DATA REVIEW AND HUMAN HEALTH RISK ASSESSMENT FOR THE UTILITY CORRIDOR SUB-AREA

BMI COMMON AREAS (EASTSIDE)
CLARK COUNTY, NEVADA

Prepared for:

Nevada Division of Environmental Protection
Bureau of Corrective Actions
2030 E. Flamingo Road, Suite 230
Las Vegas, Nevada 89119-0818

Prepared by:

Basic Remediation Company LLC
875 Warm Springs Road
Henderson, Nevada 89011

SEPTEMBER 2009

Basic Remediation
COMPANY

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

September 24, 2009

Dr. Ranajit Sahu, C.E.M. (No. EM-1699, Exp. 10/07/2009) Date
BRC Project Manager

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
BCLs	Basic Comparison Levels
bgs	below ground surface
BMI	Basic Management, Inc.
BRC	Basic Remediation Company
COPCs	chemicals of potential concern
CSF	cancer slope factor
CSM	conceptual site model
DAFs	dilution attenuation factors
DQIs	data quality indicators
DVSR	Data Validation Summary Report
ECI	Environmental Conditions Investigation
FSSOP	Field Sampling and Standard Operating Procedures
GiSdT	Guided Interactive Statistical Decision Tools
HEAST	Health Effects Assessment Summary Tables
HI	hazard index
IEUBK	Integrated Exposure Uptake Biokinetic Model
ILCR	incremental lifetime cancer risk
IRIS	Integrated Risk Information System
LBCLs	Leaching-based Basic Comparison Levels
LCS	laboratory control sample
MS/MSD	matrix spike/matrix spike duplicate
NBMG	Nevada Bureau of Mines and Geology
NDEP	Nevada Division of Environmental Protection
NFAD	No Further Action Determination
NRS	Nevada Revised Statutes
PAHs	polynuclear aromatic hydrocarbons
PARCC	precision, accuracy, representativeness, comparability, and completeness
PBT	persistent, bioaccumulative, and toxic
PCBs	polychlorinated biphenyls
PEF	particulate emission factor

ACRONYMS AND ABBREVIATIONS (Continued)

PR	percent recovery
QA/QC	assurance/quality control
QAPP	Quality Assurance Project Plan
RAGS	Risk Assessment Guidance for Superfund
RfC	reference concentration
RfD	reference dose
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SOP	standard operating procedure
SQLs	sample quantitation limits
SVOCs	semi-volatile organic compounds
TEFs	toxicity equivalency factors
TEQ	toxic equivalent
TICs	tentatively identified compounds
UCL	upper confidence limit
USEPA	U.S. Environmental Protection Agency
VOCs	volatile organic compounds
WRF	City of Henderson Water Reclamation Facility

EXECUTIVE SUMMARY

Basic Remediation Company (BRC) has prepared this Data Review and Human Health Risk Assessment for the Utility Corridor Sub-Area of the Basic Management, Inc. (BMI) Common Areas (Eastside) in Clark County, Nevada. The purpose of the report is to support the No Further Action Determination (NFAD) by the Nevada Division of Environmental Protection (NDEP) in order to facilitate the installation of a new 48-inch sewer line along this alignment. The NFAD for the Site was issued by NDEP on September 4, 2009.

BACKGROUND

An investigation was conducted at the Site in 2008 (with additional data collected in 2009) in accordance with a NDEP-approved Sampling and Analysis Plan (SAP). The Site investigation involved collection of soil matrix samples placed along the entire length of the sewer alignment excavation. Samples were collected every 100 feet within the southern portion of the excavation, through the Southern RIBs and First Eight Rows sub-areas; and every 200 feet along the Beta Ditch and through the Spray Wheel and Upper Ponds sub-areas. Several subsequent rounds of soil remediation and confirmation sampling were performed. The final number of samples collected was determined to be adequate for the completion of a statistically robust dataset upon which to perform a human health risk assessment.

The Site is a linear feature that is approximately 7,300 feet in length, 50 feet across, running north-south, and comprised of approximately 8.4 acres. It consists of undeveloped land with very little surface relief that is gently sloping to the northwest. It crosses through the waste conveyance and disposal ponds historically operated by the BMI Complex, including the Beta Ditch and Upper Ponds. The Site includes the length of the sewer alignment excavation north of the Parcel 4B sub-area until it meets up with the tie-in location at the City of Henderson Water Reclamation Facility (WRF) at the northern boundary of the Upper Ponds sub-area (see Figure 1).

