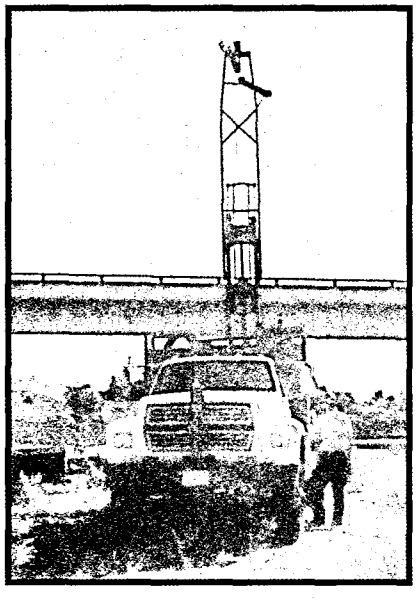
LIMITED INITIAL SITE CHARACTERIZATION REPORT
MARICOPA COUNTY SHERIFF'S SHOOTING RANGE
NEAR MCMICKEN DAM
SURPRISE, ARIZONA
CONTRACT FCD 2004C029
WORK ASSIGNMENT NO. 3



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Ninyo & Moore

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PREPARED FOR:
Flood Control District of Maricopa County
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Phoenix, Arizona 85009

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January 30, 2006
Project No. 600996003

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Mr. Michael Greenslade, P.E.
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009

Subject: Limited Initial Site Characterization Report
Maricopa County Sheriff's Shooting Range
Near McMicken Dam
Contract FCD 2004C029
Work Assignment No. 3

Dear Mr. Greenslade:

In accordance with your authorization, Ninyo & Moore is pleased to provide this Limited Initial Site Characterization report regarding the Maricopa County Sheriff's Shooting Range located near the McMicken Dam in Surprise, Arizona. The activities were performed under Flood Control District of Maricopa County Contract No. 2004C029, Work Assignment No. 3, and in general accordance with Ninyo & Moore's revised proposal dated June 30, 2005.

Ninyo & Moore appreciates this opportunity to be of service to Flood Control District of Maricopa County. If you have any questions or comments regarding this report, please call the undersigned at your convenience.

Respectfully submitted,
NINYO & MOORE

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EXECUTIVE SUMMARY

Ninyo & Moore was retained by the Flood Control District of Maricopa County to perform a Limited Initial Site Characterization at the Maricopa County Sheriff's Office Shooting Range located near McMicken Dam in Surprise Arizona. The Sheriff's Shooting Range consists of an approximately 19.72-acre area located in Section 24 of Township 4 North, Range 2 West, Gila and Salt River Meridian and is located within Maricopa County Assessor's Parcel Number 503-75-016. The range is situated just east of McMicken Dam and north of the McMicken Dam principal spillway. The current shooting range configuration consists of five bays. Bay 1 is used as a rifle range, Bay 2 through Bay 4 is used as pistol and shotgun ranges and Bay 5 is used for Special Weapons and Tactics training. Approximately four open burning treatment units (burn pits) were reportedly used for the demilitarization of small arms ammunition. At the time of this report remediation of the burn pits was in progress with approximately 80 cubic yards of material excavated being disposed of as a hazardous waste because the material failed the toxicity characteristic leaching procedure test for lead. Additionally, a dumpster previously used to burn fireworks and chemical irritants, such as chloroactonphenone, o-chlorobenzylidenemalononitrile, and pepper spray was removed from the site in December of 2005 according to the Maricopa County Department of Risk Management.

The scope of work summarized in this report included use of visual and field instrumentation delineation of lead, collection of soil samples, processing and screening of soil samples, analysis of selected processed samples at an analytical laboratory, providing recommendation for further assessment or remediation and provide available best management practices for continued operations of the shooting range.

Based on the results of the Limited Initial Site Characterization, Ninyo & Moore has reached the following conclusions:

- Lead is the primary contaminant of concern for the Sheriff's Shooting Range due to the detected concentrations of total and leachable lead in the berms and range soil.
- The berms generally are impacted by metals in approximately the upper 2 to 3 feet of soil in areas receiving direct fire and the upper 6 inches in areas of indirect fire.
- Based on visual observations and X-Ray Fluorescence Spectroscopy (XRF) results, the range floor is impacted by metals in approximately the upper 6 inches of soil.
- Soil in the berms contains leachable lead at a concentration that would render it hazardous waste if it were to meet the definition of solid waste.

Based on the results of the Limited Initial Site Characterization, Ninyo & Moore recommends the following:

- Assessing the applicability of soil washing to remove lead and other metal contaminants from the soil by conducting a scalable treatability study.

- Evaluation of explosives used in the SWAT Area, including additional research and sampling activities.

- Additional assessment to further define the vertical and horizontal extent of metals impacts. The additional sampling and analysis would serve to provide a more accurate picture with which to estimate remediation costs.

- Additional correlation studies to further develop the use of XRF as a field screening device for this site.

- To evaluate methods of reducing the leachable lead, a full-scale treatability study be performed on site soil to select the appropriate process and process controls.

In addition, Ninyo & Moore recommends the following for range operations and range clean-up:

- The range operator should review and implement a program of lead reclamation to reduce the lead available for weathering and increased potential for mobility.

- The range operator should review and implement a program to reduce the small particle lead. This lead has a higher potential for migration and is present in significant quantities at the range.

- When performing range clean-up activities, additional sampling should be performed to assess the vertical and horizontal extent of impacted soils.

1. INTRODUCTION

Ninyo & Moore was retained by the Flood Control District of Maricopa County to perform a limited initial site characterization for the Maricopa County Sheriff's Shooting Range, located near McMicken Dam, Surprise, Arizona (Figure 1).

The Sheriff's Shooting Range consists of an approximately 19.72-acre area located in Section 24 of Township 4 North, Range 2 West, Gila and Salt River Meridian and is a portion of Maricopa County Assessor's Parcel Number 503-75-016. The range is situated just east of McMicken Dam and north of the McMicken Dam principal spillway. The current shooting range configuration consists of 5 bays. Bay 1 is used as a rifle range, Bay 2, Bay 3, and Bay 4 are used as pistol and shotgun ranges, and Bay 5 is used for Special Weapons and Tactics (SWAT) training. In addition, approximately four open burning treatment units (burn pits) were reportedly used for the demilitarization of small arms ammunition. At the time of this report remediation of the burn pits was in progress with approximately 80 cubic yards of material excavated being disposed of as a hazardous waste because the material failed the toxicity characteristic leaching procedure (TCLP) test for lead. Additionally, a dumpster previously used to burn fireworks and chemical irritants, such as chloroactonphenone (CN), o-chlorobenzylidenemalononitrile (CS), and pepper spray was removed from the site in December of 2005, according to the Maricopa County Department of Risk Management.

This study was performed concurrently with a companion study at the Surprise Sportsman's Club Shooting Range on an adjacent portion of the parcel.

2. SITE DESCRIPTION

2.1. Topography and Surface Drainage

A review of the United States Geological Survey (USGS), 7.5-Minute Topographic Map Series, McMicken Dam, Arizona, dated 1957 (photorevised 1981), indicated that the site is located in an undeveloped area and has an elevation of approximately 1,345 feet with a gentle slope to the southeast.

The surface drainage patterns are not defined, with the exception of a ditch running north-east-southwest in the eastern portion of the site, near the small arms burn pits. The ditch is reportedly designed to promote infiltration and retain waste on site.

2.2. Geology

The Sheriff's Shooting Range is located in the Sonoran Desert Section of the Basin and Range Physiographic Province, which is typified by broad alluvial valleys separated by steep, discontinuous, sub-parallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to several thousands of feet. These basins filled with alluvium from the erosion of the surrounding mountains, as well as from deposition from rivers. Coarser-grained alluvial material was deposited at the margins of the basins near the mountains. The surface geology of the area is described as Quaternary deposits of silt, sand, and gravel.

The site is located in the West Salt River Valley Sub-basin, which consist of an alluvial basin surrounded by mountains. The basin is underlain by sedimentary deposits. Generally, the subsurface soils at the site consist of deposits of unconsolidated to consolidated gravel, sand, silt, and clay. Based on our review of the United States Department of Agriculture (USDA), Soil Survey, Maricopa County, Arizona, Central Part, the site is a mixture of three different soil types: The Vecont Loam, which is generally found in concave stream channels and depressions in valley plains and alluvial fans near McMicken Dam, the Coolidge-Tremant Complex, which is primarily level soil in valley plains and alluvial fans in the northwestern part of the Salt River Valley, and the Mohall Loam, which is primarily found in fairly level in old alluvial fans and valley plains. The three soil types primarily consist of deeper, heavily drained soils that formed in older alluvium fans and plains. These soil types are derived from a wide mixture of rocks including, limestone, granite andesite, basalt, schist, rhyolite, and/or granite-gneiss.

2.2.1. Site Soils

The Sheriff's Range is located in the Mohall loam soil association described as well-drained and nearly level loam soils with visible lime at moderate depths that tend to form on old alluvial fans and valley plains. The general profile for the Mohall loam soil as described in the Soil Survey of Maricopa County, Arizona is a surface layer of loam 6 to 16 inches thick, a subsurface layer of yellowish-red to reddish-brown clay loam to a depth of 25 inches, and light-brown loam to a depth of 42 inches. The underlying material is light-brown very fine sandy loam to a depth of 60 inches. Below a depth of approximately 26 inches the soil contains a large concentration of lime.

Soil samples during taken during the sampling event were described as brown, silty-sand with 5 to 10% gravels, and 0 to 5% caliche nodules varying in size from approximately 2 mm to 2 cm in diameter. In-house laboratory tests conducted on a composite sample from the range yielded a bulk density of approximately 1.76 grams per cubic centimeter, a clay content under 15%, a plasticity index of 7, and a pH of 7.9. A sieve analysis of the composite sample showed approximately 41% of the sample passing the #200 sieve. The berms in general showed incipient caliche at approximately depths of 7 to 8 inches.

2.3. Groundwater

The site is located within the West Salt River Valley Sub-basin of the Phoenix Active Management Area. According to the Arizona Department of Water Resources (ADWR), 2002-2003 Hydrologic Map Series Report No. 35, the depth to the regional aquifer at the site varies from approximately 485 to 500 feet below ground surface (bgs) (ADWR, 2003). The groundwater flow is generally towards the southeast; however, specific groundwater flow direction at the site may vary.

3. SCOPE OF WORK

The scope of work for this report included the visual and field instrumentation delineation of metals, collection of soil samples, processing and screening of soil samples, analysis of selected processed samples at an analytical laboratory, providing recommendations for further assessment or remediation and providing available best management practices (BMPs) for continued operations of the Sheriff's Shooting Range.

4. FIELD ACTIVITIES

On September 3, 2005, Mr. Dwight Clark and Ms. Holly Land of Ninyo & Moore, accompanied by Officer Don Burke of the Maricopa County Sheriff's Office performed an initial site reconnaissance to develop a field methodology for this assessment. During the site reconnaissance we observed the face of the berms, the top of the berms and the area behind the berms. Officer Burke noted during the site reconnaissance that the bullets would sometimes flip up and over the berms, landing on the back side of the berm or the surface of McMicken Dam. Additionally, we noted erosion of the berms in discrete locations. Some areas of berm erosion had been previously repaired by Maricopa County Sheriff's Office personnel using soil containing visible bullets.

