# Clean-Up and Reuse Plan For Hazardous Materials APN 006-64-012/013/015/016/017/018/019 Babbitt, Mineral County, Nevada

For Mineral County Post Office Box 1450 Hawthorne, Nevada 89415

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Converse Project No. 07-23151-04-07



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# **1.0 INTRODUCTION**

This Clean-Up and Reuse Report is being developed in conjunction with the Mineral County, Nevada and U.S. Environmental Protection Agency (EPA), Region 9's (DCN Number BNFD0346QV2) Community Wide Site Assessment Grant for Hazardous Materials. Work was performed according to the Hazardous Substances Field Sampling Plan (FSP) approved by EPA, Region 9 (DCN BNFD0363SV3) in August, 2009; and, Addendum 1: Field Sampling Plan Hazardous Material Phase II Environmental Site Assessment (ESA) for Babbitt, Nevada Area, dated January 1, 2010.

The purpose of this report is to present findings of additional field sampling, conclusions, clean-up options and possible funding sources.

# 2.0 BACKGROUND

# 2.1 General

The Babbit Housing Area (Babbitt) was constructed during World War II to provide housing for married civilian workers for the Hawthorne Naval Ammunitions Plant, now known as the Hawthorne Army Depot. During the period of 1940-1945, a total of 580 duplexes were constructed. At the conclusion of the Korean Conflict, the Navy began disposing of whole blocks of vacant Babbitt housing units by selling the houses and, upon purchase, the new owners were required to remove the structures from the site. Some of the buildings, including the majority of the commercial buildings, which were not suitable for sale were demolished on-site. Each of these structures contained asbestos materials and were painted with lead-based paint. Furthermore, underground heating oil storage tanks (USTs) were present on many of the parcels. Various agricultural areas, ball-fields, borrow sites, tree lines, and other features were also present. The last occupant moved from Babbitt in June 1987 and the remaining buildings were removed in July 1994, and the area has been vacant ever since

# 2.2 Site Geology

The Property is located in the western portion of Nevada, near the western margin of the Basin and Range geologic province. The area has an arid to semi-arid climate. The topography is characterized by elongated ranges and valleys. The Property is located in a valley location and covered by Quaternary alluvial deposits. These deposits are chiefly valley fill, but include older gravels, slope wash, and Pleistocene lake bed deposits. According to the Geologic Map of the Hawthorne Quadrangle, 1981, the Project site is located on Young and Intermediate Alluvial Fan Deposits.

The Walker River is the only river located in Mineral County, Nevada. The course of the river is approximately 50 miles long and flows into Walker Lake. This lake has no outlet, and as such, the water is notably saline. The lake level has been constantly dropping as recorded since the early 1900s. The water supply in the remainder of the county is limited to snow and spring run-off feeding into small streams on the east flank of the Wassuk Range, to Bodie Creek near Aurora, and scattered springs and wells. Based upon data contained in the "Basewide Groundwater Monitoring Annual Report, 2008, Hawthorne Army Depot", groundwater in the area of Babbitt is over 100 feet from ground surface. Regional flow is towards Walker Lake, located northwest of the Property.

# 2.3 Phase I and Phase II Investigation Summary

Phase I investigations were conducted on the Properties. These investigations identified several areas of concern as noted below.

- Historic use of the Property included the USTs used to store heating oil.
- Historic use of the Property may have included the use of dichlorodiphenyltrichloroethane DDT, organophosphates, and other types of agricultural chemicials.
- Electricial transformers were located on the Property that may have contained PCB oil.
- There may be buried debris on the Property that contains asbestos and lead base paint.
- There is possible buried debris in a borrow pit area (Hazardous Material).

To evaluate these issues Converse conducted Phase II ESA investigations at the Babbitt properties in November 2009.

Based on these investigations all but two issues were eliminated as problems within the Babbitt area. The two issues remaining are:

- 1. Asbestos in soil, including small pieces of asbestos containing building debris scattered on the surface.
- Dichlorodiphenyldicloroethylene (DDE) a break down product of DDT was detected in the soil along a portion of the tree line above the Preliminary Remediation Goal (PRG) residential limit but below the PRG industrial limit.

Based on the above findings, additional sampling was recommended to determine the vertical and horizontal extent of these contaminants of concern.

# 3.0 ADDITIONAL SOIL SAMPLING

# 3.1 DDT/DDE

# 3.1.1 Vertical Soil Sampling Rationale and Sample Collection

Soil samples were collected at 1 foot, 2 feet and 3 feet intervals below grade at TL-3, TL-8, and TL-11 to determine the vertical extent of the DDT/DDE contamination. A maximum sampling depth of 3 feet below grade was chosen because, in all likelihood, the pesticide was applied on the ground surface. DDT/DDE is highly persistent in the environment; however, these compounds are considered to be stationary in the soil because of their extremely low solubility.

Locations TL-3, TL-8, and TL-11 represent the highest readings for DDE recorded during the Phase II ESA investigation. Therefore, once the vertical extent of contamination for these locations had been established, it was assumed the DDE concentration at other locations would be equal to or lesser than those found in TL-3, TL-8, and TL-11. Therefore, soil removal depths can be established based on the data collected at the three locations with the highest recorded DDE.

# 3.1.2 Horizontal Soil Sampling Rationale and Sample Collection

The tree line was a linear feature that extended approximately 7,800 feet and formed a wind break around the community. Sampling along the center of the tree line yielded DDE contamination above the residential PRG. The area of contamination extended for approximately 5,400 feet starting from near the intersection of 10<sup>th</sup> Street and Essex Avenue and ending near 24<sup>th</sup> Street and Langley Avenue (approximately from TL-1 to TL-12). Additional sampling was performed to delineate the horizontal distance from the center of the tree line and to identify the extent of elevated DDE. Two zones were considered for sampling purposes; an area that extends 8 feet on either side from the center of the tree line; and, an area that extends 15 feet from the center of the tree line. Both of these zones extend the length of the tree line from TL-1 to TL-12. Assuming that the DDT was applied by spraying from a small trailer or tractor applicator, the chemical would have been directly applied from approximately 8 to 10 feet with an over spray of 10 to 15 feet. It is assumed the pesticide was uniformly applied resulting in a homogenous distribution. Once a horizontal distance was established from these three points, the data were used to identify a zone of concern along the tree line from TL-1 to TL-12.

Soil samples were collected from 0 to 12 inches in depth at both 8 feet and 15 feet from the center of the tree line. Samples were collected on both sides and beyond the terminus of the tree line. Samples were also collected near TL-1

(terminus of tree line), TL-12 (terminus of tree line), and TL-3 (location of highest DDE concentration).

# 3.1.3 Sample Handling and Analysis Protocol

All soil samples were collected using hand tools. Each soil sample was placed in an 8 ounce laboratory supplied jar, labeled and marked with custody seal, placed on ice, and delivered to a Nevada Certified Laboratory in Reno, Nevada under proper chain-of-custody procedures.

Selected samples were analyzed for DDT/DDE by EPA Method 8081. This method has a 7 day hold time. The laboratory was notified that the samples needed to be analyzed on a five day turn around so that, if any of the deeper or step out samples required analysis, they could be analyzed within the hold time. Based on the initial laboratory results, no hold samples required analysis. The samples collected are summarized in the following table:

| Location | Distance from Location   | Depth | Analyze/Hold |
|----------|--|-------|--------------|
| TL-1     | 8 feet NW  | 0-12" | Analyze      |
| TL-1     | 15 feet NW   | 0-12" | Hold         |
| TL-1     | 8 feet SE  | 0-12" | Analyze      |
| TL-1     | 15 feet SE   | 0-12" | Hold         |
| TL-1     | 8 feet NE  | 0-12" | Analyze      |
| TL-1     | 15 feet NE   | 0-12" | Hold         |
| TL-3     | 8 feet NW  | 0-12" | Analyze      |
| TL-3     | 25 feet NW (Asphalt<br>pavement was blocking the<br>15' location so sample was<br>moved) | 0-12" | Hold         |
| TL-3     | 8 feet SE  | 0-12" | Analyze      |
| TL-3     | 15 feet SE   | 0-12" | Hold         |
| TL-3     | 0  | 1'    | Analyze      |
| TL-3     | 0  | 2'    | Analyze      |
| TL-3     | 0  | 3'    | Hold         |
| TL-8     | 0  | 1'    | Analyze      |
| TL-8     | 0  | 2'    | Analyze      |

Table 1 – Soil Sample Collection DDT/DDE

| Location | Distance from Location | Depth | Analyze/Hold |
|----------|------------------------|-------|--------------|
| TL-8     | 0                      | 3'    | Hold         |
| TL-11    | 0                      | 1'    | Analyze      |
| TL-11    | 0                      | 2'    | Analyze      |
| TL-11    | 0                      | 3'    | Hold         |
| TL-12    | 8 feet NW              | 0-12" | Analyze      |
| TL-12    | 15 feet NW             | 0-12" | Hold         |
| TL-12    | 8 feet SE              | 0-12" | Analyze      |
| TL-12    | 15 feet SE             | 0-12" | Hold         |
| TL-12    | 8 feet SW              | 0-12" | Analyze      |
| TL-12    | 15 feet SW             | 0-12" | Hold         |

Table 1 – Soil Sample Collection DDT/DDE

# 3.2 Asbestos

# 3.2.1 Rationale

During the Phase II ESA investigation, asbestos contamination was identified in the soil. The horizontal extent was determined at that time (See Plate 3). To ascertain the vertical extent of asbestos in the soil, samples were collected at SO1 and SO2. Samples collected at these two locations had the highest level of asbestos detected during the Phase II sampling event. Samples were collected at intervals of 6 inches, 1 foot, 1 ½ feet, 2 feet, 2 ½ feet, and 3 feet below grade. In view of the fact that asbestos in the soil appeared to be generated from surface debris, 3 feet was considered well beyond the depth that asbestos contamination would be expected to be encountered. The information gathered from these locations was used to determine a soil removal depth as it relates to asbestos in the soil.

# 3.2.2 Asbestos Sample Analysis Protocol from Field Sampling Plan

Soil samples were collected using a hand held auger. Samples were placed in zip lock plastic bags, labeled, and deliver to a laboratory in Reno, Nevada for analysis. Samples collected in the field were analyzed by Polarized Light Microscopy (PLM) going from shallow to deep. At the present time, there is no approved method for detecting asbestos in soil; however, it is generally agreed and accepted that Transmission Electron Microscopy (TEM) is the most accurate method available although it is also the most expensive. Therefore, two samples that recorded non-detect during the PLM analysis screening were be chosen for TEM confirmatory analysis.

# 4.0 SCOPE OF WORK

The scope of work for this Cleanup and Reuse Plan consisted of field sampling, laboratory analysis and report preparation. The scope specifically addresses the previously identified DDT/ DDE and asbestos.

# 5.0 FIELD ACTIVITES

# 5.1 Sampling for DDT/ DDE

A total of twenty five soil samples were collected during this investigation. See Section 3.1 and 3.2 for information on sample collections. Sample locations are identified on Plate 3.

# 5.2 Sampling for Asbestos

A total of 12 soil samples were collected. See Section 3.2.2 for information on sample collection (See Plate 1 for sample locations).

# 6.0 SOIL SAMPLING RESULTS

The table below summarizes the laboratory results for this project.

# 6.1 DDT/DDE

The soil samples results are summarized in the following tables:

| Location | Laboratory ID Number | Depth<br>(Feet) | DDT*<br>Results | DDT<br>PRGr** | DDE***<br>Results | DDE<br>PRGr |
|----------|----------------------|-----------------|-----------------|---------------|-------------------|-------------|
| TL-3     | CON100212701-08A     | 1               | 1.30            | 1.7           | 1.5               | 1.4         |
| TL-3     | CON100212701-09A     | 2               | 0.70            | 1.7           | 0.95              | 1.4         |
| TL-8     | CON100212701-15A     | 1               | 0.10            | 1.7           | 0.29              | 1.4         |
| TL-8     | CON100212701-16A     | 2               | 0.0047          | 1.7           | 0.012             | 1.4         |
| TL-11    | CON100212701-18A     | 1               | 0.041           | 1.7           | 0.18              | 1.4         |
| TL-11    | CON100212701-19A     | 2               | 0.027           | 1.7           | 0.094             | 1.4         |

Table 2 – Vertical Characterization Analytical Results

\* DDT – Dichlorodiphenyltrichloroethane

\*\* PRGr - Preliminary Remediation Goal for Residential Property, set by EPA Region 9

\*\* DDE - Dichlorodiphenyldicloroethylene (Breakdown product of DDT)

All results and PRG Values are in parts per million (ppm)

| Location | Laboratory ID Number | Distance<br>from<br>Location | DDT*<br>Results | DDT<br>PRGr** | DDE***<br>Results | DDE<br>PRGr |
|----------|----------------------|------------------------------|-----------------|---------------|-------------------|-------------|
| TL-1     | CON100212701-01A     | 8' NW                        | 0.15            | 1.7           | 0.19              | 1.4         |
| TL-1     | CON100212701-04A     | 8' SE                        | 0.0058          | 1.7           | 0.012             | 1.4         |
| TL-1     | CON100212701-06A     | 8' NE                        | 0.64            | 1.7           | 0.87              | 1.4         |
| TL-3     | CON100212701-11A     | 8' NW                        | 0.10            | 1.7           | 0.12              | 1.4         |
| TL-3     | CON100212701-13A     | 8' SE                        | 0.06            | 1.7           | 0.11              | 1.4         |
| TL-12    | CON100212701-21A     | 8' NW                        | 0.015           | 1.7           | 0.19              | 1.4         |
| TL-12    | CON100212701-24A     | 8' SE                        | 0.0068          | 1.7           | 0.065             | 1.4         |
| TL-12    | CON100212701-26A     | 8' SW                        | 0.0066          | 1.7           | 0.057             | 1.4         |

Table 3 – Horizontal Characterization Analytical Results

\* DDT - Dichlorodiphenyltrichloroethane

\*\* PRGr - Preliminary Remediation Goal for Residential Property, set by EPA Region 9

\*\*\* DDE - Dichlorodiphenyldicloroethylene (Breakdown product of DDT)

All results and PRG Values are in parts per million (ppm)

All samples collected between 0 to 12"

# 6.2 Asbestos

The 12 soil samples collected during this investigation were screened by the PLM method. No asbestos fibers were identified during the PLM screening. Two samples from SO-1 collected at 6 inches and at 1 foot intervals were sent for TEM analysis. TEM analysis reported no asbestos and <0.01% respectively.

# 7.0 Quality Control

All sampling and field activities were conducted in accordance with the Hazardous Substances Field Sampling Plan (FSP) as approved by EPA, Region 9 (DCN BNFD0363SV3) in August, 2009; and, Addendum 1: Field Sampling Plan Hazardous Material Phase II ESA for Babbitt, Nevada Area, dated January 1, 2010 and approved by EPA, Region 9 in February 2010. There were no deviations or exceptions to the FSP.

# 7.1 Field Quality Control

One field day was required to collect the follow-up soil samples. An equipment blank was collected the day of the field sampling. There were no constituents of concern detected above the laboratory reporting limit in the equipment blank. Temperature blanks were included in the laboratory cooler. Converse was not informed of any issues related to the temperature blanks.

# 7.2 Laboratory Quality Control

The FSP called for one field split soil samples to be collected for the DDT/DDE. The location chosen for the split sample was TL-12, 8" NW. The sample results from the split sample deviated 0.001 ppm for DDT and not at all for the DDE. This is an excellent correlation.

# 8.0 Conclusion

# 8.1 DDT/DDE

# 8.1.1 Vertical

Based on the follow-up sampling conducted as part of this evaluation, only one sample collected on the centerline of the tree line was elevated above the PRGr for DDE and none were elevated above the PRGr for DDT. The sample that was over the PRGr was collected at TL-3, 1 foot below grade and reported 1.5 ppm of DDE which is 0.1ppm over the PRGr of 1.4ppm. The following table compares DDE concentration at TL-3, TL- 8, and TL-11.

| Location | Sample Collected 8/26/10 at Surface | Sample Collected 2/16/10 at 1' | Sample Collected 2/16/10 at 2' | DDE<br>PRGr** | DDE<br>PRGi*** |
|----------|-------------------------------------|--------------------------------|--------------------------------|---------------|----------------|
| TL-3     | 3.4                                 | 1.5                            | 0.95                           | 1.4           | 5.1            |
| TL-8     | 3.0                                 | 0.29                           | 0.012                          | 1.4           | 5.1            |
| TL-11    | 3.1                                 | 0.18                           | 0.094                          | 1.4           | 5.1            |

Table 4 – Comparison of DDE\* Concentration for Vertical Samples

\* DDE - Dichlorodiphenyldicloroethylene (Breakdown product of DDT)

\*\* PRGr - Preliminary Remediation Goal for Residential Property, set by EPA Region 9 \*\*\* PRGi - Preliminary Remediation Goal for Industrial Property, set by EPA Region 9 All results and PRG Values are in parts per million (ppm)

The above comparison demonstrates that the DDE concentration decreased rapidly with depth. Based on these results, it appeared that approximately one foot of surface soil should be removed to eliminate DDE concentrations over the PRGr. Since none of the soil samples collected during the original Phase II ESA or during the follow-up sampling event reported DDE over the PRGi, only soil in the areas used for residential development is deemed to require removal.

# 8.1.2 Horizontal

Based on the follow-up sampling event conducted as part of this evaluation, none of the samples collected at the horizontal step out of 8 feet from centerline of the

tree line reported DDT or DDE over the PRGr levels. The following table compares DDE concentration at TL-1, TL- 3, and TL-12.

| Location | Sample Collected<br>8/26/10<br>at Centerline | Sample C<br>8' fron | ollected 2/16/10<br>n Centerline | DDE<br>PRGr** | DDE<br>PRGi*** |
|----------|--|---------------------|----------------------------------|---------------|----------------|
|          |  | NW                  | 0.19                             | -             |                |
| TL-1     | 1.6.4  | SE                  | 0.012                            | 1.4           | 5.1            |
|          |  | NE                  | 0.87                             |               |                |
|          |  | NW                  | 0.10                             | 1.4           | 5.1            |
| TL-3     | 3.4  | SE                  | 0.06                             |               |                |
|          |  | NW                  | 0.15                             |               |                |
| TL-12    | 1.7  | SE                  | 0.065                            | 1.4           | 5.1            |
|          |  | SW                  | 0.057                            |               |                |

Table 5 – Comparison of DDE\* Concentration for Horizontal Samples

\* DDE - Dichlorodiphenyldicloroethylene (Breakdown product of DDT)

\*\* PRGr - Preliminary Remediation Goal for Residential Property, set by EPA Region 9 \*\*\* PRGi - Preliminary Remediation Goal for Industrial Property, set by EPA Region 9 All results and PRG Values are in parts per million (ppm)

The above comparison demonstrates that the DDE concentration decreased rapidly as you move from the centerline of the tree line. The samples collected at 8 feet from the tree line centerline were well below the PRGr for DDE. Based on these results it appears that if soil was removed 5 feet from the tree centerline on both sided it should eliminate DDE concentrations over the PRGr. Since none of the soil samples collect during the original Phase II or during the follow-up sampling reported DDE over the PRGi only soil in the areas used for residential development would require removal.

# 8.2 Asbestos

During the Phase II ESA investigation, non-friable asbestos was identified in the areas where the historic building structures were located. Additionally, asbestos was identified in the surface soil in the areas of the debris ranging from a trace amount to 0.24 percent. Additional sampling was conducted during the follow up sampling. The TEM results for SO-1 from the original Phase II are compared with samples collected on February 16, 2010, in Table 6 below..

| Location | Latitude | Longitude  | Sample Collect<br>9/22/09 at Surface | Sample Collect 2/16/10 at 6" | Sample Collect<br>2/16/10 at 1' |  |  |
|----------|----------|------------|--------------------------------------|------------------------------|---------------------------------|--|--|
| SO1      | 38.54031 | -118.64960 | 0.24 %                               | No Asbestos                  | <0.01                           |  |  |

Table 6 – Asbestos Soil Concentrations at SO-1

Based upon the soil sampling conducted at the site, it appears that only the top 6 inches of soil have been contaminated by the asbestos debris in any measurable amount. At this time, there are no EPA or Nevada Division of Environmental Protection (NDEP) regulations that regulate asbestos in soil. Converse identified two states that did have regulations for asbestos in soil: Colorado and Massachusetts. Neither of these states has established a safe level for asbestos in soil. While all collected soil samples reported less than 1% asbestos, the regulatory limit for building materials, there may still be a risk of exposure for asbestos especially during construction when the soil is disturbed. Also, asbestos exposure may be a risk factor for children playing in the dirt.

