1663, MS K490
LOS ALAMOS NM 87545

STANDARD

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405333 LOS17** Receipt: **05-14-04**

William P. Boyd, President of Assaigai Analytical Laboratories, Inc.

Sample: ***04SWRC482*** Collected: *05-13-04 9:45:00* By: *DR*
Matrix: ***MS***

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405333-01B		**SW846 1311/3010A/6010B ICP TCLP**					By:	KDW		
M04795	MT.2004.985.73	7440-38-2	Arsenic	ND	mg / L	1	0.2		05-25-04	05-26-04
M04795	MT.2004.985.73	7440-39-3	Barium	1.0	mg / L	1	0.2		05-25-04	05-26-04
M04795	MT.2004.1002.20	7440-43-9	Cadmium	ND	mg / L	1	0.02		05-25-04	05-28-04
M04795	MT.2004.985.73	7440-47-3	Chromium	ND	mg / L	1	0.02		05-25-04	05-26-04
M04795	MT.2004.985.73	7439-92-1	Lead	ND	mg / L	1	0.1		05-25-04	05-26-04
M04795	MT.2004.985.73	7782-49-2	Selenium	ND	mg / L	1	0.05		05-25-04	05-26-04
0405333-01B		**SW846 1311/3010A/7000 series AA-FL TCLP**					By:	KDW		
M04795	MT.2004.969.88	7440-22-4	Silver	ND	mg / L	1	0.01		05-25-04	05-26-04
0405333-01B		**SW846 1311/7470A CVAA TCLP**					By:	BJM		
M04814	MT.2004.1004.24	7439-97-6	Mercury	ND	mg / L	1	0.0002		05-28-04	05-28-04

Unless otherwise noted, all samples were received in acceptable condition and all sampling was performed by client or client representative. Sample result of ND indicates Not Detected, ie result is less than the sample specific Detection Limit. Sample specific Detection Limit is determined by multiplying the sample Dilution Factor by the listed Reporting Detection Limit. All results relate only to the items tested. Any miscellaneous workorder information or foonotes will appear below.

REPRODUCTION OF THIS REPORT IN LESS THAN FULL REQUIRES THE WRITTEN CONSENT OF AAL.
THIS REPORT MAY NOT BE USED IN ANY MANNER BY THE CLIENT OR ANY OTHER THIRD PARTY TO CLAIM PRODUCT ENDORSEMENT BY THE NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM.

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

C[redacted] **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405333 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilu[illegible]*
L	*Not applicable due to MDL proximity*

Type: ***LCS: Lab Control Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-003**	
MT.2004.985.65	7440-38-2	Arsenic	90	% Recovery	80 - 120	1	NA		05-26-04
MT.2004.985.65	7440-39-3	Barium	107	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.1002.14	7440-43-9	Cadmium	93	% Recovery	92 - 117	1	NA		05-28-04
MT.2004.985.65	7440-47-3	Chromium	91	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.65	7439-92-1	Lead	96	% Recovery	88 - 119	1	NA		05-26-04
MT.2004.985.65	7782-49-2	Selenium	105	% Recovery	93 - 120	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-003**	
MT.2004.969.80	7440-22-4	Silver	96	% Recovery	80 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-002**	
MT.2004.1004.10	7439-97-6	Mercury	98	% Recovery	80 - 120	1	NA		05-28-04

Type: ***MB: Method Blank*** Matrix: ***TCLP***

R[redacted]Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M[redacted]795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-001**	
MT.2004.985.63	7440-38-2	Arsenic	ND	mg / L		1	0.2		05
MT.2004.985.63	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.1002.12	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-28-04
MT.2004.985.63	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.63	7439-92-1	Lead	ND	mg / L		1	0.1		05-26-04
MT.2004.985.63	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-002**	
MT.2004.985.64	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-26-04
MT.2004.985.64	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.1002.13	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-28-04
MT.2004.985.64	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.64	7439-92-1	Lead	ND	mg / L		1	0.1		05-26-04
MT.2004.985.64	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-011**	
MT.2004.985.75	7440-38-2	Arsenic	ND	mg / L		1	0.2		05-26-04
MT.2004.985.75	7440-39-3	Barium	ND	mg / L		1	0.2		05-26-04
MT.2004.1002.24	7440-43-9	Cadmium	ND	mg / L		1	0.02		05-28-04
MT.2004.985.75	7440-47-3	Chromium	ND	mg / L		1	0.02		05-26-04
MT.2004.985.75	7439-92-1	Lead	ND	mg / L		1	0.1		05-26-04
MT.2004.985.75	7782-49-2	Selenium	ND	mg / L		1	0.05		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-001**	
M[redacted]2004.969.78	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
[redacted]795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-002**	
MT.2004.969.79	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