On October 27 and 28, 2005, Ms. Holly Land and Mr. Keenan Murray of Ninyo & Moore performed field activities including the visual delineation of metals and the collection of soil samples for analysis.

4.1. Visual Delineation

Ninyo and Moore performed a visual delineation of metals impact at the site based on observed bullets, bullet fragments and shot (herein referred collectively as "bullets"). Visible surface bullets at the site were delineated into three categories: high density, moderate density and low density. The catagories were assigned by visibly judging the approximate concentrations in each area of the site relative to each other based on the percentage of the surface area covered by bullets. High concentrations were defined as surface areas of greater than 25% visible bullets, moderate areas were defined as surface areas of typically 5 to 25%

visible bullets and low areas were defined as surface areas of typically less than 5% visible bullets. Typically, high concentrations were observed on berm faces, behind the berms, the downstream McMicken Dam face, and top of the McMicken Dam in the northern portion of the range (behind Bays 1 through 3).

In addition, three areas of high concentrations of bullets were noted outside of the firing direction during the visual delineation. The first was an area of the berm southeast of the SWAT area was noted to contain a high concentration of bullets, possibly from a previous berm repair. The second was an area noted in the *Final Phase I / II - Environmental Site Assessments of Sheriff's Shooting Range, Surprise Arizona, EEC Project No. 203169.01,* dated June 28, 2004, and performed by EEC designated as "Part of Old Berm" near a small drainage containing a visually high percentage of lead. The third was an area along the north berm adjacent to the 100-yard firing position.

The results of visual delineation are provided in Figure 2. To assess the relative impacts within the areas delineated, soil samples were collected for further processing using X-Ray Fluorescence Spectroscopy (XRF) and fixed-base laboratory analytical methods as well as particle size evaluations.

The visual delineation indicated that the metals impact was visibly limited to the upper 2 to 3 feet of soil in the direct fire sections of the berms and upper 6 inches of the indirect fire sections of the berms and range floor. The berms were also noted to have some visible calcification below the 7 inch depth, which will impact the remediation process if excavation is included.

4.2. Collection of Soil Samples

A total of 47 soil samples were collected in the field to support further characterization efforts. The sample locations are presented on Figure 3. Sample locations were chosen to bracket the full range of impacts noted on the site.

5. PROCESSING OF SOIL SAMPLES

5.1. Sample Processing and Screening Methodology

A total of 47 discrete samples were collected at the Sheriff's Shooting Range for processing and analysis. The average soil sample size collected was approximately 3,364 grams with an average bulk density of 1.76 grams per cubic centimeter. The samples were processed in the following manner:

1. Bulk samples were weighed and the weights were recorded on laboratory logs.
2. Samples were initially sieved through a #4 mesh sieve and then through either a #30 or #50 mesh sieve on a mechanical shaker for approximately 10 minutes to disaggregate the soil and debris.
3. The soil fraction ranging from the #4 to #50 mesh sieve was placed in zip lock polyethylene bags, weighed, and the weights were recorded on laboratory logs.
4. For those samples with visible lead, the bullets, bullet jackets, and fragments retained by the #4 mesh sieve were manually separated, weighed, and the weights were recorded on laboratory logs.
5. The smaller fraction was tested for total lead using a portable field XRF in general accordance with USEPA Method 6200 and recorded on laboratory logs.
6. Four representative samples were selected and composited for average bulk density testing by weighing the soil in a 0.25-cubic-foot volume bucket.

Laboratory equipment used was as follows:

- A&D HP-20K Digital Scale with a range of 0.0 to 21,000 grams;
- Field Portable X-Ray Fluorescence Instrument XL-309; and
- ASTM certified brass sieves with steel mesh in various sizes.

5.2. Equipment Decontamination

Sieve equipment as well as the metallic scoop and aluminum bowl used for weighing of sieve fractions was decontaminated between each sieving event as follows:

1. Rinsed with potable water.

2. Scrubbed with sponge and brush using phosphate-free, biodegradable anionic and non-ionic surfactant.
3. Rinsed again with potable water.
4. Allowed to air dry.

Laboratory equipment used was as follows:

- Plastic brush;
- Sponge;
- Phosphate-free, biodegradable surfactant; and
- Potable water.

6. SAMPLE SCREENING RESULTS

Of the 47 soil samples collected, 16 were analyzed as bulk samples by Ninyo & Moore with the XRF prior to sample processing and splitting. The bulk screening results ranged up to 5,480 parts per million (ppm).

The samples were processed to remove the portion of the sample greater than #4 mesh (0.187 inch) sieve. The portion of the sample retained on the #4 mesh sieve was weighed to determine the weight in the size range. This portion of the sample was visually assessed and the bullets removed to weigh the mass of metal in the sample greater than #4 mesh sieve. In general, the samples contained an average of 16% particles greater than #4 mesh sieve by weight. Of this 16%, if visible bullets were present they comprised 52% of the weight of this fraction on average.

The samples were further processed with either a #30 mesh (0.0234 inches) or #50 mesh (0.0117 inches) sieve. The sample fractions were weighed and recorded to note the size distribution of the particles within the sample. The sample fractions in the particle size less than the #30 mesh sieve ranged from 43% to 89% of the total sample weight for those processed with the #30 mesh

sieve. The sample fractions in the particle size less than the #50 mesh sieve ranged from 10% to 62% of the total sample weight for those processed with the #50 mesh sieve.

Following initial sample processing, with the #4 mesh sieve, the samples were further screened with the XRF for total lead on the fraction less than the #30 mesh or #50 mesh sieves. The sample screening results following sample processing ranged up to 5,430 ppm lead. The results displaying the relative mass of the sieved fractions and the screening analytical methods by XRF are presented in Table 1.

XRF screening yielded inconclusive results for some soil samples. However, several of the soil samples yielding inconclusive results for the project were subsequently analyzed using certified laboratory methods, thereby yielding useable data.

Soil samples, by nature, generally are not homogeneous and can exhibit the "nugget effect", causing suspect or erroneous readings with the XRF. The XRF analyzes a small portion of the sample, approximately 5 millimeters square, to a depth of approximately 10 millimeters. If a large rock or other materials (nuggets) are present in the sample, it may shield or shadow the metals in the sample from analysis by the XRF. Consequently, the sample result may be significantly less or greater than the true value.

Ninyo & Moore collected soil samples in pairs at the same location to aid in assessing the depth of impact for the soil in the berm materials. At the location of each pair, one of the samples was collected at the surface and one of the samples was collected at a depth of up to 20 inches below the first sample. The following soil sample pairs were collected in the berm soil: S-60 and S-61, S-67 and S-68, S-69 and S-70, and S-83 and S-84. The relative depths of each sample are displayed in Table 1. The XRF results supported the visual field observation that the metals impact extends to a depth of approximately 2 to 3 feet below the surface of the berms.

Ninyo & Moore also collected samples S-79 and S-80 to aid in the assessment of the depth of impact for the soil in the range floor. The XRF results supported the visual field observation that metals impact exists in near-surface soil in the range floor, to a depth of approximately 6 to 9-inches.

7. LABORATORY ANALYTICAL METHODS

Following sample processing, a total of 20 samples were selected for laboratory analysis by USEPA Method 6010/7471. The samples were selected to bracket the full range of XRF screening results in an attempt to correlate the XRF results with laboratory certified results. Of the 23 samples, 10 were selected for total lead by Inductively Coupled Plasma (ICP) analysis, 7 were selected for ICP Metals (lead, tin, antimony, arsenic, copper and zinc) and 5 were selected for total RCRA Metals (arsenic, barium, cadmium, chromium, lead, selenium and silver) and 1 was selected for TCLP lead using the TCLP sample preparation and total lead analysis on the leachate. The selected soil samples were transported under chain-of-custody (COC) protocol to Del Mar Analytical (an Arizona Department of Health Services [ADHS] certified analytical laboratory, accreditation number AZ0426) following the sample screening discussed in Section 6.

8. ANALYTICAL RESULTS AND DISCUSSION

A summary table of the analytical results is presented in Table 2 with reference to the appropriate regulatory standards. The laboratory analytical report with COC documentation is presented in Appendix A. As a note the samples for the Maricopa County Sheriff's Shooting Range and samples from the Surprise Sportsman's Club Range were analyzed by the subcontract laboratory in the same batch, resulting in the samples being reported in the same report. The results were compared to the State of Arizona Soil Remediation Levels (SRLs), State of Arizona Groundwater Protection Levels (GPLs), and 20 times the RCRA Toxicity Characteristic Leaching Procedure (TCLP) standards.

The 20 times RCRA TCLP concept is outlined in USEPA manual SW-846, Chapter 2, Figure 2-2. The concept provides that if the total concentration of an analyte is less than 20 times the TCLP regulatory limit, then the sample cannot leach enough of that analyte to fail the TCLP. The reason for this is that the TCLP Method 1311 requires a dilution ratio of 1:20; therefore, the concentration of the analyte extracted will be less than or equal to 1/20th of the original concentration of the analyte. Therefore, the RCRA TCLP regulatory limit may be multiplied by 20; if

the results of the total concentration of an analyte is equal to or less than the 20 times RCRA TCLP, then the constituent does not exhibit the characteristic of toxicity as defined by RCRA.

Antimony, arsenic barium, copper, mercury, tin and zinc were detected in the soil samples at concentrations below Arizona SRLs, GPLs and 20 times thresholds for RCRA TCLP standards. However, lead was detected in the samples at elevated concentrations ranging from 13 mg/kg to 17,000 mg/kg. Of the 20 samples analyzed, 17 soil samples had lead concentration above the 20 times threshold for RCRA TCLP standard (100 mg/kg), 11 soil samples had lead concentrations above the Arizona Residential SRL (400 mg/kg) with 9 exceeding the Arizona Non-residential SRL (2,000 mg/kg) and 13 had lead concentrations above the Arizona GPLs (290 mg/kg). The one soil sample selected for TCLP analysis had a concentration of 520 milligrams per liter (mg/L), exceeding the RCRA TCLP threshold of 5 mg/L.

As discussed in Section 6, soil sample pairs were collected in the berm soil and analyzed at the fixed-base laboratory. The relative depths of each sample are displayed in Table 1. The complete sample results for those samples tested are displayed in Table 2. The laboratory results supported the visual field observation that the metals impact extends to a depth of approximately 2 to 3 feet below the surface of the berms in areas receiving direct fire and the upper 6 inches in areas of indirect fire.