Converse recommends that, in all areas, the asbestos containing debris be removed because non friable material can degrade and become friable from weathering. This is evident by the asbestos identified in the soil. For worker safety purposes, this would be considered OSHA Class II work. While it is the contractor's responsibility to assure that their employees are safe at the workplace, the following guidelines should be considered during the removal of the asbestos debris:

- 1. Workers should be trained as required by 40 CFR 763 as Class II Worker involved in working with one material. This requires eight hours of training.
- 2. Workers will require medical surveillance if they are required to wear a negative pressure respirator if exposed to asbestos over the permissible exposure limit (PEL), or have more than 30 days exposure a year.
- 3. Worker should wear ½ mask air purifying respirators until an exposure assessment can be conducted. If the assessment demonstrates that the worker is not exposed to asbestos over the OSHA permissible exposure limit (PEL) of 0.1 fiber per cubic centimeter (f/cc) for a 8 hour period or 1.0 f/cc for 30 minutes, respirator use can be discontinued.
- 4. The contractor should set up a regulated work area and a decontamination area.
- 5. Collected debris should be bagged, handled as asbestos containing material, and properly disposed.
- 6. Debris can be picked up by hand or surface soil can be scooped up with heavy equipment and the debris screened out. In either case, soil and debris must be kept wet during the removal process.
- 7. All debris should be removed or secured in a locked dumpster at the end of

each work day.

8. Work should not be conducted if wind speed is greater than 15 miles per hour.

In areas where residential use is planned, the top 6 inches of soil should be removed and replaced with clean soil. It is Converse's understanding that the removed soil can be taken to the Mineral County landfill where it will be utilized for landfill cover.

Although there are no work practices established for soil removal or mass grading in areas where there is less than 1 percent asbestos in the soil, EPA has developed approaches to reduce exposure to naturally occurring asbestos. Based on the conditions encountered at the site, the relevant parts outlined in the EPA fact sheet *Natural Occurring Asbestos: Approaches for Reducing Exposure* should be integrated into the Contractor's mass grading plans. Mass grading/soil removal should only be conducted after the loose asbestos has been removed from the project site. The fact sheet has been provided in Appendix D. Specifically the contractor should: limit generation of dust by keeping the project area wet; decontaminate equipment before it leaves the work area (a gravel pad, tire shaker, or wheel wash system may be used to clean soil from vehicles); limit personnel and vehicle access to the area; reduce driving speed; and, avoid conducting mass grade/soil removal during winding conditions. Air monitoring during the project may be considered by the contractor.

# 9.0 Estimated Cleanup Cost

The costs presented in this section are based on the general assumptions stated in this document and are intended to be used for budgeting purposes only. In no way should this be consisted as a cost proposal for the required cleanup.

# 9.1 DDT/DDE Remediation Cost

These cost assume the following: 1) the entire 5,400 feet long by 10 feet wide by 1 foot deep area will be remediated; 2) the Nevada Division of Environmental Protection will accept the work plan to remove the soil as outlined above; 3) the soil removal will require one week of field work; and, 4) the soil can be used at the Mineral County landfill for cover. Based on these assumptions 2,000 cubic yards of material will be generated. The following table outlines estimated cost:

Table 7 – Estimated Cost for DDE Remediation

| Task   | Estimated Cost |            |
|--|----------------|------------|
| Project Management                             | \$             | 8,000.00   |
| 40 hour OSHA Training for 5 of the Contractors |                |            |
| Personnel.                                     | \$             | 12,500.00  |
| Contractor Cost to Remove and Transport Soil   | \$             | 40,000.00  |
| (\$8,000/day for 5 days)                       |                |            |
| Soil Import (2,000 cubic yards at \$10/yard)   | \$             | 20,000.00  |
| Soil Disposal (2,000 cubic yards at \$5/yard)  | \$             | 10,000.00  |
| Oversight for Regulatory Compliance            | \$             | 18,000.00  |
| Follow-Up Confirmatory Soil Sampling           | \$             | 5,000.00   |
| Total Estimate                                 | \$             | 113,500.00 |

# 9.2 Asbestos Remediation Cost

These cost assume that: 1) the work plan to remove the asbestos debris, as outlined above, will be acceptable to the regulatory agencies; 2) the removal of asbestos will be completed using one piece of heavy equipment and utilizing three workers; 3) no more than 90 cubic yards of waste material will be generated; and 4) site cleanup will be completed in 3 weeks. The following table outlines estimated cost:

 Table 8 – Estimated Asbestos Cleanup Cost for Removing Debris

| Task  | Estimated Cost |
|---|----------------|
| Project Management                                      | \$ 6,500.00    |
| 8 hours Asbestos Worker Training for 4 of the           |                |
| Contractors Personnel.                                  | \$ 3,000.00    |
| Contractor Cost to Remove Asbestos Debris               | \$ 37,500.00   |
| Air Monitoring (NEA and Area Monitoring) Assumes 4      |                |
| days total)   | \$ 3,500       |
| Asbestos Disposal (3-30 yard dumpsters at \$1,280/each) | \$ 3,840.00    |
| Oversight for Regulatory Compliance                     | \$ 15,000.00   |
| Follow Up Site Inspection                               | \$ 2,000.00    |
| Total Estimate  | \$71,340.00    |

At this time, there is no estimate on the number of residential lots planned for the project area. Estimated cost to remove soil in residential areas is based on a per lot estimate. These costs assume that: 1) 6 inches of soil will be removed from the entire lot; 2) the lot size will be 1/3 acre and a total of 270 cubic yards of waste soil will be generated; and, 3) the soil can be used at the Mineral County landfill for cover. The following table outlines estimated cost:

| Task   | Estimated Cost |  |  |  |  |
|--|----------------|--|--|--|--|
| Project Management                           | \$ 500.00      |  |  |  |  |
| Contractor Cost to Remove and Transport Soil | \$ 3,000.00    |  |  |  |  |
| (\$1,500/day for 2 days)                     |                |  |  |  |  |
| Soil Import (270 cubic yards at \$10/yard)   | \$ 2,700.00    |  |  |  |  |
| Soil Disposal (270 cubic yards at \$5/yard)  | \$ 540.00      |  |  |  |  |
| Total Estimate                               | \$ 6,740.00    |  |  |  |  |

Table 9 – Estimated Cost for Soil Removal on Residential Lots

# **10.0 Cleanup Funding Options**

Federal and State funding is available to assist Mineral County to address contamination issues at the former Babbitt site, including cleanup grants and loans under the State of Nevada's Brownfields Cleanup Revolving Loan Fund (BCRLF) program.

As part of an annual national competition, EPA makes available \$200,000 per site in Brownfields funding to eligible applicants to clean up contaminated Brownfields properties. Annually, an applicant may apply for up to 3 cleanup grants or \$600,000 total. Each individual site cleanup grant would require a 20% matching share, or \$40,000. There are a number of rules that direct the award of these cleanup grants including: 1) the recipient of these funds must not be a responsible party under Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); 2) a Phase I ESA must be performed within 6 months of purchasing the property; 3) a Phase II ESA must be completed at the time the application is submitted to EPA for funding; 4) and, the applicant must own the property at the time the proposal is submitted. The 400-acre Babbitt property is comprised of 11 separate parcels, each of which may be eligible for a \$200,000 grant if EPA accepts that each parcel is a "site" for purposes of EPA Brownfields funding. Based on preliminary findings by EPA, Region 9's Office of Regional Counsel in 2008, Mineral County is believed to be an eligible applicant for EPA Brownfields funding because the property was deeded to the County by the United States government and is not a responsible party for the contamination at the Babbitt property.

Eligible applicants may also apply to the Nevada Department of Environmental Protection for \$200,000 in Brownfields cleanup funding under similar guidelines as

discussed above, including a 20% matching share. Guidelines are similar because these funds are made available to the State by EPA under Section 128(a) of the Brownfields law which authorizes EPA to set-aside \$50 million to support State Brownfields programs, including making funding available to communities to assess and clean up Brownfields sites planned for redevelopment. Eligible applicants may also apply to NDEP for a low-interest loan or receive a sub-grant of up to \$200,000 per site under the BCRLF to clean up contaminated Brownfields properties. A sub-grant under the BCRLF does not have to be re-paid.

Plates

# Appendix A

# CONVERSE 🛞 CONSULTANTS



Date Created: 02/03/2010 Project No: 07-23151-04-05 300 600 1,200 1,800 0

Areas to be Resampled

- NON-PAVED

----- PAVED

\_\_\_\_

Feet

3,000

2,400



# CONVERSE



| DDE CONTAMINATION               |  |
|---------------------------------|--|
| Hawthorne<br>Mineral County, NV |  |

|     |     | 1 inc | h = 200 f |
|-----|-----|-------|-----------|
|     |     |       |           |
| 100 | 200 | 400   | 600       |

# CONSULTANTS







SITE MAP **Asbestos Surface Debris** Hawthorne Mineral County, NV

Date Created: 09/18/2009

Project No: 07-23151-04-05



800

Babbitt Parcels Phase 2 Asbestos.mxd

# CONSULTANTS

| eet |       |               |
|-----|-------|---------------|
| C   | 1,600 | Feet<br>2,000 |

### Legend **Mineral County Roads** Asbestos Sample Locations - NOT SPECIFIED Heavy Concentration of Transite Siding — DIRT Scattered Transite Siding - GRADE AND DRAIN - NON-PAVED

- PAVED

# Plate 3

Field Sampling Plan/ Addendum

Appendix B

# Addendum 1: Field Sampling Plan for:

# Hazardous Material Phase II ESA for the Babbitt, Nevada Area

# For: Mineral County P.O. Box 1450 Hawthorne, NV 89415

# January 1, 2010

| Project Principal:      | Dean Stanphill, PE, GE, REA,<br>Converse Consultants<br>4840 Mill Street<br>Reno, NV 89502<br>Phone: 775-856-3833 Fax: 775-856-3513 |
|-------------------------|---|
| Project Manager:        | Thomas Mix, National Brownfields Coordinator,<br>Converse Consultants   |
| Field Services Manager: | Kathi Brandmueller, PE, CEM, Converse Consultants   |
| QA Manager              | Don Orndorff, Mineral County Brownfields, Coordinator   |

# For EPA use:

| Approved by EPA Project Manager:   | Date: |
|------------------------------------|-------|
|                                    |       |
| Received by QA Office:             | Date: |
|                                    |       |
| Reviewed by:                       | Date: |
|                                    |       |
| Approved:                          | Date: |
| Region 9 Quality Assurance Manager |       |

# 1.0 INTRODUCTION

This addendum is being developed in conjunction with the Mineral County, Nevada, Brownfields Quality Assurance Project Plan (QAPP), approved by EPA, Region 9 (DCN Number BNFD0346QV2) in June, 2009; and, the Hazardous Substances Field Sampling Plan (FSP) also approved by EPA, Region 9 (DCN BNFD0363SV3) in August, 2009;

# 2.0 BACKGROUND

The Phase II investigation for the Babbitt area has been completed and the report finalized. During the investigation two issues were identified as follows:

- 1. Asbestos in soil, including small pieces of asbestos containing building debris scattered on the surface.
- 2. Dichlorodiphenyldicloroethylene (DDE) a break down product of DDT was detected along the tree line in the soil over the Preliminary Remediation Goal (PRG) residential limit but below the PRG industrial limit.

Based on the Phase II findings described above, additional sampling is being requested to aid in the vertical and horizontal characterization of the constituents of concern. Once the follow-up investigation has been completed, Mineral County will prepare a Clean-Up Plan that will address both issues identified during the Phase II Investigation.

# 3.0 ADDITIONAL SAMPLING

- 3.1 DDE
  - 3.1.1 Rationale:

Soil samples will be collected at 1', 2' and 3' below grade at TL-3, TL-8, and TL-11 to determine the vertical extent of the DDE contamination that is above the PRG for residential soil. A maximum sampling depth of 3' below grade was chosen because the DDE is a break down product of the DDT that was applied on the surface. These chemicals are highly persistent in the environment; however, because of their extremely low solubility, they are considered to be immobile in soil. It is anticipated, then, that contamination will not be present 2' below grade and that samples collected 3' below grade will only be analyzed if the 2' below grade sample is above the PRG for residential soil).

Sampling locations TL-3, TL-8, and TL-11 represent the highest readings for DDE recorded during the Phase II investigation. Therefore, once the vertical extent of contamination for these locations has been established it can be assumed the DDE concentration at other location will be equal to or lesser than those found in TL-3, TL-8, and TL-11. Therefore, soil removal depths can be established based on the data collected at the three locations with the highest recorded DDE.

The tree line was a linear feature that extended approximately 7,800 feet and formed a wind brake around the community. Sampling along the center of the tree line yielded DDE contamination over the residential PRG for approximately 5,400 feet starting from near the intersection of 10<sup>th</sup> Street and Essex Avenue and ending near 24<sup>th</sup> Street and Langley Avenue (approximately from TL-1 to TL-12). Additional sampling will be performed to delineate the horizontal distance from the center of the tree line to identify the extent of elevated DDE. Two zones are being considered for sampling purposes, one that extends 8 feet on either side from the center of the tree line, and one that extends 15 feet from the center of the tree line. Both of these zones extend the length of the tree line from TL-1 to TL-12. Assuming that the DDT was applied by spraying from a small trailer or tractor applicator, the chemical would have been directly applied from approximately 8 to 10 feet with an over spray of 10 to 15 feet. It is assumed the pesticide was uniformly applied resulting in a homogenous distribution. Once a horizontal distance is established from these three points the data will be used to identify a zone of concern along the tree line from TL-1 to TL-12. This information will be utilized during the development of the Clean-Up Plan.

Samples will be collected from 0 to 12 inches in depth at both 8 feet and 15 feet from the center of the tree line. Samples will be collected on both sides and beyond the terminus of the tree line. Samples will be collected near TL-1 (terminus of tree line), TL-12 (terminus of tree line), and TL-3 (location of highest DDE concentration). The samples collected at a lateral distance of 8 feet from the tree line will be tested first. If any of these samples contain DDE in excess of the residential PRG, then the samples at 15 feet will be tested.

| Location  | Depth                        | Purpose                        | Primary<br>Samples | Field<br>Duplicates | Equipment Blank |  |
|---|------------------------------|--------------------------------|--------------------|---------------------|-----------------|--|
| 8'/15' NW,<br>8'/15' NE,<br>and 8'/15'<br>SE of TL-1  | 0-12"                        | Horizontal<br>Characterization | 6                  |                     |                 |  |
| 8'/15 NW<br>and 8'/15'<br>SE of TL-3                  | 0-12"                        | Horizontal<br>Characterization | 4                  |                     |                 |  |
| TL-3  | 1', 2, and 3'<br>below grade | Vertical<br>Characterization   | 3                  |                     |                 |  |
| TL-8  | 1', 2, and 3'<br>below grade | Vertical<br>Characterization   | 3                  | 1                   | 1               |  |
| TL-11   | 1', 2, and 3'<br>below grade | Vertical<br>Characterization   | 3                  |                     |                 |  |
| 8'/15' NE,<br>8'/15' SE,<br>and 8'/15,<br>SW of TL-12 | 0-12"                        | Horizontal<br>Characterization | 6                  |                     |                 |  |

A total of 25 samples will be collected as outlined in the following table.

# 3.1.2 Sample Analysis

All samples will be analyzed for DDE by EPA Method 8081. This method has a 7 day hold time. The laboratory has been notified that the samples will need to be analyzed on a five day turn around so that, if any of the deeper or step out samples require analysis, they can be done within the hold time.

# 3.1.3 Soil Collection Techniques

Samples will be collected using a spade or a hand auger. Techniques for sample collection, quality control, and quality assurance from the existing approved Field Sampling Plan (FSP) will be followed during the additional sampling event.

## 3.2 ASBESTOS

## 3.2.1 Rationale

To determine the vertical extent of asbestos in the soil, samples will be collected at SO1 and SO2. This represents the highest level of asbestos detected during the Phase II sampling event. Samples will be collected at 6", 1', 1  $\frac{1}{2}$ ', 2', 2  $\frac{1}{2}$ ' and 3' below grade. Since the asbestos in the soil appears to be generated from surface debris, 3 feet is considered well beyond the depth that asbestos contamination is expected. The information gathered from these locations will be used to determine a soil removal depth as it relates to asbestos in the soil. The horizontal extent of the asbestos contamination was identified during the Phase II investigation. A total of 12 samples will be collected during the sampling event.

# 3.2.2 Sample Analysis

Samples collected in the field will be analyzed by Polarized Light Microscopy (PLM) going from shallow to deep until no detectable asbestos is recorded. At the present time, there is no approved method for detecting asbestos in soil; however, it is generally agreed and accepted that Transmission Electron Microscopy (TEM) is the most accurate method available but is also the most expensive. Therefore, the samples that record non-detect during PLM analysis will be sent for TEM confirmatory analysis. In this way, we can screen the soil using PLM in a cost effective manner but verify the results with TEM. Please refer to Plate 1 for sample locations.

# 3.2.3 Soil Collection Techniques:

Samples will be collected using a spade or a hand auger. Techniques for sample collection, quality control, and quality assurance from the existing approved Field Sampling Plan (FSP) will be followed during the additional sampling event.

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Mineral County, NV

Date Created: 02/03/2010 Project No: 07-23151-04-05

300

0

600

1,200

1,800

2,400

Feet

3,000

Plate 1

----- GRADE AND DRAIN

- NON-PAVED

----- PAVED

\_\_\_\_

Field Sampling Plan for:

# Hazardous Material Phase IIs for the Babbitt, Nevada Area

For

Mineral County P.O. Box 1450 Hawthorne, NV 89415

# July 30, 2009

| Project Principal:      | Dean Stanphill, PE, GE, REA, Converse Consultants                     |
|-------------------------|---|
| Project Manager:        | Thomas Mix, National Brownfields Coordinator,<br>Converse Consultants |
| Field Services Manager: | Kathi Brandmueller, PE, CEM, Converse Consultants                     |
| QA Manager              | Don Orndorff, Mineral County Brownfields, Coordinator                 |

# For EPA use:

| Approved by EPA Project Manager:   | Date: |
|------------------------------------|-------|
|                                    |       |
| Expedited Review? Yes              | No    |
| Received by QA Office:             | Date: |
|                                    |       |
| Reviewed by:                       | Date: |
| Approved:                          | Date: |
| Region 9 Quality Assurance Manager |       |

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# Appendix:

Appendix A – Soil Sampling SOP Appendix B – Decontamination SOP

Appendix C – Field Forms

# **1.0 INTRODUCTION**

This Field Sampling Plan (FSP) is being developed in conjunction with the Mineral County, Nevada, Brownfields Quality Assurance Project Plan (QAPP), Approved June, 2009, DCN Number BNFD0346QV2.

The Property is defined herein to include the majority of the Babbitt Housing Area, designated by APN Numbers: 06-640-12, 06-640-13, 06-640-15, 06-640-16, 06-640-17, 06-640-18, and 06-640-19.

The Babbit House Area (Babbitt) was constructed during World War II to provide housing for married civilian workers for the Hawthorne Naval Ammunitions Plant, now known as the Hawthorne Army Depot. During the period of 1940-1945, a total of 580 duplexes were constructed. At the conclusion of the Korean Conflict, the Navy began disposing of whole blocks of vacant Babbitt housing units by selling the houses and, upon purchase, the new owners were required to remove the structures from the site. The last occupant moved from Babbitt in June of 1987. Some of the buildings which were not suitable for sale were demolished (eaqch structure contained asbestos and lead based paint). This included the majority of the commercial buildings. The last buildings were removed in July, 1994. The Property is currently vacant. Also, underground heating oil storage tanks (USTs) were present on many of the parcels. Various agricultural areas, ball-fields, borrow sites, tree lines, and other features were also present.

Phase I investigations were conducted on the Property. The investigation on the Property identified the following areas of concern. This FSP is specific only to the hazardous materials related issues as noted below. Petroleum issues are are addressed in a separate document, also as noted below.

- Historic use of the Property included the USTs used to store heating oil (Petroleum FSP).
- Historic use of the Property may have included the use of DDT, organophosphates, and other types of agricultural chemicials (Hazardous Materials FSP).
- Electricial transformers were located on the Property that may have contained PCB oil (Hazardous Materials FSP).
- There may be buried debris on the Property that contains asbestos and lead-based paint (Hazardous Material FSP).
- There is possible buried debris in a borrow pit area (Hazardous Materials FSP).

In order to identify the issues at the subject property, a two phase approach will be taken. The first phase will consist of a geophysical study to identify areas where asbestos and lead based paint may be buried.

The second phase will include subsurface investigation and soil sampling. Soil samples will be analyzed for Polychorinated Biphenyl (PCBs) by EPA Method 8082, Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270, Organophosphorous Pesticides by EPA Method 8141, Chlorinated Herbicides by EPA Method 8151, Organochlorine Pesticides (includes DDT) by EPA

Method 8081, and total lead by EPA Method 6010B, as required.

Commercial, industrial, and residential developments are planned for the Property. It is anticipated that properties cleared under the EPA Brownfields grant will be offered for sale to the public in September/October of 2009 timeframe.

# 1.1 Site Name or Sampling Area

The Property as defined includes the Babbitt Housing Area in Mineral County, California.

# **1.2 Site or Sampling Area Location**

The Property is located adjacent to the Hawthorne Army Depot. The Property is now considered part of the town of Hawthorne, Nevada, which is south and contiguous to the Property.

# **1.3 Responsible Agency**

Phase II investigations are being conducted under the EPA Brownfields Community Wide Assessment Grant for Hazardous Substances. The Grant is being administered by Mineral County, Nevada hereinafter referred to as "the County." The County Board of Commissioners is constitutionally charged with the operation and management of the County and is the decision making body for the project. The County has identified Mr. Don Orndorff as the Mineral County Brownfield Coordinator to act as the liaison between EPA and consultants. To assist the County in performing the work required under the EPA Brownfields grant, they have contracted with the environmental consulting firm of Converse Consultants (Converse). Converse will answer directly to the County Board of Commissioners through Mr. Orndorff. For additional information on organizational roles and responsibilities please refer to Section A3 of the QAPP.