The sewer alignment excavation will be constructed to a depth ranging from 2 to 14 feet below ground surface (bgs). Following placement of the sewer pipe, the site will be backfilled with clean pea gravel, then overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained. The entire Site is beneath future roadways under the prospective redevelopment plan.

CONCEPTUAL SITE MODEL

The conceptual site model (CSM) for the Site considers current and potential future land-use conditions. Currently, the Site is undeveloped. Current receptors that may use the Site include on-site trespassers. Therefore, current exposures to native soils at the Site are likely to be minimal. In addition, exposures to future receptors will be much greater than current exposures. Because the Site will be an infrastructure easement in support of future development of the Eastside, the CSM includes construction workers (sewer installation) and future maintenance workers (repair and upkeep of the infrastructure). It is important to note that the entire Site is beneath future roadways under the prospective redevelopment plan. This, therefore, precludes potential exposures to future residential receptors to Site soils.

DATA REVIEW AND USABILITY EVALUATION

A data review and usability evaluation was performed to identify appropriate data for use in the human health risk assessment. The results of the data usability evaluation indicate that the data collected in 2008 and 2009 are adequate for use in a risk assessment. As part of the data review process, data were compared to both NDEP (2009a) Basic Comparison Levels (BCLs) and leaching-based BCLs (LBCLs). The data review showed no indication that concentrations increase with depth, supporting the conclusion that currently the Site is not a likely source of impacts to groundwater. In addition, as indicated above, the Site will be entirely beneath a road surface, effectively serving as a ‘cap’ for the infiltration of water from the surface. Although various infrastructures will exist within the Site (for example, sewerline), which have the potential to leak and become a potential source of downward infiltration, this is considered of minimal likelihood, given current standards for sewer design and construction as well as the focus on leak prevention and associated water loss in Henderson. Therefore, potential impacts to groundwater, and subsequent groundwater exposures were not further evaluated. It should be noted that development of the Site will not preclude future groundwater investigation or remediation activities that may need to be conducted by BRC.

HUMAN HEALTH RISK ASSESSMENT

The data review section (Section 4) did not take into account cumulative effects, nor all potential exposure pathways. Therefore, a human health risk assessment was conducted (Section 5) to determine if chemical concentrations in Site soils are: (1) either representative of background conditions; or (2) do not pose an unacceptable risk to human health and the environment under current and anticipated future use conditions. The human health risk assessment followed the basic procedures outlined in U.S. Environmental Protection Agency (USEPA) and NDEP guidance documents. The human health risk assessment also conforms to the methodology included in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007).

RISK CHARACTERIZATION RESULTS

The total cumulative non-cancer HI for future construction workers is 0.26. The total cumulative non-cancer HI for future maintenance workers is 0.20. These total cumulative non-cancer HIs are below the target HI of 1.0. The chemical theoretical upper-bound ILCR for future construction workers is 9×10^{-7}. The chemical theoretical upper-bound ILCR for future maintenance workers is 4×10^{-6}. Although the maintenance worker chemical ILCR is above the risk goal of 1×10^{-6}, dioxins/furans are a major contributor to the ILCR. However, all dioxins/furans concentrations are below the NDEP BCL of 1.0 parts per billion (ppb or 1,000 parts per trillion [ppt]; NDEP 2009a). The theoretical chemical upper-bound ILCR for future maintenance workers decreases to 1×10^{-6} without including dioxins/furans.

The radionuclide theoretical upper-bound ILCR for future construction workers is 9×10^{-6}. Although the construction worker radionuclide ILCR is above the risk goal of 1×10^{-6}, it is within USEPA's acceptable risk range of 10^{-6} to 10^{-4}, and consistent with the background radionuclide ILCR of 8×10^{-6}. The radionuclide theoretical upper-bound ILCR for future maintenance workers is 2×10^{-4}. Although the maintenance worker radionuclide ILCR is above the risk goal of 1×10^{-6} and USEPA's acceptable risk range, it is equal to the background radionuclide ILCR of 2×10^{-4}.

In addition, the estimated risks for death from mesothelioma (primarily) and lung cancer (secondarily) for asbestos exposures to both future construction workers and maintenance workers are below 1×10^{-6}.

The human health risk assessment used data from the surface to 10 feet bgs. However, data were collected in June 2009 in order to characterize soil conditions to 20 feet bgs at three locations at the Site. It does not appear that the detections at 20 feet bgs at these three sample locations would change the overall conclusions of the human health risk assessment.