The one soil sample exceeding the TCLP threshold for lead was collected from the portion of sample S-55 passing the #50 mesh sieve. Forty-six percent of the sample passed the #50 mesh sieve. The concentration of total lead in the portion of the sample passing the # 50 mesh sieve was reported by the laboratory to be 17,000 mg/kg. The ratio of leachable lead to total lead in the soil sample was approximately 1:40. The results of this sample suggest that the lead in the smaller soil particle sizes is relatively mobile because the ratio is relatively close to 1:20 dilution ratio discussed above for the 20 times RCRA TCLP concept. If this mobility is applied, as an approximation, to the other soil samples, soil samples having total lead concentrations of greater than 200 mg/kg in the sieved portion could exceed the RCRA TCLP threshold.

Ninyo & Moore understands that the TCLP thresholds are for determination of a hazardous waste, and that the berms are not a waste material. However, this data indicates the following: 1) The potential for mobility of the lead in the smaller soil particle sizes is readily detectable with standard analytical methods available such as the TCLP method, 2) If the soil in the berm were to be disposed, it would exceed the characteristic of toxicity for lead (hazardous waste code D008) upon testing for disposal, and 3) If the soil from the berms were to be physically separated or soil washed, the resultant fine particles may still have lead levels similar the initial lead levels of the bulk soil. This latter point is evidenced by the data in Table 1, which shows the sieved sample XRF results being generally comparable to the bulk XRF results. This indicates that a significant portion of the lead present is in the smaller particle sizes.

8.1. Correlation between Laboratory Analytical Results and XRF Screening Results

The USEPA has evaluated the use of XRF data in the characterization of sites and found it to be an acceptable method when used in conjunction with fixed-base laboratory analytical methods. The USEPA recommends that a portion of the XRF samples be analyzed at a fixed-base laboratory to assess the site-specific correlation. The tests generally correlated better if the samples are homogenized and processed through a #30 mesh sieve.

Ninyo & Moore compared the results for total lead to the XRF screening results. Based on the information the XRF generally had a low bias, i.e. XRF screening measurements were generally lower than fixed-base laboratory analytical results, often by a factor of 2 or more. In addition, the XRF screening and the analytical results had a correlation factor (R^2) of 0.79. The correlation factor is a value that ranges from zero to one, and is the fraction of the variance in the two variables that is shared. The closer the correlation factor is to 1, the better the correlation. Based on the calculated correlation factor, the XRF screening results and the analytical data correlate reasonably well for a preliminary field screening method. However, further study and method development may improve the correlation of the readings.

9. BEST MANAGEMENT PRACTICES FOR CONTINUED OPERATION

There are a variety of "Best Management Practices" available for the continued operations of a shooting range while mitigating environmental degradation. The primary document for reviewing the Best Management Practices (BMPs) available is EPA-902-B-01-001, *Best Management Practices for Lead at Outdoor Shooting Ranges*, United States Environmental Protection Agency, January 2001. Additionally, Ninyo & Moore used the following documents in development of this discussion:

- Environmental Management at Operating Outdoor Small Arms Firing Ranges, Interstate Technology Regulatory Council, February 2005.
- Prevention of Lead Migration and Erosion from Small Arms Ranges, United States Army Environmental Center, August 1998.
- Corrective Action at Outdoor Shooting Ranges Guidance Document, Colorado Department of Public Health and Environment, January 2005.
- Environmental Aspects of Construction and Management of Outdoor Shooting Ranges, National Shooting Sports Foundation, 1997.

The selection of BMPs is performed through the evaluation of several site specific factors discussed in the table below:

Site-Specific Factor	Effect
Range Size	Larger ranges distribute the lead over a larger area. This is a particular issue with shotgun ranges. The smaller ranges concentrate the lead and allow for more efficient means of collection.
Soil pH	The ideal soil pH to mitigate lead migration is the 6.5 to 8.5 range.
Soil Type	Gravel may contribute to the ricochet and/or fragmentation of bullets, increasing the possibility of metals migration. Sandy soil will allow for reclamation activities to be conducted more easily. Sandy and gravelly soils allow for more downward mobility of constituents of concern. Clay soils decrease migration of contaminants and will bind lead ions to the clay particles. Clay soils will limit the effectiveness of physical separation processes.

Site-Specific Factor	Effect
Annual Precipitation	The more arid the climate, the lower potential for metals migration.
Topography / Surface runoff	If the runoff is mitigated to remain on site, it will lower the potential impacts from surface water migration.
Groundwater Depth	Relatively deep groundwater table reduces the potential for metals to reach the groundwater.
Vegetation	The lack of vegetation allows the runoff that does reach the boundary of the range to potentially contain more lead. Vegetation will aid in reducing water velocities, allowing particulates to drop out of solution.

Given the above factors it is recommended to control the amount of metals generated in the shooting process and efficiently recover the metals from the bullet containment structures. The following BMPs are submitted for consideration to mitigate the buildup and subsequent migration of metals from the operations of the firing range:

1. Bullet Traps or other containment devices;
2. Metal recovery and recycling;
3. Use of non-lead bullets;
4. Limiting generation of off-site shot fall areas;
5. Ground contouring; and
6. Prompt removal of explosive charge casings.

Bullet Traps or Other Containment Devices - There are several options for bullet traps or other containment devices ranging from the simple use of commercially available bullet traps on fixed target locations to the use of sand traps in a simple berm face.

- **Bullet Traps** - The option that holds much promise in the design of long term effective metal management from firing weapons is a bullet containment trap that is placed in front of the protective impact berms and receives the bullets from behind the target. The benefits of these type systems include the containment of the bullets, and, with some systems, a design that limits the fragmentation of the bullets while containing them. With the bullets contained, the reclamation of the metals can be easily performed on a routine basis and with little effort. Some systems operate as a wet system that will limit the airborne lead produced from the impacts for a more effective containment of the metals. However, these systems are

costly to purchase and require a re-design of the current ranges. A typical wet system 48-inch square box trap costs on the order of $20,000 retail.

- **Sand Traps** - The sand trap type bullet containment system is a variation on the earthen berms currently employed at the range. The design options may include the placement of a retaining or containment wall and floor in the berm face to contain an acceptable layer of sand. The sand is of a uniform particle size and will allow the bullets to decelerate and rest within the sand. This type of system will allow for the convenient removal of the sand for routine screening to remove the bullets and fragments.

- **Earthen Berms** - The current earthen berm system can be considered a containment device in that they collect the bullets from the firing operations and mitigate safety hazards beyond the range areas. Some minor modifications could improve the performance of these earthen berms, improving the environmental sustainability of the range complex. Improvements for consideration include:

  - Sieving of the berm materials to remove rock. This will decrease the potential for ricochet and fragmentation and will facilitate the reclamation process.

  - Increasing the berm height. This will decrease the off-site impacts from ricochet and miss fires.

Metal Recovery and Recycling - The recovery of the metal from the bullets will reduce the total metals at the site, making less available to cause environmental impacts. Several methods for the removal of the lead are available. The use of soil amendments can inhibit particle separation and should only be used after careful consideration. A brief summary of the methods of metals recovery with the benefits of each are given below:

- **Hand Raking and Sifting** - This method of metals recovery is appropriate for the routine maintenance of ranges. Special attention should be applied to the "bullet pockets" behind the targets. This method employs the removal of surface metals from the range areas during routine repairs. The process basically consists of raking the area like one is raking leaves and then sifting the soil through an appropriately sized screen. The metal is then collected for recycling. The facility will need to take great care in ensuring the workers involved are protected from lead hazards, and that the metal is promptly recycled. Storage of metal for periods longer than one year may be considered speculative accumulation by regulatory authorities. This method should be employed on the bullet pockets whenever metals are visible in the pockets to decrease a build up and excessive fragmentation in the bullet pockets. This method will only remove the larger lead particles, and will not reduce the lead already in leachable size ranges. Removal of the larger lead particles will diminish the potential for lead from contributing to the leachable lead in the range.

- **Mechanical Removal and Separation** - This method of metals removal is also appropriate for the routine maintenance of ranges. The process consists of the removal of the top soil or media in the berms and other impacted areas to a depth deep enough to gather the metal bullets and fragments. The soil or media is then screened to remove the bullets and bullet fragments using wet or dry screening. The screening is preferably done wet to minimize dust when a small clay fraction is present in the soil. This type of activity is recommended on a routine basis to decrease the detrimental metal build-up in the soil or media as mentioned above. Additionally, as noted above, only the larger fractions of metals will be removed using these methods; therefore, they are appropriate for routine removal activities.

- **Soil Washing** - The soil washing process is the more aggressive method for the removal of metals from the soil or berm media. This method employs removal and initial screening in the manner described for the Mechanical Removal and Separation wet methods. The soil is then further separated using gravity and chemical reagents. This method is appropriate as part of a long term metals reclamation program for a range, and is performed on an infrequent basis.

Use of Non-Lead Bullets - The elimination of lead from range activities is considered a best management practice in that it removes the lead from the possible contaminants prior to introduction. However, some of the manufacturers' options for non-leaded bullets may still create environmental impacts from the metals employed.

Prevention of Off-Site Shot Fall Areas - Preventing the off-site shot fall from range activities will reduce the potential for environmental impacts from bullets and shot landing in off-site areas. Some ranges in other areas have used shot screens to extend the effective height of the berms and retain the bullets and shot on the range. Detailed engineering studies will provide an appropriate design for this type of BMP and aid in appropriate installation. An alternative to the use of screens would be to raise the level of the berms, as determined by engineering studies.

Ground Contouring - The employment of the ground contouring BMP affects the range surface water or runoff flows as a whole. The berms should be designed with a reduced potential for erosion, and the general range should be designed to retain precipitation. The precipitation may be retained preferably in a lined impoundment to decrease the potential for infiltration, while promoting evaporation. The effective use of this BMP will also decrease the potential for off-site migration through surface waters.

Removal of Explosive Charge Casings - This BMP will aid in reducing impacts from the residual explosives contained in the charge casings used in the SWAT Area. These casings, if left in the elements will allow the migration of explosive compounds to the soil, potentially creating an environmental impact. Additionally, the explosives may migrate by wind and melting to a liquid form in the extreme local climate at the range. To effectively employ this BMP the casings should be removed from the range areas as soon as practicable upon completion of the training exercises

10. CONCLUSIONS

Ninyo & Moore has completed a Limited Initial Site Characterization and has reached the following conclusions:

- Lead is the primary contaminant of concern for the Sheriff's Shooting Range due to the detected concentrations of total and leachable lead in the berms and range soil.
- The berms generally are impacted by metals in approximately the upper 2 to 3 feet of soil in areas receiving direct fire and the upper 6-inches in areas of indirect fire.
- Based on visual observations and X-Ray Fluorescence Spectroscopy (XRF) results, the range floor is impacted by metals in approximately the upper 6 inches of soil.
- Soils in the berms contain leachable lead at a concentration that would render it hazardous waste if it were to meet the definition of solid waste.

11. RECOMMENDATIONS

Based on the results of the Limited Initial Site Characterization, Ninyo & Moore recommends the following:

- Assessing the applicability of soil washing to remove lead and other metal contaminants from the soil by conducting of a scalable treatability study.
- Evaluation of explosives used in the SWAT Area, including additional research and sampling activities.
- Additional assessment to further define the vertical and horizontal extent of metals impacts. The additional sampling and analysis would serve to provide a more accurate picture with which to estimate remediation costs.