# **1.4 Project Organization**

The following personally will be the contact people for this project:

Don Orndorff Mineral County Brownfields, Coordinator PO Box 1450 Hawthorne, NV 89415 Phone: (775) 312-0340 E-Mail: <u>donaldorndorff@sbcglobal.net</u> Thomas Mix Converse Consultants 4840 Mill Street, Suite 5 Reno, Nevada 89502 Phone: (775) 856-3833 E-Mail <u>tmix@converseconsultants.com</u>

# 2.0 BACKGROUND

# 2.1 Site or Sampling Area Description

The following maps identify the area within the State of Nevada, as well as an overview of the project area.



Figure 1 Project Area



# CONSULTANTS



FIGURE 2 SAMPLING AREA
## **2.2 Operational History**

The majority of the historic Babbitt Housing Area is located on the subject site. Babbitt was constructed during World War II to provide housing for married civilian workers for the Naval Ammunitions Plant located in Hawthorne, Nevada. During the period of 1940-1945, a total of 580 duplexes were constructed within the Babbitt area. The duplexes were rectangular (27 x 55 feet) and one story. The buildings were wood framed and transite (asbestos) paneled set on concrete foundations with gabled roofs covered with asbestos-containing shingles. In addition, twelve community buildings were constructed in the center of the complex. The community buildings housed a grocery store , post office, drug store, bank, bowling alley, theater, nursery/day care center, dance hall, community center (ceramic shop), and a dispensary. The community buildings were also present.

At the conclusion of the Korean Conflict, the Navy began disposing of whole blocks of vacant Babbitt housing units by selling the residences with the requirement that the new owners to remove the structures from the site. By 1964, only 261 of the original 580 duplexes remained. In 1977, operation of Naval Ammunitions Plant located in Hawthorne was transferred to the Department of the Army. In 1984, the Army Corps of Engineers began disposing of the remaining Babbitt housing units where they again were sold and removed. The last occupant moved from Babbitt in June of 1987. Some of the buildings were demolished being deemed not suitable for sale. This included the majority of the commercial buildings. The last buildings were removed in July, 1994. Each residence had been painted with lead-based paint and had asbestos-containing building materials. Also, each residence was equipped with an underground heating oil storage tank. Additional information found that during the 1994 demolition, some building debris may have been buried on the subject site.

There had once been agricultural use of the portion of the Property located between Essex and Highway 95. There was an elm tree line that had been planted as a windbreak. According to the *"Environmental Assessment for the Transfer of Ownership of the Babbitt Housing Area Portion of the Hawthorne Army Depot,* in the 1950's, DDT may have been used in an attempt to control elm beetles.

According to the "*Preliminary Assessment Screening, No. 38-EH-5034-97, Babbitt Housing Area, Hawthorne Army Depot, Hawthorne, Nevada*" dated June, 1996, there were electrical transformers located within the Babbitt area that contained PCB's. These transformers were removed between 1992 and 1994, however, no soil sampling was conducted at that time.

#### 2.3 Previous Investigations/Regulatory Involvement

The following documents were reviewed for the Phase I reports: "Environmental Assessment for the

Transfer of Ownership of the Babbitt Housing Area Portion of Hawthorne Army Depot, June 1997, prepared by Day & Zimmerman Hawthorne Corporation and Preliminary Assessment Screening, No.38-EH-5034-97, Babbitt Housing Area, July 1996, prepared by U.S. Army Center for Health Promotion and Preventive Medicine." Neither document indicated there had been any soil or groundwater sampling conducted at the subject site.

Mineral County has a Table of Results for 2007 which indicates soil sampling was conducted at undisclosed locations on the subject site. Eighteen samples were analyzed for CAM 17 metals; ten samples were analyzed for asbestos; and, six samples were analyzed for pesticides. With the exception of arsenic (reporting levels typical to the Inter-Mountain West are above the PRGs) no constituents were reported over the PRG's. Because the sampling was not relevant to the scope of work presented herein, the information is not considered pertinent to the current investigation.

# 2.4 Geological and/or Meteorological Information

The Property is located in the western portion of Nevada, near the western margin of the Basin and Range geologic province. The area has an arid to semi-arid climate. The topography is characterized by elongated ranges and valleys. The Property is located in a valley location and covered by Quaternary alluvial deposits. These deposits are chiefly valley fill, but include older gravels, slope wash, and Pleistocene lake bed deposits. According to the Geologic Map of the Hawthorne Quadrangle, 1981, the Project site is located on Young and Intermediate Alluvial Fan Deposits.

There is only one river, the Walker River, located in Mineral County. The course of the river is only approximately 50 miles long and flows into Walker Lake. This lake has no outlet and as such the water is notably saline. The lake level has been constantly dropping as recorded since the early 1900s. The water supply in the remainder of the county is limited to snow and spring run-off feeding into small streams on the east flank of the Wassuk Range, to Bodie Creek near Aurora, and scattered springs and wells. Based upon data contained in the "*Basewide Groundwater Monitoring Annual Report, 2008, Hawthorne Army Depot*", groundwater in the area of Babbitt is over 100 feet from ground surface. Regional flow is towards Walker Lake, located northwest of the Property.

# 2.5 Environmental and/or Human Impact

At the present time, there is no reason to believe the site is negatively impacting human health or the environment. This is based on the fact that the subject site is currently vacant and uninhabited. Human contact is limited to people driving or walking through the area. Also, there are no sensitive receptors located near the subject site.

However, if the site is redeveloped as planned, people will come into contact with the soil during construction and subsequent use. Therefore, the Phase II investigations are designed to evaluate soil safety for human use, as well as to identify any conditions that may limit redevelopment.

# 3.0 PROJECT DATA QUALITY OBJECTIVES

#### 3.1 Project Task and Problem Definition

The Phase II investigations are being designed to evaluate soil safety for human use, as well as to identify any conditions that may limit reuse of the property. During the Phase I investigations, information was discovered that indicated there may be buried debris on the site that contains asbestos and lead-based paint. Also historic use of the site may have included the use of DDT and organophosphates. Electricial transformers were located on the site that may have contained PCB oil and there may be buried debris in the area of the borrow pit.

# **3.2 Data Quality Objectives (DQOs)**

If anomalies are discovered during the geophysical investigation, test pits will be excavated in those areas. The excavations will be advanced approximately five feet below grade. If debris is not discovered, the excavation will be back filled and the investigation will move to the next anomaly. If debris is discovered in any of the test pits, then additional test pits will be excavated to delineate the vertical and horizontal extent of the debris. This information will be utilized to develop a cleanup plan.

If no anomalies are discovered, a total of fourteen test pits will be excavated in ten locations in Area 1A (Figure 3) and four locations in Area 2A (Figure 6). The excavations will be advanced five feet below grade. If no debris is discovered, the excavation will be back filled. If debris is discovered in a test pit, additional test pits will be excavated to delineate the vertical and horizontal extent of the debris field. This information will be utilized to develop a cleanup plan. One soil sample will be collected from each of the fourteen test pits. The depth of the sample will be based on field observations. These samples will be tested for total lead. If any of the samples are above the residential PRG, additional sampling will be recommended to further evaluate the issue. If no samples are above the residential PRG, then no further investigation will be recommended.

In the areas of the agriculture fields, community garden, ball field, tree line, and electrical transformers, the soil samples collected will be compared to the residential PRGs for the constituents of concern. If any or the samples are above the PRGs additional investigation will be recommended. This will include a more targeted sampling plan that will consist of discrete soil samples to better delineate the extent of the contamination. If no constituents of concern are identified above residential PRG's, no further investigation will be recommended.

The five test pits in the area of the borrow pit will be advanced approximately five feet below grade unless buried debris is encountered. If debris is not encountered, the test pits will be backfilled and no additional investigation will be recommended. If debris is encountered, additional test pits will be excavated to determine the vertical and horizontal extent of the buried debris. The type of material will be documented, and if necessary, additional soil sampling will be recommended to address issues related to the material encountered. If buried debris is not discovered, no further action will be recommended.

The following Table includes the major analytes of concern, and their corresponding action limits and detection limits.

| Constituents                   | Lab Test Protocol      | PRG            | Detection Limit |
|--------------------------------|------------------------|----------------|-----------------|
| 1,2-Dichlorobenzene            | EPA Method 8270        | 2,000 mg/kg    | 0.33 mg/kg      |
| 1,2,4-Trichlorobenzene         | EPA Method 8270        | 1.7 mg/kg      | 0.33 mg/kg      |
| Pentachlorophenol              | EPA Method 8270        | 3 mg/kg        | 0.8 mg/kg       |
| Phenol                         | EPA Method 8270        | 18,000 mg/kg   | 0.33 mg/kg      |
| DDT                            | EPA Method 8081        | 1.7 mg/kg      | 0.33 mg/kg      |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                | 0.067 mg/kg     |
| Aroclor 1016                   |                        | 3.9 mg/kg      |                 |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                | 0.033 mg/kg     |
| Aroclor 1221                   |                        | 0.17 mg/kg     |                 |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                | 0.033 mg/kg     |
| Aroclor 1232                   |                        | 0.17 mg/kg     |                 |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                | 0.033 mg/kg     |
| Aroclor 1242                   |                        | 0.22 mg/kg     |                 |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                |                 |
| Aroclor 1248                   |                        | 0.22 mg/kg     | 0.033 mg/kg     |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                |                 |
| Aroclor 1254                   |                        | 0.22 mg/kg     | 0.033 mg/kg     |
| Polychorinated Biphenyl (PCBs) | EPA 8082               |                |                 |
| Aroclor 1260                   |                        | 0.22 mg/kg     | 0.033 mg/kg     |
| TPH (Volatiles)                | Modified EPA 8015      | 100 ppm        | 10 mg/kg        |
| TPH (Extractable)              | Modified EPA 8015      | 100 ppm        | 10 mg/kg        |
| Volatile Organic Compounds     | EPA Method 8260B       | Will be        | 0.5 to 2 ug/L   |
|                                |                        | verified based | based on        |
|                                |                        | on compounds   | compound        |
|                                |                        | detected       |                 |
|                                |                        |                |                 |
|                                | Total Metal EPA Method |                |                 |
| Lead                           | 6010B                  |                | 0.1 mg/kg       |

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Table 3.1 Analytes of Concern

# **3.3 Data Quality Indicators (DQIs)**

DQIs are covered in Section A-7.3 in the approved QAPP.

# 3.4 Data Review and Validation

Mr. Thomas Mix will manage the project team. He will be assisted by the Converse Field Services Manager, Ms. Kathi Brandmueller, PE, CEM. Ms. Brandmueller will verify field data through reviews of data sets to identify inconsistencies or anomalous values. Any inconsistencies discovered will be resolved as soon as possible by seeking clarification from field personnel responsible for data collection. All field personnel will be responsible for following the sampling and documentation procedures described in this FSP so that defensible and justifiable data are obtained.

The steps for validating field activities include:

- 1. Evaluation of field records for completeness and consistency.
- 2. Review field QC information.
- 3. Summarize deviations and determine effects on data quality.
- 4. Summarize number and type of samples collected.

Laboratory personnel will verify analytical data at the time of analysis and reporting. Sample conformance with the requirements of the analytical method will be verified. Laboratory personnel will make a systematic effort to identify any outliers or errors before the data is reported. Outliers that result from errors found during data verification will be identified and corrected. Outliers that cannot be attributed to errors in analysis, transcription, or calculation will be clearly identified in the case narrative section of the analytical data package. All analytical data generated for this project will be verified by the laboratory.

Verified data will be checked for a variety of topics including: transcription errors, correct application of dilution factors, the appropriate reporting of dry weight versus wet weight, and the correct usage of conversion factors, among others. Verified data may have laboratory qualifiers. Verified data is one output of this process.

The steps for validating laboratory data include:

- 1. Assemble planning documents and data to be validated.
- 2. Review results of data verification to determine method, procedural and contractual QC compliance or noncompliance.
- 3. Review verified data for the data set as a whole, including laboratory qualifiers.
- 4. Assign validated data qualifiers which supersede laboratory qualifiers, although both sets of qualifiers are retained in the database.
- 5. Prepare data validation report.

# 3.5 Data Management

Field data will be handled as outlined in the approved QAPP Section B 5.1.

# 3.6 Assessment Oversight

The following information is contained in the approved QAPP and has been brought forward for clarity.

Converse will conduct at least one field audit during the life of the project. If the audit results indicate any concerns, a follow-up audit will be conducted. The field audits will be used to reveal any weaknesses in field practices and procedures. The field audits will evaluate if the field personnel are following the procedure set forth in the FSP and the SOPs. It will be the responsibility of the Converse to conduct these audits. The audit will be performed by senior staff members who are not part of the Phase II sampling team.

During the field audit the assessor will conduct personnel interviews and direct observations to evaluate adherence to the FSP and SOPs. Specific items that will be verified include:

- Examination of field documents (specifically the FSP and HASP documents which will be made available for reference to the field sampling team).
- Documentation of field personnel training.
- Verify that the proper laboratory container and proper preservatives are being utilized.
- Verify that laboratory sample containers are properly labeled and stored, and that the laboratory chain-of-custody is filled out correctly.
- Verify that the decontamination area is properly set up and functioning according to the SOP. This will be initiated in the event that decontamination is required due to field activities being conducted.
- Verify that any and all field equipment in use is functioning properly.

During the audit, any deficiencies will be discussed with field personnel and corrections will be made as soon as reasonably possible. An audit report will be filed with Mineral County within 14 days of the performance of such an audit. If the field audit identified any significant noncompliance issues, a follow-up field audit will be conducted.

# 4.0 SAMPLING RATIONALE

## 4.1 Soil Sampling

#### 4.1.1 Surface Soil Sampling

#### General

Surface soil sampling will specifically addresses those areas where pesticides, herbicides or PCB's may be present on the surface. The herbicides or pesticides would have been applied by aerial spraying. The PCB's would have been the result of oil being released from pole mounted transformers onto the soils surface. Sample locations for the Property were identified based on the historic information that was generated during the Phase I investigations (see Figures 3-9 for proposed sample locations).

#### Sampling in Ball-Field, Agricultural and Garden Areas

According to the "*Environmental Assessment for the Transfer of Ownership of the Babbitt Housing Area Portion of the Hawthorne Army Depot*" in the 1950s, DDT and other pesticides including organophosphates, may have been used in the agricultural areas of Babbitt. The areas of most likely exposure to DDT and organophosphate use have been identifed as the historic agricultural area, the community garden area, and the ball field. For this reason, soil samples collected from these areas will be analyzed for Semi-Volatile Organic Compounds (SVOCs) to include Polynuclear Aromatic Hydrocarbons (PAHs) utilizing EPA Method 8270, Organophosphorous Pesticides using EPA Method 8141, Chlorinated Herbicides using EPA Method 8151, and Organochlorine Pesticides (includes DDT) using EPA Method 8081. All sample results will be compared to soil PRG levels for residential soil.

Within each area, twenty (20) random samples will be collected between 0 and 1 foot below ground surface. The twenty samples will be composited into one sample. The ball field, agricultural and garden areas have been divided into ten sub-areas. The sub-areas are marked 1 through 10 on Figures 3, 4, 5, and 6.

#### Sampling Along Tree Line

According to the "*Environmental Assessment for the Transfer of Ownership of the Babbitt Housing Area Portion of the Hawthorne Army Depot*" DDT may have been used in the 1950s in the area in an attempt to control elm beetles. The heaviest DDT usage was most likely along the elm tree line that acted as a windbreak for the community. To address the elm tree line, a soil sample will be collected approximately every 150 feet along the historic tree line from 0 to 1 foot below ground surface. Each sample will be analyzed for Organochlorine Pesticides (including DDT) utilizing EPA Method 8081.

It is assumed that the DDT would be having been applied at the same rate for the entire tree line; therefore, a spacing of 150 feet should supply a good representation of the area and be a cost effective use of grant monies. An estimated 20 samples will be obtained. The approximate sample locations have been marked on Figures 3, 4, 6, 7, 8 and 9. All sample results will be compared to soil PRG levels for residential soil.

# Sampling at Electrical Transformer Locations

According to the "*Preliminary Assessment Screening No. 38-EH-5034-97, Babbitt Housing Area, Hawthorne Army Depot, Hawthorne, Nevada*" dated June, 1996, there were electrical transformers located within the Property that contained PCBs. The transformers were removed between 1992 to 1994; however, no soil sampling was conducted at that time.

Five areas were identified where transformers were located that may have contained PCBs. These areas are identified on Figures 4, 5, 6, and 7. Three soil samples will be collected from 0 to 1 foot below grade at the base of each power pole where each transformer may have been located. The three samples will be composited into one for a total of five samples. Each of these samples will be analyzed for PCBs using EPA Method 8082. All sample results will be compared to the soil PRG levels for residential soil.

# 4.1.2 Subsurface Soil Sampling

# <u>General</u>

Subsurface soils sampling is proposed in areas where buried debris may be present, either from demolition of on-site structures or the previously identified borrow pit.

#### **Buried Debris**

Two areas of possible buried debris were identified which may contain asbestos and lead-based paint. These areas are identified in Figure 3 and Figure 6. Each area will be investigated using geophysical equipment. The purpose of this investigation is to identify any anomalies that may indicate buried debris. If anomalies are detected, backhoe pits will be placed in the area of the anomaly. If no anomalies are identified, backhoe test pits will be placed in random distribution throughout the area where the buried debris is suspected.

A minimum of fourteen (14) test pit locations will be spread across the combined two areas. Figures 3 and 6 indentify the areas of buried debris. One soil sample will be collected from each test pit.

The depth of the soil samples will be determined in the field based on visual observations. Each soil sample will be tested for total lead.

#### Soil Sampling – Borrow Site

The last issue identified was a borrow pit where trash had been dumped. This area is identified on Figure 8. Without a subsurface evaluation it is not possible to identify the quantity or quality of the dumped debris; therefore, Converse will place approximately five test pits in the area of the borrow pit. After the buried material types are identified, a decision to proceed with soil will be made. The decision process for determining whether or not sampling may be required will be based upon the material encounter in the test pits. For example, if only trash such as old furniture and paper waste is discovered, only lead sampling will be conducted. However, if items such as drums are uncovered, testing will be required to ascertain their contents and whether or not they have caused soil contamination. This may include total petroleum hydrocarbons and volatile organics. Soil samples will be collected from a depth one foot, three feet and five feet in each test pit. Deeper samples may be necessary depending on the depth of debris. A minimum of 15 soil samples will be tested for total lead. Based on visual observations additional analysis may be required.









