UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

SEP 25 2013

MEMORANDUM

SUBJECT: Request for a Time-Critical Removal Action at the Bluewater Radiological Site, in the Village of Bluewater, Cibola County, New Mexico

FROM: Warren Zehner, On-Scene Coordinator
Removal Team (6SF-PR)

Jon Rinehart, On-Scene Coordinator
Removal Team (6SF-PR)

THRU: Ragan Broyles, Associate Director
Prevention and Response Branch (6SF-P)

TO: Carl Edlund, P.E, Director
Superfund Division (6SF)

I. PURPOSE

This memorandum requests approval for a time-critical removal action, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq., at the Bluewater Radiological Site (the "Site") in the Village of Bluewater, Cibola County, New Mexico. The proposed actions for this Site include the excavation, consolidation, and removal of radiologically contaminated soil/debris from 26 residential properties which exceeded the established CERCLA risked based action level for Radium-226. In addition to the contaminated soil/debris removal, 5 of the 26 residences exceeded the established health-based levels for Radon-222 and will require the installation of abatement systems in the affected homes. An additional 8 residential radon-222 abatement systems may need to be installed when the final results become available in November 2013.

As described in Section III of this memorandum, the factors described in Section 300.415 of the National Contingency Plan (NCP), 40 CFR § 300.415, have been considered, and based on those factors, a determination has been made that a removal action at the Site is appropriate. This Removal Action is not expected to exceed the statutory twelve-month time limit, nor is it expected to exceed the statutory $2,000,000 extramural limitation.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID:	NMN000607509
Category of Removal:	Time Critical
Site ID:	A6GS
Latitude:	35. 253413 N
Longitude:	-107. 979799 W

693207

A. Site Description

1. Removal Site Evaluation

In March 2009, the Environmental Protection Agency, Region 6 Prevention and Response Branch (EPA PRB) received a verbal request for assistance from the State of New Mexico Environment Department (NMED) in the evaluation of residential properties near or adjacent to legacy uranium mines and/or mills in the Grants Mineral Belt (GMB) for potential removal action(s) . The Bluewater Radiological Site is located in and around the Village of Bluewater, Cibola County, New Mexico. The Site is located within the boundaries of the Ambrosia Lake Sub-District (ALSD) of the GMB and near the Anaconda Copper Company (Anaconda) legacy uranium mill site.

Based on the NMED request for assistance, the Superfund Technical Assessment and Response Team (START) III contractors were tasked by EPA PRB to conduct a Radiation Removal Assessment (RRA) on the Site. As part of this radiological assessment, a quality assurance sampling plan (QASP) was developed for the project, documenting standard operating procedures (SOPs), assessment methodologies, EPA guidance and other best management practices. The RRA (Attachment 3) was conducted in two phases, outdoor for excess gamma radiation in soil/debris and indoor for excess gamma radiation and/or radon-222, from March 2013 until September 2013.

After extensive technical review of the excess gamma radiation data from the soil/debris phase of the RRA, EPA concluded that the sources of the excess ionizing radiation present in the soil/debris on the Site were not consistent with the well-documented isotopic profile of the known sources of radiological contamination (mill waste) associated with the Anaconda Uranium Mill, that is under long term care and maintenance of the Department of Energy legacy program. The isotopic profile of the soil/debris was consistent with known examples of mining and mining related process waste. The NMED made a written request to the PRB for assistance in conducting a removal action on the affected residential properties at the Bluewater Radiological Site, in the Village of Bluewater on September 6, 2013 (Attachment 2).

The elevated concentrations of several radio-isotopes and their associated progeny in various uranium mine waste streams are the contaminants of concern on this Site, primarily from gamma and other forms of ionizing radiation associated with these radio-isotopes. Uranium mine waste streams include, but are not limited to overburden, sub-economic ore, and broken/replaced infrastructure/mechanical elements, and/or soil/debris that have become contaminated with radioactive waste materials ("waste materials"). The principal contaminant of concern is radium-226 (^{226}Ra, hereafter to mean the isotope and progeny) and radon-222 (^{222}Rn, hereafter to mean the isotope and progeny) primarily from the mining operations and/or subsequent mine closure operations conducted in the ALSD of the GMB. In addition to ^{226}Ra and ^{222}Rn contamination, uranium-238 (^{238}U, hereafter to mean, all the isotopes and their

progeny) from the mining operations and/or subsequent mine closure operations conducted in the ALSD of the GMB is also a contaminant of concern. These radio-isotopes have been potentially dispersed by the aforementioned uranium mining operations in the ALSD, and by various anthropogenic means throughout the Site. Anthropogenic activities such as utilization of waste materials in residential landscaping (rock borders, rock gardens, etc.), re-use of contaminated materials (e.g., salvaged piping used in a residential fence), re-use as construction materials on the residential properties (e.g., foundations), and collection of decorative objects made from contaminated materials (e.g., petrified wood) have dispersed radioactive contamination within the residential areas in no predictable order or pattern. The elevated concentrations of radio-isotopes and associated radioactivity above normal background levels, expressed in counts per minute (CPM) present on the residential properties on this Site, appear to be the direct result of the mining operations, and/or the utilization of waste materials generated during the uranium mining operations conducted in the ALSD of the GMB.

The fine and sandy/dusty texture of the contaminated soils on the Site makes it easy for these waste materials to adhere to humans and animals that come into direct contact with them. For humans and especially children, the wastes may be subsequently ingested during normal hand-to-mouth (or plaything-to-mouth) activity, or it may be inhaled. Moreover, the dry climate and sparse vegetative cover in these areas may cause the fine-grained waste materials to become wind-borne. Given the frequent dust storms taking place seasonally on the Site, potential for exposure is greatly increased. These dust storms can also cause indoor contamination (the dust is so fine that it can blow through small cracks), increasing the likelihood that humans, and especially children, may be exposed. In addition, during the brief wet periods following precipitation events, contaminated mud may be tracked into residences and/or vehicles. When the mud dries and is disturbed during human activities, such as routine cleaning, the airborne fraction of the dust contributes to further inhalation exposure.

2. Physical Location

The Site is located in and around the Village of Bluewater, in a semi-rural area of Cibola County, New Mexico (Attachment 4). Geomorphologically, the Site is in semi-arid grassland that has been heavily altered by anthropogenic activities associated with residential subdivisions. Density of vegetative cover is highly variable across the Site boundary. Although the Site is located near the Anaconda mill, it does not appear that Village residents were only employed at the Anaconda mill during active uranium production years. The Site is composed of 225 residential structures/lots, of which 26 residential structures/lots exceed CERCLA risk based health levels for excess gamma radiation and/or ^{222}Rn (Attachment 5).

3. Site Characteristics

The EPA has completed investigating the extent of residential radiological contamination on this Site. Based on the RRA it appears that the source of the radiological contamination on this Site is waste material salvaged from the historic uranium mining or mining related

operations at the numerous uranium mines located within the ALSD of the GMB.

The ALSD is a large sub-district on the GMB located in Cibola and McKinley counties in northwest New Mexico. Based on the review of Federal and State government regulatory records, there were up to 103 uranium mining operations and four uranium mills operating in the sub-district from the early 1950s until 2002, with most active operations ceasing in the 1980s (See Attachment 6). These mines and mills were the single largest source of employment in Cibola and McKinley counties, NM.

As part of the overall operations at the mines and mills in the ALSD, the mines maintained overburden and/or sub-economic ore waste piles and at least one waste/debris area for general infrastructure/ mechanical wastes. It appears based on several conversations with residents and former mine workers throughout the RRA study areas in the ALSD that "salvage" of the aforementioned waste piles and/or waste storage areas for residential re-utilization was common and if not approved by the mine operator, it was condoned. Reportedly, no warning signs or potential health impact information about the use of the waste materials were present in the waste areas during the operational history of the mines. Since the various uranium mines in the ALSD were the largest employers in Cibola and McKinley counties for a significant number of years, a disproportionally large fraction of the adult residents of these counties had easy and ready access to the various aforementioned waste storage areas in the ALSD. Several examples of residential re-utilization of radioactive waste materials were observed during the RRA on the Site, including but not limited to building materials, fill, landscaping (rock gardens), and souvenirs.

During the course of the RRA, the EPA On-Scene Coordinators (OSCs) had discussions with property owners and residents of the Site regarding the residential re-utilization of various mine and mine operations waste streams on their residence. Most residents were unsure of the origin(s) of contaminated materials as they were not the original owners of the property. A minority of residents was vague and tentative in their responses, and some did admit that they or their relatives did bring some materials from one or more of the source mines in the ALSD onto their property for various uses.

As mentioned above, the EPA has completed the surface soil and structural (indoor) RRA on the Site. Surface radiological surveys were conducted on each residence utilizing a 2"x 2" gamma scintillation detector. Gamma radiation levels around and near the residences were as high as 569,909 CPM, as compared to the Site specific background of 12,319 CPM. See Interim Bluewater Site RRA Status Report (Attachment 3).

4. Release or Threatened Release into the Environment of a Hazardous Substance, Pollutant or Contaminant

One of the principal contaminants of concern on this Site is ^{222}Rn, which has been detected in the residences on seven properties on the Site at levels up to 85 pico curies per liter

(pCi/L) using seven day samplers. In order to be consistent with the recommendations of the EPA Region 6 Regional Health Physicist/Radon Coordinator and the substantive requirements of *Protocols for Radon and Radon Decay Product Measurement in Homes* (EPA 402-R-02-003, May 1993), the more definitive 91 day samplers were placed in the 5 residences that exceeded the acceptable exposure level on the seven day samplers. EPA has previously determined that the acceptable in-home exposure level for ^{222}Rn is ≤4 pCi/L as per the 91 day samplers (*EPA Assessment of Risks from Radon in Homes* (EPA 402-R-03-003, June 2003). The 91 day samplers recorded levels of ^{222}Rn above the ≤4 pCi/L exposure level, with a maximum level of 73 pCi/L at this Site.

Uranium-238 and ^{226}Ra are also principal contaminants of concern on this Site based primarily on the gamma and other forms of ionizing radiation associated with these radio-isotopes. Radiological dose is measured in milli-rem per year (mrem/year). The *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, August 22, 1997 (OSWER Directive 9200.4-18) established a general, maximum acceptable radiological dose level of 15 mrem/year above background level for non-NRC licensed facilities. Further, this guidance document states that the total effective dose equivalent (TEDE) of 15 mrem/year represents an excess cancer risk of $3x10^{-4}$, and is considered essentially equivalent to the CERCLA presumptively protective excess cancer risk level of $1x10^{-4}$. The referenced risk calculation utilizes a 30-year exposure period per lifetime and a 24 hour/day exposure rate. The risk calculation is based upon a risk conversion factor of 7% cancer incidence per 100 rem of exposure and comes from the National Academy of Sciences report on *The Biological Effects of Ionizing Radiation (BEIR V), 1990*. The *Protocol for Uranium Home Site Assessment, Grants Mineral Belt Uranium Project; Cibola and McKinley Counties, New Mexico, December 2009,* documents the regulatory consistency with EPA 1997, OSWER 9200.4-18 and the process used for conducting the radiological assessment on Site residential properties. The START III Certified Health Physicists (CHPs) have evaluated the radiological data from the Removal Assessment on the Site and have determined that 26 residences on the Site have exceeded the acceptable TEDE of 15 mrem/year and the excess cancer risk level of $3x10^{-4}$ is exceeded by a similar factor.

As previously stated, the primary contaminants of concern at the Site, ^{238}U and ^{226}Ra and their associated progeny, are hazardous substances as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14) and 40 CFR § 302.4. The following are the known health effects associated with exposure to the aforementioned hazardous substances on the Site.

Radon-222

Radon-222 is a colorless and odorless noble gas that is produced in the decay chains of Uranium and Thorium. Radium-226 is the parent of ^{222}Rn. According to the Agency for Toxic Substance and Disease Registry (ATSDR) *ToxFAQs for Radon* (September 2008), ^{222}Rn is recognized by the EPA and the Department of Health and Human Services (DHHS) as a human carcinogen. The primary target organ for ^{222}Rn and its alpha ionizing radiation producing

progeny are the lungs. Several health organizations have indicated that prolonged exposure to high levels (> 4pCi/L) of ^{222}Rn is the second leading cause of lung cancer in the United States, behind only smoking.

Exposure pathways are the routes that a contaminant can take in order to be assimilated by a human or animal. For example, the inhalation of gases, vapors or contaminated airborne particles (dust) or the incidental ingestion of contaminated soils through direct contact are both exposure pathways. The exposure pathways of concern at the Site for ^{222}Rn are described below:

- Inhalation is the primary exposure pathway at this Site for ^{222}Rn and associated alpha ionizing radiation producing progeny. As discussed above a significant amount of ^{222}Rn is present in 5 of the 26 residence on this Site. Inhalation exposure is not limited to only the gaseous phase of ^{222}Rn, the alpha emitting progeny readily attach to fine surface soils and related fine particulate matter (dust). Since this Site is in a semi-arid environment and the contaminated soils tend to be fine grained and dusty, they are easily airborne after wind or mechanical disturbance and subject to inhalation by humans or livestock.

Radium-226

Radium-226 is principally a source of alpha and gamma radiation, although some beta radiation is also produced during the decay process. According to the ATSDR *ToxFAQs for Radium* (July 1999) document, exposure to ^{226}Ra can cause adverse effects to the eyes (cataracts) and blood (anemia), ^{226}Ra has been identified by the EPA and the National Academy of Sciences as a known human carcinogen, being specifically linked to cancers of the bone and breast, and also leukemia.

The exposure pathways of concern for ^{226}Ra at this Site are described below:

- The predominant exposure pathway related to ^{226}Ra was determined to be external gamma radiation, contributing over 90% of the total effective dose equivalent (TEDE) in the Residual Radioactive modeled scenario with ^{222}Rn removed.

- A significant amount of the surface area of the residences on this Site is contaminated with elevated concentrations of ^{226}Ra at or near the surface. The contaminated soils are fine grained and have a high probability of adherence to skin, clothing and fur as a result of direct contact. For humans, incidental ingestion of the contaminants adhering to skin or clothing can occur through normal hand-to-mouth activities such as play or mealtime.

- Inhalation is another exposure pathway at this Site. As discussed above a significant amount of the surface soils on this Site are contaminated with ^{226}Ra. The contaminated soils tend to be fine grained and dusty, are easily airborne after wind or mechanical

disturbances, and subject to inhalation by humans or livestock. Inhalation and ingestion combined for a total of approximately 5% of the TEDE estimate in the Residual Radioactive (RESRAD) modeled scenario for this Site.

Uranium

Uranium is a widespread mineral forming heavy metal that in nature is composed of three isotopes, ^{238}U, ^{235}U, and ^{234}U, with the ^{238}U isotope generally composing over 98% of the mixture. All of these isotopes are the same chemically, but they have different energy and decay properties. According to the ATSDR *ToxFAQs for Uranium* (October 1999), Uranium is an alpha ionizing radiation emitter and in general, weakly radioactive. Exposure to excess levels of Uranium can cause human tissue damage, primarily in the kidneys. Cancer risk from exposure to excess Uranium levels appears to be low to none. The primary risk on this Site from Uranium is cancer caused by exposure to the progeny generated by its decay.

5. NPL Status

This Site is not presently on the NPL. However, should the Site rank on the NPL, the current removal action will be consistent with any subsequent remedial activities that might be taken due to the fact that the proposed actions constitute a source control measure.

6. Maps, Pictures and Other Graphic Presentations

Attachment 1 - Enforcement Addendum (Enforcement Confidential/FOIA Exempt)
Attachment 2 - NMED Referral Letter, September 06, 2013
Attachment 3 – Interim Status Report for Bluewater Site Radiation Removal Assessment, September 2013
Attachment 4 – Area Map
Attachment 5 –Site Location Map
Attachment 6 – Historic Uranium Mines in ALSD

B. Other Actions to Date

1. Previous Actions

The EPA Region 6 Removal Program has taken no previous actions on this Site.

2. Current Actions

Based on the RRA data and the health based dose calculations utilizing the RESRAD and EPA PRG models and a ration of dose to excess cancer risk assumed at the TEDE of 15

mrem/year level per excess cancer risk of $3x10^{-4}$ discussed above (Section II.A.4), the EPA has determined that current conditions on specific properties found within the Site exceed acceptable levels and pose an unacceptable health risk to the residents of those properties.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

The State of New Mexico, through the NMED has had no previous and current regulatory activities associated with this Site. EPA has coordinated all RRA activities on the Site with NMED.

2. Potential for Continued State/Local Response

The NMED will not be able to provide a response action to physically address the actions described in this memorandum.

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

A. Threats to Public Health

The factors described in Section 300.415 of the National Contingency Plan (NCP), 40 CFR § 300.415, have been considered, and, based on those factors, a determination has been made that a removal action is appropriate to address the hazardous substances present in the contaminated wastes at the Site. Any or all of these factors may be present at a site yet any one of these factors may determine the appropriateness of a removal action.

1. Actual or Potential Exposure to Nearby Human Populations, Animals, or the Food Chain from Hazardous Substances or Pollutants or Contaminants. 40 CFR § 300.415(b)(2)(i).

As discussed above, in Section II.A.3-4, the Removal Assessment identified levels of ionizing gamma radiation in the soils/debris surrounding or in close proximity to the 26 residential structures and excess levels of ^{222}Rn in 5 of the 26 residences on the Site in excess of the referenced EPA acceptable exposure, dose and/or risk limits. An additional 8 residential ^{222}Rn abatement systems may need to be installed when the final 91 day ^{222}Rn results become available in November 2013.

2. High Levels of Hazardous Substances or Pollutants or Contaminants in Soils Largely at or Near the Surface That May Migrate. 40 CFR § 300.415(b)(2)(iv).

As discussed above, the results of the RRA (Attachment 3) indicate high levels of radiological contamination in the surface and near surface soils (< 12 inches) on a significant

portion of the 26 identified residences on this Site.

