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NMED Hazardous Waste Bureau

James Bearzi, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Road East, Bldg. 1
Santa Fe, NM 87505

Dear Mr. Bearzi:

On behalf of the U. S. Department of Energy/National Nuclear Security Administration (DOE/NNSA), and Sandia Corporation, DOE/NNSA is submitting the "Sandia National Laboratories/New Mexico, Mixed Waste Landfill (MWL) Quarterly Progress Report Evapotranspirative (ET) Cover Construction Project, May–July 2009." This quarterly project report addresses all quarterly reporting requirements required by the New Mexico Environment Department (NMED) Final Order In the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the MWL (Final Order) NMED May 2005) and the NMED conditional approval of the MWL Corrective Measures Implementation Plan (Bearzi December 2008), both requiring the Progress Reports to be submitted to the Department on a quarterly basis during implementation of the remedy. MWL ET Cover construction activities for the period of May through July 2009, are presented in this first quarterly progress report consistent with requirements in the Compliance Order on Consent (NMED April 2004), Section VII.D.5.

Should you have any questions regarding this project quarterly report, please contact me at (505) 845-6036, or Joe Estrada of my staff at (505) 845-5326.

Sincerely,

Patty Wagner
Manager

Enclosure (1)

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CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: **Mixed Waste Landfill Quarterly Progress Report Evapotranspirative Cover Construction Project, May – July 2009.**

Document author: **Mike Mitchell, Department 06765**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure 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 or imprisonment for knowing violations.

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Sandia National Laboratories

Sandia National Laboratories, New Mexico (SNL/NM)

Environmental Restoration Project

MIXED WASTE LANDFILL
QUARTERLY PROGRESS REPORT
EVAPOTRANSPIRATIVE COVER CONSTRUCTION PROJECT
MAY – July 2009

September 2009

United States Department of Energy
Sandia Site Office

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MIXED WASTE LANDFILL
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Sandia National Laboratories/New Mexico
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Department 6765
Albuquerque, New Mexico 87185

September 2009

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ABBREVIATIONS AND ACRONYMS

BMP	Best Management Practice
CMI	Corrective Measures Implementation
CMIP	Corrective Measures Implementation Plan
CQA	Construction Quality Assurance
CY	Cubic Yards
DOE	Department of Energy
ET	Evapotranspirative
HWB	Hazardous Waste Bureau
KAFB	Kirtland Air Force Base
K-SAT	Saturated Hydraulic Conductivity
MW	Monitoring Well
MWL	Mixed Waste Landfill
NMED	New Mexico Environment Department
QA	Quality Assurance
QC	Quality Control
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
TA	Technical Area

1.0 Introduction

Sandia National Laboratories/New Mexico (SNL/NM) is located within the boundaries of Kirtland Air Force Base (KAFB), immediately south of the city of Albuquerque in Bernalillo County, New Mexico. KAFB occupies 52,233 acres. SNL/NM research and administration facilities are divided into five technical areas (TAs), designated 1 through 5, and several additional test areas, occupying 2,842 acres. TA-1, TA-2, and TA-4 are separate research facilities in the northwestern portion of KAFB. TA-3 and TA-5 are contiguous research facilities forming a 4.5-square-mile, rectangular area in the southwestern portion of KAFB. TA-3 alone occupies 2,000 acres. The Mixed Waste Landfill (MWL) is a 2.6-acre, fenced waste disposal area located in north-central TA-3 at SNL/NM (Figure 1).

1.1 Background

The MWL Corrective Measures Implementation Plan (CMIP) (SNL/NM November 2005) incorporates the final remedy selected by the New Mexico Environment Department (NMED) and details the deployment of the Evapotranspirative (ET) Cover (Chapter 2), the regulatory basis (Chapter 3), MWL characteristics (Chapter 4), the technical basis for the cover (Chapter 5), the MWL ET Cover design (Chapter 6), and cover performance monitoring (Chapter 7). Appendices include construction specifications (Appendix A), and the construction quality assurance plan (Appendix B).

After receiving conditional approval of the CMIP from the New Mexico Environment Department (NMED) (Bearzi December 2008), the MWL ET Cover Construction contracting process was initiated and completed in March 2009. The EDi Team was selected to construct the ET Cover and the URS Corporation was selected to perform independent third party Construction Quality Assurance (CQA) under a separate contract. NMED was notified of the start of ET Cover construction field work on April 10, 2009 (Davis April 2009). The EDi Team mobilized to the field to begin initial site activities on May 11, 2009 after completing an updated Health and Safety Plan that was approved by Sandia.

1.2 Purpose and Scope

Progress reports for ET Cover construction activities are required by the NMED Final Order In the Matter of Request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill (Final Order) (NMED May 2005) during implementation of the remedy. The Conditional Approval for the MWL CMIP (Bearzi December 2008) required the Progress Reports to be submitted to the Department on a quarterly basis during implementation of the

remedy. MWL ET Cover construction activities for the period of May through July 2009 are presented in this first quarterly progress report consistent with requirements in the Compliance Order on Consent (NMED April 2004), Section VII.D.5 specifying that progress reports shall, at a minimum, include the following information.

1. A description of the work completed during the reporting period;
2. A summary of all problems, potential problems, or delays encountered during the reporting period;
3. A description of all actions taken to eliminate or mitigate problems, potential problems, or delays;
4. A discussion of the work projected for the next reporting period, including all sampling events; and
5. Copies of the results of all monitoring, including sampling and analysis, and other data generated during the reporting period; and
6. Copies of all waste disposal records generated during the reporting period.

The construction of the Subgrade Layer was completed in December 2006 during an earlier phase of work. The 2006 Subgrade Layer work is not presented in this quarterly progress report, but will be detailed in the CMI Report. The 2009 Subgrade Layer construction activities were limited to clearing, watering, compacting, field testing, and verification of the surface. No additional fill material was placed on the existing Subgrade Layer.

A CMI Report documenting ET Cover construction will be prepared and submitted to the NMED within 180 days of ET Cover completion as required by the Final Order. The CMI Report will present detailed cover construction documentation, all field and laboratory testing results, CQA documentation, a photo log of construction activities, and final as-built drawings. Sandia and the Department of Energy (DOE) anticipate submitting this report within or shortly after the next quarterly reporting period (August through October 2009). Accordingly, there will be no additional quarterly construction progress report, as the required information will be incorporated within the CMI Report.

1.3 Construction Activity Summary

Construction activities completed during the reporting period are summarized below and in Table 1, which also summarizes activities to be completed in the next reporting period (August through October, 2009). More detailed information is provided in Sections 2.0 through 6.0. A photographic log of ET Cover construction activities is provided in Attachment A. There were

no significant schedule delays or problems encountered during the reporting period, and the ET Cover construction work continues to be ahead of the overall schedule approved by the NMED (Bearzi December 2008). Preliminary soil and rock volume estimates for each layer of the ET Cover (compacted, in-place volumes) are summarized in Table 2. All soil and rock volume estimates and ET Cover layer thickness information presented in this report are preliminary. Final volume and thickness information will be provided in the MWL CMI Report.

Two very small spills occurred during construction activities, both less than one gallon total, and neither spill occurred on the cover. The first spill occurred on June 3, 2009 at the south end of the site and involved a small amount of diesel fuel (less than 1 quart) spilling from the water truck due to a loose fuel cap. The second spill occurred on June 30, 2009 at the Borrow Pit Area. A hydraulic line on an end-dump truck ruptured as gravel was being delivered, releasing approximately 2 to 3 gallons. In both cases site personnel immediately recognized the problem, took corrective action to stop the spill, and then cleaned up the area. All contaminated soil related to the two spills was placed in two 55-gallon drums for disposal (one drum for each spill). One plastic bag of adsorbent materials was also generated from the hydraulic oil spill. All resulting waste was New Mexico Special Waste and was disposed of through the SNL/NM Hazardous Waste Management Facility. Signed waste manifests documenting final disposition are included as Attachment B.

NMED personnel visited the MWL ET Cover construction site on two occasions during the reporting period. On June 26, 2009 NMED/Hazardous Waste Bureau (HWB) representatives visited the site and received a briefing on cover activities completed to date. On July 8, 2009 Will Moats and Bill McDonald of the NMED/HWB conducted a site inspection of both the ET Cover and the Borrow Pit Area operations.

1.3.1 Site and Borrow Pit Area Activities

The 2009 ET Cover construction work included clearing, watering, compacting, field testing, and verification of the Subgrade Layer. Construction of the Bio-intrusion Layer involved the placement and compaction of approximately 6,800 cubic yards (cy) of rock to form an interlocking, approximately 1.3-foot thick layer directly overlying the Subgrade Layer. Approximately 3,060 cy of loose, dry soil was placed, spread, compacted, and then moisture-conditioned immediately above the Bio-intrusion Layer to fill void spaces and create a thin, approximately 3-inch overlying soil layer (hereafter referred to as the meniscus layer) upon which construction of the Native Soil Layer proceeded. Construction of the Native Soil Layer

involved the placement and compaction of approximately 23,300 cy of soil in eight lifts (maximum 8-inch loose, 6-inch compacted) to form a 2.8-foot thick layer (approximate average thickness) over the Bio-intrusion Layer. Two wedge lifts and two polishing lifts (explained in Section 4.1) were installed as Lifts 1 through 4 to establish the 2% east-to-west design slope across the central portions of the landfill. During construction of the Native Soil Layer the side slopes on all sides of the ET Cover were built up and the toe established so at completion of the Top Soil Layer, the final slope would be approximately a 6 to 1 according to the CMIP specifications. The Top Soil Layer will be constructed in early August 2009 and documented in the CMI Report.

Borrow Pit Area activities included loading haul trucks with existing soil fill stockpiled in 2006 at the Borrow Pit and rock stockpiled in 2005 at the nearby Bulk Waste Staging Area; soil sampling of fill material according to CMIP specifications; excavation, screening to 2-inch minus (hereafter referred to as 2-minus), stockpiling, and loading of additional native soil and top soil material; screening and stockpiling berm material hauled to the Borrow Pit from the site for use as fill material; and Pug Mill set up, calibration, and operation to blend 3/8-inch gravel with the top soil fill material. The Borrow Pit Area, Bulk Waste Staging Area, and haul routes used are shown in Figure 2.

1.3.2 Field and Laboratory Testing

Standard Proctor (ASTM 698) soil sampling of Native Soil fill material was conducted at a frequency of 1 sample per 500 cy (loose) as specified in the CMIP. Four samples were also collected from the Top Soil material to support moisture and density testing of the Top Soil Layer after installation (not required by CMIP). Gradation (ASTM C136) and Classification (ASTM D2487 and D4318) soil testing was also preformed on all Native Soil and Top Soil Layer fill material at a frequency of 1 sample per 500 cy (loose) as specified in the CMIP. Saturated hydraulic conductivity (K-SAT, ASTM 5856-95) testing was conducted on all of the Native Soil Layer lifts at a frequency of 1 sample per acre as specified in the CMIP.

Quality control (QC) field moisture and density testing with a Troxler™ Neutron Gauge was conducted by the EDi Team on the Subgrade Layer and all lifts of the Native Soil Layer at a frequency of 5 samples per acre. Additional quality assurance (QA) field testing was performed at specific locations selected by the URS CQA Team as a check to the QC results. A sampling grid comprised of thirteen 100-foot square blocks was used to ensure complete spatial coverage of the landfill surface for the moisture and density field testing effort (Figure 3).

All Standard Proctor test results are presented in Table 3, and shown graphically in Figure 4. The results demonstrate the general consistency of the soil fill material with regards to maximum dry density and optimum moisture. All field moisture and density results for the reporting period are shown in Table 4 for the top of the Subgrade Layer and each individual Native Soil Layer lift. Gradation and Classification soil testing results for the Native Soil and Top Soil Layer fill materials are provided in Tables 5 and 6, respectively. Table 7 presents K-SAT results for the Native Soil Layer soil samples.

1.3.3 Verification Surveys

Topographic surveys of each ET Cover layer system were performed and approved prior to constructing the subsequent layer. QC surveys were performed by the EDi Team and QA surveys were performed by the URS CQA Team as part of the verification process detailed in the CMIP. After the QA survey was performed and approved, construction of the next layer proceeded. Survey verification of the Subgrade Layer, Bio-intrusion Layer, meniscus layer, and Native Soil Layer was performed during the reporting period. Corrective actions were taken as needed based upon these surveys to ensure each layer met the specifications in the CMIP. Any variances were documented and approved by the CQA Engineer prior to proceeding with the next cover layer. All soil and rock volume estimates and ET Cover layer thickness information presented in this report are preliminary. Final QC and QA survey information, as well as final volume and thickness information, will be provided in the MWL CMI Report.

1.3.4 Technical Issues and Resolution

During ET Cover construction engineering decisions were made and documented to address situations where field conditions required changes relative to CMIP specifications, and/or situations where specifications or design elements were not clear or were inconsistent. In all cases where engineering judgment was relied upon, decisions were made in a conservative manner and resulted in an ET Cover that is more protective of human health and the environment. A summary of project technical issues and variances is provided below.

The Subgrade Layer was constructed in 2006. In May 2009 the Subgrade Layer surface was cleared of limited vegetation and remnant erosion matting installed after completion of the 2006 effort. The east-to-west slope across the central portion of the cover was slightly less than the 2% design slope. The decision was made to establish the 2% slope with the Native Soil Layer

instead of adding more material to the Subgrade Layer, by constructing two localized wedge lifts in the east-central part of the Native Soil Layer (i.e., build up the east-central area to increase the slope).

A coarse, angular rock was specified in the CMIP and used for the Bio-intrusion layer. To ensure the minimum thickness of 1 foot was achieved, the rock was placed at a target thickness of 1.25 feet. Based upon the final survey, the average thickness of the rock layer after placement and compaction was approximately 1.3 feet thick. Because of the coarse nature of the rock and the fact that a thicker Bio-intrusion Layer would be more protective, the decision was made to accept the thicker layer. In addition, there were no specifications in the CMIP for filling in void spaces in the Bio-intrusion Layer or how to transition from the rock surface to the Native Soil Layer. Observations of several methods tested in the field led to the decision to spread a layer of loose, dry soil across the surface of the Bio-intrusion Layer with a bulldozer, and then compact it with a vibratory drum roller to an average thickness of approximately 3-inches. After compaction water was added to the dry soil to moisture condition both the overlying layer of soil and the soil that filtered down into the void spaces.

As mentioned above, to establish the east-to-west 2% slope across the main central portion of the ET Cover, the Native Soil Layer was constructed with two wedge lifts. The two wedge lifts raised the elevation of the east-central portion of the cover and resulted in a Native Soil Layer that was slightly thicker than the upper tolerance thickness specified in the CMIP.