1 inch = 2,000 feet

| Legend |  |                      |  |  |  |  |  |
|--------|--|----------------------|--|--|--|--|--|
|        | Tree Line                                      | COUNTY_ROADS_MINERAL |  |  |  |  |  |
| \$     | Historic Location of Pole-Mounted Transformers | DIRT                 |  |  |  |  |  |
| 0      | Community Garden                               | GRADE AND DRAIN      |  |  |  |  |  |
| 9      | Study Area Parcels                             | NON-PAVED            |  |  |  |  |  |
| -11    | County Parcels                                 | PAVED                |  |  |  |  |  |

Area 4 - Sub Area for composite sample X = Appoximate Location for Treeline Samples

# SITE MAP

Babbitt Subject Parcels A Portion of APN# 06-640-13 Hawthorne\_County, NV

# FIGURE 4

Project No: 07-23151-04-05C







1 inch = 2,000 feet

|   | Legend          |   |  |
|---|-----------------|---|--|
|   | Commercial Area | COUNTY_ROADS_MINERAL<br>NOT SPECIFIED<br>DIRT |  |
| N | County Parcels  |   |  |



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1 inch = 2,000 feet

| County Parcels NON-PAVED |
|--------------------------|



Babbitt Subject Parcels A Portion of APN# 06-640-17 Hawthorne County, NV

# **FIGURE 7**

Project No: 07-23151-04-05F







1 inch = 2,000 feet

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|          | Leg             | end       |                 |
|----------|-----------------|-----------|-----------------|
| atility. |                 | Mineral C | ounty Roads     |
| Tree     | Line            |           | NOT SPECIFIED   |
| Bon      | ow Pit          |           | DIRT            |
| C Stur   | ty Area Parcels |           | GRADE AND DRAIN |
| ST COL   | nty Parcels     |           | NON-PAVED       |
|          |                 |           | PAVED           |



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|         | Leg                | jend                 |
|---------|--------------------|----------------------|
| 15 A.A. | -                  | Mineral County Roads |
| 12      | Tree Line          | NOT SPECIFIED        |
| 0       | Borrow Pit         | DIRT                 |
| 1.3     | Propane UST        | GRADE AND DRAIN      |
| Q       | Study Area Parcels | NON-PAVED            |
| 11      | County Parcels     | PAVED                |

# 5.0 REQUEST FOR ANALYSES

# **5.1 Analyses Narrative**

Soil samples will be collected for laboratory analysis according to the following table:

| Area of Concern                     | Constituents                                   | Lab Test Protocol    | Primary<br>Samples       | Field<br>Duplicates | Laboratory<br>Control<br>Samples | Blanks           |
|-------------------------------------|--|----------------------|--------------------------|---------------------|----------------------------------|------------------|
|                                     |  | EPA Method 8270      |                          |                     |                                  |                  |
|                                     | Semi Volatiles                                 | to Include PAHs      | 10                       | 1                   | 1                                | 1                |
| Historic                            | Pesticides                                     | EPA Method 8141      | 10                       | 1                   | 1                                | 1                |
| Agricultural Area,                  | Herbicides                                     | EPA Method 8151      | 10                       | 1                   | 1                                | 1                |
| Community Garden<br>and, Ball Field | Organochlorine<br>Pesticides<br>(includes DDT) | EPA Method 8081      | 10                       | 1                   | 1                                | 1                |
| Tree line                           | Organochlorine<br>Pesticides<br>(includes DDT) | EPA Method 8081      | 15                       | 2                   | 1                                | 2                |
| Pole Mounted                        |  |                      |                          |                     |                                  |                  |
| Transformers                        | PCB's  | EPA Method 8082      | 5                        | 1                   | 1                                | 1                |
|                                     | TPH<br>(Volatiles)                             | Modified EPA<br>8015 | Up to<br>15 as<br>needed | 1 if<br>required    | 1 if<br>required                 | 2 if<br>required |
| Borrow Pit                          | TPH<br>(Extractable)                           | Modified EPA<br>8015 | Up to<br>15 as<br>needed | 1 if<br>required    | 1 if<br>required                 | 2 if<br>required |
|                                     | Volatile<br>Organic<br>Compounds               | EPA Method<br>8260B  | Up to<br>15 as<br>needed | 1 if<br>required    | 1 if<br>required                 | 2 if<br>required |

# Table 5.1Request for AnalysisHerbicides, Pesticides, PCB's, TPH, Volatiles

#### Table 5.2 Request for Analysis Lead

|                     |              | Leau              |         |            |            |        |
|---------------------|--------------|-------------------|---------|------------|------------|--------|
| Area of Concern     | Constituents | Lab Test Protocol | Primary | Field      | Laboratory | Blanks |
|                     |              |                   | Samples | Duplicates | Control    |        |
|                     |              |                   |         |            | Samples    |        |
|                     |              | Total Metal EPA   |         |            |            |        |
|                     | Lead         | Method 6010B      | 14      | 2          | 1          | 2      |
| Two areas of buried |              |                   |         |            |            |        |
| debris              |              |                   |         |            |            |        |
|                     |              | Total Metal EPA   |         |            |            |        |
| Borrow Pit          | Lead         | Method 6010B      | 15      | 2          | 1          | 2      |

 Table 5.3 Sample Quality Control

| Constituents                                     | Sample Type   | Laboratory                              | Hold     | Preservative | QC Samples  |
|--|---|---|----------|--------------|---|
|  |   | Containers                              | Time     |              |   |
| Semi-Volatile<br>Organic Compounds<br>(SVOCs)    | Composite   |   | 7 Days * |              | Duplicate field samples will<br>be collected for 10% of the<br>total volume of samples  |
| Organophosphorous<br>Pesticides                  | Composite   | 1-8 ounce<br>glass soil<br>jar for this | 7 Days * |              | collected for this suite of<br>analytes. Ten samples are<br>planned; therefore, 1<br>duplicate sample will be<br>collected. These samples will<br>be randomly chosen in the   |
| Chlorinated<br>Herbicides                        | Composite   | analytes.                               | 7 Days * | Cool to 4°C  | field.  |
| Organochlorine<br>Pesticides (includes<br>DDT)   | Grab for Samples<br>Collected on<br>Tree Line   |   | 7 Days * | ±2°C         | Along the historic tree line,<br>an additional 15 samples will<br>be collected for DDT only.<br>Duplicate field samples will<br>be collected for 10% of the<br>total volume of samples for a<br>total of two samples.   |
| Organochlorine<br>Pesticides (includes<br>DDT)   | Composite for<br>samples<br>collected in 10<br>sub areas within<br>the agricultural,<br>garden, and ball<br>field areas |   | 7 Days*  |              | Duplicate field samples will<br>be collected for 10% of the<br>total volume of samples<br>collected for this suite of<br>analytes. Ten samples are<br>planned; therefore, 1<br>duplicate sample will be<br>collected. These samples will<br>be randomly chosen in the<br>field. |
| a  | 1   | 1                                       | 1        | 1            |   |
| TPH<br>Purgeable<br>(gasoline range<br>organics) | Grab  | 25 gram<br>EnCore<br>sampler            | 48 Hours |              | Duplicate field samples will<br>be collected for 10% of the<br>total volume of samples<br>collected for this analyte. A<br>maximum of 15 samples may  |

| TPH<br>Purgeable<br>(gasoline range<br>organics) | Grab | 25 gram<br>EnCore<br>sampler   | 48 Hours  |                     | be collected for 10% of the<br>total volume of samples<br>collected for this analyte. A<br>maximum of 15 samples may   |
|--|------|--------------------------------|---|---------------------|--|
| TPH<br>Extractable<br>(diesel range<br>organics) | Grab | 1-4 ounce<br>glass soil<br>jar | 14 days<br>to extract<br>(analyze<br>within 40<br>days) | Cool to 4°C<br>±2°C | be collected as needed. Up to<br>2 duplicate samples will be<br>collected.   |
| Volatile Organics                                | Grab | 25 gram<br>EnCore<br>sampler   | 48 Hours  |                     | Duplicate field samples will<br>be collected for 10% of the<br>total volume of samples<br>collected for this analyte. A<br>maximum of 15 samples may<br>be collected as needed. Up to<br>two duplicate samples will be<br>collected. |

| Constituents                      | Commits Trans   | Laboratama   | 11-14    | Duranting           | OC Commission   |
|-----------------------------------|---|--|----------|---------------------|---|
| Constituents                      | Sample Type   | Laboratory   | Hold     | Preservative        | QC Samples  |
|                                   |   | Containers   | Time     |                     |   |
| Polychorinated<br>Biphenyl (PCBs) | Composite   | 1-4 ounce<br>grass soil jar                        | 7 Days * |                     | One duplicate field sample<br>will be collected for the five<br>primary samples planned for<br>this analyte.  |
| Total Lead                        | Grab  | 1-4 ounce<br>grass or<br>plastic soil<br>container | 180 Days | None                | Duplicate field samples will<br>be collected for 10% of the<br>total volume of samples<br>collected for this analyte.<br>Twenty nine samples are<br>anticipated with 3 duplicate<br>sample to be collected. |
| Equipment Blanks                  | Collected as<br>described in<br>Section<br>10.1.1.1 of this<br>document | 1 litter<br>amber glass<br>bottle                  |          | Cool to 4°C<br>±2 C | As described in Section<br>10.1.1.1 of this document  |
| Field Blanks                      | Collected as<br>described in<br>Section<br>10.1.1.1 of this<br>document | 1 litter<br>amber glass<br>bottle                  |          | Cool to 4°C<br>±2 C | As described in Section 10.1.1.1 of this document   |

Table 5.3 Sample Quality Control (Continued)

\* holding time to extraction

# **5.2 Analytical Laboratory**

The following information is contained in the approved QAPP and has been brought forward for clarity.

DQIs for the analyte for this project are located in "Appendix G" of the approved QAPP. These DQIs will be provided to the laboratory which will then acknowledge that it is capable and willing to meet the DQI criteria. If additional analytes are identified during the development of the FSP, DQIs will be obtained for those analytes. If the project is allowed to use a laboratory from the EPA CLP, it will not be necessary to submit the DQI due to the laboratories previously undergoing a rigorous EPA acceptance process.

Additional information on laboratory procedure can be found in Section B 5.4 of the approved QAPP.

# 6.0 FIELD METHODS AND PROCEDURES

## 6.1 Field Equipment

## 6.1.1 List of Equipment Needed

A list of field equipment is included in Section 6 of the Converse Consultants Soil Sampling SOP, included in "Appendix A" of this document. The SOP also is part of the approved QAPP.

#### 6.1.2 Calibration of Field Equipment

The following information is contained in the approved QAPP and has been brought forward for clarity.

All field and laboratory analytical instruments and equipment will be tested, inspected, and maintained according to the manufacturer's guidelines and recommendations. Data collected from improperly functioning equipment will not be used. Records of equipment testing, inspection, and maintenance will be maintained with each piece of equipment.

Preventative maintenance for field equipment will be carried out in accordance with procedures and schedules recommended in the equipment manufacturer's literature or operating manual.

Any field instrument that is out of order or compliance will be segregated, clearly marked, and not used until it is repaired. The field team leader will be notified of equipment malfunctions so that service can be completed quickly or substitute equipment can be obtained. When the condition of equipment is suspect, unscheduled testing, inspection, and maintenance will be conducted. Any significant problems with field equipment will be reported in the daily field report.

Calibration of all analytical instrumentation is required to ensure that the analytical system is operating correctly and functioning at the sensitivity that is required to meet project-specifications. Each instrument will be calibrated with standard solutions appropriate to the instrument and analytical method, in accordance with the methodology specified by the manufacturer.

Field equipment, if used, will be calibrated according to the manufacture's specifications. The calibration frequency depends on the type and stability of the equipment, the intended use of the equipment, and recommendations of the manufacturer. Detailed calibration procedures for field equipment are available in specific manufacturer instruction manuals. All calibration information will be recorded and maintained with the field instruments.

# 6.2 Field Screening

No field screening, with the exception of visual observations of debris, will be used during the gathering of data for this project.

# 6.3 Soil

As part of this project, grade and subsurface soils will be collected. These samples types are discussed in Section 2 of Converse Consultants SOP, included in "Appendix A" of this document.

# 6.3.1 Surface Soil Sampling

Collection of surface soils is discussed in Section 3.1 of Converse Consultants Soil Sampling SOP, included in "Appendix A" of this document. The SOP is also part of the approved QAPP.

# 6.3.2 Subsurface Soil Sampling

Subsurface soils will be collected from back hoe pits in the two areas designated to obtain subsurface debris and in the borrow pit. This is covered in Section 3.2 of Converse Consultants Soil Sampling SOP, in "Appendix A" of this document.

# 6.4 Other

It is not anticipated that any media besides soil will be sampled during this Phase II investigation, however, if unanticipated conditions are encountered, the FSP will be amended to cover the condition.

#### **6.7 Decontamination Procedures**

Decontamination procedures are outlined in Converse Consultants Decontamination SOP, included in "Appendix B" of this document. The SOP is also part of the approved QAPP.

# 7.0 SAMPLE CONTAINERS, PRESERVATION AND STORAGE

# 7.1 Soil Samples

The follow information is contained in the approved QAPP and has been brought forward for clarity.

Soil samples will be placed in either 4 or 8 ounce glass soil jars. These jars will be supplied by the laboratory. All laboratory samples will be labeled in the field with a Sharpie<sup>®</sup> or equivalent water-proof labeler with the following information:

- Sample Location
- Date Sample was Collected
- Time Sample was Collected
- Sample Type
- Samplers Name
- Method Used to Preserve Sample

After the jars are labeled, a custody seal should be placed on sample container.

Samples collected for organic and mercury analysis must be placed in coolers with ice. Samples for metal analysis only, with the *exception* of mercury, can be placed in a cooler without ice; however, ice can also be used for these samples if it easier to keep all samples together.

Ice will be placed in zip lock bags or other water tight containers and the samples containers will be placed in the cooler in such a way as to avoid melted ice water entering into the containers.

# 8.0 DISPOSAL OF RESIDUAL MATERIALS

The only residual materials that will be generated during this sampling event will soil that will be shipped to the laboratory. It will be the laboratory's responsibility to properly dispose of the unused soil.

# 9.0 SAMPLE DOCUMENTATION AND SHIPMENT

The following information is contained in the approved QAPP and has been brought forward for clarity.

Copies of various field forms are included in "Appendix D" of the approved QAPP. Individual samples will be labeled in the field. Labels will include the sample location, the date and time of collection, sample type, sampler's name, and the method used to preserve the sample, if applicable. Sample preservation involves the treatment of a sample usually through the addition of a compound that adjusts the pH to retain the samples properties, including concentrations of substances, until they can analyzed.

# 9.1 Field Notes

The following information is contained in the approved QAPP and has been brought forward for clarity.

The field team should record, in ink, field activities on field forms. For each sampling event, the

field team must provide the site name and location, date, the sampling start and finish times, the names of field personnel, the level of protection, the documentation of any deviation from protocol, and signatures of field personnel. For individual samples, the field teams should ensure that the field notes document the exact location and time that the sample was taken, any measurement made (with real-time equipment), a physical description of the sample, the sample ID number, the sampling depth, the volume and type of sample, and the equipment used to collect the sample. This information can be critical to future evaluations of the resulting data's usability.

Complete and accurate documentation is essential to demonstrate that field measurement and sampling procedures are carried out as described in this QAPP and FSP. At a minimum, the following information will be recorded on the field forms:

- Name and affiliation of all on-site personnel or visitors
- Weather conditions during the field activity
- Summary of daily activities and significant events
- Notes of conversations with coordinating officials
- Discussion of issues encountered and their resolution
- Discussion of deviations from the field sampling plan.
- Description of all photographs taken

Copies of various field forms are included in "Appendix C" of this document.

#### 9.1.1 Field Logbooks

Because of the smaller size of the project, field log books will not be used for this project.

#### 9.1.2 Photographs

A photographic log, with descriptions, will be compiled for the final Phase II report.

# 9.2 Labeling

The following information is contained in the approved QAPP and has been brought forward for clarity.

Individual samples should be labeled in the field. Labels should include the sample location, the date and time of collection, the sample type, the sampler's name, and the method used to preserve the sample, if applicable. No preservatives, with the exception of ice, will be required for the soil samples collected for this project.

## 9.3 Sample Chain-Of-Custody Forms and Custody Seals

A sample chain-of-custody form and custody seals are provided in Section 6 of the Converse Consultants Soil Sampling SOP, included in "Appendix A" of this document. The SOP is also part of the approved QAPP.

#### 9.4 Packaging and Shipment

Samples should be delivered to the laboratory as soon as reasonably possible after the sampling event. If the samples are to be shipped to the laboratory, the cooler can be used as a shipping container and blue ice can be substituted for the ice used during field collection.

#### **10.0 QUALITY CONTROL**

#### **10.1 Field Quality Control Samples**

The information from 10.1.1 is contained in the approved QAPP and has been brought forward for clarity.

#### 10.1.1 Assessment of Field Contamination (Blanks)

Field quality control samples are collected to help evaluate whether contamination has been caused by the equipment, ambient conditions, sample containers, transit, or the laboratory. The samples will include equipment blanks, field blanks, and trip blanks. One type of blank must be collected per sampling event, but not all three. If, as part of the assessment, equipment is to be decontaminated in the field, equipment blanks will be collected. Field blanks are the next in sampling priority, followed by trip blanks. However, since no sampling for volatile compounds are planned, trip blanks will not used during the Phase II investigation.

#### **10.1.1.1 Equipment Blanks**

Equipment blanks are collected to evaluate the potential for cross-contamination of samples during collection. When non-disposable sampling equipment is used in the field, equipment blanks will be collected at a rate of one per day or 1 out of every ten pieces of equipment decontaminated, whichever is greater.

Equipment blanks will be obtained by passing organic-free water through or over the decontaminated sampling equipment, and collecting the water in appropriate sample containers. Equipment blanks will be analyzed for the same parameters as the associated field samples. Equipment blanks should not contain detectable concentrations of target analyses greater than the PRQL for the compound. Any detection of target analytes within an equipment blank will result in an investigation to determine the effect on overall data usability. Affected results will be qualified as estimates or as nondetects at an elevated PRQL, as appropriate.

#### 10.1.1.2 Field Blanks

Field blanks are collected to evaluate the potential for cross-contamination of samples during collection. Field blanks will be collected at a rate of one per day or 1 for every 10 samples collected, whichever is greater.

Field blanks will be collected on days when no equipment blanks are collected. Field blanks for soil and water samples are laboratory supplied containers filled in the field with purged deionized water. Field blanks should not contain detectable concentrations of target analytes greater than the PRQL for the compound. Any detection of target analytes in a field blank will result in an investigation to determine the effects on overall data usability. Affected results may be qualified as estimates or as nondetects at an elevated PRQL, as appropriate.

# **10.1.1.3 Temperature Blanks**

Temperature blanks will be collected for this project and included in each ice chest.

# 10.1.1.4 Assessment of Field Variability (Field Duplicate or Co-located Samples)

Duplicate field samples will be collected for a minimum of 10% of the total volume of the samples collected. The samples will be randomly chosen in the field and will be located based on information observed in the field (i.e. areas where soil staining is observed or odors are evident). If no observations are made to indicate one area may be more contaminated than others, the samples will be randomly collected. The amount of samples for each analyte is outline in Table 5.1 of this FSP.

#### **10.2 Background Samples**

No background samples are planned for this project.

#### **10.3 Field Screening and Confirmation Samples**

The only field screening planned for this project is visual observations. No confirmation samples are planned.

# **10.4 Laboratory Quality Control Samples**

For this project, six laboratory control samples will be collected for each analyte evaluated. This will include PCBs, SVOCs, Organophosphorous Pesticides, Chlorinated Herbicides, Organochlorine Pesticides (includes DDT), and total lead by EPA method 6010B. These samples will be collected by increasing the soil required for each analyte by 2. The collected sample will be mixed in the field to try it assure that it is as homogeneous as possible. The sample will them be handled as the other collected samples covered by FSP. An effort will be made to pick the sample expected to contain moderate levels of contamination. If there is no way to make this determination in the field, a random location will be selected for each sample.

# 11.0 FIELD VARIANCES

As conditions in the field may vary, it may become necessary to implement minor modifications to sampling as presented in this plan. When appropriate, the QA Office will be notified and a verbal approval will be obtained before implementing the changes. Modifications to the approved plan will be documented in the final report.

# 12.0 FIELD HEALTH AND SAFETY PROCEDURES

Please reference Section A 4.3 of the QAPP.



Soil Sampling SOP

#### 1) INTRODUCTION

The purpose of this Standard Operating Procedure (SOP) is to provide a description of the procedures for the collection of representative soil samples. Soil samples will consist of two types, grab samples and composite. Samples can also be taken at variable depths below ground surface. In some cases, hand sampling equipment can be used, in other cases power equipment may be utilized. Power equipment may include back-hoes, drill-rigs, or direct push (Geo-Probe).

These are standard (i.e. typically applicable) operating procedures which may be varied or changed, as required, dependent upon site conditions, equipment limitation, or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented and associated with the final report.

2) SAMPLE TYPES

#### Grab Samples:

A grab sample is defined as a discrete aliquot representative of a specific location at a given point in time. The sample is collected all at once at one particular point in the sample medium. The representativeness of such samples is defined by the nature of the materials being sampled. In general, as sources vary over time and distance, the representativeness of grab samples will decrease.

Grab samples will be collected using disposable or decontaminated hand instruments. After collection, the sample will be placed in a sterile laboratory supplied container. The containers will be handled as described in SECTION 4 of this SOP.

#### Composite Samples

Composites are non-discrete samples composed of more than one specific aliquot collected at various sampling locations and/or different points in time. Analysis of this type of sample produces an average value and can, in certain instances, be used as an alternative to analyzing a number of individual grab samples and calculating an average value. It should be noted, however, that compositing can mask problems by diluting isolated concentrations of some hazardous compounds below detection limits. Compositing is often used for environmental samples and may be used for hazardous samples under certain conditions. For example, compositing of hazardous waste is often performed after compatibility tests have been completed to determine an average value over a number of different locations (group of drums). This procedure generates data that can be useful by providing an average concentration within a number of units,

can serve to keep analytical costs down, and can provide information useful to transporters and waste disposal operations.

Once the need for composite sampling is identified in the Field Sampling Plan (FSP), the location of the sample points will be identified by one of two methods. The first method will involve identifying a sub-area within the larger area to be sampled, and then a set number of random samples would be collected within that area and composited. The second method would be to identify a grid in the area to be sampled and a sample would be collected at each grid point. Soil from a given number grid points would them be composited.

To composite a soil sample, a predetermined amount of soil will be identified in the FSP (this is generally one spade full). This amount of soil will be collected from each identified location and placed in a pre-cleaned container (plastic bucket). The soil will then be mixed thoroughly using the collection spade. After mixing, a sample will be removed and placed in a sterile laboratory supplied container.

- 3) TYPES OF SAMPLE COLLECTION
- 3.1 Near Surface Soil Samples

Near surface samples (0-2 feet below grade) can be collected with hand tools which include spades, scoops, or bucket auger. These tools must be properly decontaminated before, between, and after sampling events. The Converse SOP for Decontamination must be followed.

Once the soil is collected, it will be placed in a sterile laboratory supplied container. The containers can include 4 or 8 ounce glass jars or plastic container. Glass containers must be used for soil samples that will be analyzed for organic compounds.

Soil samples to be analyzed for VOCs will be collected from the 3" metal sleeves in accordance with EPA Method 5035 using one single-use EnCore sampler. Care should be taken to disturb the sample as little as possible during collection. Samples will be collected by driving a 3 inch steel tube into the ground with a slide hammer. After collecting the samples they will be transferred to the EnCore sampler by pushing the sampler into the tube sample. Please note these samples only have a 24 hour hold time.