- Additional correlation studies to further develop the use of an XRF as a field screening device for the site.

- To revaluate methods for reducing leachable lead, a full-scale treatability study be performed on site soil to select the appropriate process and process controls.

In addition, Ninyo & Moore recommends the following for range operations and range clean-up:

- The range operators should review and implement a program of lead reclamation to reduce the lead available for weathering and increased potential for mobility.

- The range operators should review and implement a program to reduce the small particle lead. This lead has a higher potential for migration and is present in significant quantities at the range.

- When performing range clean-up activities, additional sampling should be performed to assess the vertical and horizontal extent of impacted soils.

12. REFERENCES

Arizona Administrative Code, 1999, Title 18, Environmental Quality Chapter 7, Department of Environmental Quality Remedial Action, Appendix A, Soils Remediation Levels.

Arizona Administrative Code, 1999, Title 18, Environmental Quality Chapter 8, Department of Environmental Quality Waste Management, Appendix A, Soils Remediation Levels.

Arizona Department of Water Resources, 2002-2003, Hydrologic Map Series Report No. 35: dated November 2002 to February 2003.

Code of Federal Regulations, 2004, Title 40, Part 261, Identification and Listing of Hazardous Waste.

Colorado Department of Public Health and Environment, Corrective Action at Outdoor Shooting Ranges Guidance Document: dated January, 2005.

EEC, Final Phase I / II - Environmental Site Assessments of Sheriff's Shooting Range, Surprise Arizona, EEC Project No. 203169.01: dated June 28, 2004.

Interstate Technology Regulatory Council, Environmental Management at Operating Outdoor Small Arms Firing Ranges: dated February, 2005.

National Shooting Sports Foundation, Environmental Aspects of Construction and Management of Outdoor Shooting Ranges: dated 1997.

United States Environmental Protection Agency, Best Management Practices for Lead at Outdoor Shooting Ranges, USEPA-902-B-01-001: January 2001, Region 2.

United States Environmental Protection Agency, 1996, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, USEPA Publication SW-846: dated December.

United States Army Environmental Center, Prevention of Lead Migration and Erosion from Small Arms Ranges: dated August, 1998.

United States Department of Agriculture, Soil Survey of Maricopa County, Arizona, Central Part: dated 1977.

United States Geological Survey (USGS), 7.5-Minute Topographic Quadrangle Map Series, McMicken Dam AZ, 1957, photorevised 1981 Scale 1:24,000.

TABLES

Table 1 - Sample Screening and XRF Results

Sample ID	Sample Depth (bs)	Sample Weight (g)	Bulk XRF (ppm)	Visible Bullets (g)	Sieve Size	Percent Passing	XRF on Passing Percent (ppm)	ICP Lead (mg/kg)
S-54	surface	4,539.4	3,220	363.5	#30	61%	3,790	N/A
S-55	surface	4,398.2	5,480	1,051.9	#50	46%	5,130	17,000
S-56	surface	4,898.7	2,070	1,137.2	#50	43%	3,410	N/A
S-57	surface	5,191.9	4,210	1,925.3	#50	39%	5,430	N/A
S-58	surface	3,702.6	N/A	66.6	#30	79%	2,230	4,300
S-59	surface	3,850.4	N/A	none	#50	10%	251	460
S-60	surface	5,202.8	2,390	2,358.1	#50	35%	3,370	8,400
S-61	20 inches	3,702.1	N/A	none	#30	80%	0.7	360
S-62	surface	4,901.4	3,050	1,961.3	#30	43%	2,810	N/A
S-63	surface	3,697.0	1,320	302.6	#30	79%	1,590	N/A
S-64	surface	3,833.6	688	401.9	#30	59%	614	N/A
S-65	surface	4,302.9	880	859.4	#30	49%	1,300	N/A
S-66	15 inches	3,118.5	N/A	none	#30	57%	80.5	N/A
S-67	surface	3,099.8	N/A	9.7	#30	89%	I	N/A
S-68	6-9 inches	3,259.0	N/A	83.4	#30	58%	1,400	6,300
S-69	surface	3,238.1	N/A	864.8	#50	39%	I	N/A
S-70	3-6 inches	2,983.1	N/A	226.3	#30	63%	1,300	3,500
S-71	surface	3,114.0	N/A	33.6	#50	35%	I	N/A
S-72	6-9 inches	3,072.6	N/A	none	#30	51%	I	N/A
S-73	surface	3,080.2	N/A	none	#30	51%	89.3	N/A
S-74	surface	3,492.6	N/A	none	#50	16%	96.5	N/A
S-75	surface	3,687.2	N/A	none	#30	26%	106	N/A
S-76	surface	3,588.9	N/A	none	#30	38%	145	N/A
S-77	18 inches	2,901.4	N/A	none	#30	64%	17.9	N/A
S-78	surface	3,047.7	N/A	183.6	#30	72%	985	N/A
S-79	surface	3,079.7	N/A	11.4	#50	38%	787	N/A
S-80	6-9 inches	3,063.5	16	none	#50	41%	1.5	N/A
S-81	surface	3,237.7	N/A	11.2	#50	60%	229	N/A
S-82	surface	2,654.1	N/A	none	#50	52%	39.6	N/A
S-83	surface	4,304.3	N/A	1,488	#50	32%	2,440	17,000
S-84	14 inches	2,960.3	N/A	none	#50	56%	22.6	110
S-85	surface	3,386.8	N/A	none	#50	60%	1,040	N/A
S-86	surface	2,414.8	N/A	none	#50	36%	311	380
S-87	surface	2,671.6	N/A	1.3	#50	62%	702	1,900
S-88	surface	2,940.8	N/A	none	#50	43%	I	N/A
S-89	surface	2,476.4	N/A	none	#50	47%	17.3	N/A
S-90	surface	2,785.1	70	21.4	#30	75%	130	N/A
S-91	surface	2,605.5	N/A	16.8	#50	26%	144	180
S-92	surface	2,661.3	N/A	162.9	#30	46%	418	2,200
S-93	surface	2,730.6	I	none	#50	34%	93.3	N/A
S-94	surface	2,721.9	N/A	none	#30	34%	39.8	N/A
S-95	surface	3,006.0	N/A	none	#50	48%	I	N/A
S-96	surface	2,176.3	37	none	#50	32%	18.4	27
S-97	surface	2,831.1	27	35.7	#50	16%	214	230
S-98	surface	2,773.8	N/A	146.1	#30	68%	217	360
S-99	surface	N/A	3	none	N/A	N/A	N/A	14
S-100	surface	N/A	I	none	N/A	N/A	N/A	13

Notes:

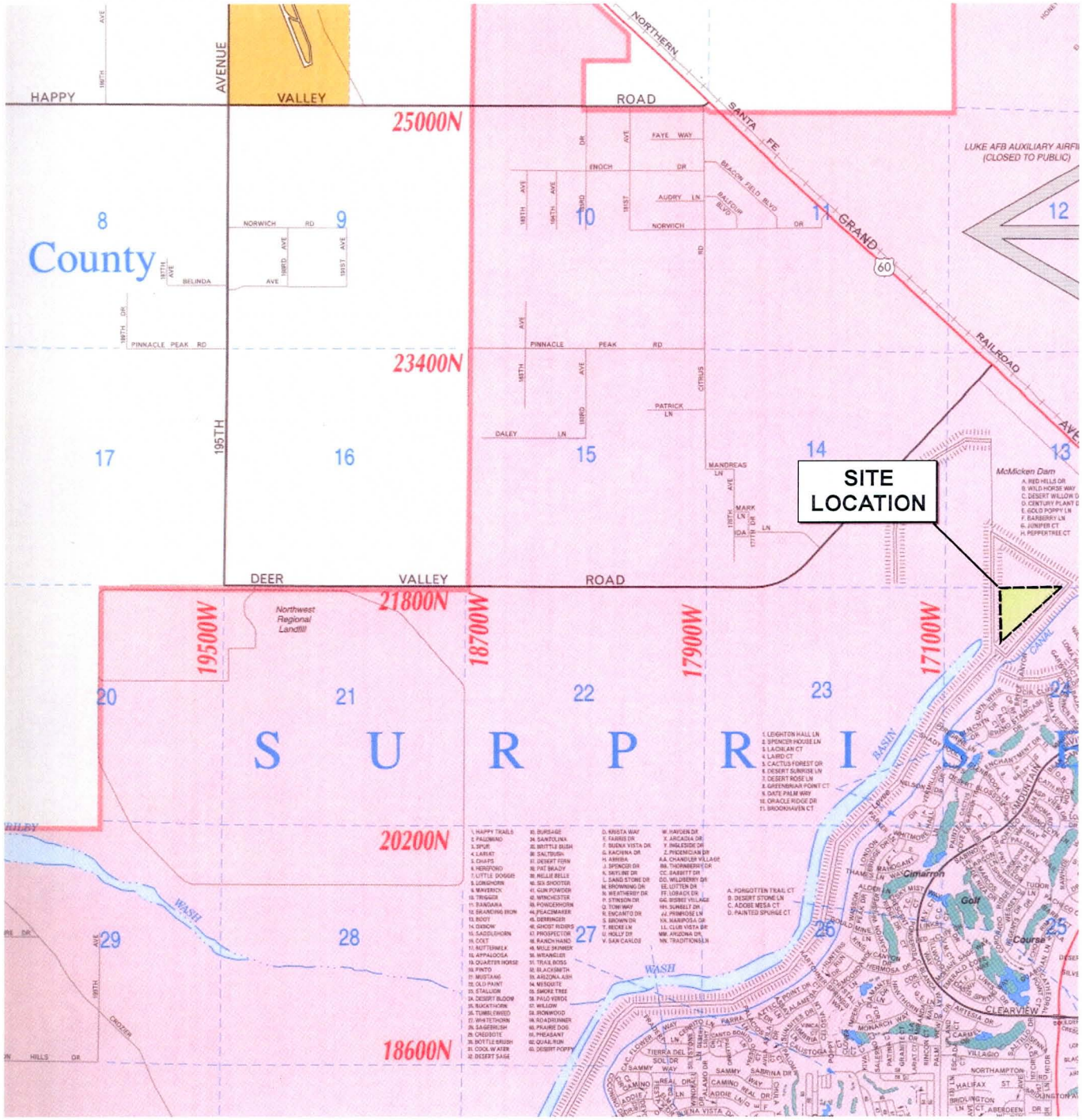
bs	= below surface
g	= grams
I	= Inconclusive Result
ICP	= Inductively Coupled Plasma
mg/kg	= milligrams per kilogram
N/A	= Not applicable
ppm	= parts per million
XRF	= x-ray fluorescence