Soil volume estimates for each layer of the ET Cover were provided in the CMIP (SNL/NM November 2005) as bank cy, equivalent to compacted, in-place cy. Preliminary estimates of the in-place soil or rock volumes for each cover layer (i.e., as-constructed) exceeded the volume estimates presented in the CMIP and are summarized by cover layer system in Table 2. Additional information will be provided in the CMI Report after further analysis and comparison of the as-built 2009 ET Cover to the 2005 CMIP cover design. In summary, the greater thicknesses of the Bio-intrusion and Native Soil Layers, in comparison to the CMIP design specifications, result in a more protective ET Cover. Additional soil fill and rock material needed to complete the ET Cover was generated (soil fill) or procured (rock) during the reporting period with no adverse schedule impacts.

1.4 Report Structure

MWL site activities are presented in Sections 2.0 through 4.0 of this report as listed below.

- Mobilization and personnel training (Section 2.0)
- Subgrade Layer preparation, field testing, and verification (Section 2.0);
- Bio-intrusion Layer installation and verification (Section 3.0);
- Extension of groundwater monitoring well MW4 casing and protective outer steel casing (Section 3.0); and
- Native Soil Layer installation, field testing, and verification (Section 4.0).

ET Cover construction support activities conducted at the MWL Borrow Pit Area and Bulk Waste Staging Area are presented in Section 5.0. Top Soil Layer work accomplished during the reporting period is presented in Section 6.0, and the construction schedule and remaining ET Cover activities are presented in Section 7.0.

2.0 Mobilization and Subgrade Layer

Mobilization to construct the MWL ET Cover and preparation of the Subgrade Layer surface was conducted from May 11 – 22, 2009. The actual construction of the Subgrade Layer was completed in December 2006 according to the specifications in the CMIP after receiving NMED approval to proceed with Subgrade and fence removal work only (Bearzi September 2006). The side slopes were not constructed to a 6 to 1 ratio as part of the 2006 Subgrade work and around most of the northern and central portion of the cover area they were considerably steeper. Because NMED approval to proceed with the remainder of the ET Cover was not received during 2006, work was stopped after completion of the Subgrade Layer and the administrative fence was re-established. The 2006 Subgrade work will be detailed in the CMI Report, along with the 2009 work summarized in this report.

2.1 2009 Work

Mobilization tasks were completed from May 11-18, 2009 and included office trailer set up, installation of a new perimeter boundary, equipment delivery and inspections, Storm Water Pollution Prevention Plan (SWPPP) best management practices (BMPs) (i.e., perimeter silt fencing and drive-off pad at site entrance for equipment), site grading for staging and administrative areas, completion of personnel training, and removal of the administrative fence around the waste disposal areas.

The Subgrade Layer surface and side slopes were prepared from May 20 - 22, 2009 by using both heavy equipment and manual methods to remove existing vegetation and remnant erosion.

The surface and slopes were then watered using a water truck and rolled with a vibratory compactor. Field moisture and density tests were conducted at 13 locations as specified in the CMIP (5 tests per acre per lift), one location in each of the 13 field testing grid blocks shown in Figure 3. All field tests met CMIP specifications, which are compaction to 90% or greater of maximum dry density at $\pm$ 2% optimum moisture content, as determined by Standard Proctor testing (ASTM D698). Field moisture and density testing results are shown in Table 4.

A 50-foot spaced grid point system was established by the EDI Team over the surface of the ET Cover area for verification topographic surveys. The EDi Team performed a QC survey and URS performed a QA survey of the Subgrade Layer final surface to verify the elevation and slope. The condition the Subgrade Layer was very good almost three years after it was constructed in late 2006, with no signs of erosion, subsidence, or ponding water. Based upon the field testing and verification survey results, the Subgrade Layer was approved by the CQA Engineer.

2.2 Technical Issues and Resolution

The only technical issues associated with the Subgrade Layer were the east-to-west 2% design slope across the central portion of the surface and the side slopes not having a 6 to 1 ratio (they were significantly steeper). After the surface was cleared, watered, compacted, and re-tested the slope was calculated between 50-foot survey grid points to determine specific areas where the slope varied from design. The slope in the east-central portion of the Subgrade surface ranged from 1.8 to 1.9%. Because the slope was only slightly less than 2% the decision was made to proceed with installation of the Bio-intrusion Layer and correct the central east-to-west design slope during construction of the Native Soil Layer. Establishing the side slopes at a 6 to 1 slope was determined to be best accomplished after installation of the Bio-intrusion Layer since the existing Subgrade Layer side slopes already extended well beyond the waste disposal boundary.

3.0 Bio-intrusion Layer

The purpose of the Bio-intrusion Layer is to create a barrier above the MWL to prevent animals from penetrating the cover and compacted subgrade into the waste disposal areas. Placing the Bio-intrusion barrier rock was a challenging construction task with two relatively independent goals. One was to achieve an interlocked, compacted layer of angular rock with good structural integrity. The second goal was to achieve fill in the rock layer voids with native soil.

The thickness, rock type, and specifications of the Bio-intrusion barrier were jointly determined by representatives of the NMED and SNL/NM MWL Project in meetings held at SNL/NM on June 3, 2004 and on February 17, 2005. The desired rock was to be quartzite or comparable siliceous rock, and broken on most or all faces. Hardness, angularity, and chemical and physical stability were the most critical characteristics. Size was to be nominally +4-inches/-6-inches with abundant smaller size fractions to facilitate the filling of the void space. Greater than 50% of the rock fragments by weight were to be larger than the 4-inch size, and the desired largest rock fragment was to be nominally 6-inches. After careful evaluation of five local quarries by SNL/NM staff, the material at San Lazarus Gulch in the San Pedro Mountains was selected. This material was comparable to hornfels, a dense contact metamorphic rock, highly siliceous, and exceedingly tough and durable. This rock exhibited conchoidal fracture and high angularity upon crushing. Approximately 6,000 cy of rock were procured and delivered to the Bulk Waste Staging Area in 2005.

3.1 2009 Work

Loading and hauling of the Bio-intrusion rock material from the Bulk Waste Staging Area occurred from May 26 through June 8, 2009. On May 26 construction tests were performed at the south end of the MWL. On May 27 full-scale construction of the Bio-intrusion Layer started and the well casing and protective outer steel casing of groundwater monitoring well MW4 was extended to accommodate the projected final ET Cover thickness. End-dump trucks were used to haul the rock from the Bulk Waste Staging Area to the site, and the rock was unloaded directly on the cover surface. A bulldozer was used to spread the rock and track/compact it (minimum 4 passes) into an interlocking layer. The target thickness for the initial rock layer was 1.25 feet to make sure the minimum 1-foot thickness specification was achieved. Surveys were continuously performed during construction to control and check thickness. From June 8 through 12, 2009 additional rock material was hauled directly from the San Lazarus Gulch in the San Pedro Mountains to complete the Bio-intrusion Layer over the classified portion of the MWL (northeast part of the MWL). The new rock was hauled directly to the site and placed on

the east side of the MWL. A front end loader was used to place the rock and a bulldozer spread and compacted the material. The additional rock was from a pre-existing stockpile at the San Lazarus Gulch quarry that was generated in 2005 when the original bio-intrusion rock was purchased and delivered to the Bulk Waste Staging Area.

Prior to full-scale construction of the Bio-intrusion Layer, several installation approaches were tested at the south end of the site on May 26, 2009 to determine the most effective way to address the following technical issues: 1) compacting the rock into a structurally sound, interlocking, layer, 2) fill void space within the Bio-intrusion Layer, and 3) create an even surface to begin construction of the Native Soil Layer. Due to the coarse nature of the bio-intrusion rock, there was no way to avoid creating an uneven surface that was problematic relative to construction of the overlying Native Soil Layer. The results of testing demonstrated that the most effective construction method was to: 1) scarify the surface of the Subgrade Layer with the bulldozer tracks (i.e., track over the surface prior to rock placement), 2) place the rock in single +1-foot thick lift or layer, spreading and tracking the rock with a bulldozer a minimum of 4 passes to achieve a compacted, interlocking lattice structure with a relatively even surface, 3) apply loose, dry soil on top of the rock layer, spreading and tracking it with the bulldozer to fill void spaces and create a nominal +3-inch thick soil layer (meniscus layer) , 4) compact the meniscus layer to a nominal 3-inch thickness using a vibratory compactor (minimum of 4 passes), and 5) moisture condition the soil as a final step using a water truck. Surveying was used to determine the thickness of the Bio-intrusion Layer and meniscus layer. A motor grader was used to cut thicker areas of the meniscus layer to achieve nominal +3-inch thick soil layer with a uniform, even surface on top of the Bio-intrusion layer.

The effectiveness of this construction method is summarized as follows. The scarified Subgrade surface allowed the bottom of the rock layer to “settle” into the top of the Subgrade Layer, partially filling the lower-most void spaces. The loose, dry soil spread over the upper surface of the rock layer flowed into interstitial void spaces much like the sand flows through the constriction in an hour glass. Further tracking the surface of the meniscus soil with the bulldozer worked additional soil down into the void spaces and achieved initial compaction, while continuing to facilitate interlocking of the angular rock fragments. Further compaction of the overlying soil layer with a vibratory roller achieved further compaction and interlocking, and may have helped achieve additional void space filling deeper in the rock layer. Surveying the meniscus layer allowed the thickness to be kept to a minimum while creating an even surface to begin construction of the Native Soil Layer. Finally, adding water as the last step hydrated the

soil layer and the soil deeper in the void spaces to complete the process. Not adding water until the final step allowed for maximum penetration of the soil into the rock layer.

3.2 Field Testing

No field testing was required for the Bio-intrusion Layer or the overlying meniscus layer. Standard moisture and density field testing was not feasible due to the minimal thickness of the meniscus layer (average 3-inch thickness) and the presence of rocks immediately beneath it. However, compaction of the meniscus layer was conducted following the same process as used for the overlying Native Soil Layer.

3.3 Verification

The thickness of the Bio-intrusion Layer was verified through both a QC survey performed by EDi Team and a QA survey performed by URS using the previously established 50-foot spaced verification grid. Areas surrounding grid points where thickness corrections were required based upon the CMIP specifications were identified, reworked, and resurveyed. After adjustment, the thickness at all grid points was equal or greater than the 1-foot minimum. The final average thickness of the completed Bio-intrusion Layer was approximately 1.3 feet.

3.4 Technical Issues and Resolution

Construction technical issues and resolution are described above in Section 3.2. The final average thickness of the Bio-intrusion Layer exceeded the upper tolerance thickness of 1.0 foot with a -0.00 feet and +.25 feet tolerance as specified in the CMIP. The layer was approved without further adjustment for the following reasons: 1) the exceedence was only approximately ½-inch, 2) the additional thickness resulted in a more protective layer, and 3) the coarseness of the rock material made fine-tuning the surface to <0.25-foot precision unfeasible without the risk of compromising the already achieved interlocking lattice structure and void filling.

4.0 Native Soil Layer

The Native Soil Layer is the thickest layer of the ET Cover and is designed to hold precipitation moisture, along with the overlying Top Soil Layer, while the processes of evaporation and transpiration remove it to the atmosphere. The Native Soil Layer was constructed with excavated and screened (2-minus) native soil fill material from the Borrow Pit. The CMIP specifications include a minimum thickness of 2.5 feet with a -0.00 foot, +0.25 foot tolerance (CMIP Section 02210), and a construction process employing maximum 8-inch loose, 6-inch

compacted lifts (CMIP Section 02200). Soil fill material sampling requirements are described in Section 1.3.2 and results are provided in Table 3 (Standard Proctor) and Table 5 (Gradation and Classification). K-SAT and moisture/density testing are discussed in Sections 1.3.2 and 4.2.

4.1 2009 Work

Construction of the Native Soil Layer was performed from June 15 through July 27, 2009 and involved the placement and compaction of approximately 23,300 cy of soil (compacted, in-place cy) in eight lifts. Each lift was constructed following the specifications of the CMIP, with a maximum thickness of 8-inches loose, 6-inches compacted. Two wedge lifts (Wedge Lifts 1 and 2) were installed along with two polishing lifts (Lifts 3 and 4) to establish the 2% east-to-west slope across the east-central portion of the landfill. Verification of the Native Soil Layer was completed on July 31, 2009. The thickness of this layer is approximately 2.8 feet, which does not include the thickness of the underlying meniscus layer.

Wedge Lifts 1 and 2 were spatially limited to the east-central portion of the cover and are shown in Figure 3. Lifts 3 and 4 are referred to as polishing lifts because their thickness was variable across the landfill surface, which was necessary to complete the adjustment for the 2% east-to-west design slope. To complete this adjustment after installation of Wedge Lifts 1 and 2, some areas of the cover surface required slightly more than a 6-inch compacted thickness. To achieve this following the CMIP specification, Lifts 3 and 4 were installed as generally thinner than 8-inch loose, 6-inch compacted lifts across the entire surface of the MWL. Grade stakes were used to guide the construction process for these first four lifts.

Lifts 5 through 8 were more standardized lifts that were installed across the entire cover surface as 8-inch loose, 6-inches compacted lifts. Grade stakes were set across the entire cover surface at the 50-foot grid points for each lift to guide the process and allow for visual confirmation that specifications were being followed. The grade stakes locations were shifted periodically to allow uniform compaction. Hubs and whiskers were used instead of grade stakes for the final Lift 8 (blue top approach). QC surveying was performed throughout the installation of each lift to guide, control, and confirm the construction process.

During construction of the Native Soil Layer the side slopes on all sides of the ET Cover were built up and the toe was established so that at completion of the Top Soil Layer, the final slope would be approximately a 6 to 1 according to the CMIP specifications. All side slopes were constructed following the same process and specifications as the Native Soil Layer lifts.

4.2 Field Testing

Moisture and density testing was conducted on every lift according to the frequency specified in the CMIP (5 per acre per lift) using the 13 field testing grid blocks shown in Figure 3. All moisture and density results are presented in Table 4. Because of the limited spatial distribution of Wedge Lifts 1 and 2, only three tests were performed per lift on the cover surface (6 total tests), and one test for each wedge lift (2 additional tests, for a grand total of 8 tests) was performed southeast of (outside) the corner formed by the eastward projection of the classified portion of the MWL (referred to as the Dog Leg Area in Table 4 and shown on Figure 3). Lift 3 was not continuous and thick enough for field testing in all thirteen grid blocks; a total of six grid blocks were tested. All thirteen grid blocks were tested for Lifts 4 through 8.

During the field testing of Lift 5 moisture and density tests failed in grid blocks 2, 3, 5, and 7. The east slope of grid block 7 met specifications after water was added. Grid blocks 1-5 of Lift 5 were ripped to a depth of approximately six inches, moisture conditioned, re-compacted, and re-tested. The re-test results met specifications. The 3-foot perimeter around groundwater monitoring well MW4 (compacted using a manual-operated compactor) was tested in addition to grid block 9 for Lifts 6 through 8. Moisture results failed for Lift 6 and 8 tests, but passed after the application of additional water to the material. Initial tests for Lift 8, grid blocks 8 and 10 also failed for moisture content, but passed re-tests after additional water was applied.