C[redacted] **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405333 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilution*
L	*Not applicable due to MDL proximity*

Type: ***MB: Method Blank*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-011**	
MT.2004.969.90	7440-22-4	Silver	ND	mg / L		1	0.01		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-001**	
MT.2004.1004.9	7439-97-6	Mercury	ND	mg / L		1	0.0002		05-28-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-007**	
MT.2004.1004.23	7439-97-6	Mercury	ND	mg / L		1	0.0002		05-28-04

Type: ***MD: Matrix Duplicate*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-007**	
MT.2004.985.69	7440-38-2	Arsenic	NA	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.69	7440-39-3	Barium	30	RPD	0 - 20	1	NA		05-26-04
MT.2004.1002.18	7440-43-9	Cadmium	33	RPD	0 - 20	1	NA		05-28-04
[redacted].985.69	7440-47-3	Chromium	158	RPD	0 - 20	1	NA		05-26-04
M[redacted]04.985.69	7439-92-1	Lead	36	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.69	7782-49-2	Selenium	45	RPD	0 - 20	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-007**	
MT.2004.969.84	7440-22-4	Silver	NA	RPD	0 - 20	1	NA		05-26-04

Type: ***MS: Matrix Spike*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**						**M04795-005**	
MT.2004.985.67	7440-38-2	Arsenic	79	% Recovery	75 - 124	1	NA		05-26-04
MT.2004.985.67	7440-39-3	Barium	108	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.1002.16	7440-43-9	Cadmium	96	% Recovery	92 - 117	1	NA		05-28-04
MT.2004.985.67	7440-47-3	Chromium	96	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.67	7439-92-1	Lead	98	% Recovery	88 - 119	1	NA		05-26-04
MT.2004.985.67	7782-49-2	Selenium	104	% Recovery	93 - 121	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**						**M04795-005**	
MT.2004.969.82	7440-22-4	Silver	92	% Recovery	80 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**						**M04814-004**	
MT.2004.1004.20	7439-97-6	Mercury	91	% Recovery	80 - 120	1	NA		05-28-04

Assaigai Analytical Laboratories, Inc.

Quality Control Summary

C[illegible] **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405333 LOS17**

Explanation of codes	
D	*Not applicable due to sample dilu[illegible]*
L	*Not applicable due to MDL proximity*

Type: ***MSD: Matrix Spike Duplicate Precision*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M04795		**SW846 1311/3010A/6010B ICP TCLP**					**M04795-006**		
MT.2004.985.68	7440-38-2	Arsenic	2	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.68	7440-39-3	Barium	< 1	RPD	0 - 20	1	NA		05-26-04
MT.2004.1002.17	7440-43-9	Cadmium	< 1	RPD	0 - 20	1	NA		05-28-04
MT.2004.985.68	7440-47-3	Chromium	< 1	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.68	7439-92-1	Lead	< 1	RPD	0 - 20	1	NA		05-26-04
MT.2004.985.68	7782-49-2	Selenium	< 1	RPD	0 - 20	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**					**M04795-006**		
MT.2004.969.83	7440-22-4	Silver	< 1	RPD	0 - 20	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**					**M04814-005**		
MT.2004.1004.21	7439-97-6	Mercury	< 1	RPD	0 - 20	1	NA		05-28-04

Type: ***MSD: Matrix Spike Duplicate Accuracy*** Matrix: ***TCLP***

Run Sequence	CAS #	Analyte	Result	Units	Range	Dilution Factor	Detection Limit	Code	Run Date
M[illegible]95		**SW846 1311/3010A/6010B ICP TCLP**					**M04795-006**		
MT.2004.985.68	7440-38-2	Arsenic	80	% Recovery	75 - 124	1	NA		05
MT.2004.985.68	7440-39-3	Barium	108	% Recovery	87 - 116	1	NA		05-26-04
MT.2004.1002.17	7440-43-9	Cadmium	96	% Recovery	92 - 117	1	NA		05-28-04
MT.2004.985.68	7440-47-3	Chromium	96	% Recovery	88 - 114	1	NA		05-26-04
MT.2004.985.68	7439-92-1	Lead	98	% Recovery	88 - 119	1	NA		05-26-04
MT.2004.985.68	7782-49-2	Selenium	104	% Recovery	93 - 121	1	NA		05-26-04
M04795		**SW846 1311/3010A/7000 series AA-FL TCLP**					**M04795-006**		
MT.2004.969.83	7440-22-4	Silver	92	% Recovery	80 - 120	1	NA		05-26-04
M04814		**SW846 1311/7470A CVAA TCLP**					**M04814-005**		
MT.2004.1004.21	7439-97-6	Mercury	90	% Recovery	80 - 120	1	NA		05-28-04