EVALUATION OF UNCERTAINTIES

Risk estimates are values that have uncertainties associated with them. These uncertainties, which arise at every step of a risk assessment, are evaluated in the report to provide an indication of the uncertainty associated with a risk estimate. Uncertainties from different sources are compounded in the human health risk assessment. Because the exposure assumptions and toxicity criteria are considered conservative, the risk estimates calculated in this human health risk assessment are likely to overestimate rather than underestimate potential risks.

SUMMARY

The results of the human health risk assessment indicate that exposures to chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors. Therefore, based on the results of the 2008 and 2009 investigations, and this data review and human health risk assessment, exposures to residual levels of chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors. In summary, BRC reaffirms that the NFAD for the Site is warranted.

1.0 INTRODUCTION

This report presents the results of an investigation and human health risk assessment Basic Remediation Company (BRC) performed for the Utility Corridor Sub-Area of the Basic Management, Inc. (BMI) Common Areas (Eastside) in Clark County, Nevada. The Utility Corridor Sub-Area will be referred to as the Site for the purposes of this report. Figure 1 shows the location of the Site within the Eastside property.

This revision of the report, Revision 3, incorporates: 1) comments received from the NDEP, dated September 4, 2009, on Revision 2 of the report, dated August 2009; 2) comments received from the NDEP, dated January 8, 2009, on Revision 1 of the report, dated December 19, 2008; and 3) comments received from the NDEP, dated December 14, 2008, on Revision 0 of the report, dated December 3, 2008. The NDEP comments and BRC's response to these comments are included in Appendix A. Also included in Appendix A is a redline/strikeout version of the text showing the revisions from the August 2009 version of the report. An electronic version of the entire report, as well as original format files (MS Word and MS Excel) of all text, tables and risk calculations are included in Appendix B.

1.1 PURPOSE OF THE REPORT

The purpose of this report is to support the No Further Action Determination (NFAD) by the Nevada Division of Environmental Protection (NDEP) in order to facilitate the installation of a new 48-inch sewer line along this alignment. The NFAD was obtained from NDEP on September 4, 2009, with the following conditions:

1. BRC retains the responsibility to address any environmental impacts to groundwater beneath the property referred to as the Utility Corridor Sub-Area. As such, additional investigation may be necessary on this property as it relates to BRC's responsibilities. BRC must be granted access to the site for activities such as well or soil boring installations or other investigative or remedial efforts.

2. The site soils beneath 10' below ground surface have not been evaluated to date with the exception of a limited investigation of soils to 20' below ground surface (bgs). The limited area of investigation to 20' below ground surface is shown on the Attached Figure A [see Section 2.1 of this report]. The property owner should note that soils that have not been addressed by these investigations should not be disturbed without additional investigation or evaluation.

3. To limit liability, the property owner should ensure that activities at the property do not exacerbate existing, sub-surface, environmental conditions.

4. The site use is suitable for purposes of commercial or industrial use.

5. Comments are provided in Attachment A [see Appendix A of this report]. Based upon the NDEP's review it appears that these comments will not alter the No Further Action determination, however, BRC must revise and resubmit the document. BRC may proceed with site development in parallel with this resubmittal.

Therefore, as indicated above, this report supports the NFAD issued by the NDEP for the Site, and addresses Condition #5 of the NFAD.

1.2 PROJECT BACKGROUND

The sewer alignment was excavated to varying depths, at first, based on visual indications of contamination (*i.e.*, discolored soils). Confirmation samples were then collected from the post-excavated alignment. Subsequently, additional soils were also removed, in targeted areas, based on confirmation sampling. The current analysis uses data based on the most recent post-excavation, confirmation sample results. It does not use any historical (*i.e.*, associated with excavated soils) data within the footprint of the excavation since these are no longer considered 'existing' data.

The sampling was conducted in accordance with the NDEP-approved *Sewer Alignment Excavation Soil Sampling and Analysis Plan* (SAP; BRC 2008) and *Sewer Alignment Excavation Supplemental Soil Sampling and Analysis Plan* (BRC 2009). The Site investigations involved collection of soil matrix samples placed along the entire length of the sewer alignment excavation. Samples were collected every 100 feet within the southern portion of the excavation, through the Southern RIBs and First Eight Rows sub-areas; and every 200 feet along the Beta Ditch and through the Spray Wheel and Upper Ponds sub-areas. As discussed in Section 7, the number of samples collected is adequate for the completion of a statistically robust dataset upon which to perform a human health risk assessment. A site map, showing the sample locations, is provided on Figure 2.