K-SAT sampling is only required for the Native Soil Layer. The results of all samples collected during the reporting period are presented in Table 7. CMIP specifications for K-SAT sampling frequency and results for the Native Soil Layer are as follows:

- frequency of 1 sample per acre per lift
- target maximum value of 4.6×10^{-4}, with a failure tolerance of 5% (i.e., 5% of the test results can exceed the target value).

Twenty K-SAT sample results were collected from the 8 lifts and all results were less than the target value, with an average of 1.62×10^{-4} and a geometric mean of 4.72×-10^{-5}. The average compaction of the 20 samples was 90.2%, with a range of 81.2% to 95.3%.

4.3 Verification

The thickness and slope of the Native Soil Layer was verified through both a QC survey performed by EDi Team and a QA survey performed by URS using the 50-foot spaced verification grid from July 28-31, 2009. During this verification process, nine points were identified by both the QC and QA surveys that were slightly less than the minimum 2.5-foot

thickness, with two of these points falling outside the cover surface on the northern side slope. The range of values falling below the minimum thickness was 2.09 to 2.42 feet, which appear to be related to irregularities (i.e., high spots) in the Bio-intrusion Layer. A thin layer of additional soil was added to these areas to increase the thickness to 2.55 feet, with the thickest fill layer being 0.46 feet. After adjustments the failing grid points were resurveyed and met the 2.5-foot minimum thicknesses specification. The final average thickness of the completed Native Soil Layer was 2.8 feet. The 2% east-to-west design slope was verified across the central portion of the Native Soil Layer surface, and the side slopes were verified to be 6 to 1 or slightly less.

4.4 Technical Issues and Resolution

Establishing the 2% east-to-west design slope across the central portion of the Native Soil Layer surface was accomplished by raising the elevation of the eastern side of the cover surface using two wedge lifts and two polishing lifts as described in Section 4.1. This resulted in a Native Soil Layer that is thicker, on average, than the 2.5-foot minimum, with a -0.000 and +0.25 foot tolerance as specified in the CMIP (i.e., approximately 2.8 feet). This variance in the Native Soil Layer thickness was anticipated after verification of the Subgrade Layer discussed in Section 2.2, and was determined to be the most protective approach to re-establish the 2% design slope. The resulting small increase in the thickness of the Native Soil Layer provides additional protection against surface moisture percolating downward to the waste disposal areas. Maintaining the 2% east-to-west design slope across the central portion of the cover surface is important to ensure adequate drainage off the cover surface over the long-term.

5.0 Borrow Pit Area Activities

Cover construction support activities were conducted at the MWL Borrow Pit Area and Bulk Waste Staging Area (Figure 2). Soil fill for the Native Soil and Top Soil Layers was previously excavated, screened to 2-minus, and stockpiled at the Borrow Pit during 2006; approximately 15,500 cy of native soil fill and 3,400 cy of top soil fill. The Bio-intrusion Layer rock (approximately 6,000 cy) was procured in 2005 and stockpiled in the Bulk Waste Staging Area just south of the Borrow Pit Area.

5.1 2009 Work

Loading and hauling of the Bio-intrusion rock material from the Bulk Waste Staging Area occurred from May 26 to June 8, 2009. End-dump trucks were used to haul the rock from the Bulk Waste Staging Area to the site. On June 15, 2009 loading and hauling activities began at

the Borrow Pit as part of the Native Soil Layer construction. A front end loader was used to load the haul trucks with both the rock and soil fill material. Bottom dump trucks were used to haul and place soil on the cover surface.

To support ongoing cover construction activities additional soil fill material was excavated, screened to 2-minus, and stockpiled at the Borrow Pit from June 12 to July 24, 2009. During this time period the soil berm around the MWL site originally installed as part of the SWPPP was excavated, hauled to the Borrow Pit, and screened for use as native soil fill. A Pug Mill was mobilized to the Borrow Pit Area in late June 2009 and then set up, calibrated, tested, and operated to blend 3/8-inch crushed gravel with the top soil fill material at a 25% by volume specification per the CMIP from July 6 - 24, 2009. The gravel was delivered and stockpiled at the Borrow Pit just prior to and during the Pug Mill operation period. The Pug Mill equipment was being demobilized at the end of the reporting period.

5.2 Technical Issues and Resolution

There were no technical issues and, therefore, no resolution was necessary for activities associated with Borrow Pit Area.

6.0 Top Soil Layer

The Top Soil Layer is the final cover layer and the layer that will directly support the establishment of native plants. It is also the layer that will initially hold all surface moisture that falls on the cover surface as precipitation. As specified in the in the CMIP, the Top Soil Layer is to be minimally compacted (i.e., compacted only as a result of the installation process, not by use of standard compaction equipment such as a vibratory roller) and have a minimum thickness of 8-inches. The Top Soil Layer will be completed in August and documentation will be provided in the CMI Report.

Additional top soil fill material was excavated and screened at the Borrow Pit from June 24 through July 24, 2009. Soil fill material sampling requirements are summarized in Section 1.3.2. Soil sampling for top soil fill material is restricted to Gradation and Classification testing; however, four Standard Proctor samples were also collected to support moisture and density testing. This testing of the Top Soil Layer is not required, but will be performed to support the documentation of this important ET Cover Layer. Results are provided in Table 3 (Standard

Proctor) and Table 6 (Gradation and Classification). No K-SAT sampling requirements apply to the Top Soil Layer.

6.1 Field Testing

There are no field testing requirements for the Top Soil Layer, however; moisture and density testing will be conducted after installation, ripping, tilling and seeding of the layer is accomplished for supporting documentation.

6.2 Technical Issues and Resolution

There were no technical issues associated with the Top Soil Layer during the reporting period. Volume estimates for this layer were revised from those presented in the CMIP (see Table 2) and this additional top soil material was excavated and screened from the Borrow Pit and blended with 3/8 inch crushed gravel as part of the Pug Mill operations. A significant factor in the revised volume estimate is that the actual target thickness of the Top Soil Layer was set at 1-foot and the CMIP estimate was based upon a minimum thickness of 8-inches.

7.0 Construction Schedule and Remaining Work

The construction schedule and remaining activities are described in this section. All work will be completed in August and September 2009. The CMI Report documenting the entire MWL ET Cover Construction Project will be completed within or shortly after the next quarterly reporting period (August through October 2009). Therefore, there will not be additional quarterly construction progress reports, as the required information will be incorporated within the CMI Report.

7.1 Schedule

The MWL ET Cover will be completed before the end of September 2009, ahead of the overall construction timeline schedule originally proposed in the December 15, 2006 Notice of Deficiency Comment Response on the MWL CMIP (SNL/NM December 2006) and approved as condition 1.f. in the NMED CMIP conditional approval (Bearzi December 2008). ET Cover activities that will be completed during the next reporting period include seeding of the Top Soil Layer, installing the final administrative fence, and demobilization of all construction-related equipment. Supplemental watering of the ET Cover and surrounding disturbed/seeded areas is an activity extending beyond completion of the ET Cover that may continue into December 2009 pending weather.

7.2 Soil Vapor Monitoring Points

Two soil vapor monitoring points will be installed through the ET Cover to an approximate depth of 35 feet below the original ground surface as required by condition 1. d. of the NMED conditional approval of the MWL CMIP (Bearzi December 2008). This work will be completed in August 2009.

7.3 Top Soil Layer and Supplemental Watering

Remaining work for the Top Soil Layer includes placement, verification of thickness and slope, ripping and tilling of the surface, drill seeding, and straw-mulch application. This work will be completed in late August or early September 2009. Top Soil Layer construction through seeding will be documented in the CMI Report.

Supplemental watering will be performed immediately after seeding to support seed germination and seedling growth as approved by the NMED (Bearzi December 2008). NMED will be notified by letter of the supplemental watering schedule and approach, which will be documented in the revised MWL Long-Term Monitoring and Maintenance Plan.

7.4 Administrative Fence Installation and Demobilization

The administrative fence surrounding the MWL ET Cover will be installed by early September 2009 according to the specifications in the CMIP. This work will be documented in the CMI Report.

7.5 Corrective Measures Implementation Report

The CMI Report will be completed during the next reporting period (August through October 2009) and submitted to the NMED shortly thereafter.

8.0 References

Davis, K. (U.S. Department of Energy), April 2009. Letter to J. Bearzi (New Mexico Environment Department), notifying the New Mexico Environment Department of the start of Mixed Waste Landfill Evapotranspirative Cover construction field work. April 10, 2009.

Bearzi, J.P. (New Mexico Environment Department), December 2008. Letter to K. Davis (U.S. Department of Energy) and F. Nimick (Sandia Corporation), "Conditional Approval, Mixed Waste Landfill Corrective Measures Implementation Plan, November 2005, Sandia National Laboratories NM5890110518, SNL-05-025." December 22, 2008.

New Mexico Environment Department (NMED) April 2004, "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act 74-4-10: Sandia National Laboratories Consent Order," New Mexico Environment Department, April 24, 2004.

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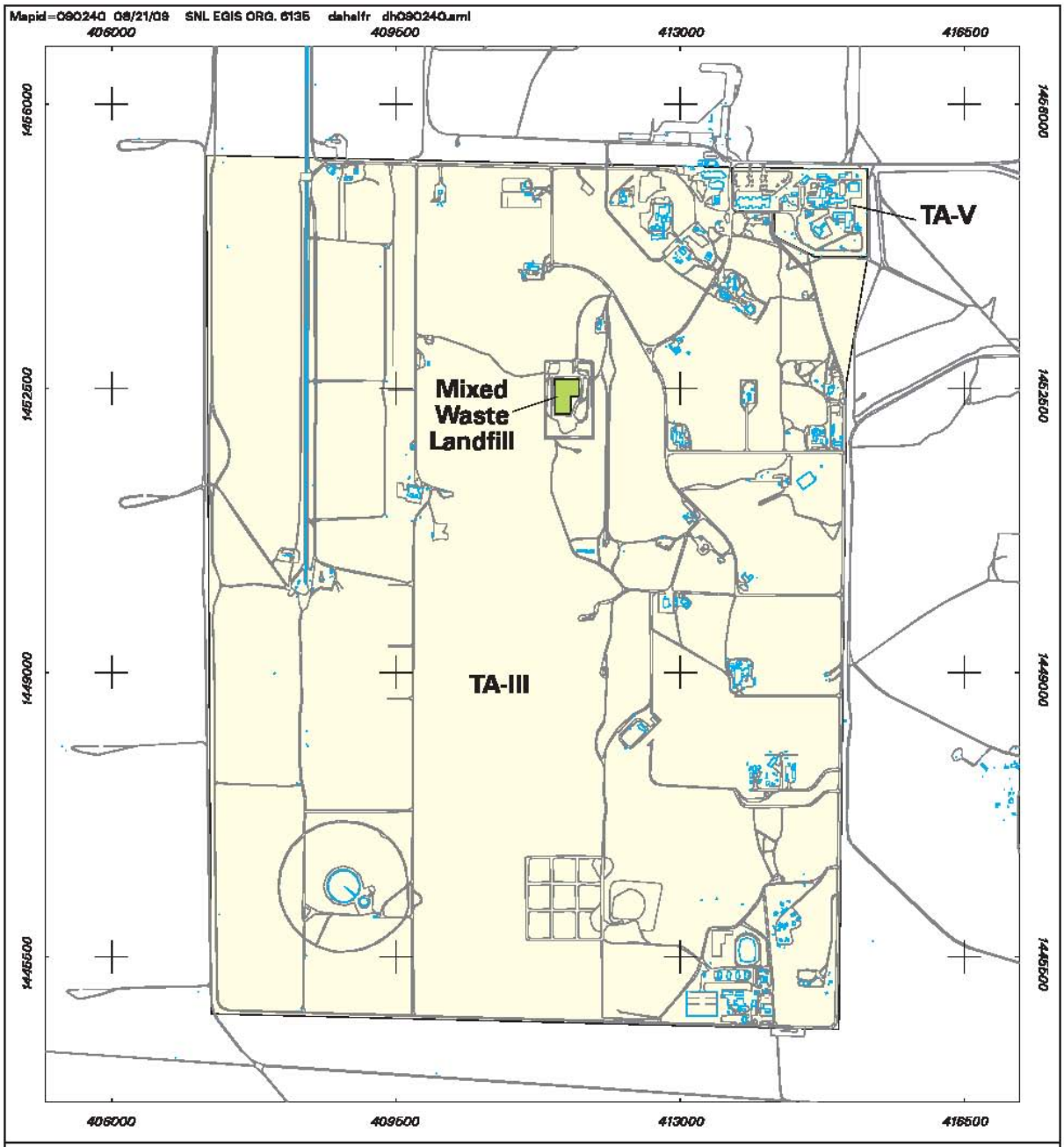
Sandia National Laboratories/New Mexico (SNL/NM), November 2005. "Mixed Waste Landfill Corrective Measures Implementation Plan," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico, November 2005.

Sandia National Laboratories/New Mexico (SNL/NM), December 21 2006, "DOE/Sandia Responses to NMED's 'Notice of Disapproval: Mixed Waste Landfill Corrective Measures Implementation Work Plan, November 2005' – Comment Set 1", prepared for US DOE by Sandia National Laboratories Environmental Restoration Project, Albuquerque, New Mexico.