ATTACHMENT D

DIOXIN/FURAN ANALYTICAL SOIL DATA COLLECTED FROM UPSLOPE OF THE TA-16-401 AND -406 SAND FILTERS

ASSAIGAI ANALYTICAL LABORATORIES, INC.
4301 Masthead NE • Albuquerque, New Mexico 87109 • (505) 345-8964 • FAX (505) 345-7259
3332 Wedgewood, Ste. N • El Paso, Texas 79925 • (915) 593-6000 • FAX (915) 593-7820
127 Eastgate Drive, 212-C • Los Alamos, New Mexico 87544 • (505) 662-2538

Explanation of codes	
B	analyte detected in Method Blank
E	result is estimated
H	analyzed out of hold time
N	tentatively identified compound
S	subcontracted
1-9	see footnote

LOS ALAMOS NATIONAL LABS
attn: **DUSTIE RICH**
P.O. BOX 1663, MS K490
LOS ALAMOS NM 87545

STANDARD

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405334 LOS17** Receipt: **05-14-04**

William P. Blake: President of Assaigai Analytical Laboratories, Inc.

Sample: *04SWRC479* Collected: *05-13-04 9:53:00* By: *DR*
Matrix: *SOIL*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405334-01A		EPA 8290					By:	ERL		
ERL63123	SB.2004.324.2		1,2,3,4,6,7,8,9-OCDD	465	pg/g	1	10	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,4,6,7,8,9-OCDF	37.3	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,4,6,7,8-HpCDD	71.4	pg/g	1	1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,4,6,7,8-HpCDF	16.1	pg/g	1	0.09	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,4,7,8,9-HpCDF	1.1	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,4,7,8-HxCDD	1.0	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,4,7,8-HxCDF	1.9	pg/g	1	0.07	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,6,7,8-HxCDD	1.5	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,6,7,8-HxCDF	0.99	pg/g	1	0.07	SJ1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,7,8,9-HxCDD	2.4	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,7,8,9-HxCDF	ND	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,7,8-PeCDD	0.40	pg/g	1	0.1	SJ1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		1,2,3,7,8-PeCDF	ND	pg/g	1	0.07	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		2,3,4,6,7,8-HxCDF	1.2	pg/g	1	0.08	SJ1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		2,3,4,7,8-PeCDF	0.86	pg/g	1	0.1	SJ1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		2,3,7,8-TCDD	ND	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		2,3,7,8-TCDF	0.61	pg/g	1	0.1	SJ1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total HpCDD	460	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total HpCDF	43.5	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total HxCDD	39.1	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total HxCDF	27.3	pg/g	1	0.08	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total PeCDD	1.5	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total PeCDF	17.0	pg/g	1	0.09	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total TCDD	3.1	pg/g	1	0.2	S	05-29-04	06-08-04

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Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: **LOS ALAMOS NATIONAL LABS**
Project: **8M02 X205 HEMR 0000**
Order: **0405334 LOS17** Receipt: **05-14-04**

Sample: *04SWRC479* Collected: *05-13-04 9:53:00* By: *DR*
Matrix: *SOIL*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405334-01A		EPA 8290					By:	ERL		
ERL63123	SB.2004.324.2		Total TCDF	8.7	pg/g	1	0.1	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.2		Total TEQ	3.2	pg/g	1	0.1	S	05-29-04	06-08-04