Samples that were collected were depth-discrete soil matrix samples. Specifically, the objective of the sampling was to support the request for an NFAD for this Site, via a human health risk assessment for the exposure scenarios discussed below. Therefore, this report includes the following primary tasks:

- Conceptual site model (CSM);
- Data usability evaluation;
- Summary of data, including evaluation to comparison levels;
- Human health risk assessment, including statistical comparison to background concentrations; and
- Data quality assessment.

Each of these tasks is discussed in the following sections of the report.

2.0 CONCEPTUAL SITE MODEL

The CSM is used to describe relationships between chemicals and potentially exposed human receptor populations, thereby delineating the relationships between the suspected sources of chemicals identified at the Site, the mechanisms by which the chemicals might be released and transported in the environment, and the means by which the receptors could come in contact with the chemicals. The CSM provides a basis for defining data quality objectives and developing exposure scenarios.

2.1 SITE DESCRIPTION

The BMI Common Areas and Complex are located in Clark County, Nevada, and are situated approximately two miles west of the River Mountains and one mile north of the McCullough Range. The local surface topography slopes in a westerly to northwesterly direction from the River Mountains and in a northerly to northeasterly direction from the McCullough Range. Near the BMI Common Areas and Complex, the surface topography slopes north toward the Las Vegas Wash. According to the Nevada Bureau of Mines and Geology (NBMG) *Las Vegas SE Folio Geologic Map (1977) and the Geologic Map of the Henderson Quadrangle, Nevada* (NBMG 1980), the River Mountains and McCullough Range consist of volcanic rocks: dacite in the River Mountains and andesite in the McCullough Range.

The Site is a linear feature that is approximately 7,300 feet in length, 50 feet across, running north-south, and comprised of approximately 8.4 acres (Figure 1). It consists of undeveloped land with very little surface relief that is gently sloping to the northwest. It crosses through the waste conveyance and disposal ponds historically operated by the BMI Complex, including the Beta Ditch and Upper Ponds. Land use in the vicinity is mixed, ranging from industrial in the BMI Complex to light industrial at the margins of the Complex to commercial and residential on the periphery of the Eastside property. Lands surrounding the Eastside property are zoned commercial and residential, and are mostly developed.

The Site, consisting of a 50-foot wide ditch, passes through the Staging, First Eight Rows, Spray Wheel, and Upper Ponds sub-areas of the Eastside Area. As noted in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007), all of the Eastside sub-areas are planned for redevelopment according to a mixed-use master plan, which will include above- and below-ground utilities (potable water, sewerlines, power, gas), roadways, trails, parks, homes, schools, shops, and municipal buildings. The Site includes the length of the sewer alignment excavation north of the Parcel 4B sub-area until it meets up with the tie-in location at the City of Henderson Water

Reclamation Facility (WRF) at the northern boundary of the Upper Ponds sub-area (see Figure 1).

Figure 3 presents a cross-section of the sewer alignment excavation, indicating that the excavation will be constructed to a depth ranging from 2 to 14 feet bgs. Following placement of the sewer pipe, the site will be backfilled with clean pea gravel, then overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained. As shown on Figure 3, the entire Site is beneath future roadways under the prospective redevelopment plan.

2.2 SUMMARY OF EXISTING DATA

As noted above, the Site runs north-south through the middle of the Eastside property, on which unlined wastewater effluent ponds (and associated conveyance ditches) were built and into which various industrial plant wastewaters were discharged from 1942 through 1976. These historical waste disposal practices have impacted soil and groundwater at the Site. In addition, the Site runs through the Spray Wheel sub-area which was used for the evaporative disposal of aqueous salt waste (see Figure 1).

Most of the environmental investigations conducted at the Eastside property have focused on the adjacent operating facilities and Upper Ponds and Ditches areas of the BMI Common Areas. Some of the data collected at the Eastside property have been collected from within the Site in support of those efforts. Only five soil samples from historical sampling events are located within the Site. These sample locations are all associated with the BMI Common Areas Environmental Conditions Investigation (ECI) conducted during March and April 1996 (Dataset 1a; ERM 1996). These sample locations include discrete samples collected from two locations along the Beta Ditch (sample locations BDB-16 and BDB-17) and composite samples from three ponds (PUA-9, PUB-10, and PUC-8). Soil samples from these locations were collected and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), organochlorine pesticides, polychlorinated biphenyls (PCBs), metals, perchlorate, and/or radionuclides.