FIGURES



Legend

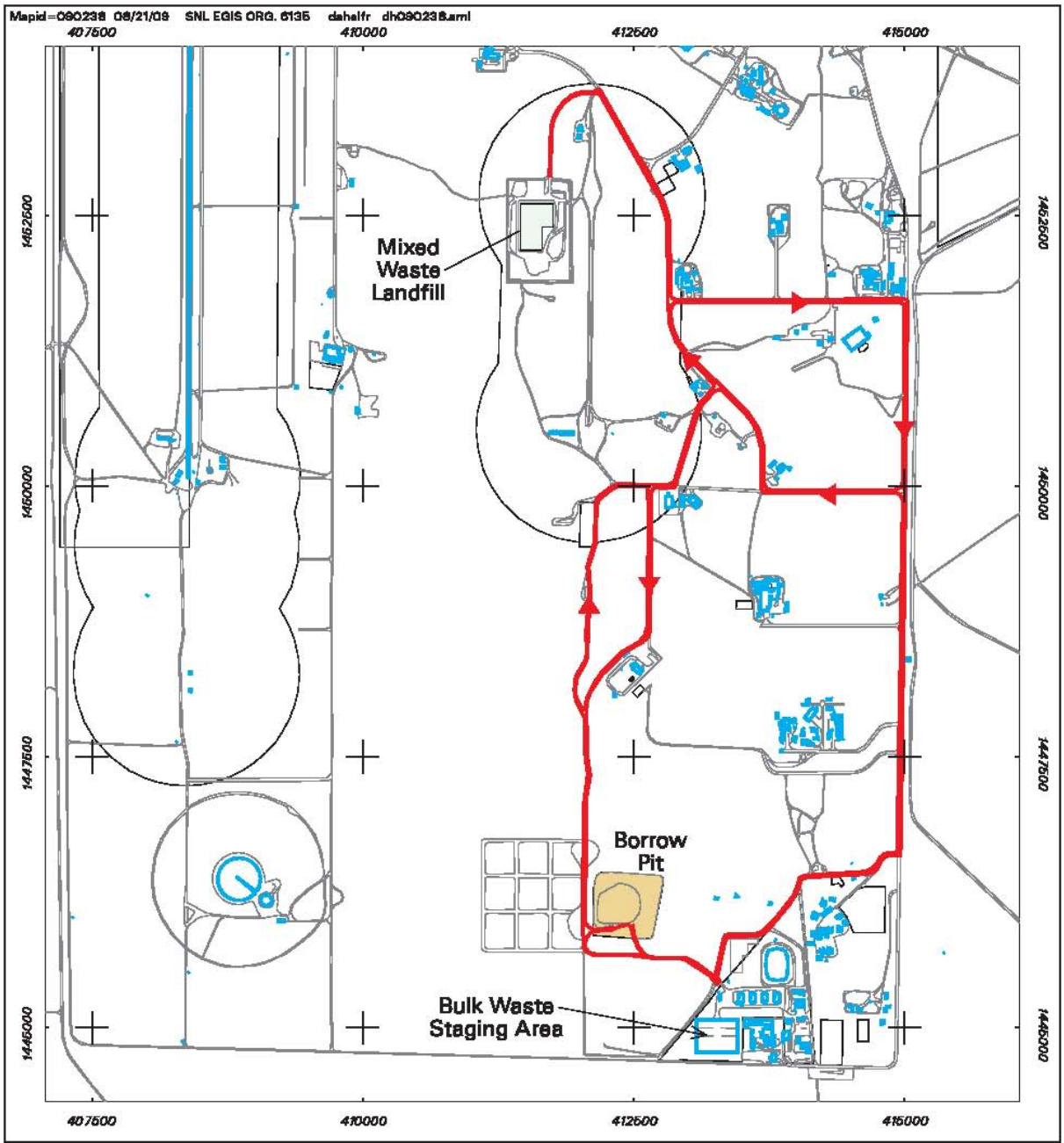
- Building / Structure
- Paved and Unpaved Road
- SNL Technical Area III & V
- Mixed Waste Landfill

Figure 1
Location of Technical Areas III & V and the Mixed Waste Landfill

0 1000 2000
Scale in Feet

0 240 480
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System



Legend

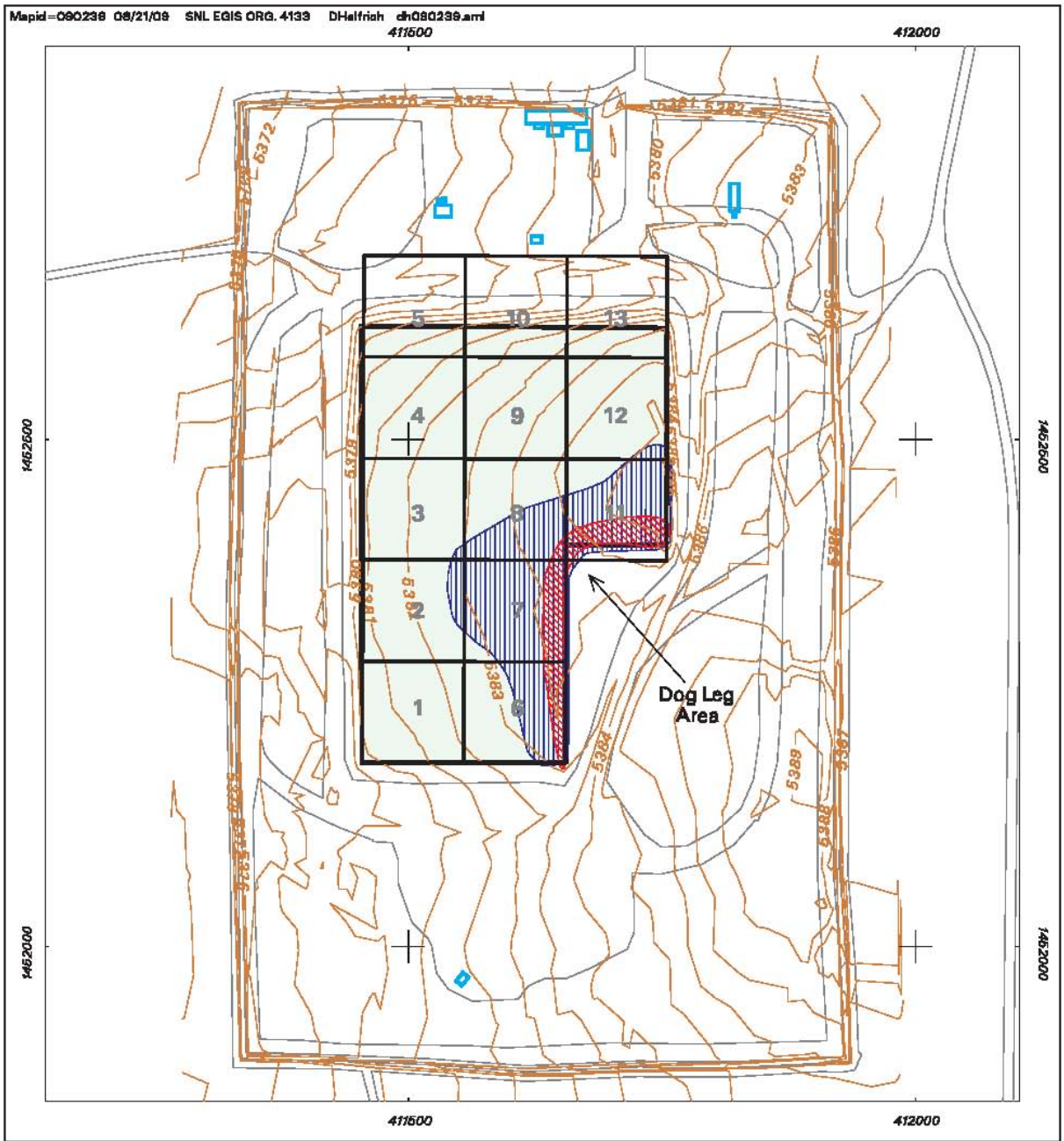
- Building / Structure
- Paved and Unpaved Road
- Haul Route
- Mixed Waste Landfill
- MWL Borrow Pit

Figure 2
Location of the Mixed Waste Landfill, Borrow Pit, Bulk Waste Staging Area and Haul Routes

0 750 1500
Scale in Feet

0 180 360
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System



Legend

- Mobile Office / Shed / Water Tank
- 1-ft. Subgrade Contour Interval
- Edge of unpaved Road
- 100-ft. Sample Grid
- MWL Disposal Area
- Wedge Lift 1
- Wedge Lift 2

Figure 3
Mixed Waste Landfill
Cover Grid Blocks and
Locations of Native Soil
Layer Wedge Lifts 1 & 2

0 80 160
Scale in Feet

0 19.2 38.4
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

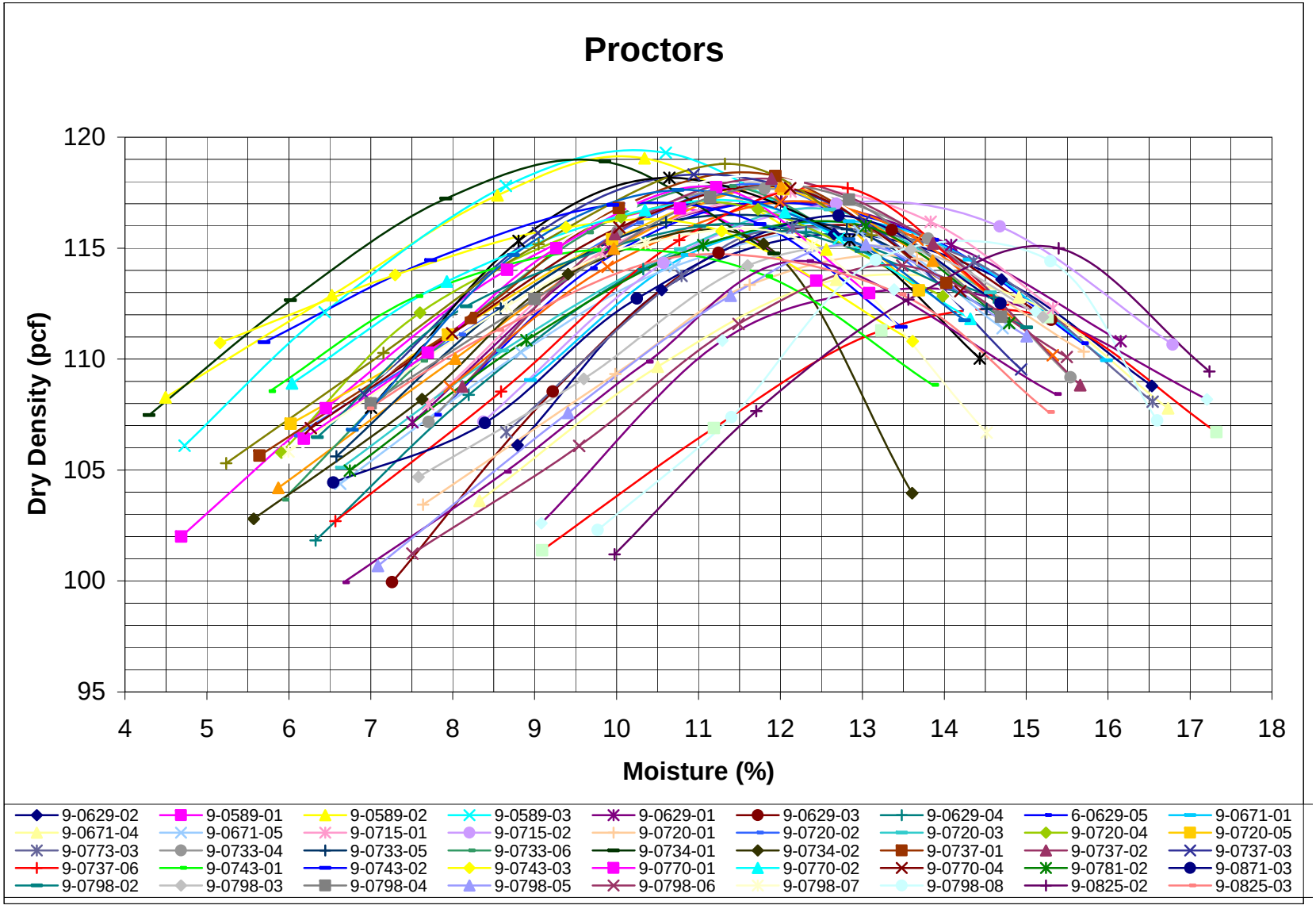


Figure 4 Graphical Representation of all MWL ET Cover Standard Proctor Results

TABLES

Table 1 Mixed Waste Landfill Evapotranspirative Cover Construction Summary

Activity	Start	Finish	Description
Work Completed May through July 2009			
Mobilization and Training	May 11, 2009	May 18, 2009	Resources, equipment, and office trailer mobilized to site and personnel training completed. Installed new perimeter boundary, silt fence, and drive-off pad. Removed administrative fence.
Subgrade Layer	May 20, 2009	May 22, 2009	Cleared vegetation, watered and compacted surface, performed field testing and verification survey.
Bio-intrusion Layer	May 26, 2009	June 16, 2009	Construction method tests conducted on May 26. Hauled and placed rock to create >1 foot thick layer, then placed soil layer on top to fill voids and create a thin soil layer above the rock (~3-inch thickness). New rock material hauled directly to site from vendor June 8-12. Verification surveys for thickness of rock layer and overlying soil layer.
MW4 Extension	May 27, 2009	May 27, 2009	Well casing and protective outer steel casing raised to accommodate surface elevation increase associated with construction of the ET Cover.
Native Soil Layer	June 15, 2009	July 31, 2009	Placed and compacted soil in lifts for cover surface and slopes. Wedge lifts used to establish 2% east-to-west slope. Verification surveys for thickness and slopes.
Borrow Pit Area Activities	June 12, 2009	July 24, 2009	Excavated and screened (2-minus) additional soil fill material, including SWPPP berm soil excavated and hauled to the Borrow Pit from the MWL site. Pug Mill operations set up and calibrated to blend top soil and 3/8-inch crush gravel.
Remaining Work to be completed August through September			
Soil Vapor Monitoring Points	August 2009	August 2009	Two soil vapor monitoring points will be installed through the ET Cover to an approximate depth of 35 feet below the original ground surface.
Top Soil Layer	August 2009	August 2009	Place top soil on cover and side slopes, verification survey for thickness and slopes, and rip/scarify surface.
Seeding and Supplemental Watering	August 2009	August 2009	Set up and test supplemental watering system. Disk and drill seed entire cover surface and disturbed areas.
Supplemental Watering	Immediately after seeding	Through December 2009	System will be operated for up to 3 months (pending weather) to help establish native vegetation.
Administrative Fence	September 2009	September 2009	Perimeter fence will be installed according to the specifications in the CMIP.
Revegetation of the Borrow Pit	To Be Determined	To Be Determined	The MWL Borrow Pit Area will be seeded and reclaimed in the 2010 growing season if it is not transferred to Sandia Facilities for continued use.

Table 2 Preliminary Soil Volume Estimates Comparing CMIP Estimates to As-Constructed Estimates

	Volumes Reflect Placed, Compacted Cubic Yards (cy)		
MWL ET Cover Layer	**CMIP Volume Estimates**	**As-Constructed Volume Estimates**	**Explanation**
Subgrade Layer	6,500	7,400	% compaction achieved in the field may be higher than predicted. The north end of MWL may have required more elevation increase than anticipated in the CMIP design.
Bio-intrusion Layer	4,900	6,800	Average thickness of the installed Bio-intrusion Layer is ~1.29 feet versus "1 foot minimum" as specified in CMIP.
Bio-intrusion Layer - Void filling and overlying 3-inch thick layer	Not Estimated	3,060	Volume estimate based on truck load tallies and represents a "loose" cyd estimate. Not addressed in CMIP.
Native Soil	13,200	23,300	The average thickness of the constructed Native Soil Layer is approximately 2.8 feet due to wedge lifts required to correct the <2% slope in the Subgrade Layer (versus 2.5 feet minimum in the CMIP). The north end elevation of the Subgrade Layer appears to be greater than predicted in the 2005 design, creating a larger cover footprint (i.e., 6 to 1 slopes are larger as a result).
Top Soil	3,900	6,800	Top soil layer is ~12 inches thick, which is ~50% thicker than specified in the CMIP (8-inch minimum thickness).
Total	**28,500**	**44,300**	**15,800 cyd difference (55% increase from original estimate).** 44,300 cyd total does not include the "3,060 cyd loose total" for the Bio-intrusion Layer void filling and overlying soil layer.