Sample: *04SWRC480* Collected: *05-13-04 9:53:00* By: *DR*
Matrix: *SOIL*

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405334-02A		EPA 8290					By:	ERL		
ERL63123	SB.2004.324.3		1,2,3,4,6,7,8,9-OCDD	155	pg/g	1	10	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,4,6,7,8,9-OCDF	13.6	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,4,6,7,8-HpCDD	19.9	pg/g	1	1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,4,6,7,8-HpCDF	6.1	pg/g	1	0.09	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,4,7,8,9-HpCDF	0.40	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,4,7,8-HxCDD	ND	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,4,7,8-HxCDF	0.67	pg/g	1	0.07	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,6,7,8-HxCDD	0.66	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,6,7,8-HxCDF	0.40	pg/g	1	0.07	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,7,8,9-HxCDD	0.77	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,7,8,9-HxCDF	ND	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,7,8-PeCDD	ND	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		1,2,3,7,8-PeCDF	ND	pg/g	1	0.09	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		2,3,4,6,7,8-HxCDF	0.59	pg/g	1	0.08	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		2,3,4,7,8-PeCDF	0.40	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.3		2,3,7,8-TCDD	ND	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		2,3,7,8-TCDF	0.70	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total HpCDD	52.3	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total HpCDF	13.8	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total HxCDD	7.2	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total HxCDF	7.9	pg/g	1	0.08	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total PeCDD	0.82	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total PeCDF	6.6	pg/g	1	0.09	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total TCDD	3.0	pg/g	1	0.2	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total TCDF	2.2	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.3		Total TEQ	1.3	pg/g	1	0.1	S	05-29-04	06-08-04

Assaigai Analytical Laboratories, Inc.

Certificate of Analysis

Client: LOS ALAMOS NATIONAL LABS
Project: 8M02 X205 HEMR 0000
Order: 0405334 LOS17 Receipt: 05-14-04

Sample: 04SWRC481 Collected: 05-13-04 9:53:00 By: DR
Matrix: SOIL

QC Group	Run Sequence	CAS #	Analyte	Result	Units	Dilution Factor	Detection Limit	Code	Prep Date	Run Date
0405334-03A		EPA 8290					By:	ERL		
ERL63123	SB.2004.324.4		1,2,3,4,6,7,8,9-OCDD	151	pg/g	1	10	S	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,4,6,7,8,9-OCDF	20.5	pg/g	1	0.2	S	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,4,6,7,8-HpCDD	27.2	pg/g	1	1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,4,6,7,8-HpCDF	11.1	pg/g	1	0.09	S	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,4,7,8,9-HpCDF	3.7	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,4,7,8-HxCDD	3.9	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,4,7,8-HxCDF	4.6	pg/g	1	0.07	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,6,7,8-HxCDD	4.6	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,6,7,8-HxCDF	4.3	pg/g	1	0.07	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,7,8,9-HxCDD	4.9	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,7,8,9-HxCDF	3.8	pg/g	1	0.09	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,7,8-PeCDD	3.5	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		1,2,3,7,8-PeCDF	2.1	pg/g	1	0.07	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		2,3,4,6,7,8-HxCDF	4.5	pg/g	1	0.08	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		2,3,4,7,8-PeCDF	3.3	pg/g	1	0.1	SJ	05-29-04	06-08-04
ERL63123	SB.2004.324.4		2,3,7,8-TCDD	1.0	pg/g	1	0.2	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		2,3,7,8-TCDF	0.93	pg/g	1	0.1	SJ1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total HpCDD	54.9	pg/g	1	0.1	S	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total HpCDF	26.6	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total HxCDD	21.3	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total HxCDF	27.8	pg/g	1	0.08	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total PeCDD	11.5	pg/g	1	0.1	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total PeCDF	10.6	pg/g	1	0.09	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total TCDD	196	pg/g	1	0.2	S1	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total TCDF	5.4	pg/g	1	0.1	S12	05-29-04	06-08-04
ERL63123	SB.2004.324.4		Total TEQ	8.3	pg/g	1	0.1	S	05-29-04	06-08-04

Unless otherwise noted, all samples were received in acceptable condition and all sampling was performed by client or client representative. Sample result of ND indicates Not Detected, ie result is less than the sample specific Detection Limit. Sample specific Detection Limit is determined by multiplying the sample Dilution Factor by the listed Reporting Detection Limit. All results relate only to the items tested. Any miscellaneous workorder information or footnotes will appear below.

1 This value is an Estimated Maximum Possible Concentration.

2 Indicates that a polychlorodibenzofuran (PCDF) peak has eluted at the same time as the associated diphenyl ether (DPE) and the DPE peak intensity is at least ten percent of the total PCDF peak intensity.

MMO Subcontracted to Eno River Laboratories. "J" denotes a concentration based on an analyte to internal standard ratio which is below the calibration curve.