Although elevated concentrations of several of these compounds were detected in these soil samples, not unexpected given they were collected from known contaminated ponds and ditch, as discussed above, excavation of the sewer alignment consisted of the removal and stockpiling of soil from the entire length of the sewer alignment to a depth of approximately four feet bgs and 50 feet across. Therefore, historical surface soil data within the footprint of the excavation are no longer considered 'existing' data. In addition, many of the previous samples were composite samples, all soil samples were collected over 10 years ago, and not all of the previous samples have been analyzed for all of the major chemicals or chemical families and several used different analytical methods. Therefore, because of these factors, and because the current investigation results are considered representative of current site conditions, previous results are not evaluated further in this report. The historical results are provided in dataset file on the enclosed report CD in Appendix B.

2.3 POTENTIAL HUMAN EXPOSURE SCENARIOS

The CSM considers current and potential future land-use conditions. Currently, the Site is undeveloped. Current receptors that may use the Site include on-site trespassers. Therefore, current exposures to native soils at the Site are likely to be minimal. In addition, exposures to future receptors will be much greater than current exposures. For example, future receptors include potential workers who are assumed to be exposed to soil at the Site for 225 days per year for 25 years which is much greater than any current exposures.

U.S. Environmental Protection Agency (USEPA; 1989) guidance states that potential future land use should be considered in addition to current land use when evaluating the potential for human exposure at a site. Therefore, the CSM also considers other future land-uses. For example, because the Site will be an infrastructure easement in support of future development of the Eastside, the CSM includes construction workers (sewer installation) and future maintenance workers (repair and upkeep of the infrastructure). Potential migration pathways, exposure pathways, and routes of exposure are shown on Figure 4. It is important to note that the entire Site will be backfilled with clean pea gravel and overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained, and beneath future roadways under the prospective redevelopment plan. This, therefore, precludes potential exposures to future residential receptors to Site soils. The current development plan for the Site is shown on Figure 5.

Although several potential human receptors may occur on the Site in the future, the human health risk assessment focuses on the future potential maintenance worker and construction worker receptors. These receptors are considered to have the highest level of potential exposure at the Site, as supported by the projected land use (infrastructure easement and sewer installation). Other receptors generally have lower potential exposures, and thus lower risk estimates. Therefore, risk estimates generated for the worker receptors will be protective of other potential receptors at the Site.

3.0 DATA USABILITY EVALUATION

The primary objective of the data review and usability evaluation was to identify appropriate data for use in the human health risk assessment. The analytical data were reviewed for applicability and usability following procedures in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a) and USEPA (1989) and NDEP's *Data Usability Guidance for the BMI Complex and Common Areas* (NDEP 2008a). A quality assurance/quality control (QA/QC) review of the analytical results was conducted during the sampling events. According to the USEPA Data Usability Guidance, there are six principal evaluation criteria by which data are judged for usability in risk assessment. The six criteria are:

- reports to risk assessor (availability of information associated with site data)
- documentation;
- data sources;
- analytical methods and detection limits;
- data review; and
- data quality indicators, including precision, accuracy, representativeness, comparability, and completeness.

A summary of these six criteria for determining data usability is provided below. In addition to the six principal evaluation criteria, NDEP's Data Usability Guidance includes a step for data usability analysis. Data usability evaluation tables are provided electronically in Appendix C (on the enclosed report CD in Appendix B).

3.1 CRITERION I – REPORTS TO RISK ASSESSOR (AVAILABILITY OF INFORMATION ASSOCIATED WITH SITE DATA)

The usability analysis of the site characterization data requires the availability of sufficient data for review. The required information is available from documentation associated with the site data and data collection efforts. Data have been validated per the NDEP-approved *Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation, April and August 2008 (Dataset 50)* (DVSR; BRC and ERM 2008), the NDEP-approved *Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation Re-Analysis - August and*

October 2008 (Dataset 50a) (BRC and ERM 2009a), and *Data Validation Summary Report, Utility Corridor Sub-Area Soil Investigation - June and July 2009 (Dataset 50b)* (BRC and ERM 2009b). The following lists the information sources and the availability of such information for the data usability process:

- A Site description provided in this report and the NDEP-approved SAPs (BRC 2008, 2009) identifies the location and features of the Site, the characteristics of the vicinity, and contaminant transport mechanisms.
- A site map with sample locations is provided in Figure 2.
- Sampling design and procedures were provided in the NDEP-approved SAPs (BRC 2008, 2009).
- Analytical methods and sample quantitation limits (SQLs) are provided in the dataset file on the enclosed report CD in Appendix B.
- A complete dataset is provided in the dataset file on the enclosed report CD in Appendix B.
- A narrative of qualified data is provided with each analytical data package, the laboratory provided a narrative of QA/QC procedures and results. These narratives are included as part of the DVSRs (BRC and ERM 2008, 2009a,b).
- QC results are provided by the laboratory, including blanks, replicates, and spikes. The laboratory QC results are included as part of the DVSRs (BRC and ERM 2008, 2009a,b).
- Data flags used by the laboratory were defined adequately
- Electronic files containing the raw data made available by the laboratory are included as part of the DVSRs (BRC and ERM 2008, 2009a,b).