3.2 Collection of Soil Samples Utilizing a Backhoe

For collection of deeper samples, test pits and trenches can be dug utilizing a backhoe or excavator. The trench of test pits deeper than 5 feet cannot be entered unless they

are sloped or scored. In most cases, soil samples can be collected from the backhoe bucket using the following procedure:

- Have the backhoe operator place his back hoe against the test pit wall or bottom of excavation in the area where you wish to collect the sample.
- Roll the bucket so the teeth of the back hoe scraps the area where you wish to collect the sample.
- Lift the bucket straight up and place bucket on ground where the sampling personnel can reach it. The sampling personnel will then remove the soil from the teeth of the backhoe with a clean, gloved hand. Care must be taken to collect soil in a way to gather the soil that has not come into direct contact with the backhoe bucket.

Once the soil is collected it will be placed in a sterile laboratory supplied container. The containers can include 4 or 8 ounce glass jars or plastic containers. Glass containers must be used for soil samples that will be analyzed for organic compounds.

Soil samples to be analyzed for VOCs will be collected accordance with EPA Method 5035 using one single-use EnCore sampler. Care should be taken to disturb the sample as little as possible during collection. Please note these samples only have a 24 hour hold time.

3.3 Collection of Soil Samples Direct Push

Samples can be collected at depth using direct push technology. The technician will sample at the depth identified on the FSP. A four to five footed Teflon lined sampler will be pushed into the ground at selected depths. Based upon the field screening required for the project, selected lengths of samples will be chosen and the tube cut in the lengths required. Tight fitting plastic caps will be placed on each selected sample. Black caps will be placed on the bottom of sample and red on top. If colored caps are not available, the technician will label the bottom of the tube.

As an alternative, the Teflon tubes can be cut open and the soil removed and placed in sterile laboratory supplied container. The containers can include 4 or 8 ounce glass jars or plastic containers. Glass containers must be used for soil samples that will be analyzed for organic compounds.

For samples that will be analyzed for volatile compounds care should be taken to disturb the sample as little as possible during collection. Soil samples to be analyzed for VOCs will be collected from the Teflon tubes in accordance with EPA Method 5035 using one single-use EnCore sampler. Please note these samples only have a 24 hour hold time.

#### 3.4 Collection of Soil Samples from a Drill-Rig

Samples can be collected from samplers advanced by a drill rig. The sampler (split spoon) will be advanced at selected sampling depths. The split spoon will be removed from the ground and disconnected from drill rig flight. The split spoon will be opened and the soil placed in a sterile laboratory supplied container. The containers can include 4 or 8 ounce glass jars or plastic containers. Glass container must be used for soil samples that will be analyzed for organic compounds. As an alterative, the split spoon can be lined with a metal liner and the liner can be removed from the device and plastic caps placed on the ends. Black caps will be placed on the bottom of the sample and red on top. If colored caps are not available, the technician will label the bottom of the tube.

Soil samples to be analyzed for VOCs will be collected accordance with EPA Method 5035 using one single-use EnCore sampler. Care should be taken to disturb the sample as little as possible during collection. Please note these samples only have a 24 hour hold time.

#### 4) SAMPLE HANDLING

All laboratory samples will be labeled in the field with a Sharpie<sup>®</sup> or equivalent waterproof labeler with the following information:

- Sample Location
- Date Sample Collected
- Time Sample Collected
- Technicians Initials

After the jars are labeled, a custody seal should be placed on sample container (see example of custody seals attached to SOP).

Samples collected for organic and mercury analysis must be placed in coolers with ice. Samples for metal analysis only, with the *exception* of mercury, can be placed in a cooler without ice, however, ice can also be used for these samples if it easier to keep all samples together.

Ice should be placed in zip lock bags or other water tight containers and the samples containers should be placed in the cooler in such a way as to avoid melted ice water getting into the containers.

Samples should be delivered to the laboratory as soon as reasonably possible after the sampling event. If the samples are to be shipped to the laboratory, the cooler can be

used as a shipping container and blue ice can be substituted for the ice used during field collection.

# 5) FIELD SUPPLIES

Before each sampling event the technician should collect the field supply check list (a copy of the check list is attached to this SOP).

CONVERSE CONSULTANT SOIL SAMPLING SOP DATED May 26, 2009 Revision: 0.1

#### 6) ATTACHMENTS

#### EXAMPLE OF SHIPPING LABLES AND CUSTODY SEALS

|          | (Name of Sampling Organiza Sample Description: Sample Location: Data: Time: Matrix: Sample Type: Preservative: Sampled By: Sample ID #: | (aois<br>Genarks:                 |  |
|----------|---|-----------------------------------|--|
|          | CUSTODY SEAL<br>Date<br>Signature   | CUSTODY SEAL<br>Date<br>Signature |  |
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**Decontamination SOP** 

#### 1) INTRODUCTION

The purpose of this Standard Operating Procedure (SOP) is to provide a description of the methods used for preventing, minimizing, or limiting cross-contamination of samples due to inappropriate or inadequate equipment decontamination. It also provides general guidelines for developing decontamination procedures for sampling equipment to be used during hazardous waste operations as per 29 Code of Federal Regulations (CFR) 1910.120. This SOP does not address personnel decontamination.

These are standard (i.e. typically applicable) operating procedures which may be varied or changed as required, dependent upon site conditions, equipment limitation, or limitations imposed by the procedure. In all instances, the ultimate procedures employed should be documented and associated with the final report.

To help control cross-contamination, when possible, disposal and one time use items will be used for sample collection.

#### 2) DECONTAMINATION SETUP FOR HAND COLLECTION INSTRUMENTS

During each sampling event where it is necessary to decontaminate hand collection instruments, a decontamination area will be set up. A plastic sheet will be place on the ground. Three clean plastic buckets will placed on the plastic sheet. The first bucket will be filled with tap water and Alconox soap, a scrub brush, and sponge. The second bucket will contain clean tap water, and the third bucket will be used to collect distilled/de-ionized water.

#### 3) DECONTAMINATION STEPS FOR HAND COLLECTION INSTRUMENTS

- Step 1: Place item to be decontaminated into first bucket. Use brush and sponge to wash item.
- Step 2: Rinse the item in the second bucket.
- Step 3: Hold item over third bucket and pour distilled/de-ionized water over item (if required, some of this last rinse water can be collect for laboratory sampling to verify effectiveness of the decontamination process).
- Step 4: Place item on clean towel to air dry.

#### 4) DECONTAMINATION OF POWER EQUIPMENT I.E. DRILL RIGS AND GEO PROBES

The drilling subcontractor must steam clean the auger or geo probe flights before mobilizing to the site. When possible, all soil samples will be collected in a single use plastic sleeve. If a reusable split spoon sampler is used, it will be decontaminated before each use by the same proceeded used to decontaminated hand tools.

If auger or geo probe flights need to be reused during a single day of sampling, it will be the sub-contractors responsibility to set up a station to decontaminate this equipment. At a minimum, the equipment must be cleaned using a Low-Pressure Water wash to remove all visible contaminates. This method consists of a container which is filled with water. The user pumps air out of the container to create a vacuum. A slender nozzle and hose allow the user to spray in hard-to-reach places. For a highly contaminated site, additional on-site decontamination may be required. This will be discussed with the sub-contractor on a site by site basis.
# Appendix C

**Field Forms** 



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### SAMPLE LOG

| LOCATION | DEPTH | PID READING | LATATUDE AND<br>LONGATUDE | LAB TEST | NOTES |
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Field Supply Check List

| Item                                 | Need for<br>Project | Date Cleaned<br>and checked | Date Loaded | Date Returned |
|--------------------------------------|---------------------|-----------------------------|-------------|---------------|
| Maps/Plot Plan                       |                     | NA                          |             | NA            |
| GIS                                  |                     |                             |             |               |
| Tape Measure                         |                     |                             |             |               |
| Measuring Wheel                      |                     |                             |             |               |
| Survey Stakes and Flags              |                     | NA                          |             | NA            |
| Camera                               |                     |                             |             |               |
| PID                                  |                     |                             |             |               |
| Zip Lock Bags                        |                     | NA                          |             |               |
| 4 oz Glass Soil Jars*                |                     | NA                          |             | NA            |
| 8 oz Glass Soil Jars*                |                     | NA                          |             | NA            |
| Voas*                                |                     | NA                          |             | NA            |
| Amber Bottles*                       |                     | NA                          |             | NA            |
| Water Bottles for                    |                     | NA                          |             | NA            |
| Metal*                               |                     |                             |             |               |
| Sample Labels                        |                     | NA                          |             | NA            |
| Chain-of-Custody                     |                     | NA                          |             | NA            |
| Custody Seals                        |                     | NA                          |             | NA            |
| Cooler                               |                     |                             |             |               |
| Ice                                  |                     | NA                          |             | NA            |
| 3 or More Clean<br>Plastic Buckets** |                     |                             |             |               |
| Scrub Brush**                        |                     |                             |             |               |
| Sponge**                             |                     |                             |             |               |
| Alconox**                            |                     |                             |             |               |
| Paper Towels**                       |                     |                             |             |               |
| Plastic Sheets**                     |                     |                             |             |               |
| Hand Spade                           |                     |                             |             |               |
| Hand Auger                           |                     |                             |             |               |
| Disposable Bailers                   |                     |                             |             |               |
| Hard Hat***                          |                     | NA                          |             | NA            |
| Tyvek Suite***                       |                     | NA                          |             | NA            |
| Respirator***                        |                     |                             |             | NA            |
| Disposal Latex Gloves***             |                     | NA                          |             | NA            |
| XRF                                  |                     |                             |             |               |

\*Supplied by Laboratory \*\*Decontamination Supplies

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| _                  |   |                 |               |   |   | <u> </u>                       |                              |   |                                |  | · ·        |
|                    |   | <u></u>         | <u> :</u>     |   |   |                                |                              |   |                                |  |            |
|                    | 100 No. |                 |               |   |   | E milate                       | 9                            | r' '                                    |                                |  | :          |
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| Billing Information:              |  |   | Alnha Analvio   | Julie  | Samples  | Collected     | From Whi         | ch State?   | 24373                |
|-----------------------------------|--|---|---|--|--|---------------|------------------|---|----------------------|
| Name                              |  |   | 255 Glendale Avenue   | s, Suite 21  |  | 2 0<br> <br>  | THER W           |   | 4<br>0               |
| Address                           |  |   | Sparks, Nevada 8948   | 31-5778  |  |               |                  | · · · · · · · · · · · · · · · · · · ·   |                      |
| City, State, Zip                  | <b></b>  |   | Phone (775) 355-10<br>Fax (775) 355-0406  | 14   | and the second | Analyses      | s Required       | and and the state of the state |                      |
| Phone Number                      | Fax  |   |   |  |  |               |                  |   |                      |
|                                   |  | # .O.1  | # qor   |  |  | ***           |                  | Requ  | iired QC Level?      |
| Address                           |  | EMail Address   |   |  |  |               |                  |   | AI 111 II            |
| City, State, Zip                  |  | Phone #   | Fax #   |  |  |               |                  | EDD / EDF   | P YES NO             |
| Time Date Matrix <sup>*</sup> Sar | mpled by   | Report Attention  |   | Total and type of  |  |               |                  | Ginhal ID #   |                      |
| Sampled Sampled See Key Below     | Lab ID Number ( Use Only )   | Sample Description  | TAT   | Field containers   |  |               |                  | HEI N   | MARKS                |
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|                                   |  |   |   | box  |  |               |                  |   |                      |
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| Relinquished by                   |  |   |   |  |  |               |                  |   |                      |
| Received by                       |  |   |   |  |  |               |                  |   |                      |
| Relinquished by                   |  |   |   |  |  |               |                  |   |                      |
| Received by                       |  |   |   |  |  |               |                  |   |                      |
| Relinquished by                   |  | and a manufacture of the second se |   |  |  |               |                  |   |                      |
| Received by                       |  |   |   |  |  | -             |                  |   |                      |
| *Key: AQ - Aqueous                | SO - Soil WA - Waste   | e OT - Other AR - Air   | **: L-Liter V   | -Voa S-Soil Jar  | O-Orbo   | T-Tedlar      | B-Brass          | P-Plastic   | OT-Other             |
| NUIE: Samples are discu           | arded 60 days aner results are   | reported uniess other arrangeme   | ents are made. Hazardo  | us samples will be retui   | rned to client   | or disposed c | of at client exp | vense. The rep  | ort for the analysis |

of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

### EXAMPLE OF SHIPPING LABLES AND CUSTODY SEALS

| Sample Description:     Sample Location:     Date:   Time:     Matrix: |              |
|--|--------------|
| Signature  | CUSTODY SEAL |
| Date   | Date         |
| CUSTODY SEAL   | Signature    |

Laboratory Results

# Appendix C



255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778 (775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

### **ANALYTICAL REPORT**

Converse 4840 Mill Street, Suite 5 Reno, NV 89502 
 Attn:
 Kathi Brandmueller

 Phone:
 (775) 856-3833

 Fax:
 (775) 856-3513

 Date Received : 02/17/10

### Job: 07-23151-04-07/ Mineral County BF

|                             |           | Organochlorine Pesticides<br>EPA Method SW8081A |                    |                   |                  |
|-----------------------------|-----------|---|--------------------|-------------------|------------------|
|                             | Parameter | Concentration                                   | Reporting<br>Limit | Date<br>Extracted | Date<br>Analyzed |
| Client ID: TL-18 ft. NW     |           |   |                    |                   |                  |
| Lab ID : CON10021701-01A    | 4,4'-DDE  | 190   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 08:58 | 4,4'-DDT  | 150   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Client ID: Equipment Blank  |           |   |                    |                   |                  |
| Lab ID : CON10021701-03A    | 4,4'-DDE  | ND  | 0.10 μg/L          | 02/18/10          | 02/18/10         |
| Date Sampled 02/16/10 09:13 | 4,4'-DDT  | ND  | 0.10 µg/L          | 02/18/10          | 02/18/10         |
| Client ID: TL-18 ft. SE     |           |   |                    |                   |                  |
| Lab ID : CON10021701-04A    | 4,4′-DDE  | 12  | 3.3 µg/Кg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 09:13 | 4,4′-DDT  | 5.8   | 3.3 μg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Client ID: TL-1 8 ft. NE    |           |   |                    |                   |                  |
| Lab ID : CON10021701-06A    | 4,4′-DDE  | 870   | 33 μg/Kg           | 02/17/10 12:11    | 02/19/10         |
| Date Sampled 02/16/10 09:22 | 4,4´-DDT  | 640   | 33 µg/Kg           | 02/17/10 12:11    | 02/19/10         |
| Client ID: TL-3 @ 1 ft.     |           |   |                    |                   |                  |
| Lab ID : CON10021701-08A    | 4,4´-DDE  | 1,500   | 66 µg/Kg           | 02/17/10 12:11    | 02/19/10         |
| Date Sampled 02/16/10 09:50 | 4,4'-DDT  | 1,300   | 66 µg/Kg           | 02/17/10 12:11    | 02/19/10         |
| Client ID: TL-3 @ 2 ft.     |           |   |                    |                   |                  |
| Lab ID : CON10021701-09A    | 4,4′-DDE  | 950   | 33 µg/Kg           | 02/17/10 12:11    | 02/19/10         |
| Date Sampled 02/16/10 10:00 | 4,4'-DDT  | 700   | 33 µg/Kg           | 02/17/10 12:11    | 02/19/10         |
| Client ID: TL-3 8 ft. NW    |           |   |                    |                   |                  |
| Lab ID : CON10021701-11A    | 4,4'-DDE  | 120   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 10:17 | 4,4'-DDT  | 100   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Client ID: TL-3 8 ft. SE    |           |   |                    |                   |                  |
| Lab ID : CON10021701-13A    | 4,4′-DDE  | 110   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 10:23 | 4,4'-DDT  | 60  | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Client ID: TL-8 @ 1 ft.     |           |   |                    |                   |                  |
| Lab ID : CON10021701-15A    | 4,4'-DDE  | 290   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 11:08 | 4,4'-DDT  | 100   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Client ID: TL-8 @ 2 ft.     |           |   |                    |                   |                  |
| Lab ID : CON10021701-16A    | 4,4′-DDE  | 12  | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 11:11 | 4,4'-DDT  | 4.7   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Client ID: TL-11 @ 1 ft.    |           |   |                    |                   |                  |
| Lab ID : CON10021701-18A    | 4,4′-DDE  | 180   | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |
| Date Sampled 02/16/10 11:32 | 4,4'-DDT  | 41  | 3.3 µg/Kg          | 02/17/10 12:11    | 02/18/10         |



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| Client ID: TL-11 @ 2 ft.    |          |     |           |                |          |
|-----------------------------|----------|-----|-----------|----------------|----------|
| Lab ID : CON10021701-19A    | 4,4´-DDE | 94  | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
| Date Sampled 02/16/10 11:37 | 4,4´-DDT | 27  | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
|                             |          |     |           |                |          |
| Client ID: TL-12 8 ft. NW   |          |     |           |                |          |
| Lab ID : CON10021701-21A    | 4,4′-DDE | 190 | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
| Date Sampled 02/16/10 12:11 | 4,4'-DDT | 15  | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
| Client ID: TL-12A 8 ft. NW  |          |     |           |                |          |
| Lab 1D : CON10021701-22A    | 4.4'-DDE | 190 | 3.3 ug/Kg | 02/17/10 12:11 | 02/18/10 |
| Date Sampled 02/16/10 12:12 | 4,4'-DDT | 14  | 3.3 μg/Kg | 02/17/10 12:11 | 02/18/10 |
| Client ID: TL-128 ft. SE    |          |     |           |                |          |
| Lab ID : CON10021701-24A    | 4.4´-DDE | 65  | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
| Date Sampled 02/16/10 12:18 | 4,4'-DDT | 6.8 | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
| Client ID: TL-12 8 ft. SW   |          |     |           |                |          |
| Lab ID : CON10021701-26A    | 4,4´-DDE | 57  | 3.3 µg/Kg | 02/17/10 12:11 | 02/18/10 |
| Date Sampled 02/16/10 12:27 | 4,4'-DDT | 6.6 | 3.3 μg/Kg | 02/17/10 12:11 | 02/18/10 |
|                             |          |     |           |                |          |

Sample data was verified by second column confirmation.

Sample results were calculated on a wet weight basis. ND = Not Detected

Roger Scholl

Kandy Daulmer

Dalter Arihm

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer Sacrainento, CA • (916) 366-9089 / Las Vegas, NV • (702) 736-7522 / Carson, CA • (310) 803-7761 / info@alpha-analytical.com Alpha certifies that the test results meet all requirements of NELAC unless footnoted otherwise.

Alpha Analytical, Inc. currently holds appropriate and available NDEP certifications for the data reported - certification #NV16.

2/24/10 Report Date



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| <b>Date:</b><br>19-Feb-2010   |                           | Q                              | C Si       | ummar                   | y Repor                                 | t                        |                      |                          |                    | <b>Work Orde</b><br>10021701         | er:  |
|---|---------------------------|--------------------------------|------------|-------------------------|---|--------------------------|----------------------|--------------------------|--------------------|--------------------------------------|------|
| Method Blan<br>File ID: 100218  | ik<br>143.D<br>MBLK 22610 | - Inito :                      | Гуре М     | BLK Te<br>Ba            | est Code: EF                            | PA Meti<br>19            | hod SW80             | 81A<br>Analys            | sis Date:          | 02/18/2010 15:40                     |      |
| Analyte   | MDER-23013                | Result                         | POL        | SokVal                  | SokRefVal                               | %REC                     | LCL(ME)              | UCL(ME)                  | RPDRef\            | /al %RPD(Limit)                      | Qual |
| 4,4'-DDE<br>4,4'-DDT<br>Surr: Tetrachlor<br>Surr: Decachlor                         | ro-m-xylene<br>robiphenyl | ND<br>ND<br>19.3<br>19.6       | 3.3<br>3.3 | 20<br>20                |   | 96<br>98                 | 30<br>34             | 130<br>142               |                    |                                      |      |
| Laboratory  | Control Spike             |                                | Type L     | CS Te                   | est Code: El                            | PA Met                   | hod SW80             | 81A                      |                    |                                      |      |
| File ID: 100218<br>Sample ID:   | 44.D<br>LCS-23619         | Units : µg/Kg                  |            | Ba<br>Run ID: <b>EC</b> | atch ID: 236 <sup>.</sup><br>2D_1_10021 | 19<br>7A                 |                      | Analy:<br>Prep I         | sis Date:<br>Date: | 02/18/2010 15:51<br>02/17/2010 12:11 |      |
| Analyte   |                           | Result                         | PQL        | SpkVal                  | SpkRefVal                               | %REC                     | LCL(ME)              | UCL(ME)                  | RPDRef\            | /al %RPD(Limit)                      | Qual |
| 4,4'-DDE<br>4,4'-DDT<br>Surr: Tetrachlo<br>Surr: Decachlo                           | ro-m-xylene<br>robiphenyl | 19.3<br>19.3<br>20.5<br>21.4   | 3.3<br>3.3 | 20<br>20<br>20<br>20    |   | 97<br>97<br>103<br>107   | 70<br>66<br>30<br>34 | 130<br>130<br>130<br>142 |                    |                                      |      |
| Sample Mat  | rix Spike                 |                                | Туре М     | IS T                    | est Code: El                            | PA Met                   | hod SW80             | 81A                      |                    |                                      |      |
| File ID: 100218   | 851.D                     |                                |            | Ba                      | atch ID: 236                            | 19                       |                      | Analy                    | sis Date:          | 02/18/2010 17:13                     |      |
| Sample ID:<br>Analyte   | 10021701-11AMS            | Units : <b>µg/Kg</b><br>Result | PQL        | Run ID: EC<br>SpkVal    | CD_1_10021<br>SpkRefVal                 | 7A<br>%REC               | LCL(ME)              | Prep I<br>UCL(ME)        | Date:<br>RPDRef\   | 02/17/2010 12:11<br>/al %RPD(Limit)  | Qual |
| 4,4´-DDE<br>4,4´-DDT<br>Surr: Tetrachlo<br>Surr: Decachlo                           | ro-m-xylene<br>robiphenyl | 117<br>110<br>22.1<br>20.3     | 6.6<br>6.6 | 20<br>20<br>20<br>20    | 118.4<br>104.9                          | -9.2<br>28<br>111<br>101 | 20<br>20<br>30<br>34 | 130<br>150<br>130<br>142 |                    |                                      | M3   |
| Sample Mat  | rix Spike Duplicate       |                                | Туре 🛿     | ISD T                   | est Code: El                            | PA Met                   | hod SW8(             | 81A                      |                    |                                      |      |
| File ID: 100218<br>Sample ID:   | 352.D<br>10021701-11AMSD  | Units : µa/Ka                  |            | Ba<br>Run ID: <b>E(</b> | atch ID: 236 <sup>.</sup><br>CD 1 10021 | 19<br>7A                 |                      | Analy<br>Prep            | sis Date:<br>Date: | 02/18/2010 17:24<br>02/17/2010 12:11 |      |
| Analyte   |                           | Result                         | PQL        | SpkVal                  | SpkRefVal                               | %REC                     | LCL(ME)              | UCL(ME)                  | RPDRef\            | /al %RPD(Limit)                      | Qual |
| 4,4 <sup>°</sup> -DDE<br>4,4 <sup>°</sup> -DDT<br>Surr: Tetrachlo<br>Surr: Decachlo | ro-m-xylene<br>robiphenyl | 119<br>121<br>21.5<br>20.2     | 6.6<br>6.6 | 20<br>20<br>20<br>20    | 118.4<br>104.9                          | 4.9<br>79<br>107<br>101  | 20<br>20<br>30<br>34 | 130<br>150<br>130<br>142 | 116.6<br>110.5     | 6 2.4(20)<br>5 8.9(20)               | M3   |

### **Comments:**

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

M3 = The accuracy of the spike recovery value is reduced since the analyte concentration in the sample is disproportionate to the spike level. The method control sample recovery was acceptable.