Table 2 - Summary of Analytical Results

Reporting Data			Regulatory Standards (mg/kg)				Sample ID (mg/kg)																	
Analyte		Method	AZ SRL Residential	AZ SRL Non-Residential	AZ GPLs	RCRA 20x TCLP Level	S-55	S-58	S-59	S-60	S-61	S-67	S-68	S-69	S-70	S-83	S-84	S-86	S-87	S-91	S-92	S-96	S-97	S-98	S-99	S-100
Metals	Antimony	6010	31	680	35	NE	NA	NA	NA	18	<50	NA	NA	NA	10	NA	NA	<5.0	NA	<5.0	NA	NA	NA	NA	<5.0	<5.0
	Arsenic	6010	10	10	290	100	NA	<5.0	NA	5.3	<50	NA	<5.0	<5.0	<5.0	NA	NA	<5.0	NA	<5.0	NA	NA	NA	NA	<5.0	5.0
	Barium	6010	5,300	110,000	12,000	2,000	NA	130	NA	NA	NA	NA	110	110	110	NA	NA	170	NA	NA	NA	NA	NA	NA	NA	NA
	Cadmium	6010	38	850	29	20	NA	<0.50	NA	NA	NA	NA	<0.50	<0.50	<0.50	NA	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	NA
	Chromium	6010	2,100	4,500	590	100	NA	25	NA	NA	NA	NA	25	27	25	NA	NA	28	NA	NA	NA	NA	NA	NA	NA	NA
	Copper	6010	2,800	63,000	NE	NE	NA	NA	NA	340	300	NA	NA	NA	100	NA	NA	62	NA	54	NA	NA	NA	NA	24	30
	Lead	6010	400	2,000	290	100	**17,000**	**4,300**	**460**	**8,400**	**360**	**6,100**	**6,300**	**4,500**	**3,500**	**17,000**	**110**	**380**	**1,900**	**180**	**2,200**	27	**230**	**360**	14	13
	Mercury	7471	6.7	180	12	4.0	NA	0.12	NA	NA	NA	NA	0.036	3.2	<0.020	NA	NA	0.042	NA	NA	NA	NA	NA	NA	NA	NA
	Selenium	6010	380	8,500	290	20	NA	<5.0	NA	NA	NA	NA	<5.0	<5.0	<5.0	NA	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	NA
	Silver	6010	NE	NE	NE	100	NA	<0.50	NA	NA	NA	NA	<0.50	<0.50	<0.50	NA	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	NA
	Tin	6010	46,000	1,000,000	NE	NE	NA	NA	NA	18	79	NA	NA	NA	16	NA	NA	10	NA	9.2	NA	NA	NA	NA	7.7	10
	Zinc	6010	23,000	510,000	NE	NE	NA	NA	NA	84	420	NA	NA	NA	57	NA	NA	150	NA	57	NA	NA	NA	NA	49	60
	[1]TCLP Lead	TCLP	NE	NE	NE	5.0	**520**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
AZ = Arizona
GPL = Groundwater Protection Level
mg/kg = milligrams per kilogram
NA = Compound not analyzed
NE = Not established
RCRA = Resource Conservation and Recovery Act
SRL = Soil Remediation Level
TCLP = Toxicity Characteristic Leaching Procedure
[1]Results of TCLP Lead are in milligrams per liter (mg/L) and are compared to RCRA regulatory threshold of 5 mg/L not to 20x the TCLP standard
Bold indicates exceedance of one or more regulatory standards

FIGURES

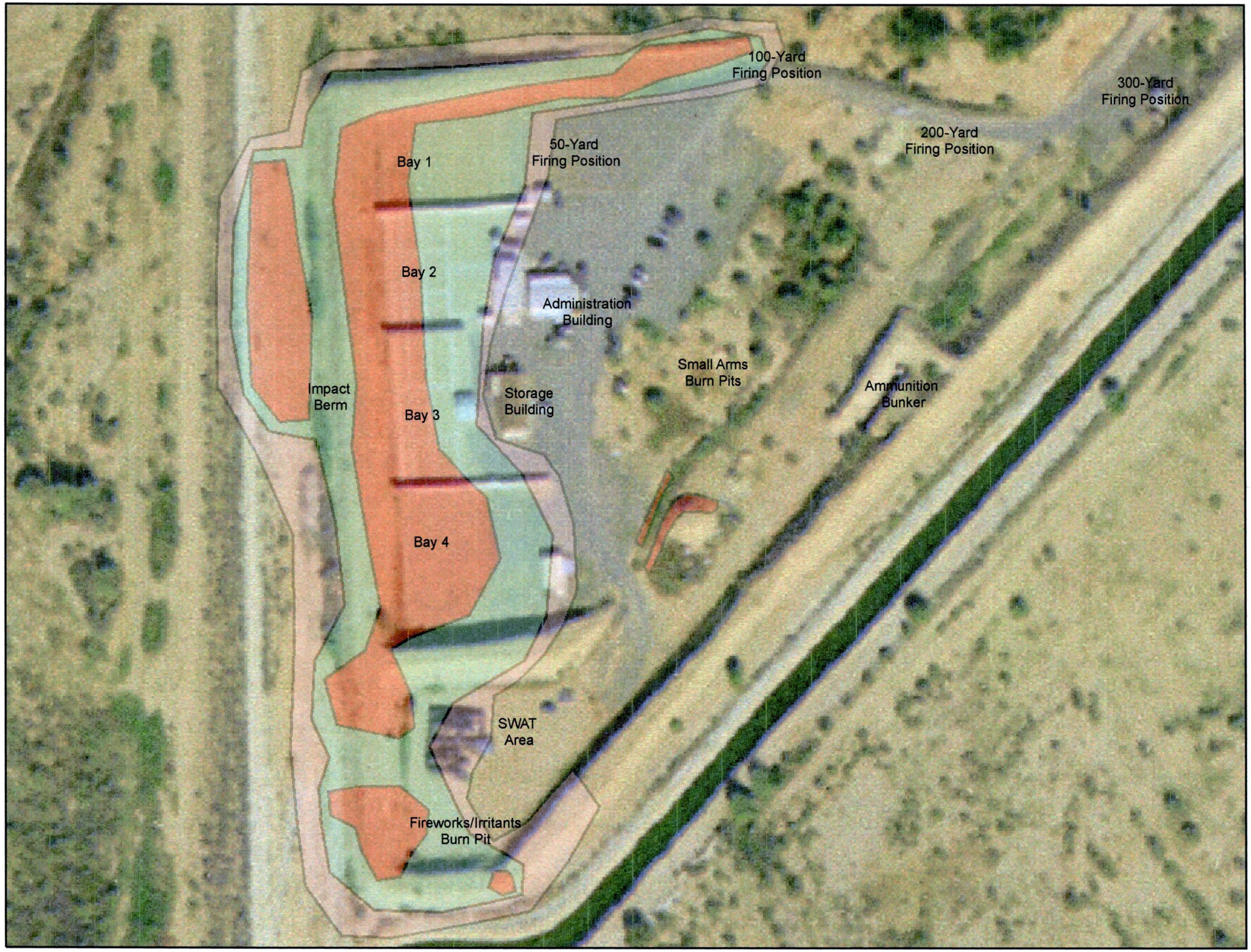


0 3300

Approximate Scale:
1 inch = 3300 feet

Source: Phoenix Mapping Service, Phoenix Metro 2005

Ninyo & Moore	SITE LOCATION MAP	
MARICOPA COUNTY SHERIFF'S SHOOTING RANGE		FIGURE 1
PROJECT No: 600996003	FILE No: 0996slm1105	DATE: 01/06



Sheriff's Shooting Range
Shot Density

high
moderate
low

0 50 yards

N
W E
S

Ninyo & Moore	OBSERVED SURFICIAL BULLET/SHOT DENSITY	
Sheriff's Shooting Range		FIGURE
PROJECT No: 600996003	FILE No: McMickenDam	DATE: 01/06	2

Sheriff's Shooting Range Sample Locations

Sample Location

S-99 Sample ID

0 50 yards

N

W E

S

Ninyo & Moore	SOIL SAMPLE LOCATIONS	
Sheriff's Shooting Range		FIGURE
PROJECT No: 600996003	FILE No: McMickenDam	DATE: 01/06	3

APPENDIX A

ANALYTICAL REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION

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LABORATORY REPORT

Prepared For: Ninyo & Moore
3001 S. 35th St. Suite 6
Phoenix, AZ 85034
Attention: Dwight Clark

Project: 600996003

Sampled: 11/15/05-11/16/05
Received: 11/16/05
Issued: 11/28/05 15:17

NELAP #01109CA Arizona DHS#AZ0426

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.
This entire report was reviewed and approved for release.

CASE NARRATIVE

LABORATORY ID	CLIENT ID	MATRIX
POK0520-01	S-1	Soil
POK0520-02	S-4	Soil
POK0520-03	S-8	Soil
POK0520-04	S-11	Soil
POK0520-05	S-14	Soil
POK0520-06	S-16	Soil
POK0520-07	S-19	Soil
POK0520-08	S-21	Soil
POK0520-09	S-23	Soil
POK0520-10	S-24	Soil
POK0520-11	S-27	Soil
POK0520-12	S-29	Soil
POK0520-13	S-30	Soil
POK0520-14	S-31	Soil
POK0520-15	S-33	Soil
POK0520-16	S-34	Soil
POK0520-17	S-35	Soil
POK0520-18	S-39	Soil
POK0520-19	S-41	Soil
POK0520-20	S-43	Soil
POK0520-21	S-44	Soil
POK0520-22	S-46	Soil
POK0520-23	S-47	Soil
POK0520-24	S-50	Soil
POK0520-25	S-51	Soil
POK0520-26	S-52	Soil

Del Mar Analytical - Phoenix
Kiera Hunter
Project Manager

Del Mar Analytical

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Ninyo & Moore
3001 S. 35th St. Suite 6
Phoenix, AZ 85034
Attention: Dwight Clark

Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

LABORATORY ID	CLIENT ID	MATRIX
POK0520-27	S-53	Soil
POK0520-28	S-55	Soil
POK0520-29	S-58	Soil
POK0520-30	S-59	Soil
POK0520-31	S-60	Soil
POK0520-32	S-61	Soil
POK0520-33	S-67	Soil
POK0520-34	S-68	Soil
POK0520-35	S-69	Soil
POK0520-36	S-70	Soil
POK0520-37	S-83	Soil
POK0520-38	S-84	Soil
POK0520-39	S-86	Soil
POK0520-40	S-87	Soil
POK0520-41	S-91	Soil
POK0520-42	S-92	Soil
POK0520-43	S-96	Soil
POK0520-44	S-97	Soil
POK0520-45	S-98	Soil
POK0520-46	S-99	Soil
POK0520-47	S-100	Soil

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Project Manager

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Ninyo & Moore
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Phoenix, AZ 85034
Attention: Dwight Clark

Project ID: 600996003

Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

SAMPLE RECEIPT:	Samples were received intact, at 21°C and with chain of custody documentation.
HOLDING TIMES:	All samples were analyzed within prescribed holding times and/or in accordance with the Del Mar Analytical Sample Acceptance Policy unless otherwise noted in the report.
PRESERVATION:	Samples requiring preservation were verified prior to sample analysis.
QA/QC CRITERIA:	All analyses met method criteria, except as noted in the report with data qualifiers.
COMMENTS:	N1 - Concentration in the MS and/or MSD exceeds the calibration range and therefore result is semi-quantitative.
SUBCONTRACTED:	No analyses were subcontracted to an outside laboratory.