3.2 CRITERION II – DOCUMENTATION REVIEW

The objective of the documentation review is to confirm that the analytical results provided are associated with a specific sample location and collection procedure, using available documentation. For the purposes of this data usability analysis, the chain-of-custody forms prepared in the field were reviewed and compared to the analytical data results provided by the laboratory to ensure completeness of the dataset as discussed in the DVSRs (BRC and ERM 2008, 2009a,b). Based on the documentation review, all samples analyzed by the laboratory were correlated to the correct geographic location at the Site and are shown in Figure 2. The samples were collected in accordance with the SAPs (BRC 2008, 2009), the standard operating procedures (SOPs) developed for the BMI Common Areas as provided in the *Field Sampling and Standard Operating Procedures* (FSSOP; BRC, ERM and MWH 2008). Field procedures included documentation of sample times, dates and locations, other sample specific information such as sample depth were also recorded. Information from field forms generated during sample collection activities was imported into the project database.

Measurement of asbestos was conducted consistent with NDEP (2009b) guidance. The analytical data were reported in a format that provides adequate information for evaluation, including appropriate quality control measures and acceptance criteria. Each laboratory report describes the analytical method used, provides results on a sample by sample basis along with sample specific SQLs, and provides the results of appropriate quality control samples such as laboratory control spike samples, sample surrogates and internal standards, and matrix spike samples. All laboratory reports, except for asbestos, provided the documentation required by USEPA's Contract Laboratory Program (USEPA 2003a, 2004a,b) which includes chain of custody records, calibration data, QC results for blanks, duplicates, and spike samples from the field and laboratory, and all supporting raw data generated during sample analysis. Reported sample analysis results were imported into the project database.

The recommended method for providing asbestos data which are useful for risk assessment purposes was performed by EMSL Analytical Inc in Westmont, New Jersey. This laboratory is not currently certified in the State of Nevada, but has California and national accreditation for asbestos analysis.

To interpret measurements of asbestos in soils, it is necessary to establish the relationship between the asbestos concentrations observed in soils and concentrations that will occur in air when such soil is disturbed by natural or anthropogenic forces. This is because asbestos is a hazard when inhaled (see, for example, USEPA 2003b). In fact, the Modified Elutriator Method (Berman and Kolk 2000), which was the method employed to perform the analyses presented in this report, was designed specifically to facilitate prediction of airborne asbestos exposures based on bulk measurements (see, for example, Berman and Chatfield 1990).

The Modified Elutriator Method incorporates a collection of samples that are re-suspended and then forced through an airway and filter. Asbestos structures are isolated and concentrated as part of the respirable dust fraction of a sample and analytical measurements are reported as the number of asbestos structures per mass of respirable dust in the sample. These are precisely the dimensions required to combine such measurements with published dust emission and dispersion models to convert them to asbestos emission and dispersion estimates. Thus, because published dust emission and dispersion models can be used to address many of the exposure pathways of interest in this study, these can be combined with measurements from the Modified Elutriator Method to predict airborne exposures and assess the attendant risks.

3.3 CRITERION III – DATA SOURCES

The review of data sources is performed to determine whether the analytical techniques used in the site characterization process are appropriate for risk assessment purposes. The data collection activities were developed to characterize a broad spectrum of chemicals potentially present on the Site, including asbestos, aldehydes, general chemistry/ions, VOCs, SVOCs, metals, dioxins/furans, polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides, radionuclides, and PCBs. As discussed above in the Section 2.2, historical data collected from the Site are not evaluated further in this data review, or the human health risk assessment. Figure 2 demonstrates that samples were collected over the entire Site.

The State of Nevada is in the process of certifying the laboratories used to generate the analytical data. As such, standards of practice in these laboratories follow the quality program developed by the Nevada Revised Statutes (NRS) and are within the guidelines of the analytical methodologies established by the USEPA. Based on the review of the available information, the data sources for chemical and physical parameter measurements are adequate for use in a risk assessment.