Sample data was verified by second column confirmation.



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| <b>Date:</b><br>24-Feb-10  | (                            | QC Si      | ummar                    | y Repor                       | t                      |                              |                                  | <b>Work Ord</b><br>10021701 | er:  |
|--|------------------------------|------------|--------------------------|-------------------------------|------------------------|------------------------------|----------------------------------|-----------------------------|------|
| Method Blank<br>File ID: 10021865.D  |                              | Туре: М    | BLK Te<br>Ba             | est Code: EF<br>atch ID: 2362 | PA Met                 | hod SW8(                     | 081A<br>Analysis Date            | : 02/18/2010 19:55          |      |
| Sample ID: MBLK-23624  | Units : µg/L                 |            | Run ID: EC               | D_1_10021                     | 8B                     |                              | Prep Date:                       | 02/18/2010 10:58            |      |
| Analyte  | Result                       | PQL        | SpkVal                   | SpkRefVal                     | %REC                   | LCL(ME)                      | UCL(ME) RPDRe                    | fVal %RPD(Limit)            | Qual |
| 4,4'-DDE<br>4,4'-DDT<br>Surr: Tetrachloro-m-xylene<br>Surr: Decachlorobiphenyl | 150<br>ND<br>0.48<br>0.49    | 0.1<br>0.1 | 0.5<br>0.5               |                               | 96<br>98               | 26<br>31                     | 130<br>141                       |                             |      |
| Laboratory Control Spike   |                              | Type: Lo   | CS Te                    | est Code: EF                  | A Met                  | hod SW80                     | )81A                             |                             |      |
| File ID: 10021866.D  |                              |            | Ba                       | atch ID: 2362                 | 24                     |                              | Analysis Date                    | e: 02/18/2010 20:06         |      |
| Sample ID: LCS-23624   | Units : µg/L                 |            | Run ID: EC               | D_1_10021                     | 8B                     |                              | Prep Date:                       | 02/18/2010 10:58            |      |
| Analyte  | Result                       | PQL        | SpkVal                   | SpkRefVal                     | %REC                   | LCL(ME)                      | UCL(ME) RPDRe                    | fVal %RPD(Limit)            | Qual |
| 4,4'-DDE<br>4,4'-DDT<br>Surr: Tetrachloro-m-xylene<br>Surr: Decachlorobiphenyl | 0.48<br>0.37<br>0.47<br>0.46 | 0.1<br>0.1 | 0.5<br>0.5<br>0.5<br>0.5 |                               | 96<br>74<br>94<br>92   | 64<br>69<br>26<br>31         | 130<br>131<br>130<br>141         |                             |      |
| Sample Matrix Spike  |                              | Type: M    | S Te                     | est Code: EF                  | A Met                  | hod SW80                     |                                  |                             |      |
| File ID: 10021869.D  |                              |            | Ba                       | atch ID: 2362                 | 24                     |                              | Analysis Date                    | : 02/18/2010 20:41          |      |
| Sample ID: 10021701-03AMS  | Units : µg/L                 |            | Run ID: EC               | D_1_10021                     | 8B                     |                              | Prep Date:                       | 02/18/2010 10:58            |      |
| Analyte  | Result                       | PQL        | SpkVal                   | SpkRefVal                     | %REC                   | LCL(ME)                      | UCL(ME) RPDRe                    | fVal %RPD(Limit)            | Qual |
| 4,4'-DDE<br>4,4'-DDT<br>Surr: Tetrachloro-m-xylene<br>Surr: Decachlorobiphenyl | 0.52<br>0.39<br>0.5<br>0.44  | 0.1<br>0.1 | 0.5<br>0.5<br>0.5<br>0.5 | 0<br>0                        | 104<br>78<br>100<br>88 | 59<br>57<br>26<br>31         | 130<br>134<br>130<br>141         |                             |      |
| Sample Matrix Spike Duplicate  |                              | Type: M    | SD Te                    | est Code: EF                  | A Met                  | hod SW80                     | 81A                              |                             |      |
| File ID: 10021870.D  |                              |            | Ba                       | atch ID: 2362                 | 24                     |                              | Analysis Date                    | e: 02/18/2010 20:53         |      |
| Sample ID: 10021701-03AMSD   | Units : µg/L                 |            | Run ID: EC               | D_1_10021                     | 8B                     |                              | Prep Date:                       | 02/18/2010 10:58            |      |
| Analyte  | Result                       | PQL        | SpkVal                   | SpkRefVal                     | %REC                   | LCL(ME)                      | UCL(ME) RPDRe                    | fVal %RPD(Limit)            | Qual |
| 4,4'-DDE<br>4,4'-DDT<br>Surr: Tetrachloro-m-xylene<br>Surr: Decachlorobiphenyl | 0.5<br>0.37<br>0.47<br>0.41  | 0.1<br>0.1 | 0.5<br>0.5<br>0.5<br>0.5 | 0<br>0                        | 100<br>74<br>94<br>82  | 59<br>5 <b>7</b><br>26<br>31 | 130 0.5<br>134 0.3<br>130<br>141 | 52 3.9(20)<br>39 5.3(20)    |      |

### Comments:

Calculations are based off of raw (non-rounded) data. However, for reporting purposes, all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Sample data was verified by second column confirmation.

| CH/  |   | )F-C  | USTO  | DY R  | ECORD  | 711   | Page: 1 of 3  |  |
|--|---|---|---|---|--|---|---|--|
|  | Α   |   | halytic   | al, Inc.  |  | INV<br>WorkOrder :  | CONR10021701  |  |
| 2  | 55 Glendale<br>TEL:   | e Avenue, S<br>(775) 355-1  | uite 21 Spark<br>044 FAX: (7  | cs, Nevada 89<br>175) 355-040   | 9431-5778<br>96  | Report Due By : 5   | 5:00 PM On : 24-Feb-201   |  |
| Report Attent<br>Kathi Brandm                              | lion  | Phone Nu<br>(775) 856-  | mber<br>1833 x  | EMail Add   | iress<br>er/aconverseconsulta  | 11  |   |  |
|  |   | (110)   |   |   |  | EDD Required : No   | 0   |  |
|  |   |   |   |   |  | Sampled by : Ka   | athi B & Frank R.   |  |
|  |   |   |   |   |  | Cooler Temp   | Samples Received Date Printe  |  |
| : 07-23151-04-1  | 07/ Minera  | I County B  | п   |   |  | 4°C   | 17-Feb-2010 17-Feb-20   |  |
| AS/MSD With Sun  | rogates   |   |   |   |  |   |   |  |
|  |   |   |   |   | Requester  | l Tests   |   |  |
| latrix Date /  | Alpha Su  | nies<br>Jb TAT  | 8081_S  | 8081_W  | HOLD   |   | Sample Remarks  |  |
| O 02/16/10<br>08:58  | 1   | с<br>5  | 8081/DDT/D<br>DE  |   |  |   |   |  |
| O 02/16/10   | 1   | 5   |   |   | Hold   |   |   |  |
| VQ 02/16/10<br>09:13                                       | 1   | კ<br>თ  |   | 8081  |  |   |   |  |
| 3O 02/16/10<br>09:13                                       | 1   | с<br>o  | 8081/DDT/D<br>DE  | · · · · ·   |  |   |   |  |
| ;O 02/16/10<br>09:16                                       | -   | с<br>5  |   |   | Hold   |   |   |  |
| 02/16/10<br>09:22  | 1   | с<br>л  | 8081/DDT/D<br>DE  |   |  |   | Time on sample contain<br>states 9:20 logged in pe<br>COC.  |  |
| 3O 02/16/10<br>09:30                                       | -   | ე   |   |   | Hold   |   | Time on sample contain<br>states 9:22 logged in pe<br>COC.  |  |
| O 02/16/10   | 1   | с<br>л  | 8081/DDT/D<br>DE  |   |  |   |   |  |
| ;O 02/16/10<br>10:00                                       | <b>_</b>  | ი<br>თ  | 8081/DDT/D<br>DE  |   |  |   |   |  |
| rozen ice, :   |   |   |   |   |  |   |   |  |
| Signature  |   |   | 1   | Print   | Name   | Compa   | any Date/Time   |  |
| Udco   | X   |   | Eliza   | ybeth   | Adcox  | Alpha Analy   | tical, Inc. 2 · [7 · 10 &:5   |  |
| after results are re<br>is applicable only<br>WS(Waste) DV | eported unl<br>/ to those s<br>//Drinking   | less other<br>samples re<br>Water) (  | arrangements<br>ceived by the<br>DT(Other)  | s are made.<br>Haboratory<br>Bottle T   | Hazardous sample<br>with this COC. The<br>ype: L-Liter V-Voz   | s will be returned to client c<br>liability of the laboratory is l<br>S-Soil Jar O-Orbo T-T.  | or disposed of at client expense.<br>limited to the amount paid for the repo<br>edlar B-Brass P-Plastic OT-Other  |  |
|  | CHL/<br>Report Atteni<br>Kathi Brandır<br>Collection<br>latrix Date /<br>0 02/16/10 08:58<br>0 02/16/10 08:55<br>0 02/16/10 09:13<br>0 02/16/10 09:14<br>0 02/16/10 09:15<br>0 00<br>0 09:15<br>0 00<br>0 09:15<br>0 0 00<br>0 09:15<br>0 0 00<br>0 09:15<br>0 0 00<br>0 09:15<br>0 0 00<br>0 00<br>0 00<br>0 00<br>0 00<br>0 00<br>0 00 | Collection No. of Boy latrix Date Alpha St         O 02/16/10       1       0         O 02/16/10       1       0         O 02/16/10       1       O         O       O       O <t< td=""><td>CHAIN-OF-CAlpha /<br/>StatisTEL: (775) 355-1Report AttentionPhone No.<br/>Phone NuKathi Brandmueller(775) 856-1CollectionNo. of Bottles<br/>No. of Bottles<br/>NS/SD With SurrogatesAS/MSD With SurrogatesO 02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O555O55O55O55O55O55O55O55O</td><td>CHAIN-OF-CUSTO         Alpha Analytic         255 Glendale Avenue, Suite 21 Spark         TEL: (775) 856-3833 x         TEL: (775) 856-3833 x         Collection No. of Bottles         Satrix Date Alpha Sub TAT         <math>O</math>       02/16/10       1       0       5       8081/DDT/D         <th c<="" td=""><td>CHAIN-OF-CUSTODY R         Alpha Analytical, Inc.         255 Glendale Avenue, Suite 21 Sparks, Nevada 8         TEL: (775) 355-1044 FAX: (775) 355-044         Report Attention Phone Number EMail Add         Value of Bottles         Sollection No. of Bottles         Collection No. of Bottles         No. of Bottles         Sollection No. of Bottles         O 02/16/10       Sollection No. of Sollection No.         O 02/16/10       O       Sollection No.</td><td>CHAIN-OF-CUSTODY RECORD         Alpha Analytical, Inc.         255 Gradule Avenue, Suite 21 Sparks, Nevada 8941-5778         TEL: (775) 355-044         Kathi Braudmueller (775) 856-3833 x         Kathi Braudmueller (775) 856-3833 x         None Number         Collection       No. of Bottles         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         O 02/16/10       1       0         O 02/16/10       1       Requestee         O 02/16/10       1       O         O 02/16/10       1       O</td><td><math display="block">\begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td></th></td></t<> | CHAIN-OF-CAlpha /<br>StatisTEL: (775) 355-1Report AttentionPhone No.<br>Phone NuKathi Brandmueller(775) 856-1CollectionNo. of Bottles<br>No. of Bottles<br>NS/SD With SurrogatesAS/MSD With SurrogatesO 02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O02/16/10105O555O55O55O55O55O55O55O55O | CHAIN-OF-CUSTO         Alpha Analytic         255 Glendale Avenue, Suite 21 Spark         TEL: (775) 856-3833 x         TEL: (775) 856-3833 x         Collection No. of Bottles         Satrix Date Alpha Sub TAT $O$ 02/16/10       1       0       5       8081/DDT/D <th c<="" td=""><td>CHAIN-OF-CUSTODY R         Alpha Analytical, Inc.         255 Glendale Avenue, Suite 21 Sparks, Nevada 8         TEL: (775) 355-1044 FAX: (775) 355-044         Report Attention Phone Number EMail Add         Value of Bottles         Sollection No. of Bottles         Collection No. of Bottles         No. of Bottles         Sollection No. of Bottles         O 02/16/10       Sollection No. of Sollection No.         O 02/16/10       O       Sollection No.</td><td>CHAIN-OF-CUSTODY RECORD         Alpha Analytical, Inc.         255 Gradule Avenue, Suite 21 Sparks, Nevada 8941-5778         TEL: (775) 355-044         Kathi Braudmueller (775) 856-3833 x         Kathi Braudmueller (775) 856-3833 x         None Number         Collection       No. of Bottles         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         O 02/16/10       1       0         O 02/16/10       1       Requestee         O 02/16/10       1       O         O 02/16/10       1       O</td><td><math display="block">\begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td></th> | <td>CHAIN-OF-CUSTODY R         Alpha Analytical, Inc.         255 Glendale Avenue, Suite 21 Sparks, Nevada 8         TEL: (775) 355-1044 FAX: (775) 355-044         Report Attention Phone Number EMail Add         Value of Bottles         Sollection No. of Bottles         Collection No. of Bottles         No. of Bottles         Sollection No. of Bottles         O 02/16/10       Sollection No. of Sollection No.         O 02/16/10       O       Sollection No.</td> <td>CHAIN-OF-CUSTODY RECORD         Alpha Analytical, Inc.         255 Gradule Avenue, Suite 21 Sparks, Nevada 8941-5778         TEL: (775) 355-044         Kathi Braudmueller (775) 856-3833 x         Kathi Braudmueller (775) 856-3833 x         None Number         Collection       No. of Bottles         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         O 02/16/10       1       0         O 02/16/10       1       Requestee         O 02/16/10       1       O         O 02/16/10       1       O</td> <td><math display="block">\begin{array}{ c c c c c c c c c c c c c c c c c c c</math></td> | CHAIN-OF-CUSTODY R         Alpha Analytical, Inc.         255 Glendale Avenue, Suite 21 Sparks, Nevada 8         TEL: (775) 355-1044 FAX: (775) 355-044         Report Attention Phone Number EMail Add         Value of Bottles         Sollection No. of Bottles         Collection No. of Bottles         No. of Bottles         Sollection No. of Bottles         O 02/16/10       Sollection No. of Sollection No.         O 02/16/10       O       Sollection No. | CHAIN-OF-CUSTODY RECORD         Alpha Analytical, Inc.         255 Gradule Avenue, Suite 21 Sparks, Nevada 8941-5778         TEL: (775) 355-044         Kathi Braudmueller (775) 856-3833 x         Kathi Braudmueller (775) 856-3833 x         None Number         Collection       No. of Bottles         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         Collection       No. of Bottles         Requestee         O 02/16/10       1       0         O 02/16/10       1       Requestee         O 02/16/10       1       O         O 02/16/10       1       O | $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ |

| Billing Information :   | CHAI  | N-OF-CI  | <b>IISTODY RECORD</b>  | NIN Page: 2 of 3   |
|---|---|--|--|--|
| Converse<br>4840 Mill Street, Suite 5   |   | Alpha A  | Analytical, Inc.   | WorkOrder : CONR10021701   |
| Reno, NV 89502  | 255 (   | Glendale Avenue, Si<br>TEL: (775) 355-1                    | uite 21 Sparks, Nevada 89431-5778<br>044 FAX: (775) 355-0406   | Report Due By : 5:00 PM On : 24-Feb-2010   |
| Client:   | <b>Report Attention</b>   | Phone Nu   | mber EMail Address   | L  |
| Converse  | Kathi Brandmuell  | ler (775) 856-3  | 3833 x kbrandmueller@converseconsult   | lfants   |
| 4840 Mill Street, Suite 5   |   |  |  | EDD Required : No  |
| Reno, NV 89502  |   |  |  | Sampled by : Kathi B & Frank R.  |
| PO : 07-23151-04-07   |   |  |  | Cooler Temp Samples Received Date Printed  |
| Client's COC #: 29789, 29790, 29791   | Job : 07-23151-04-07/   | Mineral County B   | П  | 4 °C 17-Feb-2010 17-Feb-2010   |
| QC Level : S3 = Final Rpt, MBLK, L  | .CS, MS/MSD With Surrog   | ates   |  |  |
|   |   | a a constant de la constant de la constant                 | Request  | ted Tests  |
| Alpha Client<br>Sample ID Sample ID   | Collection No.<br>Matrix Date Alph  | . of Bottles<br>ha Sub TAT                                 | 8081_S 8081_W HOLD   | Sample Remarks   |
| CON10021701-10A TL-3 @ 3 ft.  | SO 02/16/10 1<br>10:10  | 0  | Hold   |  |
| CON10021701-11A TL-3 8 ft. NW   | SO 02/16/10 1<br>10:17 1  | 0 5  | 8081/DDT/D<br>DE   |  |
| CON10021701-12A TL-3 25 ft. NW  | SO 02/16/10 1<br>10:20  | 0  | Hold   |  |
| CON10021701-13A TL-3 8 ft. SE   | SO 02/16/10 1<br>10:23  | 0  | 8081/DDT/D<br>DE   |  |
| CON10021701-14A TL-3 15 ft. SE  | SO 02/16/10 1<br>10:25  | 05   | НоИ  |  |
| CON10021701-15A TL-8 @ 1 ft.  | SO 02/16/10 1<br>11:08  | 0 5  | 8081/DDT//D<br>DE  |  |
| CON10021701-16A TL-8 @ 2 ft.  | SO 02/16/10 1<br>11:11  | 05   | 8081/DDT/D<br>DE   |  |
| CON10021701-17A TL-8 @ 3 ft.  | SO 02/16/10 1<br>11:13  | 0 5  | Hold   |  |
| CON10021701-18A TL-11 @ 1 ft.   | SO 02/16/10 1<br>11:32 1  | 0  | 8081/DDT//D<br>DE  |  |
| CON10021701-19A TL-11 @ 2 ft.   | SO 02/16/10 1<br>11:37 1  | 0  |  |  |
| Comments: <u>Samples brought in by cl</u>   | ient, Frozen ice.:  |  |  |  |
| <b>5</b>  | Signature   |  | Print Name   | Company Date/Time  |
| Logged in by:   | th (Idco)   |  | Elizabeth Adco   | 0X Alpha Analytical, Inc. 2.17-10 8:50   |
| NOTE: Samples are discarded 60<br>The report for the analysis of the above sa<br>Matrix Type · AO(Anupone) AR(Air) SO | days after results are repo<br>mples is applicable only to<br>(Soil) WS(Waste) DW(r | rted unless other a<br>those samples re<br>brinking Water) | arrangements are made. Hazardous samp<br>ceived by the laboratory with this COC. Th<br>>T/Other) Bottle Type: L-Liter V-V/ | ples will be returned to client or disposed of at client expense.<br>he liability of the laboratory is limited to the amount paid for the report.<br>Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other |
| Matrix Type: AQ(Aqueous) AR(Air) SO   | (Soil) WS(Waste) DW(L   | Drinking Water) C  | JI (Other) Bottle Type: L-Liter V-V  |  |

| Billing Information :<br>Converse         | CHAIN-OF-CUSTODY RECORD  | NX Page: 3 of 3                           |
|---|--|---|
| 4840 Mill Street, Suite 5                 | Alpha Analytical, Inc.   | WorkOrder : CONR10021701                  |
| Reno, NV 89502                            | 255 Glendale Avenue, Suite 21 Sparks, Nevada 89431-5778<br>TEL: (775) 355-1044 FAX: (775) 355-0406 | Report Due By : 5:00 PM On : 24-Feb-2010  |
| Client:                                   | Report Attention Phone Number EMail Address  |   |
| Converse                                  | Kathi Brandmueller (775) 856-3833 x kbrandmueller@converseconsul                                   | ants                                      |
| 4840 Mill Street, Suite 5                 |  | EDD Required : No                         |
| Reno. NV 89502                            |  | Sampled by : Kathi B & Frank R.           |
| PO: 07-23151-04-07                        |  | Cooler Temp Samples Received Date Printed |
| Client's COC #: 29789, 29790, 29791       | Job : 07-23151-04-07/ Mineral County BF  | 4 °C 17-Feb-2010 17-Feb-2010              |
| QC Level : S3 = Final Rpt, MBLK, L        | CS, MS/MSD With Surrogates   |   |
|   | Request  | ed Tests                                  |
| Alpha Client                              | Collection No. of Bottles 8081_S 8081_W HOLD   |   |
| Sample ID Sample ID                       | Matrix Date Alpha Sub TAT  | Sample Remarks                            |
| CON10021701-20A TL-11 @ 3 ft.             | SO 02/16/10 1 0 5 Hold   |   |
| CON10021701-21A TL-128 ft. NW             | SO 02/16/10 1 0 5 8081/DDT/72<br>12:11 DE DE   |   |
| CON10021701-22A TL-12A 8 ft. NW           | SO 02/16/10 1 0 5 8081/DDT/D<br>12:12 1 0 5 B081/DDT/D   |   |
| CON10021701-23A TL-12 15 ft. NW           | SO 02/16/10 1 0 5 Hold   |   |
| CON10021701-24A TL-12 8 ft. SE            | SO 02/16/10 1 0 5 8081/DDT/TD<br>12:18 1 0 5 B081/DDT/TD<br>DE                                     |   |
| CON10021701-25A TL-12 15 ft. SE           | SO 02/16/10 1 0 5 Hold   |   |
| CON10021701-26A TL-12 8 ft. SW            | SO 02/16/10 1 0 5 8081/DDT/D<br>12:27 1 0 5 BOB DE   |   |
| CON10021701-27A TL-12 15 ft. SW           | SO 02/16/10 1 0 5 Hold   |   |
| Comments: <u>Samples brought in by cl</u> | ient. Frozen ice. :  |   |