Table 3 Standard Proctor Results

Test Number	Date Sampled	Description	Gradation/ Classification Meet Specification	Maximum Dry Density (lb/ft^3)[1]	Optimum Moisture Content (%)	Testing Laboratory
SNL MWL 052009-1	5/20/2009	Native Soil	YES	116.7	10.6	AMEC
SNL MWL 052009-2	5/20/2009	Native Soil	YES	119.1	10.3	AMEC
SNL MWL 052009-3	5/20/2009	Native Soil	YES	119.3	10.3	AMEC
SNL MWL 052909-4	5/29/2009	Native Soil	YES	117.0	12.0	AMEC
SNL MWL 052909-5	5/29/2009	Native Soil	YES	115.7	12.6	AMEC
SNL MWL 052909-6	5/29/2009	Native Soil	YES	116.2	12.8	AMEC
SNL MWL 052909-7	5/29/2009	Native Soil	YES	115.8	12.3	AMEC
SNL MWL 052909-8	5/29/2009	Native Soil	YES	117.0	12.0	AMEC
SNL MWL 060909-9	6/9/2009	Native Soil	YES	116.2	12.5	AMEC
SNL MWL 060909-10	6/9/2009	Native Soil	YES	113.2	13.5	AMEC
SNL MWL 060909-11	6/9/2009	Native Soil	YES	112.2	14.6	AMEC
SNL MWL 060909-12	6/9/2009	Native Soil	YES	113.9	13.6	AMEC
SNL MWL 060909-13	6/9/2009	Native Soil	YES	115.9	12.3	AMEC
SNL MWL 062409-14	6/24/2009	Native Soil	YES	114.7	13.3	AMEC
SNL MWL 062409-15	6/24/2009	Native Soil	YES	117.7	11.8	AMEC
SNL MWL 062409-16	6/24/2009	Native Soil	YES	116.6	12.4	AMEC
SNL MWL 062409-17	6/24/2009	Native Soil	YES	116.9	11.0	AMEC
SNL MWL 062409-18	6/24/2009	Native Soil	YES	117.6	11.6	AMEC
SNL MWL 062909-19	6/29/2009	Native Soil	YES	117.7	12.0	AMEC
SNL MWL 062909-20	6/29/2009	Native Soil	YES	116.9	12.2	AMEC
SNL MWL 062909-21	6/29/2009	Native Soil	NO	115.9	12.7	AMEC
SNL MWL 062909-22	6/29/2009	Native Soil	YES	117.8	11.8	AMEC
SNL MWL 062909-23	6/29/2009	Native Soil	YES	116.6	11.6	AMEC
SNL MWL 062909-24	6/29/2009	Native Soil	YES	117.7	11.3	AMEC
SNL MWL 063009-25	6/30/2009	Native Soil	YES	118.4	11.7	AMEC
SNL MWL 063009-26	6/30/2009	Native Soil	YES	118.0	11.8	AMEC
SNL MWL 063009-27	6/30/2009	Native Soil	YES	118.3	11.2	AMEC
SNL MWL 063009-28	6/30/2009	Native Soil	YES	118.1	10.8	AMEC
SNL MWL 063009-29	6/30/2009	Native Soil	YES	118.2	11.6	AMEC
SNL MWL 063009-30	6/30/2009	Native Soil	YES	117.8	12.5	AMEC
SNL MWL Berm-1	6/30/2009	Native Soil	YES	115.0	10.0	AMEC
SNL MWL Berm-2	6/30/2009	Native Soil	YES	117.0	10.4	AMEC
SNL MWL Berm-3	6/30/2009	Native Soil	YES	116.2	10.2	AMEC
SNL MWL Berm-4	7/10/2009	Native Soil	YES	117.8	11.1	AMEC
SNL MWL Berm-5	7/10/2009	Native Soil	YES	117.0	11.1	AMEC
SNL MWL Berm-6	7/14/2009	Native Soil	YES	116.2	12.3	AMEC
SNL MWL Berm-7	7/14/2009	Native Soil	YES	116.6	12.7	AMEC
SNL MWL Berm-8	7/14/2009	Native Soil	YES	118.6	11.3	AMEC
SNL MWL Berm-9	7/16/2009	Native Soil	YES	114.6	13.0	AMEC

Table 3 Standard Proctor Results

Test Number	Date Sampled	Description	Gradation/ Classification Meet Specification	Maximum Dry Density (lb/ft^3)[1]	Optimum Moisture Content (%)	Testing Laboratory
SNL MWL Berm-10	7/16/2009	Native Soil	YES	116.0	11.2	AMEC
SNL MWL Berm-11	7/16/2009	Native Soil	YES	115.3	13.2	AMEC
SNL MWL Berm-12	7/16/2009	Native Soil	YES	117.7	12.1	AMEC
SNL MWL Berm-13	7/16/2009	Native Soil	YES	115.0	13.0	AMEC
SNL MWL Berm-14	7/16/2009	Native Soil	YES	114.2	13.5	AMEC
SNL MWL Berm-15	7/16/2009	Native Soil	YES	115.9	11.3	AMEC
SNL MWL Berm-16	7/16/2009	Native Soil	YES	116.0	14.4	AMEC
SNL MWL Berm-17	7/23/2009	Native Soil	YES	114.9	15.0	AMEC
SNL MWL Berm-18	7/23/2009	Native Soil	YES	114.7	11.6	AMEC
SNL MWL Berm-19	7/23/2009	Native Soil	YES	117.5	10.9	AMEC
SNL MWL 060209-4	6/2/2009	Top Soil	YES	118.9	9.6	AMEC
SNL MWL 060209-6	6/2/2009	Top Soil	YES	116.2	10.9	AMEC
SNL MWL 071009-8	7/10/2009	Top Soil	YES	117.8	11.8	AMEC
SNL MWL 071409-10	7/14/2009	Top Soil	YES	118.0	11.2	AMEC

Table 4 In-Place Density and Moisture Content Field Results

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft^3)[1]	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 1	120.1	11.6	90%	97	11.4	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 2	120.1	11.6	90%	99	9.8	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 3	120.1	11.6	90%	100	9.8	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 4	120.1	11.6	90%	100	9.9	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 5	120.1	11.6	90%	98	11.6	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 6	120.1	11.6	90%	98	10.5	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 7	120.1	11.6	90%	100	10.2	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 8	120.1	11.6	90%	98	11.5	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 9	120.1	11.6	90%	98	9.7	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 10	120.1	11.6	90%	96	11.6	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 11	120.1	11.6	90%	99	9.8	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 12	120.1	11.6	90%	97	10.2	YES	YES	AMEC
EDi Sub-Grade	5/22/2009	Subgrade Surface	Grid Block 13	120.1	11.6	90%	98	10.2	YES	YES	AMEC
EDi North Slope Lift 1	6/17/2009	North Slope, Lift 1	North Slope	120.1	11.6	90%	97	11.2	YES	YES	AMEC
EDi North Slope Lift 2	6/17/2009	North Slope, Lift 2	North Slope	120.1	11.6	90%	99	10.8	YES	YES	AMEC
EDi North Slope Lift 3	6/17/2009	North Slope, Lift 3	North Slope	120.1	11.6	90%	97	11.8	YES	YES	AMEC
EDi North Slope Lift 4	6/17/2009	North Slope, Lift 4	North Slope	120.1	11.6	90%	95	12.7	YES	YES	AMEC
EDi North Slope Lift 5	6/18/2009	North Slope, Lift 5	North Slope	120.1	11.6	90%	97	11.8	YES	YES	AMEC
EDi North Slope Lift 6	6/18/2009	North Slope, Lift 6	North Slope	120.1	11.6	90%	99	11.1	YES	YES	AMEC
EDi North Slope Lift 7	6/19/2009	North Slope, Lift 7	North Slope	115.8	12.3	90%	93	14.3	YES	YES	AMEC
EDi North Slope Lift 8	6/19/2009	North Slope, Lift 8	North Slope	115.8	12.3	90%	93	14.2	YES	YES	AMEC
EDi East Slope Lift 1	6/17/2009	East Slope, Lift 1	East Slope	120.1	11.6	90%	97	11.0	YES	YES	AMEC
EDi East Slope Lift 2	6/17/2009	East Slope, Lift 2	East Slope	120.1	11.6	90%	97	11.2	YES	YES	AMEC
EDi East Slope Lift 3	6/17/2009	East Slope, Lift 3	East Slope	120.1	11.6	90%	97	12.2	YES	YES	AMEC
EDi East Slope Lift 4	6/17/2009	East Slope, Lift 4	East Slope	120.1	11.6	90%	98	11.3	YES	YES	AMEC
EDi East Slope Lift 5	6/18/2009	East Slope, Lift 5	East Slope	120.1	11.6	90%	96	11.3	YES	YES	AMEC

Table 4 In-Place Density and Moisture Content Field Results

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft^3)[1]	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory
EDi East Slope Lift 6	6/18/2009	East Slope, Lift 6	East Slope	120.1	11.6	90%	99	11.7	YES	YES	AMEC
EDi West Slope Lift 1	6/17/2009	West Slope, Lift 1	West Slope	120.1	11.6	90%	96	11.7	YES	YES	AMEC
EDi West Slope Lift 2	6/17/2009	West Slope, Lift 2	West Slope	120.1	11.6	90%	98	11.8	YES	YES	AMEC
EDi West Slope Lift 3	6/17/2009	West Slope, Lift 3	West Slope	120.1	11.6	90%	96	11.1	YES	YES	AMEC
EDi West Slope Lift 4	6/17/2009	West Slope, Lift 4	West Slope	120.1	11.6	90%	97	11.1	YES	YES	AMEC
EDi West Slope Lift 5	6/18/2009	West Slope, Lift 5	West Slope	120.1	11.6	90%	97	11.3	YES	YES	AMEC
EDi West Slope Lift 6	6/18/2009	West Slope, Lift 6	West Slope	120.1	11.6	90%	98	11.9	YES	YES	AMEC
EDi Dog Leg Lift 1	6/18/2009	Lift 1 on Dog Leg	Dog Leg	120.1	11.6	90%	97	11.9	YES	YES	AMEC
EDi Dog Leg Lift 2	6/18/2009	Lift 2 on Dog Leg	Dog Leg	120.1	11.6	90%	97	11.1	YES	YES	AMEC
EDi Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 7	115.8	12.3	90%	96	11.1	YES	YES	AMEC
EDi Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 8	115.8	12.3	90%	97	12.4	YES	YES	AMEC
EDi Wedge Lift 1	6/19/2009	Native Soil Lift 1	Grid Block 11	115.8	12.3	90%	94	12.2	YES	YES	AMEC
EDi Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 7	115.8	12.3	90%	97	11.7	YES	YES	AMEC
EDi Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 8	115.8	12.3	90%	96	10.6	YES	YES	AMEC
EDi Wedge Lift 2	6/19/2009	Native Soil Lift 2	Grid Block 11	115.8	12.3	90%	96	11.5	YES	YES	AMEC
EDi NS Lift # 3	6/23/2009	Native Soil Lift 3	Grid Block 1	115.8	12.3	90%	100	10.7	YES	YES	AMEC
EDi NS Lift # 3	6/23/2009	Native Soil Lift 3	Grid Block 2	115.8	12.3	90%	100	10.3	YES	YES	AMEC
EDi NS Lift # 3	6/24/2009	Native Soil Lift 3	Grid Block 6	117.0	12.0	90%	97	11.6	YES	YES	AMEC
EDi NS Lift # 3	6/24/2009	Native Soil Lift 3	Grid Block 8	117.0	12.0	90%	95	10.9	YES	YES	AMEC
EDi NS Lift # 3	6/26/2009	Native Soil Lift 3	Grid Block 11 SE	117.0	12.0	90%	99	11.4	YES	YES	AMEC
EDi NS Lift # 3	6/26/2009	Native Soil Lift 3	Grid Block 11 NE	117.0	12.0	90%	91	12.4	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 1	117.0	12.0	90%	100	13.8	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 2	117.0	12.0	90%	98	11.6	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 3	117.0	12.0	90%	94	13.8	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 4	117.0	12.0	90%	97	12.4	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 5	117.0	12.0	90%	97	12.9	YES	YES	AMEC

Table 4 In-Place Density and Moisture Content Field Results

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft^3)[1]	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 6	117.0	12.0	90%	100	13.5	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 7	117.0	12.0	90%	99	11.6	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 8	117.0	12.0	90%	100	12.7	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 9	117.0	12.0	90%	100	12.0	YES	YES	AMEC
EDi NS Lift # 4	6/26/2009	Native Soil Lift 4	Grid Block 10	117.0	12.0	90%	97	12.0	YES	YES	AMEC
EDi NS Lift # 4	6/29/2009	Native Soil Lift 4	Grid Block 11	117.0	12.0	90%	98	10.1	YES	YES	AMEC
EDi NS Lift # 4	6/29/2009	Native Soil Lift 4	Grid Block 12	117.0	12.0	90%	96	13.1	YES	YES	AMEC
EDi NS Lift # 4	6/29/2009	Native Soil Lift 4	Grid Block 13	117.0	12.0	90%	97	10.9	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 1	117.0	12.0	90%	94	12.3	YES	YES	AMEC
EDi NS Lift 5 Re-Test	7/9/2009	Native Soil Lift 5	Grid Block 1	117.0	12.0	90%	95	10.9	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 2	117.0	12.0	90%	91	6.8	YES	**NO**	AMEC
EDi NS Lift 5 Re-Test	7/9/2009	Native Soil Lift 5	Grid Block 2	117.0	12.0	90%	100	10.5	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 3	117.0	12.0	90%	89	12.2	**NO**	YES	AMEC
EDi NS Lift 5 Re-Test	7/9/2009	Native Soil Lift 5	Grid Block 3	117.0	12.0	90%	99	12.2	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 4	117.0	12.0	90%	95	11.9	YES	YES	AMEC
EDi NS Lift 5 Re-Test	7/9/2009	Native Soil Lift 5	Grid Block 4	117.0	12.0	90%	100	12.1	YES	YES	AMEC
EDi NS Lift 5	7/7/2009	Native Soil Lift 5	Grid Block 5	117.0	12.0	90%	89	6.9	**NO**	**NO**	AMEC
EDi NS Lift 5 Re-Test	7/9/2009	Native Soil Lift 5	Grid Block 5	117.0	12.0	90%	99	13.5	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 6	117.0	12.0	90%	100	13.4	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 7 East Edge	117.0	12.0	90%	89	7.1	**NO**	**NO**	AMEC
EDi NS Lift 5 Re-Test	7/1/2009	Native Soil Lift 5	Grid Block 7 East Edge	117.0	12.0	90%	96	10.3	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 7	117.0	12.0	90%	96	13.6	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 8	117.0	12.0	90%	97	10.8	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 9	117.0	12.0	90%	98	11.9	YES	YES	AMEC
EDi NS Lift 5	7/2/2009	Native Soil Lift 5	Grid Block 10	117.0	12.0	90%	94	11.1	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 11	117.0	12.0	90%	91	10.2	YES	YES	AMEC