3. Weather Conditions That May Cause Hazardous Substances or Pollutants or Contaminants to Migrate or be Released. 40 CFR § 300.415(b)(2)(v).

As referenced above, the Site is located in northwest New Mexico. This part of the State routinely experiences severe weather of varying degrees of intensity during the Spring and Summer. Given that the referenced radiological contamination is located at or near the surface of the Site, and because the Site is located in a semi-arid area, with limited vegetative cover, there is a high potential for off-site migration of the aforementioned hazardous substances in surface soils via the flash flooding rains in the Summer and/or strong wind storms that are associated with strong low pressure systems in the Spring.

4. The Availability of Other Appropriate Federal or State Response Mechanisms to Respond to the Release. 40 CFR § 300.415 (b)(2)(vii).

At this time, there are no other mechanisms available to respond to actions described in this memorandum in a timely manner so as to effectively reduce the imminent and substantial endangerment to public health posed by the hazardous substances located on the Site. The State and local officials do not have the resources available to address the current dangerous conditions at the Site. If other mechanisms become available during the conduct of this response action, the EPA will evaluate those mechanisms as appropriate.

B. Threats to the Environment

The actions taken during this response are designed solely to address a public health threat resulting from the hazardous substances present on the Site derived from waste materials that appear to have originated from the historic uranium mining in the ALSD of the GMB. This site will be referred back to the State at the completion of this removal action.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances, pollutants or contaminants from the Site, if not addressed by implementing the response action selected in this Action Memorandum, will continue to present an imminent and substantial endangerment to public health or welfare or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions Taken

1. Action Description

a. Action Levels and Clean-up Levels

The EPA uses the term "action level" to mean the contaminant concentration level in soil or groundwater signifying the need for a response action. Wastes that meet the definition of a hazardous waste under the Resource Conservation and Recovery Act ("RCRA") not found in a soil or groundwater matrix (such as drummed wastes found on a site), are usually not subject to a specific action level. They are simply removed to prevent actual or potential exposures. Action levels should not be confused with "cleanup levels." The cleanup level is the contaminant concentration level which the response action is designed to meet. That is, once EPA has identified a contaminated medium which contains concentrations of a contaminant which exceed the action level, the removal action calls for continued response until the concentration of the contaminant in the contaminated medium are below the established cleanup level. Prior to the excavation of soils beyond 24" below ground surface proper approval must be obtained.

For this removal action, both the action level and cleanup level is 3.5 pCi/gram of ^{226}Ra in the contaminated waste materials and soils. This concentration value is the equivalent of a $3x10^{-4}$ excess cancer rate as calculated by the aforementioned RESRAD model and EPA's PRG calculator using site specific data where possible. Further, this concentration value is also the equivalent of a 15 mrem/yr dose rate for ionizing gamma radiation generated from the decay of the aforementioned radioisotopes and their associated daughter progeny in the contaminated re-purposed materials and soils.

In developing the action levels and cleanup levels for the Site, EPA Region 6 considered the *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, August 22, 1997 (OSWER Directive 9200.4-18), EPA Region 9 Navajo Nation Radiological Structure Assessment data and procedures, and consulted with NMED to determine whether there were potential state Applicable or Relevant and Appropriate Requirements (ARARs) within the meaning of CERCLA Section 121, 42 U.S.C. § 9621. After the action levels and cleanup levels for this Site were reviewed and found to be consistent with historic action levels and cleanup levels used by the EPA on similar sites, the OSC decided to utilize the aforementioned ionizing radiation concentration of 3.5 pCi/g of ^{226}Ra and the equivalent dose rate as the action level and cleanup level for the radiological contamination on this Site.

b. Bluewater Radiological Site

The EPA proposes to mitigate the imminent and substantial threats to human health, welfare, or the environment by taking steps to prevent the release of external ionizing radiation from the sources on this Site. The removal action will include the following objectives to prevent direct human contact and excessive ionizing radiation exposure from the contaminated soils/debris, and contaminated re-purposed materials present on the Site:

- Consolidate, transport and dispose of the radiologically contaminated soil, debris, and any other contaminated materials into an approved off-site facility.
- Replace excavated soils with clean fill and restore to pre-removal grade.
- Conduct confirmation radiological scanning, sampling, and analysis to ensure that the ionizing radiation exposure is below established EPA cleanup levels.
- Install ^{222}Rn abatement systems at the residences that exceeded the established acceptable exposure level for ^{222}Rn.
- Conduct confirmatory ^{222}Rn sampling to verify that the abatement systems have reduced the ^{222}Rn levels to the acceptable exposure levels.

c. Certain Contaminated Materials Will Be Taken Off-site

The contaminated soils excavated during the removal action will be consolidated with the contaminated demolition materials and taken off-site for disposal. The contamination found at the Site and discussed in this memorandum stems from waste material salvaged from the historic mining operations conducted within the ALSD. The contaminated wastes described above are a solid waste, but not a hazardous waste under the Resource Conservation and Recovery Act (RCRA), because they are derived from the extraction, beneficiation, and processing of ores and minerals within the meaning of 40 CFR § 261.4 (b)(7). Since the aforementioned materials are not a hazardous waste under RCRA, EPA does not consider the RCRA hazardous waste management requirements to be applicable or relevant and appropriate (*See* Section V 4(c) below). Although these wastes are not considered hazardous wastes under RCRA regulations, they are determined to be CERCLA hazardous substances.

The off-site disposal of the CERCLA wastes generated from this removal will be in conformance with EPA's procedures for planning and implementing off-site response action, 40 CFR § 300.440. All off-site transportation of hazardous waste will be performed in conformance with applicable U.S. Department of Transportation (USDOT) requirements. Other requirements under the Occupational Safety and Health Act (OSHA) of 1970, 29 U.S.C. § 651 et. seq., and under the laws of States with plans approved under section 18 of the State's OSHA laws, as well as other applicable safety and health requirements, will be followed. Federal OSHA requirements include, among other things, Hazardous Materials Operation, 29 CFR Part 1910.120, as amended by 54 Fed. Reg. 9317 (March 5, 1989), all OSHA General Industry (29 CFR Part 1910) and Construction (29 CFR Part 1926) standards wherever they are relevant, as well as OSHA recordkeeping and reporting regulations, the EPA regulations set forth in 40 CFR Part 300, and other EPA policies/guidelines relating to the conduct of work at Superfund sites.

2. Contribution to Remedial Performance

The actions described above for the Site will contribute to any presumed remedial cleanup alternative given that the response actions to be taken will constitute contaminant source removal.

3. Description of Alternative Technologies

At this time, there are no other proven alternative technologies that could be feasibly applied at this Site. The appropriate action is to conduct the removal action on the Site as described in this memorandum. If an equally protective and less expensive technology is later identified, it may be considered.

4. Applicable or Relevant and Appropriate Requirements (ARARs)

The proposed removal action will be conducted to eliminate the actual or potential exposure to hazardous substances pursuant to CERCLA, in a manner not inconsistent with the NCP. As per 40 CFR Section 300.415(j), Superfund-financed removal actions under CERCLA § 104 and § 106 shall, to the extent practicable considering the exigencies of the situation, attain the applicable or relevant and appropriate requirements (ARARs) under Federal environmental law.

a. Chemical-specific ARARs - There were no chemical-specific Federal or State ARARs identified that were applicable to this removal action.

b. Location-specific ARARs - There were no location-specific Federal or State ARARs identified that were applicable to this removal action.

c. Action-specific ARARs - The ^{238}U, ^{226}Ra and related daughter progeny contamination in the demolition materials and related soil/debris is from the mining of uranium which is a solid waste, but not a hazardous waste under the Resource Conservation and Recovery Act (RCRA), because it is solid waste from the extraction, beneficiation, and processing of ores and minerals within the meaning of 40 CFR § 261.4(b)(7). Since the materials are not a hazardous waste under RCRA, EPA does not consider RCRA hazardous waste management requirements to be applicable or relevant and appropriate, including without limitation the waste analysis requirements found at 40 CFR §§ 261.20 and 261.30, the RCRA manifesting requirements found at 40 CFR § 262.20, and the RCRA packaging and labeling requirements found at 40 CFR § 262.30. Since the removal action involves no on-site storage of hazardous wastes, storage requirements found at 40 CFR Part 265 are not applicable or relevant and appropriate.

Although the hazardous substances which are the subject of this removal action are solid waste and not hazardous waste under RCRA because they are solid waste from the extraction, beneficiation, and processing of ores and minerals, according to 40 CFR § 261.4(b)(7), it is useful in this Site-specific situation for EPA to use certain RCRA requirements to control and track waste sent off-site. Accordingly, RCRA waste analysis requirements found at 40 CFR §§ 261.20 and 261.30, RCRA manifesting requirements found at 40 CFR § 262.20, and RCRA packaging and labeling requirements found at 40

requirements found at 40 CFR §§ 261.20 and 261.30, RCRA manifesting requirements found at 40 CFR § 262.20, and RCRA packaging and labeling requirements found at 40 CFR § 262.30 will be used for off-site disposal of wastes and other contaminated material generated during this removal action. Because on-site storage of repackaged hazardous wastes is not expected to exceed ninety (90) days, specific storage requirements found at 40 CFR Part 265 are neither applicable nor relevant and appropriate. (See 40 CFR § 262.34).

d. To-be-considered (TBCs) - In addition to ARARs, other advisories, criteria, or guidance that may be useful in developing the remedy were, as appropriate, identified and considered.

5. Project Schedule

The proposed actions for this time critical removal action are expected to be completed in six months.

B. Estimated Costs

Extramural Costs

Removal Contractors.....	$ 1,490,000
START III Contractors.....	$ 200,000
Subtotal, Extramural Costs	$ 1,690,000
Extramural Costs Contingency (15%)	$ 260,000

TOTAL, EXTRAMURAL COSTS..... $ 1,950,000

The above costs are based on an average 12" excavation depth.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD NO ACTION BE TAKEN OR ACTION BE DELAYED

Should the actions described in this Action Memorandum be delayed or not taken, the elevated ^{222}Rn, gamma radiation dose and associated excess cancer risk will continue to pose a significant threat to the residents located on the Site.

VII. OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this removal action.

EPA Region 6 has initiated the enforcement process on this Site. (See Enforcement Confidential Attachment #1, for additional details). The total cost to EPA for this removal action, consisting of the excavation and disposal of the contaminated soil/debris is **$3,637,065.**

(Direct Cost) + (Other Direct) + (42.63% of Total Direct {Indirect Cost}) = Estimated EPA Cost for a Removal Action

$1,950,000 + $600,000 + (42.63% X $2,550,000) = **$3,637,065**

Direct costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2002. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a Removal Action.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Bluewater Radiological Site, in and around the Village of Bluewater, Cibola County, New Mexico. It is developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq., and is not inconsistent with the National Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 300.415 (b) (2), 40 CFR § 300.415 (b)(2) criteria for a time-critical removal action. We recommend your approval of the proposed time-critical removal action request. The total estimated EPA cost for the removal is **$3,637,065.** Of this, an estimated $1,950,00 comes from regional funds.

APPROVED: _____ DATE: 9/25/13

Carl E. Edlund, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency, Region 6

Attachments (6)

MEMORANDUM

SUBJECT: Request for a Time-Critical Removal Action at the Bluewater Radiological Site, in the Village of Bluewater, Cibola County, New Mexico

FROM: Warren Zehner, On-Scene Coordinator
Removal Team (6SF-PR)

Jon Rinehart, On-Scene Coordinator
Removal Team (6SF-PR)

THRU: Ragan Broyles, Associate Director
Prevention and Response Branch (6SF-P)

TO: Carl Edlund, P.E, Director
Superfund Division (6SF)

I. PURPOSE

This memorandum requests approval for a time-critical removal action, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq., at the Bluewater Radiological Site (the "Site") in the Village of Bluewater, Cibola County, New Mexico. The proposed actions for this Site include the excavation, consolidation, and removal of radiologically contaminated soil/debris from 26 residential properties which exceeded the established CERCLA risked based action level for Radium-226. In addition to the contaminated soil/debris removal, 5 of the 26 residences exceeded the established health-based levels for Radon-222 and will require the installation of abatement systems in the affected homes. An additional 8 residential radon- 222 results may need to be installed when the final results become available in November 2013.

As described in Section III of this memorandum, the factors described in Section 300.415 of the National Contingency Plan (NCP), 40 CFR § 300.415, have been considered, and based on those factors, a determination has been made that a removal action at the Site is appropriate. This Removal Action is not expected to exceed the statutory twelve-month time limit, nor is it expected to exceed the statutory $2,000,000 extramural limitation.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID:	NMN000607509
Category of Removal:	Time Critical
Site ID:	A6GS
Latitude:	35. 253413 N
Longitude:	-107. 979799 W

Webster 6SF-PR 9/13/13 | Capuyan 6SF-TE 9/13/13 | Johnson 6SF-TE 9/13/13 | Travis 6SF-RC 09/13/2013 | Peyckke 6RC-S 09/16/2013 | Rinehart 6SF-PR 9-16-13 | Zehner 6SF-PR 9/16/13 | ~~Edlund 6SF~~

~~Phillips 6SF~~

Attachment 1 – Enforcement

Attachment 2

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

Harold Runnels Building
1190 St. Francis Drive, P.O. Box 5469
Santa Fe, NM 87505-5469
Phone (505) 827-2918 Fax (505) 827-2965
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SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

RYAN FLYNN
Cabinet Secretary
Designate

BUTCH TONGATE
Deputy Secretary

September 6, 2013

Ms. Susan Webster (6SF-PR)
Team Leader, Removal Site Team
USEPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Removal Action - Bluewater, New Mexico

Dear Ms. Webster:

The New Mexico Environment Department (NMED) has been informed that the Environmental Protection Agency (EPA) Region 6 plans on conducting a removal action in the Village of Bluewater. The removal will include excavation of contaminated soil from 26 residential properties and three houses will have radon abated. The highest gamma radiation detected in the soil was approximately 590,000 cpms. Currently, NMED does not have appropriate resources to remove and dispose of the waste materials and requests that EPA conduct a removal for the materials identified.

NMED appreciates the attention given to this situation. Please call me at (505) 827-2434 should you have any questions or require additional information.

Sincerely,

Phyllis Bustamante

Phyllis Bustamante
Superfund Oversight Section

copy: Jon Rinehart, On-Scene Coordinator, EPA Region 6
Jerry Schoeppner, Chief, Ground Water Quality Bureau
SOS Read File

Attachment 3

INTERIM STATUS REMOVAL ASSESSMENT REPORT

FOR

BLUEWATER RADIOLOGICAL SITE
MULTIPLE PROPERTIES
BLUEWATER, CIBOLA COUNTY, NEW MEXICO

Prepared for

U.S. Environmental Protection Agency
Linda Carter, Project Officer
1445 Ross Avenue
Dallas, Texas 75202

Contract No. EP-W-06-042
TDD No. 1/Weston-042-13-005
WESTON W.O. No. 20406.012.001.0801.01
NRC No. N/A
FPN N/A
CERCLIS ID: NMN000607509
EPA OSC Jon Rinehart
START-3 PTL Robert Sherman

Submitted by

Weston Solutions, Inc.
Robert Beck, VP, P.E., Program Manager
70 NE Loop 410, Suite 600
San Antonio, Texas 78216
(210) 308-4300

September 2013

1. INTRODUCTION AND SITE DESCRIPTION

Weston Solutions, Inc. (WESTON®), the Superfund Technical Assessment and Response Team (START-3) Contractor (EPA team), was tasked by the U.S. Environmental Protection Agency (EPA) Region 6 Prevention and Response Branch (PRB) under Contract Number EP-W-06-042, Technical Direction Document (TDD) No. 1/Weston-042-13-005 and Amendments (Appendix E) to conduct removal assessments and provide technical support in monitoring on-site activities performed by the EPA and contractors (i.e., Emergency and Rapid Response Services [ERRS]) during subsequent removal actions at the Bluewater Radiological Site located in Bluewater, Cibola County, New Mexico. The activities conducted under this TDD are associated with residential properties located in Bluewater Village and in the neighborhood of Plano Colorado. Bluewater Village is located in Cibola County, New Mexico, approximately 10 miles northwest of the city of Grants, at the intersection of New Mexico State Highway 606 and Interstate Highway 40 at exit 72. The neighborhood of Plano Colorado is located approximately 2 miles north of Bluewater Village, on the west side of Interstate Highway 40 (Figure 1-1). A Site Location Map is provided as Figure1-2. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Identification Number assigned to the site is NMN000607509. As part of this tasking, a Quality Assurance Sampling Plan (QASP) and a Health and Safety Plan (HASP) were prepared and approved by the EPA OSC prior to site mobilization. The Bluewater Radiological Site project is part of an ongoing project to investigate radioactive contamination in the Grants Mineral Belt. EPA developed a protocol document and a QASP for assessment and removal activities in the Grants Mineral Belt. The Bluewater removal assessment uses the same QASP with site-specific addenda.

This removal assessment focused on the dwellings and the surrounding yards up to an area of 1 acre. Northwestern New Mexico houses were traditionally constructed with locally obtained stone or locally-produced adobe, while local soils and sands were used as components for mortar and stucco. Some residents may have used the overburden rock piles from uranium mines as a source of building materials for new houses or to repair old houses. These rocks, as well as timbers and scrap metal from the mines that were possibly used in house construction, may have contained radioactive materials. Additionally, radioactive materials from the mines may have been brought onto residential properties or accumulated through aerial dust deposition. Many

homes in Bluewater Village and Plano Colorado were built with modern construction methods and rocks were not used as a building material. However, lumber and metal from the mines may have been used to build the houses. Radioactive materials may have been brought into the yards or deposited in the soils near these houses. Additionally, soil may be contaminated as a result of the windblown material from tailings piles and impoundments from former uranium mills. The Anaconda Bluewater Mill was located approximately 1.5 miles east of Bluewater Village (and 2.5 miles southeast of Plano Colorado). The Homestake Mining Company Mill was located approximately 6.5 miles east of Bluewater Village (and 8 miles east-southeast of Plano Colorado). Both the Anaconda Bluewater Mill and the Homestake Mining Company Mill closed in the early 1980s. Both mills have been dismantled, but large tailings piles remain.