Matrix Type: AQ(Aqueous) AR(Air) SO(Soil) WS(Waste) DW(Drinking Water) OT(Other) The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for the report. NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense. Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

Signature

Logged in by:

Inploth

**CeX** 

Elizabeth.

t acox

Alpha Analytical, Inc. Company

2.17.10 8:50 Date/Time

Print Name

|   |  |                                       |                               |   | <b>っ</b><br>いい<br>い   |
|---|--|---------------------------------------|-------------------------------|---|-----------------------|
| Billing Information:  |  | Avenue Suite 21 Az                    | mples Collected From          | m Which State?<br>WA  | DOD_Site              |
| Attr: Katni Brandanie   | Sparks, Nevac<br>Phone (775) 3             | 1a 89431-5778 <b>ID</b><br>155-1044   | OR OTH                        | <b>IER</b> Pag  | re # 🔔 of             |
| City, State, Zip 4  |  |                                       | Analyses R                    | equired   |                       |
| Consultant / Client Name  | 7-23151-04-07                              | name (nuntu BF 1                      |                               |   | vel: III or IV        |
| Address Advin   | KaTM: Report Attention / Project Ma        |                                       | DE                            |   |                       |
| City, State, Zip Email:   |  |                                       |                               | EDD/E   | EDF? YES NO           |
| Time Date Matrix PO#7.7751-04-07 Phone: -   | Mobile:                                    |                                       |                               | Giobal  |                       |
| Sampled Sampled Below Lab ID Number (Use Only)  | Sample Description                         | TAT Filered # Containers**            |                               |   | <b>IEMARKS</b>        |
| 8:20/10021701 -01 TL-   | 1 8' NW                                    | 5 days NA X                           |                               |   |                       |
| 8:51 3 3.02 TL-   | I IS'NW                                    |                                       | 0110                          |   |                       |
| 9:13 AQ   | ipmut Blank                                | X ou                                  |                               |   |                       |
| -JT 40.   | 18,25                                      | na X                                  |                               |   |                       |
| 9:16 1 0 · · · · · · · · · · · · · · · · · ·  | ·1 15' SE                                  | Ŧ                                     | 010                           |   |                       |
| 90. T   | -1 ONE                                     | X                                     |                               |   |                       |
| 9.30  | -1 IS'NE                                   | Ŧ                                     | 0 - 0                         |   |                       |
| -17 30-<br>-17 30-  | · 3 @ 1 (                                  | ×                                     |                               |   |                       |
| 17 PO   | -3 02'                                     | ×                                     |                               |   |                       |
| 10.10 TL  | -3 Q 3 (                                   | 4                                     | A<br>F<br>F<br>F<br>F         |   |                       |
| 10:17 11 TL   | NN B C-                                    | ×                                     |                               |   |                       |
| JT SI- SI   | 13 as NW                                   | Ŧ                                     | 017                           |   |                       |
| 10:28 V V -13 TL  | -3 8° SE                                   |                                       |                               |   |                       |
| ADDITIONAL INSTRUCTIONS:  |  |                                       |                               |   |                       |
|   |  |                                       |                               |   |                       |
| I, (field sampler), attest to the validity and authenticity of this san grounds for Jegal action (NAC 445.0636 (c) (2)). Sampled By: $\Box$ | nold. I am aware that tampering with or in | tentionally mislabeling the sample    | e location, date or time of c | ollection is considered   | fraud and may be      |
| Reinquished by: (Signature/Attiliation)   | Received by: (signature/Affili             | aijon Munaca /                        | alphe 10                      | $\frac{1}{2} \left[ \frac{1}{2} \left[ \frac{1}{2} \right] \right]^{T}$ | ime<br>S:/S           |
| Relinquished by: (Signature/Affiliation)  | Received by: (Signatuce/Affili             | Lation)                               | Da                            | ate:  | ime:                  |
| Relinquished by: (Signature/Affiliation)  | Received by: (Signature/Affili             | ation)                                | Da                            | ite:  | ime:                  |
| *Key: AQ - Aqueous SO - Soil WA - Waste O   | T - Other AR - Air **: L-Liter             | V-Voa S-Soil Jar C                    | -Orbo T-Tedlar E              | 3-Brass P-Plastic   | OT-Other              |
| of the above samples is applicable only to those samples receive  | d by the laboratory with this coc. The lia | bility of the laboratory is limited t | o the amount paid for the re  | eport.  | פרטונוטו נוופ מומוצטט |

| Billing Information:<br>Company Name Converse Conscilitudes I Alpha Analytical, Inc. Samples Collected From Wi<br>AZ CA V V<br>AZ CA V V   | Samples Collected From Which State?  |  |
|--|--|--|
| Attn: Kath) Brand much of 1 E Sparks, Nevada 89431-5778 ID OR OTHER -  | ID OR OTHER Page # A of 3  |  |
| Phone Number 836 - 3833 Fax 856 - 3513   | Analyses Required  |  |
| Consultant/Client Name Job# 7-23151-04-07 Job Name County BF /4/ / /   | Arg BE (4/) / / Data Validation  |  |
| Address Addres   |  |  |
| City, State, Zip Email: Kbrandrauel ler @ CONverseconse Itest? [] / /  | Ser 1 test / / / / EDD / |  |
| Ime         Date         Matrix'         PO. #         -> 33(51-04-07)         Phone:         284-9752         Mobile:         560-4818         20/20         20/20         / <th <="" th="">         /         <th< td=""><td></td></th<></th>  | / <th< td=""><td></td></th<>   |  |
| Sampled Sampled Sampled Below Lab ID Number (Use Only) Sample Description TAT Filed # Containers** / ->/ / / / /   | Containers** / '-/ / / / / REMARKS   |  |
| 10:28 2 10 50 -14 TL-3 15' SE 5 NA 1-5 HOLD  | HOLD   |  |
| 11:08         X     X     X       X       X         X           X  | X  |  |
| $\  \cdot \  = \frac{1}{16} + \frac$ | ×  |  |
| 17 TL-8 C3 FOLD  | FOLD   |  |
| 11:32   X 2 18 TL- 11 C 1' X   | ×  |  |
| W:3  | ×  |  |
| W4 20 TL - 11 @ 3' HOUD  | FOLD   |  |
| U:11 0 21 TL-12 8'NW X   | ×  |  |
| VIII VOLULIA B'NW X  | X  |  |
| 12:13 JUN 23 TL-12 15 NW HOUD  | 4040   |  |
| DINE VITL-12 BY SE X   |  |  |
| $\begin{array}{c c}  c,c  \\ \hline \\ $   | HOLE   |  |
| ADDITIONAL INSTRUCTIONS:   |  |  |
|  |  |  |
| I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabeling the sample location, date or time of collection grounds for legal action (NAC 445.0636 (c) (2)). Sampled By:   | eling the sample location, date or time of collection is considered fraud and may be   |  |
| Pelinquister Signature Attiliation CONVESC Received by Begnature / Attiliation / A. C. / alunda Date://  | 9.00 / alight Date://7/10 Time: 8:15   |  |
| Relinquished by: (Signature/Affiliation) Received by: (Signature/Affiliation) Date:  | Daté: Time:  |  |
| Relinquished by: (Signature/Affiliation) Received by: (Signature/Affiliation) Date:  | Date: Time:  |  |
| 'Key: AQ - Aqueous SO - Soil WA - Waste OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Bras: NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client  | -Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other<br>s will be returned to client or disposed of at client expense. The report for the analysis   |  |

of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.

| Billing Information:  | Alaka Application in  | Samples Collected From Which State?   | -1944<br>2 <b>144</b> 82 |
|---|---|---|--------------------------|
| Antress 4840 Hill St Site   | Show the second | AZ CA NV WA DOD Site<br>ID OR OTHER Page # of   | 5                        |
| Phone Number 256-3633 Fax 256-3   | 513   | Analyses Required   |                          |
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| Address Cylor   | Report Attention / Project Manager  |   |                          |
| City, State, Zip  | ame:mail:   |   | 10                       |
| Time Date Matrix* P.O. #  | hone: Mobile:   |   |                          |
| Sampled Sampled Below Lab ID Number (Use Only)  | Sample Description TAT Filtered # Containers*   |   |                          |
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|   |   |   |                          |
| and the second se |   |   | -                        |
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| ADDITIONAL INSTRUCTIONS:  |   |   |                          |
| I, (field sampler), attest to the validity and authenticity of grounds for legal action (NAC 445.0636 (c) (2)). Sample  | his sample. I am aware that tampering with or intentionally mistabeling the   | sample location, date or time of collection is considered fraud and may   | y be                     |
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| Relinquished by: (Signature/Affiliation)  | Received by: (Signature/Affiliation)  | Date: Time:   |                          |
| Key: AQ - Aqueous SO - Soil WA - Waste<br>VOTE: Samples are discarded 60 days after results are r   | OT - Other AR - Air **: L-Liter V-Voa S-Soil Jar<br>ported unless other arrangements are made. Hazardous samples will be  | r O-Orbo T-Tedlar B-Brass P-Plastic OT-Othe returned to client or disposed of at client expense. The report for the a   | r<br>nalysis             |

of the above samples is applicable only to those samples received by the laboratory with this coc. The liability of the laboratory is limited to the amount paid for the report.



**Converse Consultants** 

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

# POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT

Client:

CONVERSE CONSULTANTS 4840 MILL STREET, STE. 5 RENO, NEVADA 89502 KATHI BRANDMUELLER N/A 07-23151-04-07

Contact: Account: Project No.: Date Received: 02/17/10 Date Analyzed: 02/17/10 Date Reported: 02/17/10 Reported To: KATHI BRANDMUELLER Submitted By: HAND Report No.: 71-180549 P. O. #: N/A

### MINERAL COUNTY BROWNFIELDS BABBIT, NV

I certify that these results are accurate for the samples obtained and comply with accepted methods of analysis.

- UA

Lab Manager, Dan R. Dolk

Analyst, Dan R. Dolk

| RESULTS:<br>LAB SAMPLE #<br>LAB DESCRIPTION<br>LOCATION | CLIENT SAMPLE # | PERCENT & TYPE OF<br>ASBESTOS | PERCENT & TYPE OF<br>NON-ASBESTOS | LAYER<br>I-H<br>APPEARANCE<br>F-NF |
|---|-----------------|-------------------------------|-----------------------------------|------------------------------------|
| Tan Soil  | 50-1A-1         | None Detected                 | <1% Celluiose                     | 1                                  |
| SO-1@6  |                 |                               | 1% Mica                           | F                                  |
| 180550  | E0.40.0         |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil  | DU-1A-2         | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-1 @ 1'   |                 |                               | 1% Mica                           | F                                  |
| 180551  | E0 10 2         |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil  | 50-1A-3         | None Detected                 | <1% Cellulose                     | I                                  |
| SO-1 @ 1.5'   |                 |                               | -1% Mica                          | F ·                                |
| 180552  | 50 1 h 1        |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil  | 50- IA-4        | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-1 @ 2'   |                 |                               | 1% Mica                           | F                                  |
| 180553  |                 |                               | 99% Mineral Cleavages             |                                    |
| Tan Soll  | 50-1A-5         | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-1 @ 2.5'   |                 |                               | 1% Mica                           | F                                  |
| 180554  |                 |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil  | 50-1A-6         | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-1 @ 3'   |                 |                               | 1% Mica                           | F                                  |
|   |                 |                               | 99% Mineral Cleavages             |                                    |

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4840 Mill Street, Suite 5 Reno, Nevada 89502 Telephone (775) 856-3833 � Fax (775) 856-3513 Page 1 of 2

4708 Roseville Road, Suite 114 North Highlands, California 95660 Telephone (916) 331-5444 ◆ Fax (916) 331-6444

|   | 1               |                               | 1                                 |                                    |
|---|-----------------|-------------------------------|-----------------------------------|------------------------------------|
| LAB SAMPLE #<br>LAB DESCRIPTION<br>LOCATION | CLIENT SAMPLE # | PERCENT & TYPE OF<br>ASBESTOS | PERCENT & TYPE OF<br>NON-ASBESTOS | LAYER<br>I-H<br>APPEARANCE<br>F-NF |
| Tan Soil                                    | 50-2A-1         | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-2 @ 6"                                   |                 |                               | 1% Mica                           | F                                  |
| 180556                                      | 50.000          |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil                                    | 50-2A-2         | None Detected                 | <1% Cellulose                     | · ]                                |
| SO-2 @ 1'                                   |                 |                               | 1% Mica                           | F                                  |
| 180557                                      | <u> </u>        |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil                                    | 5U-ZA-3         | None Detected                 | <1% Celluiose                     | 1                                  |
| SO-2 @ 1.5'                                 |                 |                               | 1% Mica                           | F                                  |
| 180558                                      |                 |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil                                    | 50-2A-4         | None Detected                 | <1% Cellulose                     | Į                                  |
| SO-2 @ 2'                                   |                 |                               | 1% Mica                           | F                                  |
| 180550                                      |                 |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil                                    | 5U-2A-5         | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-2 @ 2.5'                                 |                 |                               | 1% Mica                           | F                                  |
| 180560                                      | <u> </u>        |                               | 99% Mineral Cleavages             |                                    |
| Tan Soil                                    | 50-2A-6         | None Detected                 | <1% Cellulose                     | 1                                  |
| SO-2 @ 3'                                   |                 |                               | 1% Mica                           | F                                  |
| ,   |                 |                               | 99% Mineral Cleavages             |                                    |

Attached are the results of analysis of bulk samples submitted for asbestos identification. Converse Consultants follows EPA Method EPA/600/R-93/116; July 1993.

Each sample was initially examined under a stereoscopic microscopic at a magnification of 10x to 60x. Fibrous material was examined for morphology and content. Portions of each sample were immersed in a fluid with a known refractive index. The sample was examined under polarized light using a Nikon Labophot microscope with a McCrone Dispersion Staining objective under 100X magnification. Optical characteristics of the fibrous material were examined to determine the mineralogy of the fiber. The observed optical characteristics include angles of extinction, signs of elongation and dispersion staining colors. Asbestos fiber content is estimated by optically comparing the quantity of asbestos material and non-asbestos material to establish estimated percentages. Per the method, samples with distinct layers or inhomogenous character have each layer analyzed separately and reported as individual layers. (1-Inhomogeneous, H-Homogeneous, F-Fibrous, NF-Non-Fibrous)

Bulk sampling may not have been performed by Converse Consultants personnel. No warranty is made as to the acceptability of sampling strategies.

Converse Consultants is National Voluntary Laboratory Accreditation Program accredited. Our NVLAP Lab Code: 102091-0. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report must not be reproduced except in full without the approval of the laboratory. This report relates only to the items tested.

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| Relinquished<br>Date/Time:<br>Received By:     | PFI - Pipe Fit<br>PHI - Pipe AL<br>DI - Duct Insu<br>TI - Tank Insu<br>EJ - Expansic<br>BI - Boiler Ins                          |           | 5 3500   | 5 ×509, | 5503  | 55503,                    | 2 12550g | Essog,                | 2503    | 25.03 | 052.03       | 6×503        | LAB #                                  | Turn-A-Ar       | Phone #: (      | Contact:               | Inspectors            | 4840 Mill St  |
|--|--|-----------|----------|---------|-------|---------------------------|----------|-----------------------|---------|-------|--------------|--------------|--|-----------------|-----------------|------------------------|-----------------------|---|
| R.   | ing insulation<br>in Insulation<br>lation<br>bn Joint<br>ulation   |           | x -2 A-4 | 10-24-3 | 2-AG0 | 0-211-1                   | 2-1A-6   | S-W-Q                 | 20-1A-4 | C-H-S | D-14-2       | 50-1A-1      | SAMPLE #                               | oundTime;       | 775) 856-3833   | Xas i                  | Frank                 | treet, Suite 5  |
| HTUR 14: S2 PA                                 | VT - Vinyi Tile<br>M - Mastic<br>CBM - Cove Base Mastic<br>AT - Accustic Tile<br>SA - Spray Acoustic<br>W - Wall<br>.P - Plaster | MATERIAL  | <        |         |       |                           |          |                       |         |       |              | Soil         | MATERIAL DESCRIPTIC                    | (Circle) RUSH   |                 | Brandmully             | Regolds               | Suitants<br>, Reno, Nevada 89502  |
| linguished By:<br>te/Time:<br>ceived By:       | GA - Gasket<br>D - Debris<br>TSI- Thermal System<br>Insulation<br>R - Roof<br>DW - Drywall<br>JC - Joint Compound                |           | 50-2 C   | 50-20   | 50-26 | 36-03                     | 50-10    | 80-10                 | 50-10   | So-10 | S-10         | 50-1 C       | IN SAMPLE LO                           | 24 Hours 2 Days | Client/Contact: | Project Location: Babb | Project Name: Mine    | status da mandre de la constatus de la constatu<br>A constatus de la constatus de l |
|  | G - Good (No Mi<br>D - Damaged (S<br>SD - Significanti   |           | R<br>N   | 1.5     |       | 305                       |          | 2.5'                  | e<br>V  | 1.51  | 1,           | 6,           | DCATION                                | Reque           |                 | 1 NV                   | ral Bound             | SURVEY  |
| Relinquished By:<br>Date/Time:<br>Received By: | aintenance is required currently)<br>ome repair needed)<br>/ Damaged (Repair or replace AS                                       | CONDITION |          |         |       |                           |          |                       |         |       |              |              | LOCATIONS OF MATERIAL                  | sted: Verbals   | (Please Circle) | Analysis Type:         | 4 Brownfields Project | DATA  |
|  | SAP)   |           |          |         |       |                           |          |                       |         |       |              |              | QNTY                                   | Fax             | ead A<br>her    | sbestos                | Number:               |   |
|  | LF - Linear Fe<br>SF - Square F<br>CF - Cubic Fe   | UNITS     |          |         |       |                           |          |                       |         |       |              |              | COND                                   | Te              | -               | Ē                      | -23515                |   |
| Relinquished<br>Date/Time:<br>Received By:     | aet<br>aet   |           |          |         |       |                           |          |                       |         |       |              |              | FRIABLE<br>YES/NO                      | st to First P   | ulk.            | Ę                      | -04-07                | ()  |
| By:  | A<br>C<br>NDA<br>Assumed<br>ACM<br>- N   | ASBESTO   |          |         |       |                           |          |                       |         |       | Soul for TEM | Sout for TEN | COMMENTS (DEBRIS,<br>EXTENT OF DAMAGE) | ositive: Yes    | prestant        | Instructions: Asb      | Date Sampled: D-      | Page  |
|  | mosite Asbestos<br>hrysotile Asbestos<br>lo Asbestos Detected<br>o Samples Taken   | S %       | ar       |         |       | Lange of the lange of the |          | and the second second |         |       |              | on V         | ASBESTOS %                             | No              | of Alosant      | 25405                  | 2191                  | of 2  |