Table 4 In-Place Density and Moisture Content Field Results

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft^3)[1]	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 12	117.0	12.0	90%	96	11.5	YES	YES	AMEC
EDi NS Lift 5	7/1/2009	Native Soil Lift 5	Grid Block 13	117.0	12.0	90%	95	12.1	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 1	117.0	12.0	90%	97	14.0	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 2	117.0	12.0	90%	96	14.0	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 3	117.0	12.0	90%	99	10.2	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 4	117.0	12.0	90%	94	10.1	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 5	117.0	12.0	90%	99	12.5	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 6	117.0	12.0	90%	94	10.7	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 7	117.0	12.0	90%	91	10.0	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 8	117.0	12.0	90%	100	11.6	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 9	117.0	12.0	90%	100	12.4	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 10	117.0	12.0	90%	100	10.5	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	Grid Block 11	117.0	12.0	90%	99	10.9	YES	YES	AMEC
EDi NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 12	117.0	12.0	90%	99	12.7	YES	YES	AMEC
EDi NS Lift 6	7/14/2009	Native Soil Lift 6	Grid Block 13	117.0	12.0	90%	99	13.2	YES	YES	AMEC
EDi NS Lift 6	7/17/2009	Native Soil Lift 6	MW-4	117.0	12.0	90%	94	9.6	YES	**NO**	AMEC
EDi NS Lift 6 Re-Test	7/21/2009	Native Soil Lift 6	MW-4	117.0	12.0	90%	91	10.3	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 1	117.0	12.0	90%	94	13.7	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 2	117.0	12.0	90%	96	13.6	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 3	117.0	12.0	90%	94	11.4	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 4	117.0	12.0	90%	94	13.0	YES	YES	AMEC
EDi NS Lift 7	7/22/2009	Native Soil Lift 7	Grid Block 5	117.0	12.0	90%	95	11.8	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 6	117.0	12.0	90%	100	10.6	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 7	117.0	12.0	90%	100	12.2	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 8	117.0	12.0	90%	96.0	11.0	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 9	117.0	12.0	90%	100	12.4	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 10	117.0	12.0	90%	100	12.6	YES	YES	AMEC

Table 4 In-Place Density and Moisture Content Field Results

Test Number	Date of Field Test	Description	Location	Standard Proctor Maximum Density (lb/ft^3)[1]	Standard Proctor Optimum Moisture Content (%)	Percent of Maximum Density Required	Percent Compaction Achieved	Moisture Content Achieved	Meets Density Spec?	Meets Moisture Spec?	Testing Laboratory
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 11	117.0	12.0	90%	99	11.9	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 12	117.0	12.0	90%	95	13.8	YES	YES	AMEC
EDi NS Lift 7	7/21/2009	Native Soil Lift 7	Grid Block 13	117.0	12.0	90%	99	11.2	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 1	117.0	12.0	90%	100	10.7	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 2	117.0	12.0	90%	99	11.4	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 3	117.0	12.0	90%	99	12.5	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 4	117.0	12.0	90%	99	11.4	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 5	117.0	12.0	90%	97	13.4	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 6	117.0	12.0	90%	100	10.0	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 7	117.0	12.0	90%	100	10.0	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 8	117.0	12.0	90%	98	8.6	YES	**NO**	AMEC
EDi NS Lift 8 Re-Test	7/28/2009	Native Soil Lift 8	Grid Block 8	117.0	12.0	90%	100	10.3	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 9	117.0	12.0	90%	100	10.1	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	Grid Block 10	117.0	12.0	90%	98	7.6	YES	**NO**	AMEC
EDi NS Lift 8 Re-Test	7/28/2009	Native Soil Lift 8	Grid Block 10	117.0	12.0	90%	100	11.2	YES	YES	AMEC
EDi NS Lift 8	7/24/2009	Native Soil Lift 8	Grid Block 11	117.0	12.0	90%	100	10.5	YES	YES	AMEC
EDi NS Lift 8	7/24/2009	Native Soil Lift 8	Grid Block 12	117.0	12.0	90%	100	11.9	YES	YES	AMEC
EDi NS Lift 8	7/24/2009	Native Soil Lift 8	Grid Block 13	117.0	12.0	90%	100	10.9	YES	YES	AMEC
EDi NS Lift 8	7/28/2009	Native Soil Lift 8	MW-4	117.0	12.0	90%	98	8.8	YES	**NO**	AMEC
EDi NS Lift 8 Re-Test	7/28/2009	Native Soil Lift 8	MW-4	117.0	12.0	90%	97	10.3	YES	YES	AMEC

[1] lb/ft^3 = pounds per cubic foot
[2] AMEC = AMEC Earth and Environmental, Albuquerque, NM
[3] N/A = not applicable; Maximum Density and Moisture Content specifications and tests do not apply to the topsoil layer

Table 5 Native Soil Layer Gradation Results

Test Number	Date Sampled	Material Description	% Passing Sieve Size						Soil Classification
			3/4 inch	1/2 inch	3/8 inch	#10	#40	#200	
SNL MWL 052009-1	5/20/2009	Native Soil Stock Piled	100	100	100	95	87	34	SC-SM
SNL MWL 052009-2	5/20/2009	Native Soil Stock Piled	100	98	97	90	81	26	SC-SM
SNL MWL 052009-3	5/20/2009	Native Soil Stock Piled	100	98	98	90	82	26	SC-SM
SNL MWL 052909-4	5/29/2009	Native Soil Stock Piled	99	98	98	90	81	31	SM
SNL MWL 052909-5	5/29/2009	Native Soil Stock Piled	98	98	97	92	86	36	SC-SM
SNL MWL 052909-6	5/29/2009	Native Soil Stock Piled	100	100	99	96	90	38	SC
SNL MWL 052909-7	5/29/2009	Native Soil Stock Piled	100	100	100	96	90	37	SC-SM
SNL MWL 052909-8	5/29/2009	Native Soil Stock Piled	99	99	98	94	87	32	SC-SM
SNL MWL 060909-9	6/9/2009	Native Soil Stock Piled	99	99	98	93	87	36	SC
SNL MWL 060909-10	6/9/2009	Native Soil Stock Piled	100	100	99	95	88	38	SC
SNL MWL 060909-11	6/9/2009	Native Soil Stock Piled	99	99	98	94	88	29	SC-SM
SNL MWL 060909-12	6/9/2009	Native Soil Stock Piled	100	100	99	94	87	35	SC-SM
SNL MWL 060909-13	6/9/2009	Native Soil Stock Piled	100	100	99	93	86	27	SC-SM
SNL MWL 062409-14	6/24/2009	Native Soil Stock Piled	100	100	100	95	89	38	SC-SM
SNL MWL 062409-15	6/24/2009	Native Soil Stock Piled	100	100	99	95	89	35	SC-SM
SNL MWL 062409-16	6/24/2009	Native Soil Stock Piled	100	100	99	93	86	33	SM
SNL MWL 062409-17	6/24/2009	Native Soil Stock Piled	100	100	100	95	88	33	SM
SNL MWL 062409-18	6/24/2009	Native Soil Stock Piled	100	100	100	93	86	33	SM
SNL MWL 062909-19	6/29/2009	Native Soil Stock Piled	99	98	97	93	86	33	SC-SM
SNL MWL 062909-20	6/29/2009	Native Soil Stock Piled	100	100	100	96	90	36	SC-SM
SNL MWL 062909-21	6/29/2009	Native Soil Stock Piled	100	99	98	93	86	**41**	SC-SM
SNL MWL 062909-22	6/29/2009	Native Soil Stock Piled	100	100	100	96	90	36	SM
SNL MWL 062909-23	6/29/2009	Native Soil Stock Piled	100	99	99	93	88	36	SM
SNL MWL 062909-24	6/29/2009	Native Soil Stock Piled	100	100	99	94	88	34	SC-SM
SNL MWL 063009-25	6/30/2009	Native Soil Stock Piled	99	98	98	92	86	34	SC-SM
SNL MWL 063009-26	6/30/2009	Native Soil Stock Piled	99	98	97	93	87	36	SC-SM
SNL MWL 063009-27	6/30/2009	Native Soil Stock Piled	98	97	96	91	85	32	SM

Table 5 Native Soil Layer Gradation Results

Test Number	Date Sampled	Material Description	% Passing Sieve Size						Soil Classification
			3/4 inch	1/2 inch	3/8 inch	#10	#40	#200	
SNL MWL 063009-28	6/30/2009	Native Soil Stock Piled	100	100	99	95	88	33	SM
SNL MWL 063009-29	6/30/2009	Native Soil Stock Piled	100	99	99	94	88	33	SM
SNL MWL 063009-30	6/30/2009	Native Soil Stock Piled	100	100	99	96	91	39	SC-SM
SNL MWL Berm-1	6/30/2009	Native Soil Excavated	100	99	99	96	92	30	SM
SNL MWL Berm-2	6/30/2009	Native Soil Excavated	99	98	97	92	86	27	SM
SNL MWL Berm-3	6/30/2009	Native Soil Excavated	99	97	96	91	86	26	SM
SNL MWL Berm-4	7/10/2009	Native Soil Excavated	100	100	100	97	90	28	SC-SM
SNL MWL Berm-5	7/10/2009	Native Soil Excavated	100	98	97	91	85	24	SM
SNL MWL Berm-6	7/14/2009	Native Soil Excavated	100	100	100	95	88	32	SM
SNL MWL Berm-7	7/14/2009	Native Soil Excavated	100	99	99	94	88	32	SC-SM
SNL MWL Berm-8	7/14/2009	Native Soil Excavated	100	100	99	95	89	36	SC-SM
SNL MWL Berm-9	7/16/2009	Native Soil Excavated	100	99	99	97	92	38	SC-SM
SNL MWL Berm-10	7/16/2009	Native Soil Excavated	100	100	99	95	90	30	SM
SNL MWL Berm-11	7/16/2009	Native Soil Excavated	100	100	100	96	91	36	SC-SM
SNL MWL Berm-12	7/16/2009	Native Soil Excavated	100	99	98	94	89	32	SC-SM
SNL MWL Berm-13	7/16/2009	Native Soil Excavated	100	100	99	94	89	37	SC
SNL MWL Berm-14	7/16/2009	Native Soil Excavated	100	99	99	97	92	34	SM
SNL MWL Berm-15	7/16/2009	Native Soil Excavated	100	100	100	97	92	37	SC-SM
SNL MWL Berm-16	7/16/2009	Native Soil Excavated	100	100	99	96	90	34	SC-SM
SNL MWL Berm-17	7/23/2009	Native Soil Excavated	100	98	98	93	87	34	SM
SNL MWL Berm-18	7/23/2009	Native Soil Excavated	97	95	94	91	86	26	SM
SNL MWL Berm-19	7/23/2009	Native Soil Excavated	100	100	100	97	92	34	SM

Table 6 Topsoil Gradation Results

Test Number	Date Sampled	Material Description	% Passing Sieve Size						Soil Classification[1]	Gradation/Classification Meet Specification
			3/4 inch	1/2 inch	3/8 inch	#10	#40	#200		
SNL MWL -060209-1	6/2/2009	Topsoil prior to mixing with crushed 3/8" gravel	100	100	100	98	92	32	SM	YES
SNL MWL -060209-2	6/2/2009	Topsoil prior to mixing with crushed 3/8" gravel	100	100	100	94	86	29	SM	YES
SNL MWL -060209-3	6/2/2009	Topsoil prior to mixing with crushed 3/8" gravel	100	100	100	98	93	33	SM	YES
SNL MWL -060209-4	6/2/2009	Topsoil prior to mixing with crushed 3/8" gravel	100	100	100	98	91	30	SM	YES
SNL MWL -060209-5	6/2/2009	Topsoil prior to mixing with crushed 3/8" gravel	100	100	100	97	90	30	SM	YES
SNL MWL -060209-6	6/2/2009	Topsoil prior to mixing with crushed 3/8" gravel	100	100	99	96	90	31	SM	YES
SNL MWL -071009-7	7/10/2009	Topsoil collected from berm on west side of borrow area	100	100	100	97	92	27	SM	YES
SNL MWL 071009-8	7/10/2009	Topsoil collected from berm on west site of borrow area	100	99	99	95	89	21	SM	YES
SNL MWL 071009-9	7/10/2009	Topsoil collected from berm on west side of borrow area	100	100	99	96	90	26	SM	YES
SNL MWL 071409-10	7/14/2009	Topsoil collected from berm on west side of borrow area	100	99	99	95	89	31	SM	YES
SNL MWL 071609-11	7/16/2009	Topsoil collected from berm on west side of borrow area	100	100	100	98	94	36	SC-SM	YES
SNL MWL 071609-12	7/16/2009	Topsoil collected from berm on south side of borrow area	100	100	100	96	90	29	SM	YES

Table 7 Hydraulic Conductivity Results of Eight Native Soil Lifts

Sample Description	Location	Date Sampled	Compaction	Average Saturated Hydraulic Conductivity[+] (K_{sat}) in cm/s*
Native Soil Wedge Lift 1	Grid Block 8	6/22/2009	90.0%	**4.02E-04**
Native Soil Wedge Lift 2	Grid Block 11	6/22/2009	89.0%	**3.58E-05**
Native Soil Lift 3	Collected Prior to Placement	6/17/2009	90.2%	**1.59E-06**
Native Soil Lift 3	Collected Prior to Placement	6/17/2009	89.7%	**1.81E-06**
Native Soil Lift 3	Collected Prior to Placement	6/17/2009	91.0%	**1.98E-06**
Native Soil Lift 4	Grid Block 2	6/30/2009	84.6%	**2.52E-04**
Native Soil Lift 4	Grid Block 6	6/30/2009	81.2%	**1.87E-04**
Native Soil Lift 4	Grid Block 9	6/30/2009	89.9%	**2.14E-04**
Native Soil Lift 5	Grid Block 1	7/9/2009	90.0%	**2.66E-04**
Native Soil Lift 5	Grid Block 4	7/9/2009	95.3%	**1.46E-04**
Native Soil Lift 5	Grid Block 8	7/9/2009	94.6%	**1.63E-04**
Native Soil Lift 6	Grid Block 3	7/14/2009	90.2%	**3.05E-04**
Native Soil Lift 6	Grid Block 6	7/14/2009	90.3%	**3.51E-04**
Native Soil Lift 6	Grid Block 12	7/14/2009	89.5%	**2.55E-04**
Native Soil Lift 7	Grid Block 1	7/22/2009	94.8%	**2.18E-04**
Native Soil Lift 7	Grid Block 5	7/22/2009	94.8%	**1.87E-04**
Native Soil Lift 7	Grid Block 13	7/22/2009	89.5%	**2.50E-04**
Native Soil Lift 8	Grid Block 2	7/27/2009	90.2%	**1.22E-06**
Native Soil Lift 8	Grid Block 7	7/27/2009	90.0%	**1.23E-06**
Native Soil Lift 8	Grid Block 9	7/27/2009	90.0%	**1.38E-06**
Average			**90.2%**	**1.62E-04**
Geometric Mean			**90.2%**	**4.72E-05**
Median			**90.0%**	**1.87E-04**

[+]Minimum Value is 4.6E-04

*Tests were performed using ASTM standard 5856 Rigid Wall

Attachment A
Photographic Log of ET Cover Construction Activities
May – July 2009

Subgrade Layer surface before the start of 2009 cover construction.
View to the north of the south end of MWL - May 20, 2009.