Reviewed By:

Kiera Hunter

Del Mar Analytical - Phoenix
Kiera Hunter
Project Manager

Del Mar Analytical

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Ninyo & Moore
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Attention: Dwight Clark

Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

TOTAL METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POK0520-01 (S-1 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1714	5.0	**12**	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1714	1.0	**150**	1	11/17/2005	11/21/2005	M2
Cadmium	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1714	1.0	**24**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	10	**7100**	2	11/17/2005	11/22/2005	M3
Mercury	EPA 7471A	P5K1805	0.020	**0.044**	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Sample ID: POK0520-02 (S-4 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**45**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-03 (S-8 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1714	2.0	**36**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	5.0	**280**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1714	5.0	**9.7**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1714	5.0	**100**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-04 (S-11 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1714	5.0	**22**	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1714	1.0	**160**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1714	1.0	**24**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	50	**15000**	10	11/17/2005	11/22/2005	
Mercury	EPA 7471A	P5K1805	0.020	**0.13**	1	11/18/2005	11/18/2005	M1
Selenium	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1714	0.50	**0.71**	1	11/17/2005	11/21/2005	

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Project ID: 600996003

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TOTAL METALS

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Sample ID: POK0520-05 (S-14 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1714	5.0	**6.9**	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1714	1.0	**110**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1714	1.0	**19**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	5.0	**2000**	1	11/17/2005	11/21/2005	
Mercury	EPA 7471A	P5K1805	0.020	**0.025**	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Sample ID: POK0520-06 (S-16 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1714	5.0	**13**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1714	2.0	**170**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	5.0	**320**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1714	5.0	**20**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1714	5.0	**59**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-07 (S-19 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**640**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-08 (S-21 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**720**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-09 (S-23 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**770**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-10 (S-24 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**340**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-11 (S-27 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	25	**10000**	5	11/17/2005	11/22/2005	

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Sample ID: POK0520-12 (S-29 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	50	**23000**	10	11/17/2005	11/22/2005	
Sample ID: POK0520-13 (S-30 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1714	5.0	**16**	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1714	5.0	**6.7**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1714	2.0	**78**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	5.0	**4000**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1714	5.0	**17**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1714	5.0	**52**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-14 (S-31 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**20**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-15 (S-33 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1714	5.0	**7.1**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1714	2.0	**32**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	5.0	**27**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1714	5.0	**9.1**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1714	5.0	**79**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-16 (S-34 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**49**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-17 (S-35 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1714	5.0	**5.2**	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1714	1.0	**120**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1714	1.0	**22**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1714	2.0	**39**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	5.0	**1900**	1	11/17/2005	11/21/2005	
Mercury	EPA 7471A	P5K1805	0.020	**0.037**	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1714	5.0	**10**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1714	5.0	**49**	1	11/17/2005	11/21/2005	

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Sample ID: POK0520-19 (S-41 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1714	5.0	**7.1**	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1714	1.0	**180**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1714	1.0	**22**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1714	25	**8900**	5	11/17/2005	11/22/2005	
Mercury	EPA 7471A	P5K1805	0.020	**0.10**	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1714	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1714	0.50	ND	1	11/17/2005	11/21/2005	
Sample ID: POK0520-20 (S-43 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1714	5.0	**1200**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-21 (S-44 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	M2
Arsenic	EPA 6010B	P5K1715	5.0	**5.7**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	2.0	**26**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**450**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1715	5.0	**7.5**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	5.0	**42**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-22 (S-46 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**1500**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-23 (S-47 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**45**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-24 (S-50 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	2.0	**37**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**69**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1715	5.0	**12**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	5.0	**66**	1	11/17/2005	11/21/2005	

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Sample ID: POK0520-25 (S-51 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	5.0	**24**	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1715	5.0	**14**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	2.0	**150**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**4200**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1715	5.0	**45**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	5.0	**73**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-26 (S-52 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**360**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-27 (S-53 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**22**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-28 (S-55 - Soil)				**Sampled: 11/15/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	25	**17000**	5	11/17/2005	11/22/2005	
Sample ID: POK0520-29 (S-58 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/23/2005	
Barium	EPA 6010B	P5K1715	1.0	**130**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1715	1.0	**25**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**4300**	1	11/17/2005	11/21/2005	
Mercury	EPA 7471A	P5K1805	0.040	**0.12**	2	11/18/2005	11/18/2005	D1
Selenium	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	

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Sample ID: POK0520-30 (S-59 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**460**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-31 (S-60 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	5.0	**18**	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1715	5.0	**5.3**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	2.0	**340**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	10	**8400**	2	11/17/2005	11/22/2005	
Tin	EPA 6010B	P5K1715	5.0	**18**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	5.0	**84**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-32 (S-61 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	50	ND	10	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1715	50	ND	10	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	20	**300**	10	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	50	**360**	10	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1715	50	**79**	10	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	50	**420**	10	11/17/2005	11/21/2005	
Sample ID: POK0520-33 (S-67 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	10	**6100**	2	11/17/2005	11/22/2005	
Sample ID: POK0520-34 (S-68 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1715	1.0	**110**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1715	1.0	**25**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	10	**6300**	2	11/17/2005	11/22/2005	
Mercury	EPA 7471A	P5K1805	0.020	**0.036**	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	

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Sample ID: POK0520-35 (S-69 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Arsenic	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1715	1.0	**110**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1715	1.0	**27**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**4500**	1	11/17/2005	11/21/2005	
Mercury	EPA 7471A	P5K1805	0.10	**3.2**	5	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Sample ID: POK0520-36 (S-70 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	5.0	**10**	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1715	1.0	**110**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1715	1.0	**25**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	2.0	**100**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**3500**	1	11/17/2005	11/21/2005	
Mercury	EPA 7471A	P5K1805	0.020	ND	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Silver	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1715	5.0	**16**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	5.0	**57**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-37 (S-83 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	25	**17000**	5	11/17/2005	11/22/2005	
Sample ID: POK0520-38 (S-84 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**110**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-39 (S-86 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	
Barium	EPA 6010B	P5K1715	1.0	**170**	1	11/17/2005	11/21/2005	
Cadmium	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Chromium	EPA 6010B	P5K1715	1.0	**28**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1715	2.0	**62**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1715	5.0	**380**	1	11/17/2005	11/21/2005	
Mercury	EPA 7471A	P5K1805	0.020	**0.042**	1	11/18/2005	11/18/2005	
Selenium	EPA 6010B	P5K1715	5.0	ND	1	11/17/2005	11/21/2005	

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TOTAL METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POK0520-39 (S-86 - Soil) - cont.				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Silver	EPA 6010B	P5K1715	0.50	ND	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1715	5.0	**10**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1715	5.0	**150**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-40 (S-87 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1715	5.0	**1900**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-41 (S-91 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1716	5.0	ND	1	11/17/2005	11/21/2005	M2
Arsenic	EPA 6010B	P5K1716	5.0	ND	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1716	2.0	**54**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1716	5.0	**180**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1716	5.0	**9.2**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1716	5.0	**57**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-42 (S-92 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1716	5.0	**2200**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-43 (S-96 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1716	5.0	**27**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-44 (S-97 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1716	5.0	**230**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-45 (S-98 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Lead	EPA 6010B	P5K1716	5.0	**360**	1	11/17/2005	11/21/2005	
Sample ID: POK0520-46 (S-99 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1716	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1716	5.0	ND	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1716	2.0	**24**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1716	5.0	**14**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1716	5.0	**7.7**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1716	5.0	**49**	1	11/17/2005	11/21/2005	

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TOTAL METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POK0520-47 (S-100 - Soil)				**Sampled: 11/16/05**				
Reporting Units: mg/kg								
Antimony	EPA 6010B	P5K1716	5.0	ND	1	11/17/2005	11/21/2005	
Arsenic	EPA 6010B	P5K1716	5.0	**5.0**	1	11/17/2005	11/21/2005	
Copper	EPA 6010B	P5K1716	2.0	**30**	1	11/17/2005	11/21/2005	
Lead	EPA 6010B	P5K1716	5.0	**13**	1	11/17/2005	11/21/2005	
Tin	EPA 6010B	P5K1716	5.0	**10**	1	11/17/2005	11/21/2005	
Zinc	EPA 6010B	P5K1716	5.0	**60**	1	11/17/2005	11/21/2005	

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TCLP METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	TCLP Limit	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: POK0520-01 (S-1 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**160**	5	5.0	11/21/2005	11/23/2005	
Sample ID: POK0520-05 (S-14 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**65**	5	5.0	11/21/2005	11/23/2005	M1
Sample ID: POK0520-12 (S-29 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**180**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-14 (S-31 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**0.41**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-18 (S-39 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**52**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-22 (S-46 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**11**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-25 (S-51 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**120**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-26 (S-52 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**0.66**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-27 (S-53 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	0.25	**8.8**	5	5.0	11/21/2005	11/27/2005	
Sample ID: POK0520-28 (S-55 - Soil)					**Sampled: 11/15/05**				
Reporting Units: mg/l									
TCLP Lead	EPA 1311/6010B	P5K2101	2.5	**520**	50	5.0	11/21/2005	11/28/2005	

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TCLP EXTRACTION FOR METALS

Analyte	Method	Batch	Extraction Start Date	Extraction End Date	Data Qualifiers
Sample ID: POK0520-01 (S-1 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-05 (S-14 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-12 (S-29 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-14 (S-31 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-18 (S-39 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-22 (S-46 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-25 (S-51 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-26 (S-52 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	

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TCLP EXTRACTION FOR METALS

Analyte	Method	Batch	Extraction Start Date	Extraction End Date	Data Qualifiers
Sample ID: POK0520-27 (S-53 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	
Sample ID: POK0520-28 (S-55 - Soil)			**Sampled: 11/15/05**		
TCLP Extraction	EPA 1311	P5K1718	11/17/2005	11/18/2005	