| Relinquished By:                          | PFI - Pipe Fitting Insulation<br>PRI - Pipe Run Insulation<br>DI - Duct Insulation<br>TI - Tank Insulation<br>EJ - Expansion Joint<br>BI - Boiler Insulation |              | E N | 5 0 | 00 | on on | G. | 4 | ω | 94605 03203X | 545-05 55031 | LAB # SAMPLE #                         | Turn-A-Around Time: ( | Contact (175) 856-3833            | Inspectors: Trank      | Converse Const<br>4840 Mill Street, Suite 5, F |
|---|--|--------------|-----|-----|----|-------|----|---|---|--------------|--------------|--|-----------------------|-----------------------------------|------------------------|--|
| Tho 19:-52 Belinquis                      | VT - Vinyl Tile<br>M - Mastic<br>CBM - Cove Base Mastic<br>AT - Acoustic Tile<br>SA - Spray Acoustic<br>W - Wall<br>P - Plaster                              | MATERIAL     |     |     |    |       |    |   |   |              | Sev 1        | MATERIAL DESCRIPTION                   | (Circle) RUSH 2       | and muell - Proje                 | Ryalds                 | <b>ultants</b><br>Peno, Nevada 89502           |
| shed By:<br>ne:<br>d By:                  | GA - Gasket<br>D - Debris<br>TSI - Thermal System<br>Insulation<br>R - Roof<br>DW - Drywall<br>DW - Joint Compound   |              |     |     |    |       |    |   |   | 50-20        | S0-2 C       | SAMPLE LOCATIO                         | 4 Hours 2 Days        | ect Location: B-Lobb i+           | Project Name: 17 nered | SU   |
| Re<br>Da                                  | - Good (No Mainten<br>- Damaged (Some r<br>D - Significantly Dam   | Q            |     |     |    |       |    |   |   | W<br>W       | 2.5          |  | Requested:            | 100                               | Conty Br               | RVEY DA  |
| linquished By:<br>ate/Time:<br>ceived By: | ance is required currently<br>epair needed)<br>naged (Repair or replace /  | ONDITION     |     |     |    |       |    |   |   |              |              | CATIONS OF MATERIAL                    | Verbals               | Analysis Type:<br>(Please Circle) | ororsfields Projec     | TA   |
|   | ASAP)  |              |     |     |    |       |    |   |   |              |              | QNTY                                   | Fax                   | Asbestos A<br>Lead A<br>Other     | t Number: 🔿            |  |
|   | LF - Linear Fe<br>SF - Square F<br>CF - Cubic Fe   | UNIT         |     |     |    |       |    |   |   |              |              | COND                                   | Te                    |                                   | 1-J.3/S                |  |
| Relinquisher<br>Date/Time:<br>Received By | e er   | <sup>o</sup> |     |     |    |       |    |   |   |              |              | FRIABLE<br>YES/NO                      | st to First P         | Bulk                              | 1-04-0"                | (  |
| 1By:                                      | A<br>C<br>NDA<br>Assumed<br>ACM  | ASBES        |     |     |    |       |    |   |   |              |              | COMMENTS (DEBRIS,<br>EXTENT OF DAMAGE) | <b>'asitive:</b> Yes  | Instructions: As                  | Date Sampled: D        | Page<br>775) 856-3833 FA                       |
|   | Amosite Asbestos<br>Chrysotile Asbestos<br>No Asbestos Detected<br>No Samples Taken  | TOS %        |     |     |    |       |    |   |   | an           | NO           | ASBESTOS %                             | No                    | bestes<br>,r Absect               | 16/10                  | X (775) 856-3513                               |



1631 Williamson Court • Suite 100 • Louisville, KY 40223 Phone (502) 244-7135 • (800) 841-0180 • FAX (502) 244-7136

E-mail: customerservice@mselabs.com \* Website: www.mselabs.com

Date: March 8, 2010

- Attention: Kathi Brandmueller Converse Consultants
  - Subject: Quantitative Analysis of soil samples for asbestos mineral fibers by Transmission Electron Microscopy (EPA/600/R-93/116)
    - RE: MSE-2220CCS Mineral County Brownfields (Babbit) Project CC#07-23151-04-07

Dear Ms. Brandmueller:

McCall & Spero Environmental, Inc. has completed the analyses of the soil samples we received from your offices on February 22, 2010. These samples represent the soil samples from the Mineral County Brownfields (Babbit) Project.

The soil samples were prepared and analyzed by TEM using the quantitative procedures described for asbestos containing materials "Method for the Determination of Asbestos in Bulk Building Materials", R. L. Perkins and B. W. Harvey (EPA/600/R-93/116). Results are express as total percent asbestos.

The results for the two (2) samples are summarized in the following report.

Thank you for consulting McCall & Spero Environmental, Inc. Should you have any questions concerning these results, please contact our office.

Sincerely, S. Dewayne Lear, B.S.

TEM Laboratory Director

# SUMMARY OF TEM QUANTITATIVE SOIL ANALYSIS RESULTS

Page 1 of 1

Project Name: Mineral County Brownfields (Babbit) Project - CC#07-23151-04-07 McCall & Spero Environmental Project No. MSE-2220CCS

| MSE #<br>2220CCS- | SAMPLE #<br>DESCRIPTION | ASBESTOS<br>TYPES & %  | TOTAL<br>ASBESTOS % | NON-FIBROUS<br>MATRIX % | OTHER<br>FIBROUS<br>MATERIAL<br>TYPES & % |
|-------------------|-------------------------|--|---------------------|-------------------------|---|
| S01               | S01-A-1<br>Soil         | ND   | NA                  | 100%                    | ND  |
| S02               | S01-1A-2<br>Soil        | Trace<br>Chrysotile<br>Asbestos<br>Detected at<br>Less than 1% | <0.01%              | 100%                    | ND  |
| LB03              | Lab Blank               | ND   | NA                  | 100%                    | ND  |

NOTES:

ND = None DetectedCH = ChrysotileA = AmositeAC = ActinoliteNA = Not ApplicableCR = CrocidoliteAN = AnthophylliteTR = TremoliteBDL = Below Detectable LevelAN = AnthophylliteTR = Tremolite

Results apply only to items tested. Quantification is accurate to within  $\pm 10\%$ . Results from this report must not be reproduced, except in full, with the approval of McCall & Spero Environmental, Inc. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Analyst:



1831 Williamson Court • Suite 100 • Louisville, KY 40223 Phone (502) 244-7135 • (800) 841-0180 • FAX (502) 244-7136

E-mail: customerservice@mselabs.com • Website: www.mselabs.com

### TEN for SOIL SAMPLE CHAIN OF CUSTODY FORM Soil Converse Consultants Telephone # 175-856-3833 Fax #: 775-856-3513 Company: at Brandmuell - Client Project Number: 07-23151-04-07 Contact: Relinguished by: Kin T Date: 2 18/10 Time: \$100 PH Written Report To: Kal annen. Read mueller Project Name: eral Co Brown fields Turn-Around (Circle One): 6-10 day 2-3 Day 4-5 Day Weekend Rush After Hour Rush For Laboratory Use Only 222QCC5 MSE Project # Method: EPA/600/R-93/116 Samples Received by: 1730 Date: ľΟ Time: **Client Sample** Location **Sample Description** Sampled By Number 501-A-102 0 6" Sil 50-F. Raydds& KIB O 50 IA - 2 Sil 50. F. Rueyolds + K.B

Results Transmitted/Date:\_\_\_\_\_

\_\_Fax/Phone By: \_\_\_\_\_

**EPA Fact Sheet** 

Appendix D



# Naturally Occurring Asbestos: Approaches for Reducing Exposure

### **Purpose and Intended Audience**

This fact sheet provides an overview of approaches for reducing exposures to naturally occurring asbestos (NOA). It is intended to make general information about management options available to state and local government officials, project managers, and environmental professionals. The information should serve as a starting point for identifying current NOA management practices. In general, selecting an appropriate approach to reduce NOA exposure should be determined on a locationspecific basis.

NOA management approaches can reduce but may not completely eliminate potential exposures to naturally occurring asbestos.

Information contained in this fact sheet was obtained from the currently available literature, including state and local government publications. To obtain more information on NOA management approaches, including their performance and frequency of use, refer to the resources provided at the end of this fact sheet.

### Naturally Occurring Asbestos

NOA occurs in rocks and soil as a result of natural geological processes. Natural weathering and human activities may disturb NOA-bearing rock or soil and release mineral fibers into the air, which pose a greater potential for human exposure by inhalation.

The U.S. Geological Survey (USGS) has an ongoing project to map the locations of historical asbestos mines, former asbestos exploration prospects, and natural asbestos occurrences. At least 35 states have reported NOA locations. To locate NOA areas in a specific part of the country, begin by consulting the USGS reports (see below) and contact a state geologist.

| U.S. Geological | Eastern United States <u>http://pubs.usgs.gov/of/2005/1189/</u>                          |
|-----------------|--|
| Survey          | Central United States <u>http://pubs.usgs.gov/of/2006/1211/</u>                          |
|                 | <ul> <li>Rocky Mountain States <u>http://pubs.usgs.gov/of/2007/1182/</u></li> </ul>      |
|                 | <ul> <li>Southwestern United States <u>http://pubs.usgs.gov/of/2008/1095/</u></li> </ul> |
| California      | Asbestos Reports, Maps, and Guidelines for Geologic Investigations                       |
| Geological      | • <u>http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/</u>        |
| Survey          | Pages/Index.aspx   |

This fact sheet is intended solely to provide general information on approaches that may be useful when addressing naturally occurring asbestos (NOA). It is not intended, nor can it be relied upon, to create any rights enforceable by any party, including any party in litigation with the United States. EPA considers NOA to be in an altered form if it has been disturbed by human activity; NOA is not considered to be altered if modified solely through naturally occurring processes or phenomena, from a location where it is naturally found. This fact sheet may be revised periodically without public notice. Use or mention of trade names does not constitute endorsement or recommendation for use.

2

In this fact sheet, NOA does not refer to commercially processed, asbestos-containing material, such as insulation and fire protection in buildings or automobile brake linings. Information about commercial asbestos-containing products is available in other publications, including the resources mentioned on EPA's asbestos Web page <u>http://www.epa.gov/asbestos</u>.

### Approaches for Mitigating Exposures to NOA

The following general approaches to mitigate inhalation exposures to NOA are aimed at reducing NOA releases from rock or soil into the air:

- Leave NOA material in place and undisturbed
- Cover or cap NOA material
- Limit dust generating activities
- Excavate and dispose of NOA material

Depending on the situation, a combination of engineering controls, work practices, and institutional (administrative) controls may be needed to implement an approach and reduce potential exposures to NOA. Selecting an approach depends on factors including:

- Accessibility of NOA (ground surface vs. below ground surface)
- Types of activities that disturb NOA (construction project vs. gardening)
- Climate and weather conditions
- Current and future land uses
- Technical and administrative feasibility of the approach

Typical engineering controls involve the use of covers and caps, vegetation, fencing, landscaping, and in some conditions, the application of water to suppress dust. Local factors, such as climate, influence the extent to which these approaches are implemented. For example, areas with dry or windy conditions may need more dust control than those with humid or less windy conditions.

Common work practices include limiting activities on NOA-containing areas, reducing driving speed on unpaved roads that may contain NOA, and cleaning vehicles driven over NOA. For example, during road construction or maintenance activities on unpaved areas where NOA is present, the Asbestos Airborne Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations of the California Air Resources Board (ARB) requires that vehicle speeds not exceed 15 miles per hour.<sup>1</sup> Worker health and safety measures that include respiratory protection may be warranted. For information, consult with Occupational Safety and Health Administration Asbestos Standards for the General Industry and Asbestos Standards for the Construction Industry (<u>http://www.osha.gov/SLTC/asbestos/hazards.html</u>).

Approaches for reducing NOA exposure are similar to practices used for asbestoscontaining materials in commercial applications.

# Examples of Engineering and Work Practices that Reduce Exposure to NOA

| Excavation,  | • Wet road surfaces with water using trucks, hoses, or sprinklers <sup>1</sup>  |
|--|---|
| Grading, or<br>Utility Work at<br>Construction<br>Projects | • Wet piles of excavated material and cover them with tarps, plastic sheeting, or other items <sup>1</sup>  |
|  | • Continuously mist the work area <sup>1</sup>  |
|  | • Install wind barriers around the work area <sup>1</sup>   |
|  | • Clean or decontaminate equipment and vehicles to ensure that no equipment or workers track soil out of the work area (a gravel pad, tire shaker, or wheel wash system may be used to clear soil from vehicles) <sup>1</sup> |
|  | • Wet the work area using a spray system attached directly to rock cutting or drilling equipment, such as a fine-mist sprayer or a variable-rate fogger nozzle (similar to those used in fire fighting) <sup>2</sup>          |
|  | • Excavate utility trenches to an adequate depth and backfill them with clean soil so that future repair work will not need excavation into potential NOA-containing materials <sup>3</sup>                                   |
|  | • When transporting NOA-containing materials, avoid overloading trucks; keep the material below the top of each truck compartment and cover material with a tarp <sup>4</sup>   |
|  | • Limit personnel and vehicle access to the work area <sup>5</sup>  |
|  | <ul> <li>Identify NOA-containing areas with signs<sup>2</sup></li> </ul>  |
|  | • Reduce driving speed <sup>1</sup>   |
|  | • Reduce drilling or excavating speeds <sup>6</sup>   |
|  | <ul> <li>Excavate during periods of calm or low winds<sup>1</sup></li> </ul>  |
| Roads and<br>Parking Areas<br>(unpaved and                 | • Cover roads with non-NOA-containing rock, chemical sealants or dust suppressants, chip seals, limestone aggregate, petroleum sealants, or asphalt cement paving <sup>1, 7, 8</sup>  |
| gravel roads)  | • Wet road surfaces with water <sup>1</sup>   |
|  | • Install windbreaks or berms <sup>1</sup>  |
|  | • Reduce driving speed <sup>1</sup>   |
|  | <ul> <li>Avoid dusty areas, especially in windy conditions<sup>1</sup></li> </ul>   |

| Around<br>Communities<br>(playgrounds, | <ul> <li>Cover areas of rock and soil with clean soil, rock, vegetation, or other<br/>material (see next section, General Considerations for Using Covers or<br/>Caps)<sup>3,9</sup></li> </ul>                      |
|--|--|
| ball fields,                           | • Pave over unpaved walkways, driveways, or roadways containing NOA <sup>1, 10</sup>   |
| pathways, and gardens)                 | • Landscape areas with vegetation, such as NOA-tolerant plants, and add a layer of organic mulch or NOA-free soil. Water plants often until they are established to minimize erosion <sup>9</sup>                    |
|  | • Water garden areas before digging <sup>9</sup>   |
|  | <ul> <li>Keep windows and doors closed on windy days and during periods when<br/>nearby rock or soil may be disturbed, such as during construction<sup>9</sup></li> </ul>  |
|  | • Limit track-in by using entryway (door) mats, and wipe down pets before they enter buildings to reduce the amount of soil tracked indoors <sup>4,9</sup>   |
|  | <ul> <li>Allow children to play in outdoor areas only if the area has a ground<br/>covering, such as wood chips, mulch, sand, pea gravel, grass, asphalt,<br/>shredded rubber, or rubber mats<sup>4</sup></li> </ul> |
|  | <ul> <li>Relocate outdoor activities to areas that do not contain NOA (walk, run, hike,<br/>and bike only on paved trails)<sup>4</sup></li> </ul>  |
|  | • Avoid dusty areas, especially in windy conditions <sup>11</sup>  |

# General Considerations for Using Covers or Caps

One of the most common engineering controls is to place a cover system over the NOA. Cover materials may include clean soil or rock, concrete, chemical sealants or dust suppressants, chip seals, limestone aggregate, petroleum sealants, asphalt paving, geotextiles, wood chips, mulch, sand, pea gravel, shred-ded rubber, rubber mats, and vegetation.

The complexity of cover systems can vary from simple (e.g., a single soil layer) to complex (e.g., multiple layers of varying materials). Several factors, including cover material properties and site characteristics, affect the type of cover system appropriate for a particular area.

The availability of materials may influence the type of cover used. Materials that are readily available and close to the NOA area may be more desirable and cost effective than materials found farther away. For example, artificial turf and other imported materials may be more expensive than locally available soils. The cover material will likely need to be assessed for NOA or other undesirable constituents. Expected lifetime, maintenance, and monitoring requirements also affect the cost of covers.

The slope of the NOA area may influence the type and thickness of the cover material used. For example, steep slopes may need vegetation or shotcrete (concrete or mortar sprayed onto a surface with a pressurized hose) to promote slope stabilization. Steep slopes typically have a higher potential for erosion and therefore may demand thicker cover material.

The thickness of the cover material should provide a safety factor sufficient to ensure that airborne releases will not occur. Thicker covers may be needed in areas where there is a significant potential for erosion. The surface of a cover should protect against erosion by wind and rain. Materials used for erosion control typically include a layer of topsoil and vegetation. In areas where adequate vegetation is not possible, gravel, admixtures, or riprap may be used for the surface layer. The thickness of the cover may also depend on the presence of other cover components, such as irrigation lines.

A geotextile, which is a geosynthetic material made of polymer fabric, may be placed below the cover material to mark the presence of NOA and serve as an erosional indicator. Geotextiles also can provide protection, reinforcement, drainage, and separation when applied to the soil surface or between layers of materials. The California Department of Toxic Substances Control (DTSC) recommends that land-scaped areas and play fields at schools include a geotextile marker covered by sufficient cover material to provide an effective barrier to reduce NOA exposures.<sup>3</sup> Placement of geotextile markers will demand additional time and expertise.

### Long-Term Management Approaches

For long-term management of areas with NOA, institutional controls (ICs) and a maintenance plan may be desirable. In areas where NOA poses potential health concerns, local and state government officials should consider providing educational material to supplement engineering approaches for reducing exposures to NOA. The Agency for Toxic Substances and Disease Registry has developed a fact sheet about asbestos and NOA for the general public entitled "Asbestos and Health: Frequently Asked Questions."<sup>4</sup>

### Institutional Controls

Generally, ICs are administrative or legal mechanisms that are designed to help minimize the potential for human exposure to contamination. They also protect the integrity of the engineering measures. ICs are generally divided into four categories: For additional information about ICs, refer to the Land Use Controls Web site at <u>http://www.lucs.org</u>

- Government controls include laws and permits (such as local zoning laws and permits required for excavating or digging). Work that may disturb NOA-containing soil may require government approval and may be subject to local or state construction guidelines. In California, the ATCM of the California ARB requires owners and operators to notify the local air quality management district within one business day of discovering NOA, serpentine mineral, or ultramafic rock in an area to be disturbed by construction, grading, quarrying, or surface mining operations.<sup>1</sup> In Virginia, the Fairfax County Health Department requires a compliance plan that includes air monitoring to ensure effective dust control during construction in areas containing NOA.<sup>2</sup>
- *Proprietary controls* include property use restrictions based on private property laws, such as land use easements or covenants.
- *Enforcement tools* include legally binding documents that require individuals or companies to conduct or prohibit specific actions.
- *Informational devices* include deed notices, public advisories, and other measures (such as warning signs and worker health and safety awareness training) that alert and educate people about an area.

### Maintenance Plan

A maintenance plan can help ensure that engineering controls and work practices remain effective. In California, for example, DTSC and school districts enter into an agreement to develop and implement an approved long-term operation and maintenance plan under DTSC oversight. These plans generally contain information about the following topics:<sup>3</sup>

- Building locations, utility line locations, and the thickness of cover material across the area
- Routine inspections

- Maintenance work, including erosion and storm water control
- Procedures for repairing cover damage
- Monitoring activities, such as perimeter or personal air monitoring
- Reporting format and frequency
- Restrictions on future activities that may expose NOA
- Management of imported soil and future excavation or trenching activities

Additional Information
Agency for Toxic Substances and Disease Registry - <u>http://www.atsdr.cdc.gov/NOA</u>
California Air Resources Board - <u>http://www.arb.ca.gov/toxics/asbestos/asbestos.htm</u>
El Dorado County, California - <u>http://www.co.el-dorado.ca.us/emd/apcd/asbestos.html</u>
Fairfax County, Virginia - <u>http://www.fairfaxcounty.gov/hd/asb</u>
Sacramento County, California - <u>http://www.airquality.org/compliance/asbestosNaturallyOccurring.shtml</u>
U.S. Environmental Protection Agency - <u>http://www.epa.gov/asbestos/pubs/clean.html</u>

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### List of Acronyms

- ARB Air Resources Board
- ATCM Airborne Toxic Control Measure
- DTSC Department of Toxic Substances Control
- ICs institutional controls
- NOA naturally occurring asbestos
- USGS U.S. Geological Survey

**Pertinent Photos** 

Appendix E