Subgrade Layer surface before the start of cover construction.
View to the south of the north end of MWL - May 20, 2009.

Subgrade Layer surface cleared, watered and rolled/compacted.
View to the north from the south end of the MWL - May 26, 2009.

Subgrade Layer surface on May 27, 2009. View to the Southeast.

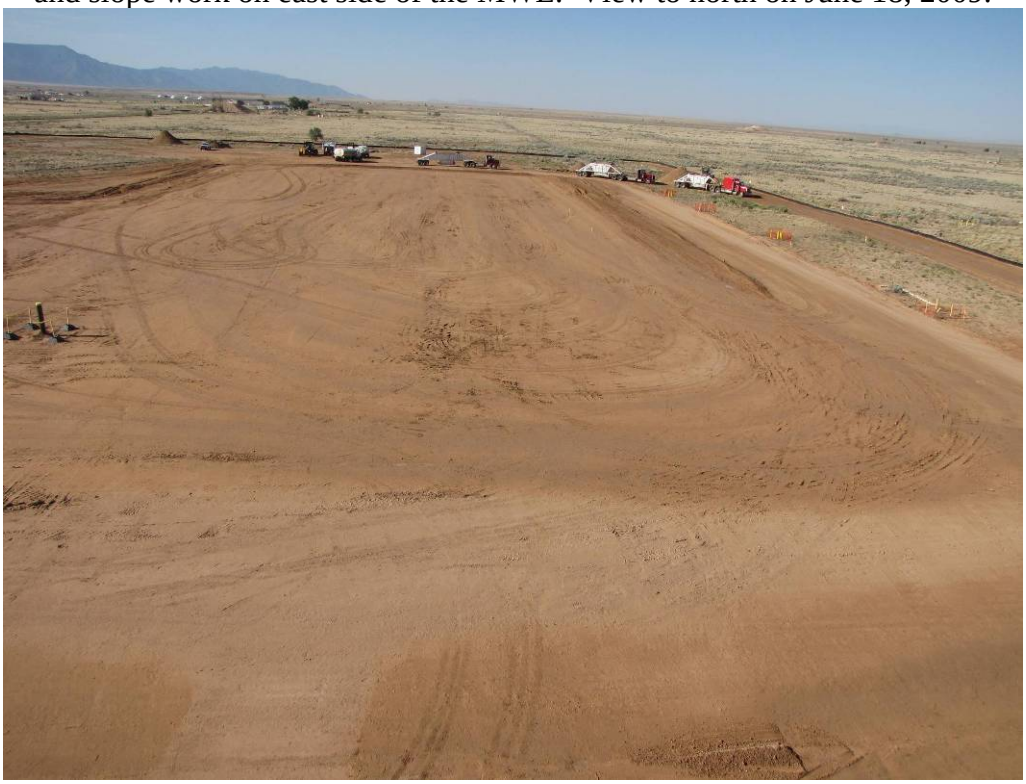
Start of Bio-intrusion Layer test at the south end of landfill.
View to southwest on May 28, 2009.

Spreading rock with bulldozer for Bio-intrusion Layer test.
View to southwest on May 28, 2009.

Bio-intrusion Rock Layer on June 8, 2009. View to north from the south end of the MWL.

Completion of the Bio-intrusion Layer over the Classified Area – northeast end of MWL. View to north on June 12, 2009.

Soil Meniscus Layer (~3 inches thick) covering Bio-intrusion Rock Layer and slope work on east side of the MWL. View to north on June 18, 2009.



North slope completed to 6 to 1 slope and first 2 wedge lifts completed on east side. Lift #3 of Native Soil Layer in progress. View to the south on June 22, 2009.

Bottom dump haul truck placing soil for Lift # 5 at northeast side of the MWL. View to southeast on June 30, 2009.

Borrow Pit Area activities on July 15, 2009. Pug Mill (background) and soil excavation and screening (foreground) operations. View to the south.

Motor grader spreading soil in dog leg area of MWL for Lift # 8.
View to the southwest on July 23, 2009.

Soil being placed to adjust the Native Soil Layer thickness at specific grid points on the west side of the MWL after verification surveys. View to the south on July 31, 2009.

Attachment B

Final Disposition Documentation for the

June 3, 2009 Diesel Spill Waste
and
June 30, 2009 Hydraulic Oil Spill Waste

Attachment B

Final Disposition of the June 3, 2009 Diesel Spill Waste
Waste Manifest 000904423

7 Pages Total
Diesel Spill Waste Represented by
Item #56 on Page 7 of 7

ENTERED JUL 21 2009

Printed: 29-JUN-2009 02:53 PM
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UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	NM5890110518	7	(505)844-4189	000904423 GBF

GENERATOR

5. Generator's Name and Mailing Address
SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION
P.O. BOX 5800, ORG. 04139, MS1117 ALBUQUERQUE, NM 87185
Generator's Phone: 505.844.3470 Attention: ROBERT P. RIVERA

Generator's Site Address (if different than mailing address)
1515 EUBANK BLVD. SE ORG. 04139 / MS1117
ALBUQUERQUE, NM 87123-1117

6. Transporter 1 Company Name
RINCHEM COMPANY, INC.
U.S. EPA ID Number
NMD002208527

7. Transporter 2 Company Name
VEOLIA ES TECHNICAL SOLUTIONS
U.S. EPA ID Number
NJD986631369

8. Designated Facility Name and Site Address
VEOLIA ES TECHNICAL SOLUTIONS L.L.C.
9131 EAST 96TH AVENUE HENDERSON, CO 80640
Facility's Phone: 303 288 4827
U.S. EPA ID Number
COD980591184

9a. HM	9b. U.S. DOT Description (Including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1 RQ HAZARDOUS WASTE, SOLID, N.O.S., 9, NA3077, III (LEAD CONTAMINATED MATERIAL)	001	DF	00002	K	D008		
X	2 RQ HAZARDOUS WASTE, SOLID, N.O.S., 9, NA3077, III (D008)(LEAD CONTAMINATED LAB TRASH)	001	DF	00019	K	D008		
X	3 RQ HAZARDOUS WASTE, SOLID, N.O.S., 9, NA3077, III (D008)(LEAD CONTAMINATED MATERIAL)	001	DF	00019	K	D008		
X	4 RQ HAZARDOUS WASTE, SOLID, N.O.S., 9, NA3077, III (D008,D011)(CADMIUM, LEAD CONTAMINATED MATERIAL)	001	BA	00031	K	D008	D008	D011

14. Special Handling Instructions and Additional Information
1 PO# 103014, NEED CD WHEN DISPOSED. PROFILES = 1. HN593141; 2. HN593141; 3. HN593106; 4. HN593106

WEAR GLOVES, GOGGLES, AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS

EMERGENCY RESPONSE GUIDE NUMBERS: 1. 171; 2. 171; 3. 171; 4. 171

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: ROBERT P/ RIVERA
Signature:
Month Day Year: 06 29 09

INTL

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: CHAD NELSON
Signature:
Month Day Year: 06 29 09

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.
H141	H141	H141	H141

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name
Signature
Month Day Year: 7 9 09

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

Printed: 22-JUN-2005 12:23 PM
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Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: NM5890110518

22. Page 2 of 7

23. Manifest Tracking Number: 000904423GBF

24. Generator's Name: Emergency Response Phone: (505)844-4189

SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION

P.O. BOX 5800, ORG. 04139, MS1111 ALBUQUERQUE, NM 87185 Phone: 505.844.3470 Attn: ROBERT P. RIVERA

25. Transporter 3 Company Name — U.S. EPA ID Number

26. Transporter 4 Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
X	5. RQ WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (D001,D010)(ACETONE, METHANOL MIXTURE)	001	DM	00104	K	D001	F003	D010
X	6. RQ WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), UN1992, I (D018,D022)(ETHYL ETHER, METHYLENE CHLORIDE MIXTURE)	001	DF	00032	K	D001 F002 F003 F005 D018 D022		
X	7. RQ WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), UN1992, II (D004)(ACETONE, GALLIUM ARSENIDE MIXTURE) DOT-SP 13937	001	CF	00035	K	D001	F003	D004
X	8. RQ WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), UN1992, II (D007,D008)(ACETONE, LEAD ZIRCONIUM TITANATE MIXTURE)	001	DM	00154	K	D001 D008	F003	D007
X	9. RQ WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), UN1992, II (D022)(ACETONE, CADMIUM SELENIDE MIXTURES)	001	DF	00017	K	D001 D006	F003 D010	F005 D022
X	10. RQ WASTE TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, II (D004)(GALLIUM ARSENIDE, HYDROFLUORIC ACID CONTAMINATED MATERIAL)	001	DF	00081	K	D004		
X	11. RQ WASTE TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, II (D004)(GALLIUM ARSENIDE, INDIUM ANTIMONIDE CONTAMINATED MATERIAL) DOT-SP 13937	001	CF	00023	K	D004		
X	12. RQ WASTE TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, II (D007,D011)(BARIUM, LEAD ZIRCONIUM TITANATE CONTAMINATED MATERIAL)	001	DM	00123	K	D005 D008	D006 D011	D007
X	13. RQ WASTE TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, II (D008)(LEAD ZIRCONIUM TITANATE CONTAMINATED MATERIAL)	002	DM	00204	K	D008		
X	14. RQ WASTE TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, II (D011)(SILVER VANADATE CONTAMINATED MATERIAL)	001	DF	00004	K	D011		

32. Special Handling Instructions and Additional Information

PROFILES = 5. HN593132; 6. HN593141; 7. HN593141; 8. HN593132; 9. HN593141, 10. HN593138; 11. HN593141, 12. HN593138; 13. HN593105, 14. HN593141

WEAR GLOVES, GOGGLES AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS.

ERGN's: 5. 128; 6. 131, 7. 131; 8. 131, 9. 131; 10. 151; 11. 151, 12. 151, 13. 151, 14. 151

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

34. Transporter 4 Acknowledgment of Receipt of Materials

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H061 H141 H141 H061 H141

H141 H141 H141 H141 H141

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DESIGNATED FACILITY TO GENERATOR

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Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page 3 of 7	23. Manifest Tracking Number
	NM5890110518		000904423GBF

24. Generator's Name — Emergency Response Phone (505)844-4189

SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION

P.O. BOX 5800 ORG 04139, MS11 ALBUQUERQUE, NM 87185 Phone: 505.844.3470 Attn: ROBERT P/ RIVERA

25. Transporter 5 Company Name — U.S. EPA ID Number

26. Transporter 6 Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
X	15. RQ WASTE TOXIC SOLIDS, ORGANIC, N.O.S., 6.1, UN2811, II (D004)(GALLIUM ARSENIDE CONTAMINATED MATERIAL)	001	DF	00055	K	D004		
X	16. RQ WASTE TOXIC SOLIDS, SELF-HEATING, N.O.S., 6.1, (4.2), UN3124, II (D001,D004)(ARSENIC, ACTIVATED CARBON MIXTURE)	003	DM	00282	K	D001	D004	
X	17. RQ WASTE TOXIC, LIQUIDS, ORGANIC, N.O.S., 6.1, UN2810, III (F039)(LEACHATE CONTAMINATED WITH METHYLENE CHLORIDE)	003	DF	00558	K	F039		
X	18. WASTE AEROSOLS, FLAMMABLE, N.O.S., 2.1, UN1950, LIMITED QUANTITY	001	DF	00028	K	D001	D018	D035
X	19. WASTE AEROSOLS, FLAMMABLE, N.O.S., 2.1, UN1950, LIMITED QUANTITY (AEROSOL CANS WITH TRACE BERYLLIUM CONTAMINATION)	001	DF	00010	K	D001		
X	20. WASTE CADMIUM COMPOUNDS, 6.1, UN2570, II (CADMIUM SELENIDE)	001	DF	00003	K	D006	D010	
X	21. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL MIXTURE) DOT-SP 12327	001	CF	00073	K	D001 D035	F003	F005
X	22. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL MIXTURE) DOT-SP 13037	002	CF	00049	K	D001	F003	
X	23. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL MIXTURE) DOT-SP 13037	001	CF	00024	K	D001	F003	D011
X	24. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL MIXTURES) DOT-SP 12327	001	CF	00078	K	D001 D021	F002	F003

32. Special Handling Instructions and Additional Information — PROFILES = 15. HN593141; 16. HN593177; 17. HN593484; 18. HN593138; 19. HN592157; 20. HN593141; 21. HN593141; 22. HN593141; 23. HN593141; 24. HN593141

WEAR GLOVES, GOGGLES, AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS — ERGN's: 15. 154; 16. 135; 17. 153; 18. 126; 19. 126; 20. 154; 21. 128; 22. 128; 23. 128; 24.