Bluewater Village served as a background during the Homestake Mining Company removal assessment (TDD No. TO-0005-10-08-01). During the Homestake removal assessment, short-term and long-term radon samples were collected from 30 residences

2. SUMMARY OF ACTIONS

2.1 BACKGROUND

In September 2010, during the Homestake Removal Assessment, a soil background was collected in Bluewater Village. The background data consisted of:

- Collection of 20 stationary, 1-minute, gamma measurements uniformly spaced at 50 feet intervals throughout the assessment area utilizing a Ludlum Model 44-10 2"x2" Sodium Iodide probe attached to a Ludlum Model 2210 count-meter (NaI probe), a laptop computer and a global positioning system (GPS) (together referred to as the [Rapid Assessment Tool] RAT system) all mounted in a modified baby buggy. The size of the assessment area totaled approximately 150 feet by 200 feet.

  The Ludlum Model 2210 count-meter was operated in 'scaler' mode that precluded the electronic capture of the measurements; results were therefore recorded by hand on standardized results sheets and transferred to residential property-specific Excel spreadsheets.

- Collection of 20 grab, surface soil samples for laboratory analysis of radium-226 (Ra-226) at the same locations as above.

- Collection of 20 stationary, 5-minute, gamma exposure measurements at the same locations as above, utilizing a Reuter Stokes Model RSS-131 Pressurized Ion Chamber

(PIC). The start and end times of PIC measurements were documented on individual background-property PIC time sheets. The gamma exposure measurements were transferred to residential property-specific Excel spreadsheets.

The soil samples were submitted to Eberline Services in Oakridge, Tennessee for gamma spectroscopic analysis. Although the gamma spectroscopic analysis provided data for many isotopes, the site-specific action levels were focused on the uranium-238 decay chain and specifically Ra-226. Samples were held at the lab for a "grow-in" period of a minimum of 21 days, after which Ra-226 was assumed to be in equilibrium with bismuth-214. All Ra-226 results were reported as equivalent to bismuth-214 results. The Eberline Services laboratory data packages for the background are provided in Appendix A.

The residential property-specific Excel spreadsheets can be found in Response Manager, the Enterprise Data Collection System designed to provide near real-time access to non-analytical data normally collected in logbooks. Response Manager provides a standard data collection interface for modules of data collected by field personnel while on-site.

The average of the 20 stationary, 1-minute, gamma measurements; the average Ra-226 concentration of the 20 grab, surface soil samples; and the average of the 20 stationary, 5-minute gamma exposure measurements equaled

- 8,672 counts per minute (cpm),
- 0.65 pico curies per gram (pCi/g), and
- 11.5 micro Roentgens per hour (μR/hr), respectively.

In August 2013, 1-minute gamma measurements were recollected from the Bluewater background 20-point grid established in September 2010 with the 2 sets of Ludlum NaI probes used to conduct the Phase 1 assessments. The 2013 Bluewater background cpm averages did not exhibit statistically significant differences from the 2010 background average; therefore, the Phase 1 property assessment data were evaluated in comparison to the Bluewater background data collected 21 September 2010.

The Bluewater Radiological Site removal assessment uses a Derived Concentration Guideline Level (DCGL) of 2.5 pico curies per gram (pCi/g) (and its screening-level equivalent of 3,648

counts per minute [cpm]) and the indoor screening level of 2.5 micro Roentgens per hour (µR/hr) established under the Grants Mineral Belt projects.

Additionally during the Homestake Removal Assessment, short-term and long-term radon sampling was conducted at 30 houses. The sampling events consisted of the following:

- Placement and collection of two short-term (6-day minimum; 7-day maximum) radon gas samples utilizing activated charcoal adsorbent canisters in one location of each residence for laboratory analysis of radon-222. Ten percent of the sample canisters had a third, co-located duplicate canister.
- Placement and collection of indoor and outddor track-etch detectors with thoron (radon-220) filters, each left in place for a 91-day (minimum) sample period. Detectors were in place for four consecutive quarters in order to provide data over a 1-year period. Ten percent of sample canisters had a second, co-located duplicate detector.
- Placement and collection of outdoor track-etch detectors with thoron (radon-220) filters, each left in place for a 91-day (minimum) sample period. Detectors were in place for four consecutive quarters in order to provide data over a 1-year period. Ten percent of sample canisters had a second, co-located duplicate detector.
- Placement and collection of long-term track-etch detectors with thoron (radon-220) filters, each left in place for a 365-day (minimum) sample period.
- Placement and collection of long-term track-etch detectors with and without thoron filters at 10 residences in Bluewater Village, in which detectors with and without thoron filters were co-located.

Signed access agreements were obtained from the property owners prior to the assessments and can be found in Response Manager.

2.2 PHASE 1 OUTDOOR ASSESSMENT

EPA conducted Phase 1 Outdoor Assessments at 148 residential properties from 25 March 2013 to 07 September 2013. Phase 1 Outdoor Assessment activities conducted at each property included the following:

- Attainment of a signed access agreement from the property owner prior to initiation of an assessment.
- Attainment of a residential data sheet detailing residents' work relationships with local uranium mines and mills; structural elements of residences and other buildings; the possible use of mine and mill-originated materials for property fencing, landscaping,

and/or souvenir displays in the home or landscape; consumption of home-grown produce; and the number of residents, pets, and livestock.

- Performance of a walking, gamma scan (2-3 feet per second; 15 inches above ground surface) of residential soils utilizing the RAT system mounted in a modified baby buggy. Only those parts of yards that were used by residents on a regular basis, up to a maximum 40,000-square-foot area, were assessed. Transects were separated by no more than 40 inches to provide maximum coverage of the surface soil within the assessment boundaries. Debris, vegetation, structures, or other objects were not moved; the survey was conducted around such obstacles. Individual property sketch sheets were utilized to document the layout of structure(s) and other obstacles.

  Gamma scan data was transferred from the RAT system to property-specific Excel spreadsheets. Utilizing Geographic Information System (GIS) software, the GPS coordinates of each gamma scan measurement were plotted color-coded by ranges relative to the screening level (3,648 cpm) plus background, to generate property-specific RAT maps. Similarly, GIS was utilized to generate property-specific maps illustrating the z-scores (number of standard deviations away from the property's mean) of each measurement (z-score maps).

- Collection of 20 stationary, 1-minute, gamma measurements uniformly spaced throughout the assessment area utilizing the RAT system. The NaI probe was operated in 'scaler' mode that precluded the electronic capture of the measurements; results were therefore recorded by hand on standardized results sheets and transferred to the property-specific spreadsheet.

- Collection of grab, 'hot spot', surface, soil samples for laboratory analysis of Ra-226 where gamma scan readings exceeded the screening-level of 3,648 cpm, along with associated GPS coordinates.

- Collection of stationary, 1-minute, gamma measurements at the 'hot spot' surface soil sample locations utilizing the RAT system (again, results were recorded by hand on standardized results sheets and transferred to the property-specific spreadsheet).

- Performance of photo-documentation of general property features and sample/measurement locations.

The results of each assessed property were subjected to as many as four statistical tests, in accordance with MARSSIM guidelines, to determine if a property's average gamma measurements exceeded the screening level of 3,648 cpm above background. The statistical tests, numbered MARSSIM Tests 1-4, were calculated in the property-specific Excel spreadsheets. The four statistical tests used to evaluate the Phase I data are described below:

- MARSSIM Test 1 compared the stationary, 1-minute gamma measurement from the applicable background location with the lowest value and the highest property gamma

scan reading. If the difference was less than 3,648 cpm, the property passed (the property average was determined to be less than the DCGL plus background) and MARSSIM Tests 2-4 were not performed. If the difference was greater than the DCGL, the property moved to Test 2.

- MARSSIM Test 2 compared the differences between the property gamma scan average and the background average and the property's 20 stationary, 1-minute, gamma-measurements average and the background average. If both were less than 3,648 cpm, the property moved to MARSSIM Test 3. If either were greater than the DCGL, the property failed (the property average was determined to be greater than the DCGL plus background) and Tests 3-4 were not performed.

- MARSSIM Test 3 was an application of the Wilcoxon Rank Sum (WRS) test. The WRS test compared the 20 stationary 1-minute readings of the assessed property to the similar set of applicable background measurements. The test was performed by adding 3,648 to each background measurement and then ranking the combined set of property and adjusted background data in increasing numerical order. If the ranks of the adjusted background measurements were statistically higher than the ranks of the survey unit measurements, the property passed and moved to MARSSIM Test 4 if necessary. If the property failed, MARSSIM Test 4 was not performed.

- MARSSIM Test 4, the Elevated Measurement Comparison (EMC)/Unity Rule test, was conducted if 'hot spot(s)' (distinct areas that contained Ra-226 concentrations greater than DCGL plus background) were present on the property. The test measured whether the 'hot spot' Ra-226 concentrations were greater than an adjusted DCGL (DCGLEMC) plus background and similarly whether the property's average Ra-226 concentration was greater than the DCGL plus background. The Unity ratio thus represents the fraction of the DCGL and DCGLEMC that a property's contamination exhibits above background and must be less than 1.0 for a property to pass.

Upon review of each property's assessment and statistical tests results, a property status statement was generated by a CHP. However, not all CHP statements have been received as of the submittal of this interim report. A property that failed Phase 1 Outdoor Assessment (failure of MARSSIM Tests 2, 3 or 4) was recommended for a Phase 2 Indoor Assessment.

The results of the Phase 1 Outdoor Assessments are summarized in Table 1 presented as Appendix A. The following 26 properties (shaded in Table 1) failed the Phase 1 Outdoor Assessment and are thus deemed eligible for soils removal and for a Phase 2 Indoor Assessment:

BW0006, BW0007B, BW0008, BW0032, BW0041, BW0044, BW0045, BW0056, BW0063, BW0064, BW0098, BW0125, BW0126, BW0127, BW0131, BW0157, BW0175, BW0187, BW0198, BW0201, BW1008, BW1009, BW1014B, BW1015, BW1034, BW1041.

Sample laboratory results remain outstanding for two properties, BW1007 and BW1022, rendering a determination of pass or fail incomplete as of the submittal of this interim report. Based on available data at this time, it appears that both properties will likely pass the Phase 1 outdoor assessment;

2.3 PHASE 2 INDOOR ASSESSMENT

EPA attempted to conduct Phase 2 Indoor Assessments at properties that either failed the Phase 1 Outdoor Assessment, had short-term radon results of greater than 4 picoCuries per liter (pCi/L) during the Homestake Removal Assessment (only residences BW0001 – BW0032 were tested), or indicated on the residential information sheet that materials from former uranium mines or mills may have been brought into the house or was used to build/renovate the house.

The complete Phase 2 Indoor Assessments consisted of sampling and interior surveys that included the following activities:

- Placement and collection of two long-term (91-day minimum; no maximum) radon gas samples, utilizing track-etch detectors, in two separate locations of each residence for laboratory analysis of Rn-222 (10 percent of sample canisters had a third, co-located duplicate canister). Detector placement locations were documented on individual property indoor-sketch sheets. Short-term (6-day) radon gas samples, standard procedure as outlined in the QASP, were not collected due to the late-summer season during which the assessments took place.

- Collection of 5-minute, stationary, gamma measurements utilizing a PIC in the center of a minimum of the two most-often occupied rooms of a residence. The measurements were downloaded to the property-specific Excel spreadsheets. The start and end times of PIC measurements were documented on individual property PIC timesheets and the PIC measurement locations were recorded on indoor-sketch sheets.

- Performance of a walking gamma scan of the floor and walls of each room in a residence utilizing a NaI probe. The range of measurements was recorded for each room on standardized results sheets.

- Collection of wipe samples at locations where gamma scan readings exceeded a residence-specific screening level (quick, 'whole-house' scan average plus 1,900 cpm).

No wipe-sample duplicates were collected. The wipe samples were analyzed by field personnel using an alpha tray counter (Ludlum Model 43-10 alpha scintillation detector, attached to a Ludlum Model 2000 scaler counting instrument). The tray-counter results and associated gamma-scan measurements were recorded on standardized results sheets and transferred to the property-specific spreadsheet.

- Collection of additional 5-minute, stationary, gamma measurements utilizing a PIC in the center of each room where wipe sample(s) were collected. The measurements were downloaded to the property-specific Excel spreadsheets. The start and end times of PIC measurements were documented on individual property PIC timesheets and PIC measurement locations were recorded on indoor-sketch sheets.

- Photo-documentation of PIC and radon sample canister/detector locations.

For each property that had a Phase 2 Assessment, the PIC-measured gamma exposure rate (using the average of all measured rooms as the entire residential average) was compared to an indoor screening level of 2.5 microroentgens per hour (µR/hr) above background (the indoor exposure rate resulting from surface soils contaminated to the DCGL of 2.5 pCi/g above background of Ra-226; refer to the Quality Assurance Sampling Plan for additional details regarding the derivation of this screening level). Each assessed property then had an annual, indoor, gamma dose above background (effective dose equivalent [indoor EDE]) calculated in the property-specific Excel spreadsheet, assuming default values of 12 hours per day and 365 days per year spent indoors. The indoor exposure rate was converted from milliroentgens (mR) to indoor EDE in milliroentgens-equivalent-in-man [mrem]) using a factor of 1.5 mR = 1 mrem, determined by MicroShield Analysis.

For properties exceeding the indoor gamma exposure rate screening level of 2.5 µR/hr above background and whose outdoor assessment results were approximated to be less than the screening level of 3,648 cpm above background, a MARSSIM Final Status Survey would be required to determine the average outdoor soil concentration to calculate a property's Total Effective Dose Equivalent (TEDE) for comparison to the action-level of 15 mrem/yr. Properties whose indoor EDE levels exceeded 15 mrem/yr above background were noted as exceeding the action-level TEDE (indoor EDE plus outdoor EDE) even without taking into account the addition of outdoor EDE levels. Indoor walking gamma-scan results with at least one measurement that exceeded a level 3 times the background average were noted.

The same background locations that were utilized for Phase 1 assessment results were used for

comparison to the Phase 2 results. Upon review of each property's Phase 2 Indoor Assessment results and indoor EDE calculations, a CHP generated a property status statement. Properties were deemed to fail the Phase 2 Indoor Assessment based on comparisons to removal action levels for radon, gross alpha contamination, and TEDE and were recommended for removal actions. Only properties whose long-term radon sample results exceeded the action level were recommended for radon abatement removal action. Additionally, properties were deemed to fail Phase 2 if an indoor gamma scan measurement exceeded 3 times background average.

As of the completion of this interim status report, 12 complete Phase 2 Indoor Assessments were conducted. Additionally, radon sampling had previously been completed for 30 properties during the Homestake Removal Assessment. The results are tabulated in Table 2 as presented in Appendix C and summarized below:

- No properties exhibited indoor gamma exposure rates that met or exceeded the screening level of 2.5 micro Roentgens per hour (μR/hr) above background.
- No properties exhibited a calculated, indoor Effective Dose Equivalent (EDE) that exceeded the EPA risk-based TEDE action level of 15 mrem/yr above background. An exceedance would have rendered a property eligible for a removal action of structural-materials.
- One property (BW1008) exhibited at least one indoor gamma-scan result greater than 3 times background levels and is thus eligible for structural-materials removal actions.
- Three properties (BW0008, BW0026, and BW0031) exhibited long-term Rn-222 concentrations that met or exceeded the EPA and Center for Disease Control (CDC) action level of 4 pCi/L and are thus eligible for installation of radon abatement systems.
- Additionally, 2 properties (BW0013 and BW0016) exhibited maximum quarterly, long-term Rn-222 concentrations of 3.6 pCi/L utilizing thoron (Rn-220)-filtered detectors. A comparison of the results of 10 co-located long-term radon detectors with and without thoron filters during the Homestake Removal Assessment revealed an approximately 11 percent decrease in concentration when using thoron-filtered detectors; therefore, these properties were also deemed eligible for installation of radon abatement systems.
- No properties exhibited indoor-surface, gross alpha concentrations that met or exceeded the Nuclear Regulatory Commission (NRC) action level of 20 disintegrations per minute per 100 square centimeters (dpm/100 cm^2). An exceedance would have rendered a property eligible for a removal action ("wipe-down") of indoor surfaces.

Long-term radon sampling results remain outstanding for 8 properties that were not sampled as

part of the Homestake Removal Assessment. The long-term radon samplers were placed in August and September and will be ready for collection in November and December 2013. Pending agreements from property owners, complete Phase 2 Indoor Assessments remain to be conducted at a total of 14 properties.

3. REMOVAL VOLUME ESTIMATES

Volume estimates for the removal of surface soils are provided in Appendix D. At 12 of the residences that failed the Phase 1 Outdoor Assessment, the radioactive contamination appears to be located in discrete items rather than in the soil.