3.4 CRITERION IV – ANALYTICAL METHODS AND DETECTION LIMITS

In addition to the appropriateness of the analytical techniques evaluated as part of Criterion III, it is necessary to evaluate whether the detection limits are low enough to allow adequate characterization of risks. At a minimum, this data usability criterion can be met through the determination that routine USEPA reference analytical methods were used in analyzing samples collected from the Site. The USEPA methods that were used in conducting the laboratory analysis of soil samples are identified in the dataset file on the enclosed report CD in Appendix B. Each of the identified USEPA methods is considered the most appropriate method for the respective constituent class and each was approved by NDEP as part of the SAPs (BRC 2008, 2009). As recommended by NDEP's guidance on *Detection Limits and Data Reporting* (NDEP 2008b) the laboratory reported SQL was used in evaluating detection limits.

Laboratory SQLs were based on those outlined in the reference method, the SAPs, and the *BRC Quality Assurance Project Plan* (QAPP; BRC, ERM and MWH 2009). In accordance with respective laboratory standard operating procedures (SOPs), the analytical processes included performing instrument calibration, laboratory method blanks, and other verification standards used to ensure quality control during the analyses of collected samples.

The range of SQLs achieved in field samples was compared to NDEP Basic Comparison Levels (BCLs; NDEP 2009a). No chemicals had SQLs that exceeded their respective BCLs. Several chemicals had SQLs above the leaching-based BCLs (LBCLs); however, given the discussion provided below in the Section 4, migration of chemicals at the Site to groundwater is considered unlikely. Therefore, the SQLs are considered adequate for risk assessment purposes.

As discussed in the *2008 Supplemental Shallow Soil Background Report* (BRC and ERM 2009a), there are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits.

3.5 CRITERION V – DATA REVIEW

The data review portion of the data usability process focuses primarily of the quality of the analytical data received from the laboratory. Soil sample data were subject to data validation. DVSRs were prepared as separate deliverables (BRC and ERM 2008, 2009a,b). The analytical data were validated according to the internal procedures using the principles of USEPA National Functional Guidelines (USEPA 1999, 2004c, 2005a) and were designed to ensure completeness and adequacy of the dataset. Additionally, DVSR 50b was issued utilizing NDEP's two *Supplemental Guidance on Data Validation* documents (NDEP 2009c,d). Any analytical errors and/or limitations in the data have been addressed and an explanation for data qualification provided in the respective data tables. The results of ERM's data review for these issues are presented in the DVSRs and are summarized below.

Although certain laboratory limits, such as percent recovery (PR) and relative percent difference (RPD) between sample and duplicate, were exceeded for certain compounds or analyses, as identified by the laboratory (and confirmed during ERM's review of the data), none of the exceedances resulted in rejection of a data point nor did they reflect a larger concern on a particular compound, sample, or method. Furthermore, based on a review of the laboratory narratives (provided in the laboratory reports in the DVSRs), ERM does not believe that the observed exceedances of laboratory criteria represent a concern.

For 1,734 out of 21,430 analytical results, quality criteria were not met and various data qualifiers were added to indicate limitations and/or bias in the data. The definitions for the data qualifiers, or data validation flags, used during validation are those defined in SOP-40 (BRC, ERM and MWH 2007) and the project QAPP (BRC, ERM and MWH 2009). Sample results were rejected based on findings of serious deficiencies in the ability to properly collect or analyze the sample and meet QC criteria. Only rejected data were considered unusable for decision-making purposes and rejected analytical results are not used in the human health risk assessment. Only four samples, three of which were hexavalent chromium in rinsate samples, and one cyanide soil sample (at sample location SAE-39), were rejected in the Site dataset.

Sample results qualified as estimated were affected by special circumstances and are likely to be quantitatively biased to some degree; estimated analytical results are used in the human health risk assessment. Data qualified as anomalous, as defined in the DVSRs, refers to data that were qualified (“U”) due to blank contamination, and are used in the human health risk assessment. These data usability decisions follow the guidelines provided in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a).

3.6 CRITERION VI – DATA QUALITY INDICATORS

Data quality indicators (DQIs) are used to verify that sampling and analytical systems used in support of project activities are in control and the quality of the data generated for this project is appropriate for making decisions affecting future activities. The DQIs address the field and analytical data quality aspects as they affect uncertainties in the data collected for site characterization and risk assessment. The DQIs include precision, accuracy, representativeness, comparability, and completeness (PARCC). The project QAPP provides the definitions and specific criteria for assessing DQIs using field and laboratory QC samples and is the basis for determining the overall quality of the dataset. Data validation activities included the evaluation of PARCC parameters, and all data not meeting the established PARCC criteria were qualified during the validation process using the guidelines presented in the National Functional Guidelines for Laboratory Data Review, Organics and Inorganics and Dioxin/Furans (USEPA 1999, 2004c, 2005a).