TRANSPORTER

33. Transporter 5 Acknowledgment of Receipt of Materials

Printed/Typed Name: CHAD NELSON — Signature — Month Day Year

34. Transporter 6 Acknowledgment of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H141 H141 H141 H141 H141

H141 H141 H141 H141

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

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UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: NM5890110518

22. Page 4 of 7

23. Manifest Tracking Number: 000904423GBF

24. Generator's Name: SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION

Emergency Response Phone: (505)844-4189

P.O. BOX 5800, ORG. 04139, MS11, ALBUQUERQUE, NM 87185 Phone: 505.844.3470 Attn: ROBERT P. RIVERA

25. Transporter 7 Company Name — U.S. EPA ID Number

26. Transporter 8 Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
X	25. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL MIXTURES) DOT-SP 13937	001	CF	00020	K	D001	F002	F003
						D021		
X	26. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL MIXTURES) DOT-SP 13937	001	CF	00040	K	D001	D003	F003
						F005		
X	27. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, METHANOL) DOT-SP 13937	001	CF	00012	K	D001	F003	
X	28. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONE, TOLUENE)	001	DF	00019	K	D001	F003	F005
X	29. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ACETONITRILE, TOLUENE)	001	DF	00022	K	D001	F005	D011
X	30. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (ETHYL ACETATE, METHANOL MIXTURE)	001	CF	00026	K	D001	F003	
X	31. WASTE FLAMMABLE LIQUIDS, N.O.S., 3, UN1993, II (METHANOL, TOLUENE MIXTURES)	001	DF	00038	K	D001	F003	F005
X	32. WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), UN1992, I (ACETONE, CARBON DISULFIDE MIXTURE)	001	DF	00032	K	D001	F002	F003
						F005	D022	D027
X	33. WASTE FLAMMABLE LIQUIDS, TOXIC, N.O.S., 3, (6.1), UN1992, II (ACETONE, 2-CHLOROETHYL PHENYL SULFIDE MIXTURES) DOT-SP 13937	001	CF	00024	K	D001	F002	F003
						F005	D007	D008
X	34. WASTE FLAMMABLE SOLID, TOXIC, INORGANIC, N.O.S., 4.1, (6.1), UN3179, II (SILVER, LEAD LANTHANUM ZIRCONATE TITANATE MIXTURE)	001	DF	00002	K	D001	D008	D011

32. Special Handling Instructions and Additional Information PROFILES = 25. HN593141, 26. HN593141, 27. HN593141, 28. HN593141, 29. HN593141, 30. HN593141, 31. HN593141, 32. HN593141, 33. HN593141, 34. HN593141

WEAR GLOVES, GOGGLES, AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS ERGN's: 25. 128, 26. 128, 27. 128, 28. 128, 29. 128, 30. 128, 31. 128, 32. 131, 33. 131, 34.

TRANSPORTER

33. Transporter 7 Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
CHAD NELSON				

34. Transporter 8 Acknowledgment of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H 1 0 | H 1 0 | H 1 0 | H 1 0

H 1 0 | H 1 0 | H 1 0 | H 1 0

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

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Ship Date 29-JUN-08
Ship Tag: VERSION 29 JUN 2008

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UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number NM5890110518	22. Page 5 of 7	23. Manifest Tracking Number 000904423GBF

24. Generator's Name: SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION
Emergency Response Phone (505)844-4189
P.O. BOX 5800, ORG 04139, MS1117 ALBUQUERQUE, NM 87185 Phone: 505.844.3470 Attn: ROBERT P. RIVERA

25. Transporter 9 Company Name — U.S. EPA ID Number

26. Transporter 10 Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
X	35 WASTE MAGNESIUM POWDER, 4.3, (4.2), UN1418, I	001	DF	00009	K	D001	D003	
X	36 WASTE ORGANOMETALLIC SUBSTANCE, LIQUID, PYROPHORIC, WATER-REACTIVE, 4.2, (4.3), UN3394, I (METHYLALUMINOXANE SOLUTION IN TOLUENE)	001	DM	00013	K	D001	D003	
X	37 WASTE ORGANOMETALLIC SUBSTANCE, SOLID, PYROPHORIC, WATER-REACTIVE, 4.2, (4.3), UN3393, I (LITHIUM DIMETHYLAMIDE)	001	DM	00011	K	D001	D003	
X	38 WASTE PROPANE, 2.1, UN1978	001	DF	00003	K	D001		
X	39 WASTE TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, III (FLUORESCENT LAMPS BROKEN, CONTAMINATED WITH TRACE BERYLLIUM)	001	DF	00011	K	D009		
X	40 WASTE TOXIC SOLIDS, ORGANIC, N.O.S., 6.1, UN2811, III (THIOUREA)	001	DF	00003	K	U219		
X	41 WASTE WATER-REACTIVE SOLID, FLAMMABLE, N.O.S., 4.3, (4.1), UN3132, I (9-BORABICYCLO(3.3.1)NONANE DIMER)	001	DF	00005	K	D001	D003	
X	42 WASTE WATER-REACTIVE SOLID, FLAMMABLE, N.O.S., 4.3, (4.1), UN3132, II (GALLIUM PHOSPHIDE)	001	DF	00002	K	D001	D003	
X	43 WASTE WATER-REACTIVE SOLID, TOXIC, N.O.S., 4.3, (6.1), UN3134, II (ALUMINUM, ANTIMONY MIXTURE)	001	DF	00003	K	D001	D003	
X	44 WASTE ZIRCONIUM POWDER, DRY, 4.2, UN2008, II	001	DF	00014	K	D001	D003	

32. Special Handling Instructions and Additional Information PROFILES = 35. HN593141; 36. HN593141; 37. HN593141; 38. HN593141; 39. HN593141; 40. HN593141; 41. HN593141; 42. HN593141; 43. HN593141; 44. HN593141

WEAR GLOVES, GOGGLES, AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS. ERGN's: 35. 138, 36. 135, 37. 135, 38. 115, 39. 151, 40. 154, 41. 138, 42. 138, 43. 138, 44.

TRANSPORTER

33. Transporter 9 Acknowledgment of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

34. Transporter 10 Acknowledgment of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H141 H141 H141 H141 H141 H141 H141 H141

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: NM5890110518

22. Page 6 of 7

23. Manifest Tracking Number: 000904423GBF

24. Generator's Name: SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION

Emergency Response Phone: (505)844-4189

P.O. BOX 5800, ORG. 04139, MS1117 ALBUQUERQUE NM 87185 Phone: 505.844.3470 Attn: ROBERT P. RIVERA

25. Transporter 11 Company Name — U.S. EPA ID Number

26. Transporter 12 Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes
X	45. AEROSOLS, 2.2, UN1950, LIMITED QUANTITY	001	DF	00012	K	
X	46. COMBUSTIBLE LIQUID, N.O.S., NA1993, III (DIPROPYLENE GLYCOL METHYL ETHER, N-METHYL PYRROLIDINONE)	001	DM	00095	K	
X	47. COMBUSTIBLE LIQUID, N.O.S., NA1993, III (DIPROPYLENE GLYCOL METHYL ETHER, N-METHYL PYRROLIDINONE)	001	DF	00191	K	
X	48. TOXIC LIQUID, INORGANIC, N.O.S., 6.1, UN3287, II (DILUTE HYDROFLUORIC ACID, NICKEL CHLORIDE) DOT-SP 13937	001	CF	00008	K	
X	49. TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, III (HYDROFLUORIC ACID CONTAMINATED MATERIAL) DOT SP 12927	001	CF	00018	K	
X	50. TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, III (TRACE BERYLLIUM CONTAMINATED MATERIAL)	002	DF	00156	K	
X	51. TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, III (TRACE BERYLLIUM CONTAMINATED MATERIAL)	002	BA	00366	K	
X	52. TOXIC SOLID, INORGANIC, N.O.S., 6.1, UN3288, III (TRACE BERYLLIUM CONTAMINATED MATERIAL) DOT SP 13937	001	CF	00012	K	
X	53. TOXIC SOLIDS, ORGANIC, N.O.S., 6.1, UN2811, III (2,2'-DIPYRIDYL)	001	DF	00003	K	
	54. NON REGULATED LIQUID WASTE	002	DF	00198	K	

32. Special Handling Instructions and Additional Information: PROFILES = 45. HN593179; 46. HN593132; 47. HN593134; 48. HN593141; 49. HN593141; 50. HN593194; 51. HN590198; 52. HN593141; 53. HN593141; 54. HN593131

WEAR GLOVES, GOGGLES, AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS

ERGN's. 45. 126, 46. 128, 47. 128, 48. 151, 49. 151, 50. 151, 51. 151, 52. 151, 53. 154

TRANSPORTER

33. Transporter 11 Acknowledgment of Receipt of Materials — Printed/Typed Name — Signature — Month Day Year

34. Transporter 12 Acknowledgment of Receipt of Materials — Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H141 H061 H141 H141

H141 H101 H141 H141 H061

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

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Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: NM5890110518

22. Page 7 of 7

23. Manifest Tracking Number: 000904423GBF

24. Generator's Name: SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION

Emergency Response Phone: (505)844-4189

P.O. BOX 5800 ORG 04139, MS 1177 ALBUQUERQUE, NM 87185 Phone: 505.844.3476 Attn: ROBERT P. RIVERA

25. Transporter 13 Company Name — U.S. EPA ID Number

26. Transporter 14 Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes
	55 NON REGULATED LIQUID WASTE DOT SP 13037	002	CF	00072	K	
	56 NON REGULATED SOLID WASTE	001	DM	00180	K	
	57 NON REGULATED SOLID WASTE	001	DF	00005	K	
	58 NON REGULATED SOLID WASTE	002	DF	00165	K	
	59 NON REGULATED SOLID WASTE DOT-SP 13037	001	CF	00005	K	

32. Special Handling Instructions and Additional Information: PROFILES : 55. HN593141 56. HN593179 57. HN593141, 58. HN593179 59. HN593141

WEAR GLOVES, GOGGLES, AND PROTECTIVE CLOTHING WHEN HANDLING CONTAINERS.

TRANSPORTER

33. Transporter 13 Acknowledgment of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

34. Transporter 14 Acknowledgment of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

H141 H141 H141 H141 H141

EPA Form 8700-22A (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

Attachment B

Final Disposition of the June 30, 2009 Hydraulic Oil Spill Waste Bill of Lading and Shipment Record

3 Pages Total
Hydraulic Oil Spill Waste Represented by Highlighted Item on Page 1

RINCHEM COMPANY, INC.
6133 EDITH BOULEVARD NE
ALBUQUERQUE, N.M. 87107
PHONE (505) 345-3655

BILL OF LADING

Date: 01 SEP 2009
Number: BL1786

Ship to: RIO RANCHO SANITARY LANDFILL
33RD & NORTHERN BLVD.
P.O. BOX 15700
RIO RANCHO, NM 87174
505.892.2055

EPA # NONE

Ship From: SANDIA NATIONAL LABORATORIES ON BEHALF OF THE U.S. NATIONAL NUCLEAR SECURITY ADMINISTRATION
P.O. BOX 5800, ORG. 04139, MS1117
ALBUQUERQUE, NM 87185
505.844.3470

EPA # NM5890110518

Ship Via: RINCHEM COMPANY, INC.

Due Date: 01 SEP 2009

nits			Quantity		
ntained	HM Package	Description	Net	Gross	
001	BA	NON REGULATED SOLID WASTE	148	148	Kilograms
001	DM	NON REGULATED SOLID WASTE	238	238	Kilograms
004	BA	NON REGULATED SOLID WASTE	533	533	Kilograms

Emergency Response Numbers

Special Handling Instruction and Additional Information
.PROFILE# 100048NM. SHIPMENT# 58689. PO# 109022. NEED CD WHEN DISPOSED.
.PROFILE# 08037B. SHIPMENT# 58390.
.PROFILE# ~~07798.00~~ 04779B SHIPMENT# 58693.

R. Morales 9-1-09
Transporter Date

Avoid contact with material.
Wear gloves, goggles, and protective clothing when handling material.
If unable to deliver, return to Generator.

For Emergencies Contact:
Sandia National Labs at
505.844.4169

09-1-09

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATION OF THE DEPARTMENT OF TRANSPORTATION.

SIGNATURE Robert Rivera 9-1-09
DELIVERED RETURNED
Deposit Drums Deposit Drum
RECEIVED BY

SPECIAL WASTE SHIPMENT RECORD

Rio Rancho Sanitary Landfill / Valencia Regional Landfill & Recycling Facility Shipment **№ 58690**

Mailing Address:	❑ *Physical Address:*	❑ *Physical Address:*
P.O. Box 15700	33rd St. & Northern Blvd.	1600 W. Highway 6
Rio Rancho, NM 87174	Rio Rancho, NM 87144	Los Lunas, NM 87031
505/892-2055	SWM #231402	SWM #013230 (sp)

Profile # 08037B

1. Generator's work site name and address
Sandia National Laboratories, 1515 Eubank Blvd. S.E., Albuquerque, NM 87123-1117

2. Generator's name and address
Sandia National Laboratories on behalf of the U.S. National Nuclear Security Administration
1515 Eubank Blvd. SE
Albuquerque, NM 87123-1117

Generator's Telephone no.
(505) 844 - 3470

3. Authorized Agent's name and mailing address (if different from #2)

Agent's Telephone no.

4. Proper name and type of waste	5. Containers No.	Type	6. Total quantity (yd3) (tons)
Soil Contaminated With > 1000 PPM TPH	1	Drums	233 Kilograms

7. Special handling instructions: **SEE BILL OF LADING 1786**

8. GENERATOR'S OR AUTHORIZED AGENT'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway in accordance with applicable international and government regulations.

I hereby certify that the above named material does not contain free liquid as defined by 40CFR Part 258.28 and is not a hazardous waste as defined by 40CFR 261 or any applicable state law.

Generator's or Authorized Agent's printed/typed name	Signature	Month / Day / Year
Robert P. Rivera	[signature]	09 /01/ 09

9. Transporter 1 (Acknowledgement of receipt of materials)

Printed/typed name, address, telephone no.	Signature	Month / Day / Year
Rinchem Company Inc 6133 Edith Blvd NE (505) 345-3655 Albuquerque, NM 87107	[signature]	09 /01 /09

10. Transporter 2 (Acknowledgement of receipt of materials)

Printed/typed name, address, telephone no.	Signature	Month / Day / Year
		/ /

11. Discrepancy indication space

12. Waste disposal site location coordinates
[illegible]

Received By (printed/typed name):	Signature	Month / Day / Year
[illegible]	[signature]	09 2 09

White/GEN Yellow/CUSTOMER Pink/LANDFILL

SNL CONTAINER CONTENT FORM
Sandia National Laboratories/New Mexico
NM Hazardous Waste Management Facility

Cntnr Barcode / ID: **SNLA091275** / 1424934 Pack Type: N Container Type: DM55X Approval Number: 08037B Waste Accum Start Date: 15 JUL 2009 Gross Weight: 233KG

DOT Shipping Name: NON REGULATED SOLID WASTE

Drum EPA Codes NCR

UDM: D81

Package No.	DR-Line	Waste ID	Solid Stream Name	Weight	EPA Codes
P1423217	DR2061435-1	A50672	SOIL CONTAMINATED WITH HYDRAULIC OIL	233 KG	NCR