BW0006 – Flagstones
BW0008 – Rocks
BW0056 – Driveway and Sidewalk
BW0064 – Material under asphalt driveway
BW0098 – Driveway
BW0126 – Unknown item in shed – owner has lost the key
BW0157 – Rocks
BW0187 – Rocks
BW0201 – Flagstones
BW1008 – Rocks
BW1041 – Paving Stones
BW1009 - Rocks

Additionally, three residences that did not fail the Phase 1 Outdoor Removal contained discrete items that should be removed:

BW0001 – Small concrete slab
BW0108 – Buried Item (Rock?)
BW1015 – One Rock

4. LIST OF FIGURES

5. LIST OF ATTACHMENTS

A. Eberline Services Analytical Background Data Packages: Bluewater Background

B. Bluewater Phase 1 Outdoor Assessment Results

C. Bluewater Phase 2 Indoor Assessment Results

D. Bluewater Removal Volume Estimates

E. TDD No. 1/Weston-042-13-005 and Amendments

APPENDIX A

EBERLINE SERVICES ANALYTICAL DATA PACKAGES: BLUEWATER BACKGROUND

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:
SDG: 10-09103
Purchase Order: 0070138
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09103-01	LCS	KNOWN	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Cobalt-60	LANL ER-130 Modified	1.34E+02	3.81E+00			pCi/g
10-09103-01	LCS	KNOWN	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Cesium-137	LANL ER-130 Modified	8.08E+01	2.26E+00			pCi/g
10-09103-01	LCS	SPIKE	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Cobalt-60	LANL ER-130 Modified	1.47E+02	9.81E+00	9.81E+00	7.84E-01	pCi/g
10-09103-01	LCS	SPIKE	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Cesium-137	LANL ER-130 Modified	8.63E+01	1.05E+01	1.05E+01	6.28E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	4.90E-02	1.10E-01	1.10E-01	2.38E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	-2.29E-02	7.61E-02	7.61E-02	1.28E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	-1.50E-01	2.97E-01	2.97E-01	6.01E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	-6.54E-01	3.62E+00	3.62E+00	7.03E+00	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	-2.40E-02	4.07E-02	4.07E-02	6.97E-02	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	2.44E-02	6.43E-02	6.43E-02	1.21E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	-2.29E-02	7.61E-02	7.61E-02	1.28E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	-1.44E-01	4.15E-01	4.15E-01	7.67E-01	pCi/g
10-09103-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	-2.91E-02	9.20E-02	9.20E-02	1.59E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	1.67E+00	3.17E-01	3.17E-01	2.94E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	1.43E+00	2.33E-01	2.33E-01	1.64E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	2.00E+01	2.76E+00	2.76E+00	7.23E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	3.37E+00	5.75E+00	5.75E+00	1.07E+01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	1.99E+00	3.00E-01	3.00E-01	1.34E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	1.50E+00	2.26E-01	2.26E-01	1.69E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	1.43E+00	2.33E-01	2.33E-01	1.64E-01	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	2.04E+00	1.75E+00	1.75E+00	1.70E+00	pCi/g
10-09103-03	DUP	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	1.70E+00	3.96E-01	3.96E-01	5.30E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	1.89E+00	3.07E-01	3.07E-01	3.23E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	1.26E+00	2.75E-01	2.75E-01	3.78E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.77E+01	2.55E+00	2.55E+00	7.76E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	-2.07E+00	5.59E+00	5.59E+00	9.48E+00	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	1.89E+00	2.90E-01	2.90E-01	1.30E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	1.43E+00	2.21E-01	2.21E-01	1.56E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	1.26E+00	2.75E-01	2.75E-01	3.78E-01	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	1.38E+00	1.04E+00	1.04E+00	1.82E+00	pCi/g
10-09103-04	DO	SB0075-26-31-100915	09/15/10 15:40	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	1.75E+00	3.93E-01	3.93E-01	5.35E-01	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	9.67E-01	4.83E-01	4.83E-01	7.57E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:
SDG: 10-09103
Purchase Order: 0070138
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	8.80E-01	2.03E-01	2.03E-01	2.26E-01	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.23E+01	2.47E+00	2.47E+00	1.05E+00	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	-1.05E+00	7.13E+00	7.13E+00	1.33E+01	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.48E-01	2.27E-01	2.27E-01	1.63E-01	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	9.78E-01	2.84E-01	2.84E-01	2.19E-01	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	8.80E-01	2.03E-01	2.03E-01	2.26E-01	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	5.51E-01	1.06E+00	1.06E+00	1.88E+00	pCi/g
10-09103-05	TRG	PJ0323-22-31-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	7.17E-01	2.18E-01	2.18E-01	2.83E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	7.02E-01	1.60E-01	1.60E-01	1.86E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	7.74E-01	1.36E-01	1.36E-01	1.04E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.13E+01	1.65E+00	1.65E+00	4.68E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	4.20E+00	3.91E+00	3.91E+00	5.79E+00	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	5.96E-01	1.07E-01	1.07E-01	1.64E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	6.70E-01	1.29E-01	1.29E-01	1.17E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	7.74E-01	1.36E-01	1.36E-01	1.04E-01	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	7.66E-01	8.01E-01	8.01E-01	1.42E+00	pCi/g
10-09103-06	TRG	PJ0323-22-32-100915	09/15/10 10:28	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	4.62E-01	1.17E-01	1.17E-01	1.54E-01	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	4.34E-01	1.34E-01	1.34E-01	2.01E-01	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	7.21E-01	1.28E-01	1.28E-01	1.03E-01	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.27E+01	1.65E+00	1.65E+00	4.81E-01	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	-4.44E-01	3.61E+00	3.61E+00	6.33E+00	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.15E-01	1.70E-01	1.70E-01	7.64E-02	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	7.73E-01	1.50E-01	1.50E-01	9.78E-02	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	7.21E-01	1.28E-01	1.28E-01	1.03E-01	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	9.60E-01	9.82E-01	9.82E-01	1.22E+00	pCi/g
10-09103-07	TRG	PJ0324-22-31-100915	09/15/10 11:46	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	4.83E-01	1.68E-01	1.68E-01	2.72E-01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	9.58E-01	3.97E-01	3.97E-01	4.40E-01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	9.65E-01	2.05E-01	2.05E-01	2.34E-01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.51E+01	2.77E+00	2.77E+00	8.44E-01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	5.53E+00	8.50E+00	8.50E+00	1.32E+01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.88E-01	2.31E-01	2.31E-01	1.58E-01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	9.57E-01	2.64E-01	2.64E-01	2.02E-01	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	9.65E-01	2.05E-01	2.05E-01	2.34E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:

SDG:	10-09103
Purchase Order:	0070138
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	6.51E-01	1.15E+00	1.15E+00	2.03E+00	pCi/g
10-09103-08	TRG	PJ0324-23-31-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	7.76E-01	2.33E-01	2.33E-01	3.62E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	8.52E-01	2.01E-01	2.01E-01	2.20E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	9.48E-01	1.49E-01	1.49E-01	1.28E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.40E+01	2.11E+00	2.11E+00	6.53E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	3.14E+00	3.81E+00	3.81E+00	7.54E+00	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.89E-01	1.34E-01	1.34E-01	1.10E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	9.97E-01	1.58E-01	1.58E-01	1.29E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	9.48E-01	1.49E-01	1.49E-01	1.28E-01	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	7.96E-01	9.28E-01	9.28E-01	1.63E+00	pCi/g
10-09103-09	TRG	PJ0324-23-32-100915	09/15/10 11:47	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	6.76E-01	1.39E-01	1.39E-01	1.88E-01	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	8.00E-01	2.74E-01	2.74E-01	4.40E-01	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	6.72E-01	1.34E-01	1.34E-01	1.21E-01	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.60E+01	2.02E+00	2.02E+00	5.42E-01	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	1.80E+00	4.34E+00	4.34E+00	7.96E+00	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.99E-01	1.85E-01	1.85E-01	8.92E-02	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	6.64E-01	1.30E-01	1.30E-01	1.15E-01	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	6.72E-01	1.34E-01	1.34E-01	1.21E-01	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	4.05E-01	8.56E-01	8.56E-01	1.49E+00	pCi/g
10-09103-10	TRG	BWBKGD01-01-61-100921	09/21/10 12:09	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	6.57E-01	1.88E-01	1.88E-01	3.14E-01	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	7.90E-01	1.89E-01	1.89E-01	2.49E-01	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	5.47E-01	1.43E-01	1.43E-01	1.18E-01	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.44E+01	2.10E+00	2.10E+00	6.92E-01	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	9.82E-01	4.34E+00	4.34E+00	7.99E+00	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	9.13E-01	1.75E-01	1.75E-01	9.48E-02	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	5.59E-01	1.36E-01	1.36E-01	1.16E-01	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	5.47E-01	1.43E-01	1.43E-01	1.18E-01	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	9.13E-01	7.61E-01	7.61E-01	1.34E+00	pCi/g
10-09103-11	TRG	BWBKGD01-02-61-100921	09/21/10 12:12	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	7.20E-01	2.16E-01	2.16E-01	3.26E-01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	5.76E-01	2.99E-01	2.99E-01	6.22E-01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	6.88E-01	2.01E-01	2.01E-01	2.08E-01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.61E+01	2.93E+00	2.93E+00	9.62E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:
SDG: 10-09103
Purchase Order: 0070138
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	-1.86E+00	7.15E+00	7.15E+00	1.31E+01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	6.98E-01	2.46E-01	2.46E-01	1.46E-01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	6.48E-01	2.05E-01	2.05E-01	2.02E-01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	6.88E-01	2.01E-01	2.01E-01	2.08E-01	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	1.10E+00	1.02E+00	1.02E+00	1.84E+00	pCi/g
10-09103-12	TRG	BWBKGD01-03-61-100921	09/21/10 12:14	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	6.72E-01	2.07E-01	2.07E-01	3.08E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	6.31E-01	2.03E-01	2.03E-01	2.48E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	8.86E-01	1.53E-01	1.53E-01	1.20E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.56E+01	2.30E+00	2.30E+00	6.91E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	8.25E-01	4.18E+00	4.18E+00	7.80E+00	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	6.91E-01	1.23E-01	1.23E-01	1.06E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	7.82E-01	1.22E-01	1.22E-01	1.28E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	8.86E-01	1.53E-01	1.53E-01	1.20E-01	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	8.47E-01	9.54E-01	9.54E-01	1.62E+00	pCi/g
10-09103-13	TRG	BWBKGD01-04-61-100921	09/21/10 12:16	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	6.28E-01	1.28E-01	1.28E-01	1.77E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	6.50E-01	1.85E-01	1.85E-01	2.05E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	9.36E-01	1.65E-01	1.65E-01	1.28E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.57E+01	2.06E+00	2.06E+00	5.75E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	8.55E+00	8.13E+00	8.13E+00	7.87E+00	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.77E-01	1.72E-01	1.72E-01	1.04E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	7.83E-01	1.45E-01	1.45E-01	1.33E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	9.36E-01	1.65E-01	1.65E-01	1.28E-01	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	9.28E-01	9.70E-01	9.70E-01	1.72E+00	pCi/g
10-09103-14	TRG	BWBKGD01-05-61-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	6.96E-01	2.00E-01	2.00E-01	3.48E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	6.32E-01	1.83E-01	1.83E-01	2.82E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	6.63E-01	1.57E-01	1.57E-01	1.36E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.55E+01	2.15E+00	2.15E+00	7.00E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	-1.61E+00	5.11E+00	5.11E+00	8.77E+00	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	6.84E-01	1.33E-01	1.33E-01	1.01E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	6.70E-01	1.44E-01	1.44E-01	1.27E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	6.63E-01	1.57E-01	1.57E-01	1.36E-01	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	6.48E-01	8.12E-01	8.12E-01	1.42E+00	pCi/g
10-09103-15	TRG	BWBKGD01-05-62-100921	09/21/10 12:18	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	7.30E-01	2.02E-01	2.02E-01	3.54E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:

SDG:	10-09103
Purchase Order:	0070138
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	1.04E+00	3.69E-01	3.69E-01	3.55E-01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	5.69E-01	1.88E-01	1.88E-01	2.29E-01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.58E+01	3.05E+00	3.05E+00	9.28E-01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	3.30E+00	7.84E+00	7.84E+00	1.55E+01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	6.10E-01	2.04E-01	2.04E-01	1.57E-01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	7.91E-01	2.31E-01	2.31E-01	2.05E-01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	5.69E-01	1.88E-01	1.88E-01	2.29E-01	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	6.96E-01	1.11E+00	1.11E+00	1.97E+00	pCi/g
10-09103-16	TRG	BWBKGD01-06-61-100921	09/21/10 12:20	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	8.11E-01	2.47E-01	2.47E-01	3.18E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Actinium-228	LANL ER-130 Modified	6.45E-01	1.71E-01	1.71E-01	2.21E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Bismuth-214	LANL ER-130 Modified	6.41E-01	1.37E-01	1.37E-01	1.07E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Potassium-40	LANL ER-130 Modified	1.48E+01	2.14E+00	2.14E+00	6.20E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Protactinium-234m	LANL ER-130 Modified	3.21E+00	4.16E+00	4.16E+00	8.06E+00	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Lead-212	LANL ER-130 Modified	7.53E-01	1.51E-01	1.51E-01	1.02E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Lead-214	LANL ER-130 Modified	5.22E-01	1.30E-01	1.30E-01	1.30E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Radium-226	LANL ER-130 Modified	6.41E-01	1.37E-01	1.37E-01	1.07E-01	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Thorium-234	LANL ER-130 Modified	2.12E+00	1.15E+00	1.15E+00	1.26E+00	pCi/g
10-09103-17	TRG	BWBKGD01-07-61-100921	09/21/10 12:22	9/27/2010	10/20/2010	10-09103	Thallium-208	LANL ER-130 Modified	5.58E-01	1.30E-01	1.30E-01	1.74E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:
SDG: 10-09104
Purchase Order: 0070138
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09104-01	LCS	KNOWN	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Cobalt-60	LANL ER-130 Modified	1.34E+02	3.81E+00			pCi/g
10-09104-01	LCS	KNOWN	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Cesium-137	LANL ER-130 Modified	8.08E+01	2.26E+00			pCi/g
10-09104-01	LCS	SPIKE	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Cobalt-60	LANL ER-130 Modified	1.47E+02	9.87E+00	9.87E+00	8.12E-01	pCi/g
10-09104-01	LCS	SPIKE	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Cesium-137	LANL ER-130 Modified	8.61E+01	1.05E+01	1.05E+01	6.25E-01	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	1.02E-01	1.27E-01	1.27E-01	2.77E-01	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	-2.77E-02	7.24E-02	7.24E-02	1.32E-01	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	-2.60E-02	3.35E-01	3.35E-01	7.28E-01	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	1.91E+00	3.73E+00	3.73E+00	8.05E+00	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	-1.70E-02	4.50E-02	4.50E-02	7.83E-02	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	-3.06E-02	5.61E-02	5.61E-02	9.65E-02	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	-2.77E-02	7.24E-02	7.24E-02	1.32E-01	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	-4.13E-01	4.09E-01	4.09E-01	7.26E-01	pCi/g
10-09104-02	MBL	BLANK	09/27/10 00:00	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	8.84E-02	9.72E-02	9.72E-02	1.98E-01	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.34E-01	2.14E-01	2.14E-01	3.76E-01	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	7.14E-01	1.23E-01	1.23E-01	1.10E-01	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.57E+01	1.96E+00	1.96E+00	6.61E-02	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	3.30E+00	3.93E+00	3.93E+00	7.55E+00	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	6.78E-01	1.43E-01	1.43E-01	8.26E-02	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	5.90E-01	1.20E-01	1.20E-01	1.06E-01	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	7.14E-01	1.23E-01	1.23E-01	1.10E-01	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	-2.74E-01	7.91E-01	7.91E-01	1.35E+00	pCi/g
10-09104-03	DUP	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.58E-01	1.66E-01	1.66E-01	2.85E-01	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	5.96E-01	1.37E-01	1.37E-01	2.00E-01	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	5.33E-01	1.23E-01	1.23E-01	1.08E-01	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.50E+01	2.15E+00	2.15E+00	6.48E-01	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	-2.26E+00	3.58E+00	3.58E+00	6.20E+00	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	8.32E-01	1.49E-01	1.49E-01	9.06E-02	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	4.41E-01	1.17E-01	1.17E-01	1.18E-01	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	5.33E-01	1.23E-01	1.23E-01	1.08E-01	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	3.24E+00	1.36E+00	1.36E+00	1.23E+00	pCi/g
10-09104-04	TRG	BWBKGD01-08-61-100921	09/21/10 12:24	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.46E-01	1.23E-01	1.23E-01	1.62E-01	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.48E-01	1.69E-01	1.69E-01	2.25E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:

SDG:	10-09104
Purchase Order:	0070138
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	6.44E-01	1.20E-01	1.20E-01	1.15E-01	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.58E+01	2.16E+00	2.16E+00	5.37E-01	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	8.64E-01	5.85E+00	5.85E+00	7.29E+00	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	7.12E-01	1.13E-01	1.13E-01	9.36E-02	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	5.95E-01	1.18E-01	1.18E-01	1.27E-01	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	6.44E-01	1.20E-01	1.20E-01	1.15E-01	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	6.15E-01	9.28E-01	9.28E-01	1.56E+00	pCi/g
10-09104-05	TRG	BWBKGD01-09-61-100921	09/21/10 12:25	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.89E-01	1.27E-01	1.27E-01	1.63E-01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	7.91E-01	3.02E-01	3.02E-01	4.61E-01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	7.20E-01	2.21E-01	2.21E-01	2.02E-01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.54E+01	2.81E+00	2.81E+00	1.19E+00	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	3.46E+00	7.35E+00	7.35E+00	1.46E+01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	6.19E-01	1.96E-01	1.96E-01	1.64E-01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	4.34E-01	1.96E-01	1.96E-01	2.07E-01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	7.20E-01	2.21E-01	2.21E-01	2.02E-01	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.16E+00	1.03E+00	1.03E+00	1.85E+00	pCi/g
10-09104-06	TRG	BWBKGD01-10-61-100921	09/21/10 12:27	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.42E-01	1.82E-01	1.82E-01	3.28E-01	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	7.04E-01	1.84E-01	1.84E-01	2.39E-01	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	5.51E-01	1.08E-01	1.08E-01	1.21E-01	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.64E+01	2.32E+00	2.32E+00	5.84E-01	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	3.85E-01	3.66E+00	3.66E+00	6.86E+00	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	6.82E-01	1.16E-01	1.16E-01	9.82E-02	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	6.18E-01	1.30E-01	1.30E-01	1.21E-01	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	5.51E-01	1.08E-01	1.08E-01	1.21E-01	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.62E+00	1.37E+00	1.37E+00	1.33E+00	pCi/g
10-09104-07	TRG	BWBKGD01-11-61-100921	09/21/10 12:30	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	4.50E-01	1.26E-01	1.26E-01	1.75E-01	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.95E-01	1.67E-01	1.67E-01	2.16E-01	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	6.68E-01	1.18E-01	1.18E-01	1.13E-01	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.49E+01	2.19E+00	2.19E+00	7.01E-01	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	1.59E-01	3.89E+00	3.89E+00	7.19E+00	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	7.98E-01	1.37E-01	1.37E-01	1.04E-01	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	5.90E-01	1.27E-01	1.27E-01	1.17E-01	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	6.68E-01	1.18E-01	1.18E-01	1.13E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:
SDG: 10-09104
Purchase Order: 0070138
Analysis Category: ENVIRONMENTAL
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.03E+00	9.41E-01	9.41E-01	1.52E+00	pCi/g
10-09104-08	TRG	BWBKGD01-12-61-100921	09/21/10 12:32	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.37E-01	1.21E-01	1.21E-01	1.73E-01	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.58E-01	1.61E-01	1.61E-01	2.22E-01	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	5.55E-01	1.23E-01	1.23E-01	1.23E-01	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.49E+01	2.04E+00	2.04E+00	4.38E-01	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	8.61E-01	3.02E+00	3.02E+00	5.85E+00	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	6.19E-01	1.06E-01	1.06E-01	9.85E-02	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	6.14E-01	1.18E-01	1.18E-01	1.18E-01	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	5.55E-01	1.23E-01	1.23E-01	1.23E-01	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	9.59E-01	8.27E-01	8.27E-01	1.46E+00	pCi/g
10-09104-09	TRG	BWBKGD01-13-61-100921	09/21/10 12:33	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.80E-01	2.01E-01	2.01E-01	2.81E-01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	7.48E-01	3.75E-01	3.75E-01	4.02E-01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	7.20E-01	2.07E-01	2.07E-01	2.09E-01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.34E+01	2.63E+00	2.63E+00	1.18E+00	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	7.58E+00	7.11E+00	7.11E+00	1.48E+01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	7.67E-01	2.70E-01	2.70E-01	1.53E-01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	6.88E-01	2.17E-01	2.17E-01	3.20E-01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	7.20E-01	2.07E-01	2.07E-01	2.09E-01	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.91E+00	1.52E+00	1.52E+00	1.59E+00	pCi/g
10-09104-10	TRG	BWBKGD01-14-61-100921	09/21/10 12:35	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	8.81E-01	2.33E-01	2.33E-01	3.25E-01	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	8.46E-01	1.88E-01	1.88E-01	2.16E-01	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	7.64E-01	1.34E-01	1.34E-01	1.27E-01	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.67E+01	2.11E+00	2.11E+00	4.85E-01	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	2.93E+00	4.19E+00	4.19E+00	7.92E+00	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	6.31E-01	1.38E-01	1.38E-01	8.68E-02	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	6.68E-01	1.38E-01	1.38E-01	1.13E-01	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	7.64E-01	1.34E-01	1.34E-01	1.27E-01	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	4.35E-01	8.44E-01	8.44E-01	1.47E+00	pCi/g
10-09104-11	TRG	BWBKGD01-15-61-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	6.67E-01	1.88E-01	1.88E-01	3.10E-01	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.45E-01	1.87E-01	1.87E-01	2.27E-01	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	5.83E-01	1.07E-01	1.07E-01	1.19E-01	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.45E+01	2.19E+00	2.19E+00	6.94E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:

SDG:	10-09104
Purchase Order:	0070138
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	2.92E+00	3.93E+00	3.93E+00	7.68E+00	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	6.14E-01	1.12E-01	1.12E-01	1.04E-01	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	6.83E-01	1.26E-01	1.26E-01	1.32E-01	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	5.83E-01	1.07E-01	1.07E-01	1.19E-01	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	5.88E-01	9.54E-01	9.54E-01	1.66E+00	pCi/g
10-09104-12	TRG	BWBKGD01-15-62-100921	09/21/10 12:37	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.56E-01	2.02E-01	2.02E-01	2.86E-01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	9.02E-01	4.05E-01	4.05E-01	6.80E-01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	6.24E-01	2.00E-01	2.00E-01	2.21E-01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.54E+01	2.82E+00	2.82E+00	1.20E+00	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	4.62E+00	6.83E+00	6.83E+00	1.40E+01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	8.70E-01	2.66E-01	2.66E-01	1.49E-01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	6.39E-01	2.11E-01	2.11E-01	1.96E-01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	6.24E-01	2.00E-01	2.00E-01	2.21E-01	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	8.07E-01	1.05E+00	1.05E+00	1.87E+00	pCi/g
10-09104-13	TRG	BWBKGD01-16-61-100921	09/21/10 12:39	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	7.06E-01	2.13E-01	2.13E-01	2.88E-01	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.63E-01	1.61E-01	1.61E-01	1.70E-01	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	5.63E-01	1.26E-01	1.26E-01	1.14E-01	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.61E+01	2.05E+00	2.05E+00	5.18E-01	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	1.12E+00	4.13E+00	4.13E+00	6.88E+00	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	6.93E-01	1.43E-01	1.43E-01	8.28E-02	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	6.89E-01	1.34E-01	1.34E-01	1.08E-01	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	5.63E-01	1.26E-01	1.26E-01	1.14E-01	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.18E+00	1.06E+00	1.06E+00	1.31E+00	pCi/g
10-09104-14	TRG	BWBKGD01-17-61-100921	09/21/10 12:40	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.93E-01	1.81E-01	1.81E-01	3.00E-01	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	6.01E-01	1.79E-01	1.79E-01	2.32E-01	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	7.16E-01	1.22E-01	1.22E-01	9.64E-02	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.54E+01	2.16E+00	2.16E+00	6.03E-01	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	-4.38E+00	3.88E+00	3.88E+00	6.34E+00	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	7.50E-01	1.36E-01	1.36E-01	9.03E-02	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	5.66E-01	1.19E-01	1.19E-01	1.09E-01	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	7.16E-01	1.22E-01	1.22E-01	9.64E-02	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	3.16E-01	8.23E-01	8.23E-01	1.38E+00	pCi/g
10-09104-15	TRG	BWBKGD01-18-61-100921	09/21/10 12:43	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.79E-01	1.70E-01	1.70E-01	2.68E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

Eberline Analytical
Final Report of Analysis

Report To:
Kristie Warr
Weston Solutions, Inc.
5599 San Felipe Suite 700
Houston, TX 77056

Work Order Details:

SDG:	10-09104
Purchase Order:	0070138
Analysis Category:	ENVIRONMENTAL
Sample Matrix:	SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Actinium-228	LANL ER-130 Modified	5.86E-01	3.37E-01	3.37E-01	3.89E-01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Bismuth-214	LANL ER-130 Modified	5.35E-01	2.02E-01	2.02E-01	3.62E-01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.50E+01	2.83E+00	2.83E+00	9.47E-01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	-1.74E-01	9.52E+00	9.52E+00	1.56E+01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Lead-212	LANL ER-130 Modified	7.77E-01	2.49E-01	2.49E-01	1.51E-01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Lead-214	LANL ER-130 Modified	5.09E-01	2.13E-01	2.13E-01	1.85E-01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Radium-226	LANL ER-130 Modified	5.35E-01	2.02E-01	2.02E-01	3.62E-01	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.24E-01	1.02E+00	1.02E+00	1.78E+00	pCi/g
10-09104-16	TRG	BWBKGD01-19-61-100921	09/21/10 12:49	9/27/2010	10/21/2010	10-09104	Thallium-208	LANL ER-130 Modified	6.43E-01	1.91E-01	1.91E-01	2.92E-01	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Actinium-228	LANL ER-130 Modified	7.55E-01	1.85E-01	1.85E-01	2.23E-01	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Bismuth-214	LANL ER-130 Modified	6.28E-01	1.32E-01	1.32E-01	1.23E-01	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Potassium-40	LANL ER-130 Modified	1.36E+01	1.81E+00	1.81E+00	5.34E-01	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Protactinium-234m	LANL ER-130 Modified	1.23E-01	4.06E+00	4.06E+00	7.18E+00	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Lead-212	LANL ER-130 Modified	5.88E-01	1.30E-01	1.30E-01	8.71E-02	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Lead-214	LANL ER-130 Modified	5.48E-01	1.19E-01	1.19E-01	1.10E-01	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Radium-226	LANL ER-130 Modified	6.28E-01	1.32E-01	1.32E-01	1.23E-01	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Thorium-234	LANL ER-130 Modified	1.15E-01	8.17E-01	8.17E-01	1.41E+00	pCi/g
10-09104-17	DO	BWBKGD01-20-61-100921	09/21/10 12:54	9/27/2010	10/20/2010	10-09104	Thallium-208	LANL ER-130 Modified	5.45E-01	1.92E-01	1.92E-01	3.01E-01	pCi/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (2-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original

APPENDIX B

BLUEWATER PHASE 1 OUTDOOR ASSESSMENT RESULTS

Appendix B -DRAFT
Summary of Phase 1 Field Screening, Laboratory Analytical Results and MARSSIM Statistical Tests
Bluewater Radiological Site Removal Assessment
Bluewater, Cibola County, New Mexico
March - September 2013

Property ID[1]	Residential Info. Sheet (Mine/Mill Material Used to Build House, or Kept Indoors?)	Gamma Scan Avg. (CPM)[2]	Highest Gamma Scan Measurement (CPM)[2]	Standard Deviation: Gamma Scan[2]	20 One-Minute Stationary Measurements Avg. (CPM)[3]	Highest One-Minute Stationary Measurement (CPM)[3]	Standard Deviation: 20 One-Minute Stationary Measurements[3]	'Hot Spot' Surface Soil Sample Results [Radium-226] (pCi/g)[3]	'Hot Spot' Surface Soil Sample Location One-Minute Stationary Measurement (CPM)[3]	MARSSIM Test 1[5]	MARSSIM Test 2[5]	MARSSIM Test 3[5]	MARSSIM Test 4[5]
BW0001	No	8,038	22,311	1,427	7,958	8,939	789	n/a	n/a	FAIL	PASS	PASS	0.24 (PASS)
BW0002	No	8,365	13,547	1,090	8,250	12,377	1,095	2.06 (1 sample)	14048	FAIL	PASS	PASS	0.18 (PASS)
BW0003	No	7,875	17,641	1,144	8,061	10,373	958	0.912 (1 sample)	15696	FAIL	PASS	PASS	0.39 (PASS)
BW0004	Yes	8,466	10,326	498	8,409	8,800	286	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0006	No	9,427	161,603	7,545	8,138	9,413	510	0.735 - 61.1 (4 samples + 1 dup)	17,932 - 226,986	FAIL	PASS	PASS	9.24 (FAIL)
BW0007	No	9,490	12,065	766	9,676	11,015	510	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW0007B	No	10,517	21,953	2,387	10,537	19,461	2,519	19.3 - 25.4 (1 sample + 1 dup)	20824	FAIL	PASS	PASS	7.8 (FAIL)
BW0008	Yes	8,103	34,469	2,125	8,362	21,232	3,109	n/a	n/a	FAIL	PASS	PASS	0.98 (FAIL)
BW0009	No	7,945	10,328	726	7,840	8,506	440	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0011	No	7,791	9,840	772	7,701	8,837	633	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0012	No	9,594	12,751	694	9,990	10,888	567	7.07 (1 sample)	12353	FAIL	PASS	PASS	0.33 (PASS)
BW0013	Yes	8,015	11,527	795	8,564	10,493	870	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0014	No	7,484	9,720	620	7,723	8,895	552	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0016	No	10,619	12,609	650	10,700	11,316	434	1.24 - 1.41 (3 samples)	11,046 - 11,259	FAIL	PASS	PASS	0.57 (PASS)
BW0018	No	9,584	11,663	695	9,752	10,927	731	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0020	Data sheet not completed	8,358	10,148	607	9,157	9,958	385	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0022	No	8,422	10,588	698	8,542	9,272	597	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0024	No	8,641	10,793	562	8,584	9,306	360	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0025	No	7,856	10,067	587	8,264	9,562	548	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0026	Data sheet not completed	8,002	9,192	454	7,921	8,342	280	n/a	n/a	PASS	n/a	n/a	n/a (PASS)

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Bluewater Radiological Site Removal Assessment
Bluewater, Cibola County, New Mexico
March - September 2013

Property ID[1]	Residential Info. Sheet (Mine/Mill Material Used to Build House, or Kept Indoors?)	Gamma Scan Avg. (CPM)[2]	Highest Gamma Scan Measurement (CPM)[2]	Standard Deviation: Gamma Scan[2]	20 One-Minute Stationary Measurements Avg. (CPM)[3]	Highest One-Minute Stationary Measurement (CPM)[3]	Standard Deviation: 20 One-Minute Stationary Measurements[3]	'Hot Spot' Surface Soil Sample Results [Radium-226] (pCi/g)[3]	'Hot Spot' Surface Soil Sample Location One-Minute Stationary Measurement (CPM)[3]	MARSSIM Test 1[5]	MARSSIM Test 2[5]	MARSSIM Test 3[5]	MARSSIM Test 4[5]
BW00268	Data sheet not completed	9,605	11,535	585	9,679	10,138	335	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0028	Data sheet not completed	7,917	10,030	594	7,961	8,487	434	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0029	Data sheet not completed	8,742	10,901	844	8,790	9,620	607	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0031	No	10,488	15,089	941	10,531	11,742	949	1.27 - 3.39 (3 samples)	12,013 - 15,838	FAIL	PASS	PASS	0.72 (PASS)
BW0032	No	8,623	22,857	1,479	8,432	9,792	791	1.09 - 1.85 (2 samples)	13,390 - 25,627	FAIL	PASS	PASS	1.05 (FAIL)
BW0033	No	10,223	12,684	708	10,057	10,959	567	1.15 (1 sample)	10647	FAIL	PASS	PASS	0.43 (PASS)
BW0035	No	8,690	11,051	649	8,552	9,047	499	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0040	No	10,012	12,682	590	10,426	11,035	459	n/a	n/a	FAIL	PASS	PASS	0.38 (PASS)
BW0041	No	10,211	21,787	1,810	11,061	18,302	2,896	4.67 - 7.67 (5 samples + 1 dup)	14,206 - 20,113	FAIL	PASS	PASS	1.95 (FAIL)
BW0042	No	8,828	11,756	1,028	8,613	9,721	811	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0044	No	8,920	18,884	1,215	8,670	10,110	862	18.8 (1 sample)	14,716	FAIL	PASS	PASS	2.06 (FAIL)
BW0045	No	9,864	15,110	1,462	9,998	14,655	1,381	1.14 - 3.62 (3 samples)	13,130 - 14,563	FAIL	PASS	PASS	1.61 (FAIL)
BW0051	Data sheet not completed	7,745	13,668	616	7,561	8,035	521	0.908 (1 sample)	13329	FAIL	PASS	PASS	0.11 (PASS)
BW0052	No	7,515	11,253	781	7,714	8,670	579	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0054	No	8,970	11,064	594	9,073	10,061	448	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW00548	No	9,605	11,330	573	9,478	10,066	520	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0056	No	11,443	48,984	4,680	10,948	21,428	2,813	12.97 - 15.91 (2 samples)	20,019 - 51,121	FAIL	PASS	PASS	2.15 (FAIL)
BW0058	No	10,179	11,850	632	10,197	10,650	499	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0059	No	9,997	11,931	651	9,955	10,888	623	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0060	No	8,705	12,139	902	8,726	9,500	780	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)

Appendix B -DRAFT
Summary of Phase 1 Field Screening, Laboratory Analytical Results and MARSSIM Statistical Tests
Bluewater Radiological Site Removal Assessment
Bluewater, Cibola County, New Mexico
March - September 2013

Property ID[1]	Residential Info. Sheet (Mine/Mill Material Used to Build House, or Kept Indoors?)	Gamma Scan Avg. (CPM)[2]	Highest Gamma Scan Measurement (CPM)[2]	Standard Deviation: Gamma Scan[2]	20 One-Minute Stationary Measurements Avg. (CPM)[3]	Highest One-Minute Stationary Measurement (CPM)[3]	Standard Deviation: 20 One-Minute Stationary Measurements[3]	'Hot Spot' Surface Soil Sample Results [Radium-226] (pCi/g)[3]	'Hot Spot' Surface Soil Sample Location One-Minute Stationary Measurement (CPM)[3]	MARSSIM Test 1[5]	MARSSIM Test 2[5]	MARSSIM Test 3[5]	MARSSIM Test 4[5]
BW0062	No	9,328	11,270	716	9,265	10,084	754	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0063	No	9,585	37,060	1,402	9,595	10,801	679	1.43 - 1.56 (2 samples)	18,494 - 55,684	FAIL	PASS	PASS	3.15 (FAIL)
BW0063B	No	9,321	11,162	621	9,132	9,845	599	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0064	No	10,438	24,908	3,056	9,103	12,437	896	2.15 - 9.85 (4 samples + 1 dup)	13,527 - 18,212	FAIL	PASS	PASS	1.87 (FAIL)
BW0065	No	8,884	12,059	605	8,939	10,326	475	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0066	Data sheet not completed	9,010	10,713	519	8,799	9,291	400	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0068	No	8,358	10,470	646	8,482	9,357	434	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0069	No	8,075	12,354	798	7,924	9,035	608	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW0072	No	8,071	10,219	631	8,052	8,861	697	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0074	No	7,787	14,228	811	7,844	8,519	494	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW0079	No	10615.01726	13,751	652	10,607	11,423	449	n/a	n/a	FAIL	PASS	PASS	0.82 (PASS)
BW0081	No	8,879	12,435	1,590	8,849	10,675	1,743	1.42 (1 sample)	11,156	FAIL	PASS	PASS	0.07 (PASS)
BW0084	No	9,323	14,035	657	9,520	10,304	354	1.43 (1 sample)	12,507	FAIL	PASS	PASS	0.22 (PASS)
BW0085	Data sheet not completed	8,522	12,653	604	8,550	9,065	449	0.787 (1 sample)	11,964	FAIL	PASS	PASS	0.04 (PASS)
BW0089	No	8,450	10,493	622	8,539	9,095	344	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0090	No	8,564	10,210	487	8,464	9,042	363	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0095	No	8,298	9,912	557	8,384	8,896	432	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0097	No	7,855	13,113	1,039	7,793	9,862	658	n/a	n/a	FAIL	PASS	PASS	0.05 (PASS)
BW0098	Unknown	16,580	91,998	13,742	17,975	60,338	14,469	0.76 - 17.1 (3 samples)	31,995 - 83,552	FAIL	FAIL	n/a	n/a (FAIL)
BW0099	No	8,154	11,713	852	8,608	10,917	940	n/a	n/a	PASS	n/a	n/a	n/a (PASS)