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METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1714 Extracted: 11/17/05										
Blank Analyzed: 11/21/2005 (P5K1714-BLK1)										
Antimony	ND	5.0	mg/kg							
Arsenic	ND	5.0	mg/kg							
Barium	ND	1.0	mg/kg							
Cadmium	ND	0.50	mg/kg							
Chromium	ND	1.0	mg/kg							
Copper	ND	2.0	mg/kg							
Lead	ND	5.0	mg/kg							
Selenium	ND	5.0	mg/kg							
Silver	ND	0.50	mg/kg							
Tin	ND	5.0	mg/kg							
Zinc	ND	5.0	mg/kg							
LCS Analyzed: 11/21/2005-11/22/2005 (P5K1714-BS1)										
Antimony	90.9	5.0	mg/kg	100		91	80-120			
Arsenic	87.5	5.0	mg/kg	100		88	80-120			
Barium	83.1	1.0	mg/kg	100		83	80-120			
Cadmium	85.3	0.50	mg/kg	100		85	80-120			
Chromium	84.1	1.0	mg/kg	100		84	80-120			
Copper	84.8	2.0	mg/kg	100		85	80-120			
Lead	86.7	5.0	mg/kg	100		87	80-120			
Selenium	87.2	5.0	mg/kg	100		87	80-120			
Silver	86.1	0.50	mg/kg	100		86	80-120			
Tin	87.8	5.0	mg/kg	100		88	80-120			
Zinc	84.0	5.0	mg/kg	100		84	80-120			
LCS Dup Analyzed: 11/21/2005-11/22/2005 (P5K1714-BSD1)										
Antimony	85.3	5.0	mg/kg	100		85	80-120	6	20	
Arsenic	85.8	5.0	mg/kg	100		86	80-120	2	20	
Barium	80.2	1.0	mg/kg	100		80	80-120	4	20	
Cadmium	81.8	0.50	mg/kg	100		82	80-120	4	20	
Chromium	81.2	1.0	mg/kg	100		81	80-120	4	20	
Copper	81.7	2.0	mg/kg	100		82	80-120	4	20	
Lead	84.2	5.0	mg/kg	100		84	80-120	3	20	
Selenium	85.5	5.0	mg/kg	100		86	80-120	2	20	
Silver	82.6	0.50	mg/kg	100		83	80-120	4	20	
Tin	84.7	5.0	mg/kg	100		85	80-120	4	20	

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METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1714 Extracted: 11/17/05										
LCS Dup Analyzed: 11/21/2005-11/22/2005 (P5K1714-BSD1)										
Zinc	81.3	5.0	mg/kg	100		81	80-120	3	20	
Matrix Spike Analyzed: 11/21/2005 (P5K1714-MS1)					**Source: POK0520-01**					
Antimony	107	5.0	mg/kg	100	45	62	75-125			*M2*
Arsenic	111	5.0	mg/kg	100	12	99	75-125			
Barium	225	1.0	mg/kg	100	150	75	75-125			
Cadmium	95.2	0.50	mg/kg	100	ND	95	75-125			
Chromium	119	1.0	mg/kg	100	24	95	75-125			
Copper	270	2.0	mg/kg	100	200	70	75-125			*M2*
Lead	6130	5.0	mg/kg	100	7100	-970	75-125			*N1, M3*
Selenium	102	5.0	mg/kg	100	4.1	98	75-125			
Silver	99.2	0.50	mg/kg	100	0.32	99	75-125			
Tin	141	5.0	mg/kg	100	51	90	75-125			
Zinc	158	5.0	mg/kg	100	78	80	75-125			
Matrix Spike Dup Analyzed: 11/21/2005 (P5K1714-MSD1)					**Source: POK0520-01**					
Antimony	155	5.0	mg/kg	100	45	110	75-125	37	20	*R4*
Arsenic	117	5.0	mg/kg	100	12	105	75-125	5	20	
Barium	212	1.0	mg/kg	100	150	62	75-125	6	20	*M2*
Cadmium	94.2	0.50	mg/kg	100	ND	94	75-125	1	20	
Chromium	117	1.0	mg/kg	100	24	93	75-125	2	20	
Copper	220	2.0	mg/kg	100	200	20	75-125	20	20	*M2*
Lead	7570	5.0	mg/kg	100	7100	470	75-125	21	20	*N1, M3*
Selenium	100	5.0	mg/kg	100	4.1	96	75-125	2	20	
Silver	97.8	0.50	mg/kg	100	0.32	97	75-125	1	20	
Tin	149	5.0	mg/kg	100	51	98	75-125	6	20	
Zinc	156	5.0	mg/kg	100	78	78	75-125	1	20	

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Ninyo & Moore
3001 S. 35th St. Suite 6
Phoenix, AZ 85034
Attention: Dwight Clark

Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1715 Extracted: 11/17/05										
Blank Analyzed: 11/21/2005 (P5K1715-BLK1)										
Antimony	ND	5.0	mg/kg							
Arsenic	ND	5.0	mg/kg							
Barium	ND	1.0	mg/kg							
Cadmium	ND	0.50	mg/kg							
Chromium	ND	1.0	mg/kg							
Copper	ND	2.0	mg/kg							
Lead	ND	5.0	mg/kg							
Selenium	ND	5.0	mg/kg							
Silver	ND	0.50	mg/kg							
Tin	ND	5.0	mg/kg							
Zinc	ND	5.0	mg/kg							
LCS Analyzed: 11/21/2005 (P5K1715-BS1)										
Antimony	90.3	5.0	mg/kg	100		90	80-120			
Arsenic	98.9	5.0	mg/kg	100		99	80-120			
Barium	92.5	1.0	mg/kg	100		92	80-120			
Cadmium	94.9	0.50	mg/kg	100		95	80-120			
Chromium	94.4	1.0	mg/kg	100		94	80-120			
Copper	94.5	2.0	mg/kg	100		94	80-120			
Lead	95.9	5.0	mg/kg	100		96	80-120			
Selenium	97.5	5.0	mg/kg	100		98	80-120			
Silver	95.6	0.50	mg/kg	100		96	80-120			
Tin	97.2	5.0	mg/kg	100		97	80-120			
Zinc	94.8	5.0	mg/kg	100		95	80-120			
LCS Dup Analyzed: 11/21/2005 (P5K1715-BSD1)										
Antimony	92.7	5.0	mg/kg	100		93	80-120	3	20	
Arsenic	99.8	5.0	mg/kg	100		100	80-120	1	20	
Barium	94.5	1.0	mg/kg	100		94	80-120	2	20	
Cadmium	97.4	0.50	mg/kg	100		97	80-120	3	20	
Chromium	95.9	1.0	mg/kg	100		96	80-120	2	20	
Copper	96.5	2.0	mg/kg	100		96	80-120	2	20	
Lead	96.7	5.0	mg/kg	100		97	80-120	1	20	
Selenium	98.7	5.0	mg/kg	100		99	80-120	1	20	
Silver	97.3	0.50	mg/kg	100		97	80-120	2	20	
Tin	97.8	5.0	mg/kg	100		98	80-120	1	20	

Del Mar Analytical - Phoenix
Kiera Hunter
Project Manager

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Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1715 Extracted: 11/17/05										
LCS Dup Analyzed: 11/21/2005 (P5K1715-BSD1)										
Zinc	96.2	5.0	mg/kg	100		96	80-120	1	20	
Matrix Spike Analyzed: 11/21/2005 (P5K1715-MS1)					**Source: POK0520-21**					
Antimony	36.6	5.0	mg/kg	100	ND	37	75-125			*M2*
Arsenic	103	5.0	mg/kg	100	5.7	97	75-125			
Barium	239	1.0	mg/kg	100	130	109	75-125			
Cadmium	91.9	0.50	mg/kg	100	ND	92	75-125			
Chromium	117	1.0	mg/kg	100	21	96	75-125			
Copper	123	2.0	mg/kg	100	26	97	75-125			
Lead	548	5.0	mg/kg	100	450	98	75-125			
Selenium	97.6	5.0	mg/kg	100	ND	98	75-125			
Silver	96.9	0.50	mg/kg	100	0.11	97	75-125			
Tin	96.3	5.0	mg/kg	100	7.5	89	75-125			
Zinc	140	5.0	mg/kg	100	42	98	75-125			
Matrix Spike Dup Analyzed: 11/21/2005 (P5K1715-MSD1)					**Source: POK0520-21**					
Antimony	38.8	5.0	mg/kg	100	ND	39	75-125	6	20	*M2*
Arsenic	109	5.0	mg/kg	100	5.7	103	75-125	6	20	
Barium	241	1.0	mg/kg	100	130	111	75-125	1	20	
Cadmium	97.0	0.50	mg/kg	100	ND	97	75-125	5	20	
Chromium	123	1.0	mg/kg	100	21	102	75-125	5	20	
Copper	128	2.0	mg/kg	100	26	102	75-125	4	20	
Lead	525	5.0	mg/kg	100	450	75	75-125	4	20	
Selenium	103	5.0	mg/kg	100	ND	103	75-125	5	20	
Silver	102	0.50	mg/kg	100	0.11	102	75-125	5	20	
Tin	102	5.0	mg/kg	100	7.5	94	75-125	6	20	
Zinc	144	5.0	mg/kg	100	42	102	75-125	3	20	

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Ninyo & Moore
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Attention: Dwight Clark

Project ID: 600996003

Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1716 Extracted: 11/17/05										
Blank Analyzed: 11/21/2005-11/22/2005 (P5K1716-BLK1)										
Antimony	ND	5.0	mg/kg							
Arsenic	ND	5.0	mg/kg							
Copper	ND	2.0	mg/kg							
Lead	ND	5.0	mg/kg							
Tin	ND	5.0	mg/kg							
Zinc	ND	5.0	mg/kg							
LCS Analyzed: 11/21/2005 (P5K1716-BS1)										
Antimony	93.2	5.0	mg/kg	100		93	80-120			
Arsenic	99.8	5.0	mg/kg	100		100	80-120			
Copper	96.3	2.0	mg/kg	100		96	80-120			
Lead	97.2	5.0	mg/kg	100		97	80-120			
Tin	98.4	5.0	mg/kg	100		98	80-120			
Zinc	96.4	5.0	mg/kg	100		96	80-120			
LCS Dup Analyzed: 11/21/2005 (P5K1716-BSD1)										
Antimony	94.9	5.0	mg/kg	100		95	80-120	2	20	
Arsenic	101	5.0	mg/kg	100		101	80-120	1	20	
Copper	98.9	2.0	mg/kg	100		99	80-120	3	20	
Lead	97.9	5.0	mg/kg	100		98	80-120	1	20	
Tin	101	5.0	mg/kg	100		101	80-120	3	20	
Zinc	98.6	5.0	mg/kg	100		99	80-120	2	20	
Matrix Spike Analyzed: 11/21/2005 (P5K1716-MS1)					**Source: POK0520-41**					
Antimony	33.4	5.0	mg/kg	100	0.74	33	75-125			*M2*
Arsenic	104	5.0	mg/kg	100	3.3	101	75-125			
Copper	165	2.0	mg/kg	100	54	111	75-125			
Lead	281	5.0	mg/kg	100	180	101	75-125			
Tin	103	5.0	mg/kg	100	9.2	94	75-125			
Zinc	163	5.0	mg/kg	100	57	106	75-125			

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Ninyo & Moore
3001 S. 35th St. Suite 6
Phoenix, AZ 85034
Attention: Dwight Clark

Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

METHOD BLANK/QC DATA

TOTAL METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1716 Extracted: 11/17/05										
Matrix Spike Dup Analyzed: 11/21/2005 (P5K1716-MSD1)					**Source: POK0520-41**					
Antimony	32.9	5.0	mg/kg	100	0.74	32	75-125	2	20	*M2*
Arsenic	106	5.0	mg/kg	100	3.3	103	75-125	2	20	
Copper	167	2.0	mg/kg	100	54	113	75-125	1	20	
Lead	268	5.0	mg/kg	100	180	88	75-125	5	20	
Tin	105	5.0	mg/kg	100	9.2	96	75-125	2	20	
Zinc	164	5.0	mg/kg	100	57	107	75-125	1	20	
Batch: P5K1805 Extracted: 11/18/05										
Blank Analyzed: 11/18/2005 (P5K1805-BLK1)										
Mercury	ND	0.020	mg/kg							
LCS Analyzed: 11/18/2005 (P5K1805-BS1)										
Mercury	0.693	0.020	mg/kg	0.667		104	85-115			
LCS Dup Analyzed: 11/18/2005 (P5K1805-BSD1)										
Mercury	0.678	0.020	mg/kg	0.667		102	85-115	2	15	
Matrix Spike Analyzed: 11/18/2005 (P5K1805-MS1)					**Source: POK0520-04**					
Mercury	1.04	0.020	mg/kg	0.667	0.13	136	85-115			*M1*
Matrix Spike Dup Analyzed: 11/18/2005 (P5K1805-MSD1)					**Source: POK0520-04**					
Mercury	1.04	0.020	mg/kg	0.667	0.13	136	85-115	0	15	*M1*

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Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

METHOD BLANK/QC DATA

TCLP METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K2101 Extracted: 11/21/05										
Blank Analyzed: 11/23/2005 (P5K2101-BLK1)										
TCLP Lead	ND	0.050	mg/l							
Blank Analyzed: 11/23/2005 (P5K2101-BLK2)										
TCLP Lead	ND	0.25	mg/l							
Blank Analyzed: 11/23/2005 (P5K2101-BLK3)										
TCLP Lead	ND	0.25	mg/l							
LCS Analyzed: 11/23/2005 (P5K2101-BS1)										
TCLP Lead	0.910	0.050	mg/l	1.00		91	80-120			
LCS Dup Analyzed: 11/23/2005 (P5K2101-BSD1)										
TCLP Lead	0.896	0.050	mg/l	1.00		90	80-120	2	20	
Matrix Spike Analyzed: 11/23/2005 (P5K2101-MS1)					**Source: POK0520-05**					
TCLP Lead	66.6	0.25	mg/l	1.00	65	160	75-125			*MI*
Matrix Spike Dup Analyzed: 11/23/2005 (P5K2101-MSD1)					**Source: POK0520-05**					
TCLP Lead	67.8	0.25	mg/l	1.00	65	280	75-125	2	20	*MI*

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Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

METHOD BLANK/QC DATA

TCLP EXTRACTION FOR METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: P5K1718 Extracted: 11/17/05										
Blank Analyzed: 11/18/2005 (P5K1718-BLK1)										
TCLP Extraction	ND	0.050	None							

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Attention: Dwight Clark

Project ID: 600996003
Report Number: POK0520

Sampled: 11/15/05-11/16/05
Received: 11/16/05

DATA QUALIFIERS AND DEFINITIONS

D1	Sample required dilution due to matrix.
M1	Matrix spike recovery was high, the method control sample recovery was acceptable.
M2	Matrix spike recovery was low, the method control sample recovery was acceptable.
M3	The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to spike level. The method control sample recovery was acceptable.
N1	See case narrative.
R4	MS/MSD RPD exceeded the method control limit. Recovery met acceptance criteria.
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

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Certification Summary

Del Mar Analytical - Phoenix

Method	Matrix	Nelac	Arizona
EPA 1311/6010B	Water		X
EPA 1311	Solid		X
EPA 6010B	Solid	N/A	X
EPA 7471A	Soil		X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

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Del Mar Analytical

A TEST AMERICA COMPANY

CHAIN OF CUSTODY FORM

Client Name/Address: Ninyo & Moore, 3001 S. 35th St, Phx, AZ 85034

Project/PO Number: 600996003

Project Manager: Dwight Clark

Phone Number: 602-243-1600

Sampler: Keenan Murray

Fax Number: 602-243-2699

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	Analysis Required: ICP Pb	ICP Metals	TCLP Pb	RCRA Metals					Special Instructions
S-1	Soil	glass jar	2	11/15/05	1400	NONE			X	X				PO#0526-1	
S-4	Soil	glass jar	1	11/15/05	1405	NONE	X							2	
S-8	Soil	glass jar	1	11/15/05	1410	NONE		X						3	
S-11	Soil	glass jar	1	11/15/05	1415	NONE				X				4	
S-14	Soil	glass jar	2	11/15/05	1420	NONE			X	X				5	
S-16	Soil	glass jar	1	11/15/05	1425	NONE		X						6	
S-19	Soil	glass jar	1	11/15/05	1430	NONE	X							7	
S-21	Soil	glass jar	1	11/15/05	1435	NONE	X							8	
S-23	Soil	glass jar	1	11/15/05	1440	NONE	X							9	
S-24	Soil	glass jar	1	11/15/05	1445	NONE	X							10	
S-27	Soil	glass jar	1	11/15/05	1500	NONE	X							11	
S-29	Soil	glass jar	2	11/15/05	1505	NONE	X		X					12	
S-30	Soil	glass jar	1	11/15/05	1510	NONE		X						13	
S-31	Soil	glass jar	2	11/15/05	1515	NONE	X		X					14	

Relinquished By:	Date/Time: 11/16/05 1622	Received By:	Date/Time: 11/16/5
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received in Lab By:	Date/Time: 11/16/5 16:22

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
intact X on ice ____ 21°C

Note: By relinquishing samples to Del Mar Analytical, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.

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CHAIN OF CUSTODY FORM

Client Name/Address: Ninyo & Moore, 3001 S. 35th St., Phx, AZ 85034

Project/PO Number: 600996003

Project Manager: Dwight Clark

Phone Number: 602-243-1600

Sampler: Veenan Murray

Fax Number: 602-243-2699

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	ICP Pb	ICP Metals	TCLP Pb	RCRA Metals					Special Instructions
							Analysis Required								
S-33	Soil	glass jar	1	11/15/05	1520	NONE		X			PO#0520-			15	
S-34	Soil	glass jar	1	11/15/05	1525	NONE	X							16	
S-35	Soil	glass jar	2	11/15/05	1530	NONE		X		X				17	
S-39	Soil	glass jar	1	11/15/05	1535	NONE			X					18	
S-41	Soil	glass jar	1	11/15/05	1540	NONE				X				19	
S-43	Soil	glass jar	1	11/15/05	1545	NONE	X							20	
S-44	Soil	glass jar	1	11/15/05	1600	NONE		X						21	
S-46	Soil	glass jar	2	11/15/05	1605	NONE	X		X					22	
S-47	Soil	glass jar	1	11/15/05	1610	NONE	X							23	
S-50	Soil	glass jar	1	11/15/05	1620	NONE		X						24	
S-51	Soil	glass jar	2	11/15/05	1625	NONE		X	X					25	
S-52	Soil	glass jar	2	11/15/05	1630	NONE	X		X					26	
S-53	Soil	glass jar	2	11/15/05	1635	NONE	X		X					27	
S-55	Soil	glass jar	2	11/15/05	1645	NONE	X		X					28	

Relinquished By: [signature] Date/Time: 11/16/05 1622

Received by: [signature] Date/Time: 11/16/05

Relinquished By: Date/Time:

Received by: Date/Time:

Relinquished By: Date/Time:

Received in Lab by: [signature] Date/Time: 11/16/05 16:22

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
intact X on ice ____ 21°C

Note: By relinquishing samples to Del Mar Analytical, client agrees to pay for the services requested on this chain of custody form and any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 30 days.

Del Mar Analytical
2852 Alton Ave., Irvine, CA 92606 (949) 261-1022 FAX (949) 261-1228
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
7277 Hayvenhurst, Suite B-12, Van Nuys, CA 91406 (818) 779-1844 FAX (818) 779-1843
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-9596 FAX (858) 505-9689
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

Client Name/Address: Ninyo & Moore, 3001 S. 35th St., Phx, AZ 85034

Project/PO Number: 600996003

Project Manager: Dwight Clark

Phone Number: 602-243-1600

Sampler: Keenan Murray

Fax Number: 602-243-2699

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	Analysis Required: ICP Pb	ICP Metals	TCLP Pb	RCRA Metals					Special Instructions
S-58	Soil	glass jar	1	11/16/05	1030	NONE				X	PO#0520-			29	
S-59	Soil	glass jar	1	11/16/05	1035	NONE	X							30	
S-60	Soil	glass jar	1	11/16/05	1040	NONE		X						31	
S-61	Soil	glass jar	1	11/16/05	1045	NONE		X						32	
S-67	Soil	glass jar	1	11/16/05	1055	NONE	X							33	
S-68	Soil	glass jar	1	11/16/05	1100	NONE				X				34	
S-69	Soil	glass jar	1	11/16/05	1110	NONE				X				35	
S-70	Soil	glass jar	2	11/16/05	1115	NONE		X		X				36	
S-83	Soil	glass jar	1	11/16/05	1120	NONE	X							37	
S-84	Soil	glass jar	1	11/16/05	1125	NONE	X							38	
S-86	Soil	glass jar	2	11/16/05	1130	NONE		X		X				39	
S-87	Soil	glass jar	1	11/16/05	1135	NONE	X							40	
S-91	Soil	glass jar	1	11/16/05	1140	NONE		X						41	
S-92	Soil	glass jar	1	11/16/05	1145	NONE	X							42	

Relinquished By: Keenan Murray Date/Time: 11/16/05 1622

Received by: Date/Time: 11/16/5

Relinquished By: Date/Time:

Received by: Date/Time:

Relinquished By: Date/Time:

Received in Lab by: Date/Time: 11/16/5 1622

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
intact X on ice ____ 21°C

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CHAIN OF CUSTODY FORM

Client Name/Address:
Ninyo & Moore
3001 S. 35th St
Phx, AZ 85034

Project/PO Number:
600996003

Project Manager:
Dwight Clark

Phone Number:
602-243-1600

Sampler:
Keenan Murray

Fax Number:
602-243-2699

Sample Description	Sample Matrix	Container Type	# of Cont.	Sampling Date	Sampling Time	Preservatives	Analysis Required: ICP Pb	ICP Metals	TCLP Pb	RCRA Metals					Special Instructions
S-96	Soil	glass jar	1	11/16/05	1150	NONE	X				P-050520-			43	
S-97	Soil	glass jar	1	11/16/05	1155	NONE	X							44	
S-98	Soil	glass jar	1	11/16/05	1210	NONE	X							45	
S-99	Soil	glass jar	1	11/16/05	1220	NONE		X						46	
S-100	Soil	glass jar	1	11/16/05	1230	NONE		X						47	

Relinquished By: [signature] Date/Time: 11/16/05 1622
Received by: [signature] Date/Time: 11/16/5

Relinquished By: Date/Time:
Received by: Date/Time:

Relinquished By: Date/Time:
Received in Lab by: [signature] Date/Time: 11/16/5 16:22

Turnaround Time: (Check)
same day ____ 72 hours ____
24 hours ____ 5 days ____
48 hours ____ normal X

Sample Integrity: (Check)
intact X on ice — 8.2°C

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