Appendix B -DRAFT
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Bluewater Radiological Site Removal Assessment
Bluewater, Cibola County, New Mexico
March - September 2013

Property ID[1]	Residential Info. Sheet (Mine/Mill Material Used to Build House, or Kept Indoors?)	Gamma Scan Avg. (CPM)[2]	Highest Gamma Scan Measurement (CPM)[2]	Standard Deviation: Gamma Scan[2]	20 One-Minute Stationary Measurements Avg. (CPM)[3]	Highest One-Minute Stationary Measurement (CPM)[3]	Standard Deviation: 20 One-Minute Stationary Measurements[3]	'Hot Spot' Surface Soil Sample Results [Radium-226] (pCi/g)[3]	'Hot Spot' Surface Soil Sample Location One-Minute Stationary Measurement (CPM)[3]	MARSSIM Test 1[5]	MARSSIM Test 2[5]	MARSSIM Test 3[5]	MARSSIM Test 4[5]
BW0101	No	7,850	10,179	625	7,986	8,757	524	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0104	Data sheet not completed	7,950	9,687	463	7,839	8,216	204	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0105	No	8,600	10,995	555	8,544	9,306	415	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0106	No	8,571	10,953	695	8,720	10,063	668	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0107	No	8,027	10,310	1,110	7,885	9,297	1,213	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0108	Data sheet not completed	8,041	20,032	783	9,114	9,595	413	1.01 - 11.6 (2 samples)	18,332 - 19,363	FAIL	PASS	PASS	0.69 (PASS)
BW0110	No	7,991	11,053	529	8,003	8,494	334	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0112	No	8,333	10,114	521	8,321	8,829	336	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0113	No	7,273	9,337	469	7,163	7,643	242	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0123	No	8,786	11,316	666	8,925	9,694	523	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0124	No	9,430	10,966	559	9,381	10,144	451	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0125	No	10,644	33,076	2,535	9,933	12,260	1,381	4.01 - 19.8 (5 samples)	12,440 - 36,778	FAIL	PASS	PASS	4.46 (FAIL)
BW0126	No	9,084	492,941	9,547	8,816	12,056	1,125	6.5 (1 sample)	42609	FAIL	PASS	PASS	1.77 (FAIL)
BW0127	Unknown	8,830	14,100	977	9,322	11,228	831	36.5 - 80.5 (2 samples)	14,013 - 18,708	FAIL	PASS	PASS	4.09 (FAIL)
BW0130	No	8,096	12,132	877	8,046	9,236	782	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW0131	Data sheet not completed	8,676	75,398	2,413	8,325	9,689	895	9.52 (1 sample)	18953	FAIL	PASS	PASS	1.24 (FAIL)
BW0135	No	8,337	10,445	615	8,267	9,266	628	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0135B	No	8,193	10,303	517	8,126	8,694	384	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0136[6]	No	8,739	22,150	1,765	8,399	9,617	446	2.33 - 5.63 (2 samples)	18,406 - 18,742	FAIL	PASS	PASS	0.26 (PASS)
BW0139	No	8,192	10,040	452	8,225	10,313	600	n/a	n/a	PASS	n/a	n/a	n/a (PASS)

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BW0140	No	8,481	9,903	499	8,488	9,218	371	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0141	No	8,272	13,366	844	8,508	9,252	613	n/a	n/a	FAIL	PASS	PASS	0.10 (PASS)
BW0142	No	7,328	9,834	818	7,545	8,891	600	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0143	No	7,550	10,655	802	7,471	8,504	699	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0144	No	8,432	10,810	700	8,999	9,534	457	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0150	No	8,516	12,170	1,041	8,556	10,253	837	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW0151	Unknown	7,538	10,028	668	7,718	8,967	657	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0152	No	7,328	9,158	599	7,277	8,011	617	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0153	Data sheet not completed	7,878	9,628	547	7,741	8,354	390	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0154	No	7,147	9,393	733	7,070	8,464	598	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0157	No	9,654	90,099	7,636	7,919	9,394	715	n/a	n/a	FAIL	PASS	PASS	1.67 (FAIL)
BW0159	No	8,928	10,863	513	9,224	9,983	376	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0160	Data sheet not completed	8,664	10,365	494	8,802	9,319	312	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0161	Data sheet not completed	8,669	10,602	659	8,861	9,671	554	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0162	Data sheet not completed	8,888	11,042	633	9,187	10,118	414	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0166	No	8,005	10,197	737	7,771	9,057	706	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0167	No	7,072	9,010	684	7,237	8,035	723	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0170	No	7,578	8,902	426	7,614	8,178	285	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0175	No	11,517	294,814	11,783	9,410	17,610	2,284	1.56 - 3.84 (3 samples)	39,512 - 62,457	FAIL	PASS	PASS	11.89 (FAIL)
BW0178	No	8,082	9,976	644	8,272	9,022	481	n/a	n/a	PASS	n/a	n/a	n/a (PASS)

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BW0179	No	7,414	10,047	635	7,632	8,751	548	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0179B	No	8,501	15,941	700	8,491	9,055	458	n/a	n/a	FAIL	PASS	PASS	0.18 (PASS)
BW0180	Data sheet not completed	7,629	10,452	716	7,715	10,162	841	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0181	No	7,775	9,816	571	7,961	8,623	369	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0182	No	7,680	9,791	465	7,723	8,172	275	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0184	No	7,723	10,432	834	8,099	9,344	636	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0187	No	8,955	208,045	6,235	8,502	9,908	749	n/a	n/a	FAIL	PASS	PASS	1.39 (FAIL)
BW0189	Data sheet not completed	7,957	9,370	502	7,861	8,256	397	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0190	Data sheet not completed	7,359	9,351	753	7,351	8,264	707	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0191	No	7,717	9,005	467	7,933	8,545	300	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0197	No	8,707	10,990	608	8,680	9,576	507	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0198	No	9,680	36,094	1,708	9,505	11,894	665	1.5 (1 sample)	35799	FAIL	PASS	PASS	3.59 (FAIL)
BW0201	Unknown	8,955	81,592	5,126	8,433	15,695	1,773	n/a	n/a	FAIL	PASS	PASS	1.73 (FAIL)
BW0202	No	7,821	9,675	614	7,757	8,638	546	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW0203	No	8,476	18,604	664	9,224	13,881	1,217	0.808 (1 sample)	24841	FAIL	PASS	PASS	0.37 (PASS)
BW1003	No	8,028	10,151	573	8,180	8,761	364	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW1004	No	10,537	13,767	886	10,499	11,767	953	2.34 - 3.63 (2 samples)	13,008 - 13,262	FAIL	PASS	PASS	0.83 (PASS)
BW1005	Data sheet not completed	10,044	13,035	1,141	10,539	11,667	1,198	1.12 (1 sample)	10995	FAIL	PASS	PASS	0.40 (PASS)
BW1006	data sheet not completed	9,384	12,545	1,389	9,726	11,354	1,493	n/a	n/a	FAIL	PASS	PASS	0.21 (PASS)
BW1007	Data sheet not completed	11,145	13,093	507	11,254	11,626	169	Awaiting Laboratory Data	Awaiting Laboratory Data	Pending	Pending	Pending	Pending

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BW1008	No	11,149	54,508	4,976	11,190	28,696	4,632	0.891 - 11.5 (3 samples + 2 dup)	35,053 - 72,072	FAIL	PASS	PASS	2.70 (FAIL)
BW1009	No	11,383	569,909	17,826	9,391	11,235	555	n/a	n/a	FAIL	PASS	PASS	10.92 (FAIL)
BW1010	No	9,970	11,891	557	9,991	10,443	281	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW1011	No	10,201	12,867	1,055	10,514	11,584	746	1.22 (1 sample)	14895	FAIL	PASS	PASS	0.54 (PASS)
BW1011B	No	11,314	14,049	823	11,152	11,781	382	0.975 - 1.62 (3 samples + 1 dup)	11,185 - 11,765	FAIL	PASS	PASS	0.73 (PASS)
BW1012	No	10,137	12,612	961	9,899	10,991	1,105	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW1013	Data sheet not completed	10,517	12,643	752	10,667	11,432	276	n/a	n/a	FAIL	PASS	PASS	0.52 (PASS)
BW1014	Unknown	10,014	13,037	890	10,209	11,517	849	1.09 (1 sample)	11,082	FAIL	PASS	PASS	0.38 (PASS)
BW1014B	Unknown	11,972	13,954	580	12,048	12,258	236	0.965 - 1.21 (3 samples)	12,387 - 13,126	FAIL	PASS	PASS	1.15 (FAIL)
BW1015	No	11,126	17,908	881	11,069	12,296	848	1.14 - 1.34 (3 samples + 1 dup)	11,824 - 14,609	FAIL	PASS	PASS	1.36 (FAIL)
BW1017	Data sheet not completed	9,781	12,741	1,162	9,268	11,289	1,394	n/a	n/a	FAIL	PASS	PASS	0.36 (PASS)
BW1020	No	11,243	13,505	896	11,464	12,411	858	0.956 - 1.21 (2 samples)	11,181 - 11,381	FAIL	PASS	PASS	0.71 (PASS)
BW1021	No	10,641	13,379	1,316	10,802	11,981	1,058	1.18 (1 sample)	13043	FAIL	PASS	PASS	0.56 (PASS)
BW1022	No	10,508	14,760	1,353	10,887	12,048	1,255	Awaiting Laboratory Data	11,493 - 52,848	Pending	Pending	Pending	Pending
BW1023	Data sheet not completed	9,023	12,571	1,881	8,903	10,993	1,918	n/a	n/a	FAIL	PASS	PASS	n/a
BW1024	Data sheet not completed	9,066	13,039	1,216	9,373	10,568	1,139	n/a	n/a	FAIL	PASS	PASS	0.14 (PASS)
BW1027	Unknown	9,618	12,761	877	9,770	12,006	795	1.02 - 1.15 (1 sample + 1 dup)	11315	FAIL	PASS	PASS	0.34 (PASS)
BW1032	Data sheet not completed	9,493	12,140	1,412	8,800	10,898	1,553	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW1033	No	9,605	13,068	750	9,498	10,560	878	n/a	n/a	FAIL	PASS	PASS	0.38 (PASS)
BW1034	Data sheet not completed	11,435	13,388	758	11,574	12,202	570	1.57 - 1.77 (2 samples)	11,965 - 12,557	FAIL	PASS	PASS	1.10 (FAIL)

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March - September 2013

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BW1035	No	9,958	13,277	1,467	10,037	11,738	1,663	1.47 (1 sample)	15,057	FAIL	PASS	PASS	0.45 (PASS)
BW1041	No	9,982	65,674	2,569	10,828	33,544	5,531	9.45 (1 sample)	17,948	FAIL	PASS	PASS	3.74 (FAIL)
BW1044	No	6,959	8,925	423	7,088	7,681	242	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW1045	No	6,758	8,589	463	6,798	7,338	334	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW1047	Data sheet not completed	10,169	12,291	556	10,304	10,892	398	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW1048	Data sheet not completed	9,876	12,228	568	10,010	10,478	302	n/a	n/a	FAIL	PASS	PASS	n/a (PASS)
BW1049	No	8,432	10,778	704	8,608	9,552	575	n/a	n/a	PASS	n/a	n/a	n/a (PASS)
BW1051	Unknown	7,198	12,570	1041	7,376	8,709	866	n/a	n/a	FAIL	PASS	PASS	0.05 (PASS)

[1] Properties shaded gray failed the Phase 1 Outdoor Assessment.

[2] Measurements made with a Ludlum Model 44-10 2"x2" Sodium Iodide (NaI) probe attached to a Model 2210 count-meter, in continuous scan mode

[3] Measurements made with a Ludlum Model 44-10 2"x2" Sodium Iodide (NaI) probe attached to a Model 2210 count-meter, in scaler mode with 1-minute counting time

[4] Radium-226 was assumed to be in equilibrium with Bismuth-214; thus, all Radium-226 results are reported as equivalent to Bismuth-214 results.

[5] MARSSIM Tests explained in Section 3.4 of the report.

[6] An adjusted DCGL of 2,728 cpm was used for Property BW0136 due to the high volume of fruits and vegetables grown in the yard.

APPENDIX C

BLUEWATER PHASE 2 INDOOR ASSESSMENT RESULTS

Appendix C - DRAFT
Summary of Phase 2 Indoor Assessment Results
Bluewater Radiation Site
Bluewater, Cibola County, New Mexico
August 2013 - September 2013

Property ID	Short-term (7-day) Indoor radon-222 (pico curies per liter) $pCi/l_{1,2,3,4}$	Long-term (90-day) Indoor radon-222 (pico curies per liter) $pCi/l_{1,2,3,5}$	Pressurized Ion Chamber (PIC): Indoor Gamma Exposure Rate Above Bkgd. --Avg. of All Measured Rooms--- (milli Roentgens per hour) $\mu R/hr_{2,6,7}$	Pressurized Ion Chamber (PIC): Calculated Indoor Annual Gamma Dose Above Bkgd. --Avg. of All Measured Rooms--- Assumes 12 hrs/day; 365 days/yr $(mrem/yr)_8$	Indoor Walking Gamma Scan: All Rooms $(CPM)_2$	Highest Gamma Scan Measurement Greater Than 3 X Background Average? $_{9,10}$	Alpha Wipe Sample Results $(DPM/100\ cm^2)_{11}$
Bluewater Background	*n/a*	*n/a*	*Outdoor 13.4*	*Outdoor 39.2*	*n/a*	*8,672 CPM*	*n/a*
BW0001	2.5 2.8	0.6 - 1.3 Thoron-Filtered 0.5 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0002	0.7 1.2	0.3 - 0.4 Thoron-Filtered 0.6 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0003	2.9 3.0	0.9 - 1.8 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0004	3.9 3.9	1.0 - 2.2 Thoron-Filtered	pending	pending	pending	pending	pending
BW0005	2.5 2.5	0.3 1.3 Thoron-Filtered 1.0 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0006	2.9 3.1	0.8 - 2.0 (Thoron-Filtered) 2.1 non-Thoron-Filtered	0.0	0.0	5,100 - 10,100	No	0.00 - 1.67 2 samples
BW0007	1.0 1.1 1.2	0.3 - 0.4 Thoron-Filtered 0.4 - 0.8 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0007B	n/a camper trailers only	n/a camper trailers only	n/a camper trailers only	n/a camper trailers only	n/a camper trailers only	n/a camper trailers only	n/a camper trailers only
BW0008	1.5 1.6 83.3 75.8 84.5	0.5 - 72.6 Thoron-Filtered 1.3 non-Thoron-Filtered	pending	pending	pending	pending	pending
BW0009	0.7 1.2	0.3 - 0.5 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0011	1.0 1.0	0.3 - 0.5 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0012	3.1 3.1	0.6 - 2.0 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0013	4.5 4.8	1.2 - 3.6 Thoron-Filtered	0.0	0.0	5,100 13,300	No	0.00 1 sample
BW0014	1.2 1.4	0.3 - 0.7 Thoron-Filtered 0.8 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0015	2.1 2.5	0.4 - 1.1 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0016	4.2 4.6	2.4 - 3.6 Thoron-Filtered	0.0	0.0	6,600 - 11,500	No	0.00 1 sample
BW0017	0.9 1.1	0.3 - 1.7 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0018	1.9 2.1	1.0 - 2.3 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a

Appendix C - DRAFT
Summary of Phase 2 Indoor Assessment Results
Bluewater Radiation Site
Bluewater, Cibola County, New Mexico
August 2013 - September 2013

Property ID	Short-term (7-day) Indoor radon-222 (pico curies per liter) $pCi/l_{1,2,3,4}$	Long-term (90-day) Indoor radon-222 (pico curies per liter) $pCi/l_{1,2,3,5}$	*Pressurized Ion Chamber (PIC): Indoor Gamma Exposure Rate Above Bkgd. --Avg. of All Measured Rooms--- (milli Roentgens per hour) $\mu R/hr_{2,6,7}$*	Pressurized Ion Chamber (PIC): Calculated Indoor Annual Gamma Dose Above Bkgd. --Avg. of All Measured Rooms--- Assumes 12 hrs/day; 365 days/yr $(mrem/yr)_8$	Indoor Walking Gamma Scan: All Rooms $(CPM)_2$	Highest Gamma Scan Measurement Greater Than 3 X Background Average? $_{9,10}$	Alpha Wipe Sample Results $(DPM/100\ cm^2)_{11}$
BW0019	2.2 2.2	0.7 - 2.8 Thoron-Filtered 1.6 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0020	2.2 2.3 2.4 2.5	0.6 - 1.3 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0021	vacant property	lost detectors	n/a	n/a	n/a	n/a	n/a
BW0022	1.0 1.1	0.3 - 0.8 Thoron-Filtered 0.8 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0024	0.7 1.0	0.3 - 0.9 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0025	3.3 3.6	1.3 - 2.4 Thoron-Filtered 2.6 non-Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0026	6.7 6.8	2.1 - 5.2 Thoron-Filtered	0.0	0.0	5,200 - 14,000	No	0.00 - 0.00 7 samples
BW0027	1.1 1.1	0.8 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0028	2 1.9	0.7 - 1.6 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0029	1.1 1.0 1.0 1.0	0.2 - 0.3 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0030	1.7 1.9	0.7 - 1.4 Thoron-Filtered	n/a	n/a	n/a	n/a	n/a
BW0031	13.7 13.8	3.2 - 16.4 non-Thoron-Filtered	0.1	0.2	6,900 - 14,500	No	0.00 - 0.00 7 samples
BW0032	2.0 2.3	0.3 - 1.6 Thoron-Filtered	pending	pending	pending	pending	pending
BW0041	n/a	placed August-2013	0.0	0.0	6,000 - 10,300	No	0 samples
BW0044	n/a	pending	pending	pending	pending	pending	pending
BW0045	n/a	placed August-2013	0.6	1.1	5,600 - 15,200	No	0.00 - 0.00 10 samples
$BW0056_{12}$	n/a	placed August-2013	0.0	0.0	5,000 - 11,000	No	0.00 - 1.61
BW0063	n/a	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer
BW0064	n/a	placed August-2013	0.0	0.0	6,500 - 9,400	No	0 samples
BW0098	n/a	pending	pending	pending	pending	pending	pending
BW0125	n/a	pending	pending	pending	pending	pending	pending
BW0126	n/a	placed August-2013	0.0	0.0	5,100 10,100	No	0 samples
BW0127	n/a	pending	pending	pending	pending	pending	pending
BW0131	n/a	pending	pending	pending	pending	pending	pending
BW0157	n/a	pending	pending	pending	pending	pending	pending
BW0175	n/a	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer
BW0187	n/a	pending	pending	pending	pending	pending	pending

Appendix C - DRAFT
Summary of Phase 2 Indoor Assessment Results
Bluewater Radiation Site
Bluewater, Cibola County, New Mexico
August 2013 - September 2013

Property ID	Short-term (7-day) Indoor radon-222 (pico curies per liter) $pCi/l_{1,2,3,4}$	Long-term (90-day) Indoor radon-222 (pico curies per liter) $pCi/l_{1,2,3,5}$	Pressurized Ion Chamber (PIC): Indoor Gamma Exposure Rate Above Bkgd. --Avg. of All Measured Rooms--- (milli Roentgens per hour) $\mu R/hr_{2,6,7}$	Pressurized Ion Chamber (PIC): Calculated Indoor Annual Gamma Dose Above Bkgd. --Avg. of All Measured Rooms--- Assumes 12 hrs/day; 365 days/yr $(mrem/yr)_8$	Indoor Walking Gamma Scan: All Rooms $(CPM)_2$	Highest Gamma Scan Measurement Greater Than 3 X Background Average?$_{9,10}$	Alpha Wipe Sample Results $(DPM/100\ cm^2)_{11}$
BW0198	n/a	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer
BW0201	n/a	pending	pending	pending	pending	pending	pending
BW1008	n/a	placed August-2013	2.3	6.6	5,600 - 44,000	Yes	0.00 - 0.00 5 samples
BW1009	n/a	placed August-2013	0.0	0.0	6,400 - 9,100	No	0 samples
BW1014B	n/a	pending	pending	pending	pending	pending	pending
BW1015	n/a	pending	pending	pending	pending	pending	pending
BW1034	n/a	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer	Homeowner declined EPA offer
BW1041	n/a	pending	pending	pending	pending	pending	pending

[1]Short- and long-term radon sampling was conducted at BW0001 through BW0032 except BW0010 and BW0023) in 2010-2011 as part of the Homestake Mining Company Removal Assessment (TDD TO-0005-10-08-01). Although long-term radon samples were collected outdoors as well as indoors; outdoor results are not included here. The long-term ranges include results for a minimum of 1 and possibly up to 5 quarterly (90-day) sampling events.

[2]Properties were eligible for Phase 2 Indoor Assessments if they failed the Phase 1 Outdoor Assessment, if their house was built from uranium mine or mill materials, if they stored uranium mine or mill materials inside the house, or if they failed short-term or long-term radon sampling (> or = 4 pico curies per liter) conducted in 2010-2011 as part of the Homestake Mining Company Removal Assessment (TDD TO-0005-10-08-01).

[3]Properties not sampled for radon as part of the Homestake Mining Company Removal Assessment (TDD TO-0005-10-08-01) (BW0041 through BW1041) were only sampled long-term for radon as part of the Bluewater Phase 2 Indoor Assessments. Short-term radon sampling was not conducted due to the assessments occuring during the summer and early fall season.

[4]Properties with 3 results had a duplicate canister or detector placed in the home. BW0020 and BW0029 had 2 duplicate canisters placed in the home. BW0008 had 2 additional sample canisters plus 1 duplicate placed in the basement.

[5]Results shaded in gray indicate levels greater than the EPA removal action level of 4 picocuries per liter; the corresponding properties were eligible for installation of radon abatement systems. In addition, BW0013 and BW0016 are eligible for radon abatement systems due to maximum long-term thoron-filtered concentrations within 11 % of 4.0 pCi/L, the average decrease in concentration noted by 10 co-located thoron-filtered and non-thoron-filtered detectors.

[6]PIC measurements were obtained using a Reuter Stokes Model RSS 131 Pressurized Ion Chamber.

[7]A property with a gamma exposure rate > the EPA screening level of 2.5 µR/hr above background, that passes the Phase 1 Outdoor Assessment, and exhibits a calculated annual gamma dose above background < 15 mrem/yr required a Final Status Survey sampling event to determine its Total Effective Dose Equivalent (TEDE). No properties exceeded this screening level.

[8]The EPA removal action level = 15 mrem/yr; a property exceeding this level would be eligible for a structural-materials removal action.

[9]Gamma scan results were obtained using a Ludlum Model 44-10 2"x2" Sodium Iodine (NaI) probe attached to a Ludlum Model 2221 count-meter.

[10]Results shaded in gray indicate the property was eligible for a structural-materials removal action.

[11]Wipe samples were analyzed utilizing an alpha tray counter: Ludlum Model 43-10 alpha scintillation detector, attached to a Ludlum Model 2000 scaler counting instrument. Wipe samples were only collected if room-scan measurements were greater than a 'quick-scan, whole-house average' plus 1,900 cpm. The Action Level for alpha wipe samples = 20 disintegrations per minute per 100 square centimeters (dpm/100 cm2).

[12]Properties were constructed of either adobe, cinder blocks or both and had a thick-wall factor of 1.2 applied to the background average per the Report of the United Nations Scientific Committee on Effects of Atomic Radiation, United Nations (1977), Annex B, Natural Sources of Radiation.

APPENDIX D

BLUEWATER REMOVAL VOLUME ESTIMATE

BLUEWATER REMOVAL VOLUME ESTIMATE
SEPTEMBER 2013

Property ID	Approximate Removal Area (Square Feet)	Approximate Removal Depth (inches)	Conversion To Cubic Yards	Added 10% Bulking Factor (Cubic Yards)	Added 30% Bulking Factor (Cubic Yards)	NOTE
BW0006	610	**6**	11.30	12.43	14.69	
BW0007B	1,150	**6**	21.30	23.43	27.69	
BW0008	330	**6**	6.11	6.72	7.94	Concrete
BW0032	80	**6**	1.48	1.63	1.93	Rocks
BW0041	4,900	**6**	90.74	99.81	117.96	Rock driveway
BW0044	170	**6**	3.15	3.46	4.09	
BW0045	4,000	**6**	74.07	81.48	96.30	Mostly driveway rock
BW0056	1,800	**6**	33.33	36.67	43.33	Driveway/sidewalk/soil
BW0063	70	**6**	1.30	1.43	1.69	
BW0064	1,100	**6**	20.37	22.41	26.48	Asphalt / soil
BW0098	2,650	**6**	49.07	53.98	63.80	Rock driveway, gravel
BW0125	850	**6**	15.74	17.31	20.46	
BW0126	50	**6**	0.93	1.02	1.20	
BW0127	200	**6**	3.70	4.07	4.81	
BW0131	450	**6**	8.33	9.17	10.83	
BW0157	150	**6**	2.78	3.06	3.61	Rocks
BW0175	575	**6**	10.65	11.71	13.84	
BW0187	100	**6**	1.85	2.04	2.41	Rocks
BW0198	400	**6**	7.41	8.15	9.63	
BW0201	290	**6**	5.37	5.91	6.98	Rocks
BW1008	4,900	**6**	90.74	99.81	117.96	Driveway/petrified wood
BW1009	900	**6**	16.67	18.33	21.67	Driveway rock (owner will not have removed)
BW1014B	30,000	**6**	555.56	611.11	722.22	
BW1015	5,500	**6**	101.85	112.04	132.41	
BW1034	2,200	**6**	40.74	44.81	52.96	
BW1041	3,900	**6**	72.22	79.44	93.89	Paving stones/rock/soil
Total	67,325		1247	1371	1621	

Property ID	Approximate Removal Area (Square Feet)	Approximate Removal Depth (inches)	Conversion To Cubic Yards	Added 10% Bulking Factor (Cubic Yards)	Added 30% Bulking Factor (Cubic Yards)	NOTE
BW0006	610	**12**	22.59	24.85	29.37	
BW0007B	1,150	**12**	42.59	46.85	55.37	
BW0008	330	**12**	12.22	13.44	15.89	Concrete
BW0032	80	**12**	2.96	3.26	3.85	Rocks
BW0041	4,900	**12**	181.48	199.63	235.93	Rock driveway
BW0044	170	**12**	6.30	6.93	8.19	
BW0045	4,000	**12**	148.15	162.96	192.59	Mostly driveway rock
BW0056	1,800	**12**	66.67	73.33	86.67	Driveway/sidewalk/soil
BW0063	70	**12**	2.59	2.85	3.37	
BW0064	1,100	**12**	40.74	44.81	52.96	Asphalt / soil
BW0098	2,650	**12**	98.15	107.96	127.59	Rock driveway, gravel
BW0125	850	**12**	31.48	34.63	40.93	
BW0126	50	**12**	1.85	2.04	2.41	
BW0127	200	**12**	7.41	8.15	9.63	
BW0131	450	**12**	16.67	18.33	21.67	
BW0157	150	**12**	5.56	6.11	7.22	Rocks
BW0175	575	**12**	21.30	23.43	27.69	
BW0187	100	**12**	3.70	4.07	4.81	Rocks
BW0198	400	**12**	14.81	16.30	19.26	
BW0201	290	**12**	10.74	11.81	13.96	Rocks
BW1008	4,900	**12**	181.48	199.63	235.93	Driveway/petrified wood
BW1009	900	**12**	33.33	36.67	43.33	Driveway rock (owner will not have removed)
BW1014B	30,000	**12**	1111.11	1222.22	1444.44	
BW1015	5,500	**12**	203.70	224.07	264.81	
BW1034	2,200	**12**	81.48	89.63	105.93	
BW1041	3,900	**12**	144.44	158.89	187.78	Paving stones/rock/soil
Total	67,325		2,494	2,743	3,242	

APPENDIX E

TDD NO. 1/WESTON-042-13-005 AND AMENDMENTS 001-003

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Vendor : WESTON SOLUTIONS, INC.

TDD # : 1/WESTON-042-13-005
Amendment # :
Contract # : EP-W-06-042

TDD Title : Bluewater Radiological Site
Purpose : TDD INITIATION

Verbal Date :
Start Date : 03/13/2013
Completion Date : 06/21/2013
Effective Date : 03/13/2013

Priority : HIGH
Overtime Authorized : No
Invoice Unit :

SSID : A6GS
Project/Site Name : Bluewater Radiological Site
Project Address : 100 Pinon St.
County : Cibola
City : Bluewater
State : NM
Zip Code : 87005

Work Area : Response / Removal
Work Area Code :
Activity : Fund Lead Removal
Activity Code : RV
Operable Unit :
Emergency Code :
FPN :
Performance Based : No

Authorized TDD Ceiling :

	Amount	LOE (Hours)
Previous Action(s) :	$0.00	0.00
This Action :	$250,000.00	0.00
New Total :	$250,000.00	0.00

Specific Elements :
See Schedule

Description of Work :
The request is for $250,000 for this TDD. The contractor shall be aquiring access agreements in Bluewater. Then residential radiation assessment will be conducted.

Region Specific :
CERCLIS: NMN000607509

Misc 2 :

Accounting and Appropriation Information:

SFO:

Line	Budget / FY	Approp. Code	Budget Org.	Program Element	Object Class	Site Project	Cost Org.	DCN Line-ID	Funding Category	TDD Amount
1	11	T	6A00	302DC6C	2505	A6GSRV00	C001	116ARVC027-001	REMOVAL	$250,000.00

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

TDD # : 1/WESTON-042-13-005
Amendment # :
Contract # : EP-W-06-042

Vendor : WESTON SOLUTIONS, INC.

Project Officer : Linda Carter (Signature) (Date)		**Branch Mail Code:** **Phone Number :** 214-665-6665 **Fax Number :** 214-665-6660
Contracting Officer Representative : Jon Rinehart (Signature) (Date)		**Branch Mail Code :** **Phone Number :** 214-665-6789 **Fax Number :**
Contract Specialist: Cora Stanley (Signature) (Date)		**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Contracting Officer : Cora Stanley Electronically Signed by Cora Stanley (Signature)	02/27/2013 (Date)	**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Other Agency Official : (Signature) (Date)		**Branch Mail Code :** **Phone Number :** **Fax Number :**

Specific Elements: Analyze -Data that has been collected.,Assess -,Collect -Samples ,Compile -,Conduct -,Document -The removal activities. Prepare a written report.,Prepare -,Support -The removal activities,Advise -The OSC on disposal options and completion of the removal activities.

Technical Direction Document

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Vendor : WESTON SOLUTIONS, INC.

TDD # : 1/WESTON-042-13-005
Amendment # : 001
Contract # : EP-W-06-042

TDD Title : Bluewater Radiological Site
Purpose : TDD INITIATION,INCREMENTAL FUNDING

Verbal Date :
Start Date : 03/13/2013
Completion Date : 06/21/2013
Effective Date : 03/13/2013

Priority : HIGH
Overtime Authorized : No
Invoice Unit :

SSID : A6GS
Project/Site Name : Bluewater Radiological Site
Project Address : 100 Pinon St.
County : Cibola
City : Bluewater
State : NM
Zip Code : 87005

Work Area : Response / Removal
Work Area Code :
Activity : Fund Lead Removal
Activity Code : RV
Operable Unit :
Emergency Code :
FPN :
Performance Based : No

Authorized TDD Ceiling :

	Amount	LOE (Hours)
Previous Action(s) :	$250,000.00	0.00
This Action :	$225,000.00	0.00
New Total :	$475,000.00	0.00

Specific Elements :
See Schedule

Description of Work :
See Schedule

Region Specific :
CERCLIS: NMN000607509

Misc 2 :

Accounting and Appropriation Information:

SFO:

Line	Budget / FY	Approp. Code	Budget Org.	Program Element	Object Class	Site Project	Cost Org.	DCN Line-ID	Funding Category	TDD Amount
1	11	T	6A00	303DC6	2505	A6GSRV00	C001	126AHSC014-001	HOMELAND SECURITY	$225,000.00

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

TDD # : 1/WESTON-042-13-005
Amendment # : 001
Contract # : EP-W-06-042

Vendor : WESTON SOLUTIONS, INC.

Project Officer : Linda Carter (Signature) (Date)	**Branch Mail Code:** **Phone Number :** 214-665-6665 **Fax Number :** 214-665-6660
Contracting Officer Representative : Jon Rinehart (Signature) (Date)	**Branch Mail Code :** **Phone Number :** 214-665-6789 **Fax Number :**
Contract Specialist: Cora Stanley (Signature) (Date)	**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Contracting Officer : Cora Stanley Electronically Signed by Cora Stanley 05/29/2013 (Signature) (Date)	**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Other Agency Official : (Signature) (Date)	**Branch Mail Code :** **Phone Number :** **Fax Number :**

Specific Elements:
Base ORIG - Analyze -Data that has been collected.,Assess -,Collect -Samples ,Compile -,Conduct -,Document -The removal activities. Prepare a written report.,Prepare -,Support -The removal activities,Advise -The OSC on disposal options and completion of the removal activities.
Description of Work:
Amendment 001 - This action requests $225,000 in additional funds to be added to this TDD to complete the structure assessment in the Village of Bluewater .
Base ORIG - The request is for $250,000 for this TDD. The contractor shall be aquiring access agreements in Bluewater. Then residential radiation assessment will be conducted.

Technical Direction Document

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Vendor : WESTON SOLUTIONS, INC.

TDD # : 1/WESTON-042-13-005
Amendment # : 002
Contract # : EP-W-06-042

TDD Title : Bluewater Radiological Site
Purpose : CHANGE PERIOD OF PER

Verbal Date :
Start Date : 03/13/2013
Completion Date : 02/28/2014
Effective Date : 03/13/2013

Priority : HIGH
Overtime Authorized : No
Invoice Unit :

SSID : A6GS
Project/Site Name : Bluewater Radiological Site
Project Address : 100 Pinon St.
County : Cibola
City : Bluewater
State : NM
Zip Code : 87005

Work Area : Response / Removal
Work Area Code :
Activity : Fund Lead Removal
Activity Code : RV
Operable Unit :
Emergency Code :
FPN :
Performance Based : No

Authorized TDD Ceiling :

	Amount	LOE (Hours)
Previous Action(s) :	$475,000.00	0.00
This Action :	$0.00	0.00
New Total :	$475,000.00	0.00

Specific Elements :

See Schedule

Description of Work :

See Schedule

Region Specific :

CERCLIS: NMN000607509

Misc 2 :

Accounting and Appropriation Information:

SFO:

Line	Budget / FY	Approp. Code	Budget Org.	Program Element	Object Class	Site Project	Cost Org.	DCN Line-ID	Funding Category	TDD Amount

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

TDD # : 1/WESTON-042-13-005
Amendment # : 002
Contract # : EP-W-06-042

Vendor : WESTON SOLUTIONS, INC.

Project Officer : Linda Carter (Signature) (Date)		**Branch Mail Code:** **Phone Number :** 214-665-6665 **Fax Number :** 214-665-6660
Contracting Officer Representative : Jon Rinehart (Signature) (Date)		**Branch Mail Code :** **Phone Number :** 214-665-6789 **Fax Number :**
Contract Specialist: Cora Stanley (Signature) (Date)		**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Contracting Officer : Cora Stanley Electronically Signed by Cora Stanley (Signature)	07/03/2013 (Date)	**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Other Agency Official : (Signature) (Date)		**Branch Mail Code :** **Phone Number :** **Fax Number :**

Specific Elements:
Base ORIG - Analyze -Data that has been collected.,Assess -,Collect -Samples ,Compile -,Conduct -,Document -The removal activities. Prepare a written report.,Prepare -,Support -The removal activities,Advise -The OSC on disposal options and completion of the removal activities.
Description of Work:
Amendment 002 - Period of performance is extended to 02/28/2014. There is no increase in cost/fee.
Amendment 001 - This action requests $225,000 in additional funds to be added to this TDD to complete the structure assessment in the Village of Bluewater .
Base ORIG - The request is for $250,000 for this TDD. The contractor shall be aquiring access agreements in Bluewater. Then residential radiation assessment will be conducted.

Technical Direction Document

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Vendor : WESTON SOLUTIONS, INC.

TDD # : 1/WESTON-042-13-005
Amendment # : 003
Contract # : EP-W-06-042

TDD Title : Bluewater Radiological Site
Purpose : INCREMENTAL FUNDING

Verbal Date :
Start Date : 03/13/2013
Completion Date : 02/28/2014
Effective Date : 03/13/2013

Priority : HIGH
Overtime Authorized : No
Invoice Unit :

SSID : A6GS
Project/Site Name : Bluewater Radiological Site
Project Address : 100 Pinon St.
County : Cibola
City : Bluewater
State : NM
Zip Code : 87005

Work Area : Response / Removal
Work Area Code :
Activity : Fund Lead Removal
Activity Code : RV
Operable Unit :
Emergency Code :
FPN :
Performance Based : No

Authorized TDD Ceiling :

	Amount	LOE (Hours)
Previous Action(s) :	$475,000.00	0.00
This Action :	$300,000.00	0.00
New Total :	$775,000.00	0.00

Specific Elements :

See Schedule

Description of Work :

See Schedule

Region Specific :

CERCLIS: NMN000607509

Misc 2 :

Accounting and Appropriation Information:

SFO:

Line	Budget / FY	Approp. Code	Budget Org.	Program Element	Object Class	Site Project	Cost Org.	DCN Line-ID	Funding Category	TDD Amount
1	13	T	6A00	303DC6	2505	A6GSRV00		136ARVC012-001	REMOVAL	$300,000.00

U.S. EPA, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

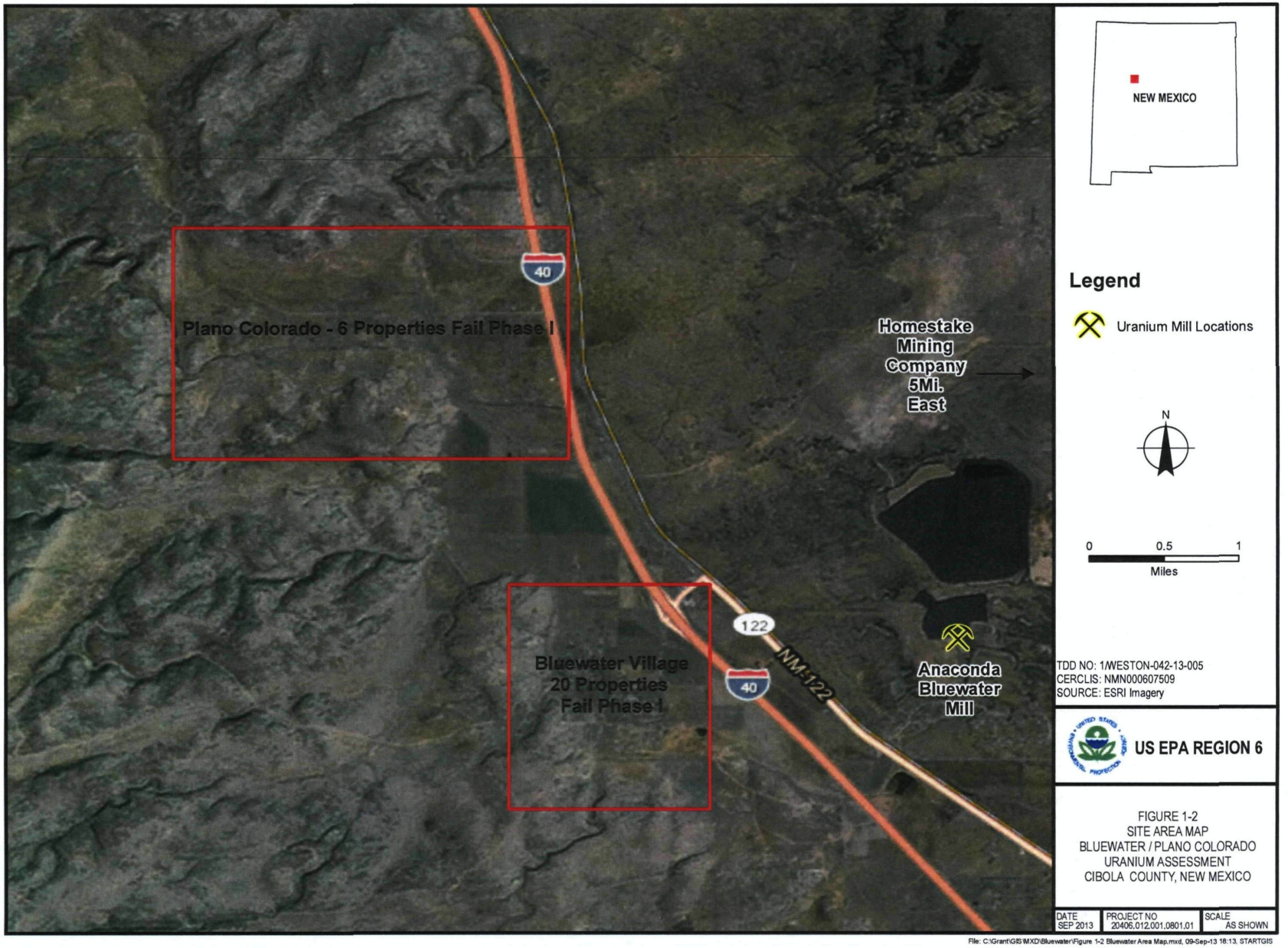
TDD # : 1/WESTON-042-13-005
Amendment # : 003
Contract # : EP-W-06-042

Vendor : WESTON SOLUTIONS, INC.

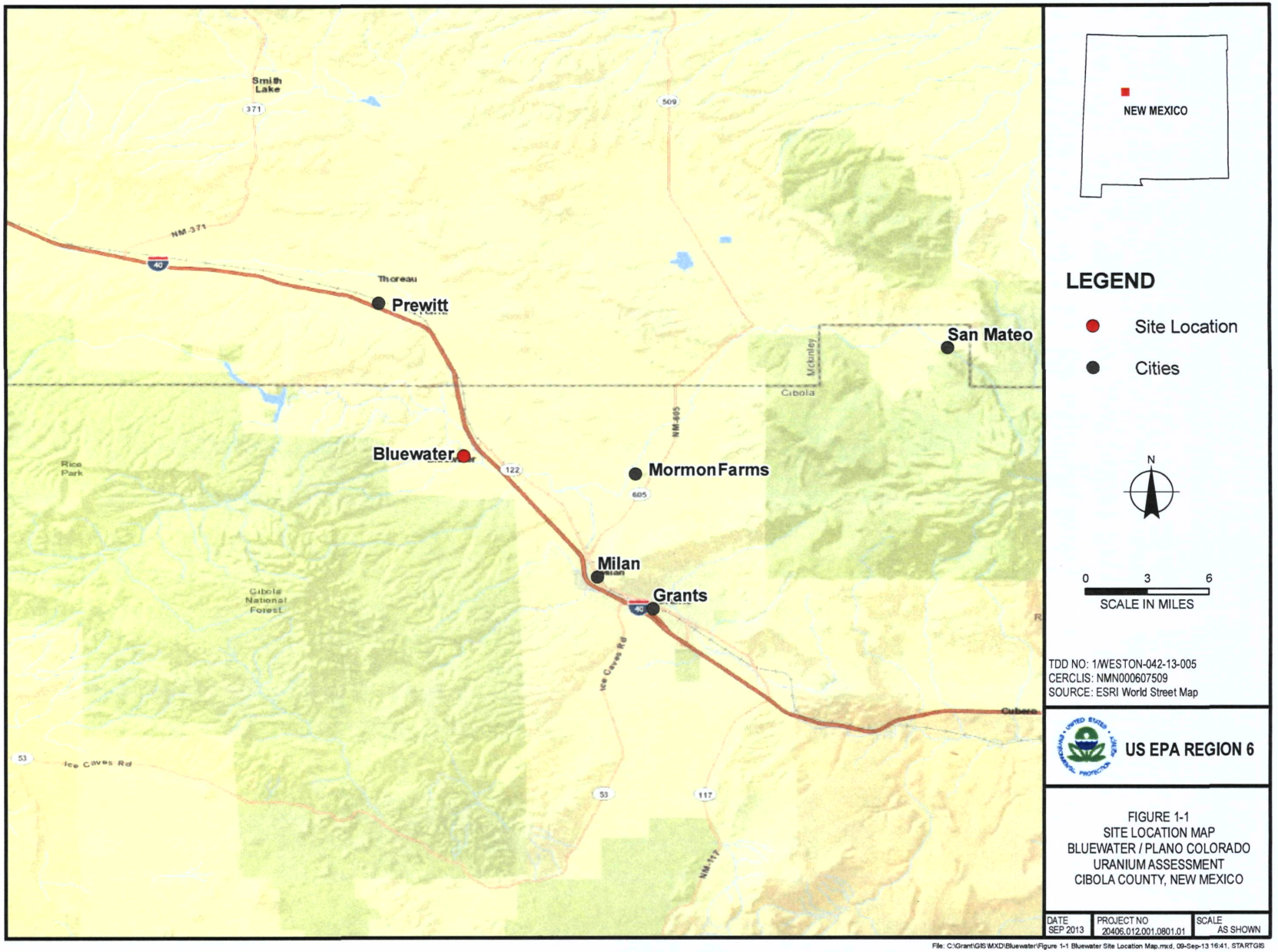
Project Officer : Linda Carter (Signature) (Date)		**Branch Mail Code:** **Phone Number :** 214-665-6665 **Fax Number :** 214-665-6660
Contracting Officer Representative : Jon Rinehart (Signature) (Date)		**Branch Mail Code :** **Phone Number :** 214-665-6789 **Fax Number :**
Contract Specialist: Cora Stanley (Signature) (Date)		**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Contracting Officer : Cora Stanley Electronically Signed by Cora Stanley (Signature)	07/26/2013 (Date)	**Branch Mail Code :** **Phone Number :** 214-665-7464 **Fax Number :**
Other Agency Official : (Signature) (Date)		**Branch Mail Code :** **Phone Number :** **Fax Number :**

Specific Elements:
Base ORIG - Analyze -Data that has been collected.,Assess -,Collect -Samples ,Compile -,Conduct -,Document -The removal activities. Prepare a written report.,Prepare -,Support -The removal activities,Advise -The OSC on disposal options and completion of the removal activities.
Description of Work:
Amendment 003 - Collect and analyze additional samples for the Phase 2 Assessment. Add $300,000 to this TDD to complete the work.
Amendment 002 - Period of performance is extended to 02/28/2014. There is no increase in cost/fee.
Amendment 001 - This action requests $225,000 in additional funds to be added to this TDD to complete the structure assessment in the Village of Bluewater .
Base ORIG - The request is for $250,000 for this TDD. The contractor shall be aquiring access agreements in Bluewater. Then residential radiation assessment will be conducted.

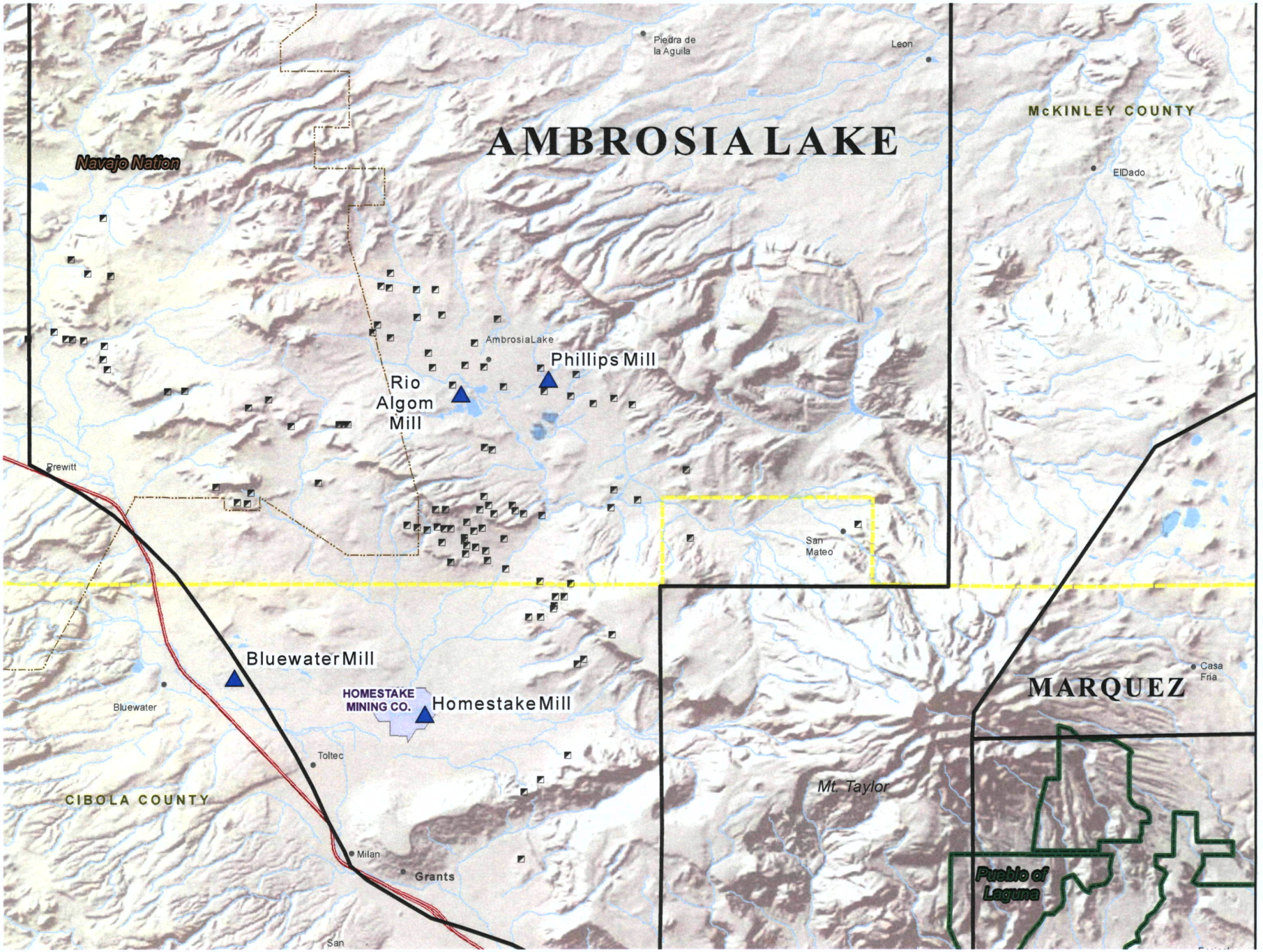
Attachment 4


Plano Colorado - 6 Properties Fail Phase I
Bluewater Village
20 Properties
Fail Phase I
40
40
122
NM-122
Homestake
Mining
Company
5Mi.
East
Anaconda
Bluewater
Mill
NEW MEXICO
Legend
Uranium Mill Locations
N
0
0.5
1
Miles
TDD NO: 1/WESTON-042-13-005
CERCLIS: NMN000607509
SOURCE: ESRI Imagery
US EPA REGION 6
FIGURE 1-2
SITE AREA MAP
BLUEWATER / PLANO COLORADO
URANIUM ASSESSMENT
CIBOLA COUNTY, NEW MEXICO
DATE
SEP 2013
PROJECT NO
20406.012.001.0801.01
SCALE
AS SHOWN
File: C:\Grant\GIS\MXD\Bluewater\Figure 1-2 Bluewater Area Map.mxd, 09-Sep-13 18:13, STARTGIS

Attachment 5


Smith Lake
371
509
NM-371
40
Thoreau
Prewitt
San Mateo
McKinley
Cibola
NM-605
Bluewater
122
Rice Park
Mormon Farms
605
Milan
Grants
40
Cibola National Forest
Ice Caves Rd
53
117
NM-117
NEW MEXICO
LEGEND
Site Location
Cities
N
0 3 6
SCALE IN MILES
TDD NO: 1/WESTON-042-13-005
CERCLIS: NMN000607509
SOURCE: ESRI World Street Map
US EPA REGION 6
FIGURE 1-1
SITE LOCATION MAP
BLUEWATER / PLANO COLORADO
URANIUM ASSESSMENT
CIBOLA COUNTY, NEW MEXICO
DATE SEP 2013
PROJECT NO 20406.012.001.0801.01
SCALE AS SHOWN
File: C:\Grant\GIS\MXD\Bluewater\Figure 1-1 Bluewater Site Location Map.mxd, 09-Sep-13 16:41, STARTGIS

Attachment 6


AMBROSIA LAKE
Navajo Nation
McKINLEY COUNTY
Piedra de la Aguila
Leon
ElDado
AmbrosiaLake
Phillips Mill
Rio Algom Mill
Prewitt
San Mateo
Bluewater Mill
HOMESTAKE MINING CO.
Homestake Mill
Bluewater
Toltec
CIBOLA COUNTY
Milan
Grants
San
MARQUEZ
Casa Fria
Mt. Taylor
Pueblo of Laguna

007333