Precision is a measure of the degree of agreement between replicate measurements of the same source or sample. Precision is expressed by RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source. Precision is generally assessed using a subset of the measurements made. The precision of the data was evaluated using several laboratory QA/QC procedures. Based on ERM's review of the results of these procedures, there do not appear to be any data usability issues associated with precision for either the Utility Corridor Sub-Area data or the background data (BRC and TIMET 2007) that limit the usability of a particular analyte, sample, or method.

Accuracy measures the level of bias that an analytical method or measurement exhibits. To measure accuracy, a standard or reference material containing a known concentration is analyzed or measured and the result is compared to the known value. Several QC parameters are used to evaluate the accuracy of reported analytical results:

- Holding times and sample temperatures;
- Laboratory control sample (LCS) percent recovery;
- Matrix spike/matrix spike duplicate (MS/MSD) percent recovery (organics);
- Spike sample recovery (inorganics)
- Surrogate spike recovery; and
- Blank sample results.

Detailed discussions of and tables with specific exceedances, with respect to precision and accuracy, are provided in the NDEP-approved DVSRs (BRC and ERM 2008, 2009a,b) and data qualified as a result of this evaluation are presented with qualifiers in the data usability tables in Appendix C.

Representativeness is the degree to which data accurately and precisely represent a characteristic of the population at a sampling point or an environmental condition (USEPA 2002a). There is no standard method or formula for evaluating representativeness, which is a qualitative term. Representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific sampling task, and by collection of an adequate number of samples from the relevant types of locations. The sampling locations at the Site were based on both systematic sampling with random point placement within each grid cell, as well as focused samples collected from specific areas to further investigate potential areas. The samples were analyzed for a broad spectrum of chemical classes across the Site. Samples were delivered to the laboratory in coolers with ice to minimize the loss of analytes. At times the samples were analyzed beyond the holding time. Sample specific results are discussed in the DVSRs. A discussion of representativeness for the background dataset is provided in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC and TIMET 2007).

Completeness is commonly expressed as a percentage of measurements that are valid and usable relative to the total number of measurements made. Analytical completeness is a measure of the number of overall accepted analytical results, including estimated values, compared to the total number of analytical results requested on samples submitted for analysis after review of the analytical data. Some of the data were eliminated due to data usability concerns. The percent completeness for the Site is 99.98 percent. The percent completeness in the background dataset is 98.5 percent (BRC and TIMET 2007).

Comparability is a qualitative characteristic expressing the confidence with which one dataset can be compared with another. The desire for comparability is the basis for specifying the analytical methods; these methods are generally consistent with those used in previous investigations of the Site. The comparability goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. The ranges of detected sample results from the current investigation are generally comparable to recent results at the Eastside (for example, the Mohawk sub-area), as well as the site background datasets (see Section 5.1.1). There are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits. Note that for constituents with SQLs that meet project limit requirements, comparisons between site and background may be less important as these left-censored data are likely to indicate conditions that pose an "acceptable" risk and further evaluation is not necessary.

4.0 DATA SUMMARY

Initially, 67 samples were collected from 46 sample locations. Sample locations for this current investigation are shown on Figure 2. Results of the investigation are presented in Appendix B, and electronically on CD. As noted above, all data have been validated.

Following the first round of sampling, because of elevated levels of the following constituents at the surface soil locations listed below, surface soil was scraped and removed from around these locations.

Sample Location	Asbestos	SVOCs	Dioxins/Furans	Metals	Radionuclides
SAE-01	Chrysotile (9 fibers)				*e.g.*, Th-228 (6.4 pCi/g)
SAE-05	Chrysotile (9 fibers)				
SAE-06	Chrysotile (8 fibers)				
SAE-07		Hexachlorobenz-ene (2 mg/kg)	TCDD TEQ (3,704 ppt)	Arsenic (34.5 mg/kg)	
SAE-09	Chrysotile (4 fibers)			Arsenic (28.7 mg/kg)	
SAE-11	Chrysotile (7 fibers)				
SAE-12	Chrysotile (7 fibers)				
SAE-13	Chrysotile (4 fibers)				
SAE-14		Hexachlorobenz-ene (1.4 mg/kg)		Arsenic (60.2 mg/kg)	*e.g.*, U-238 (4.67 pCi/g)
SAE-15				Arsenic (10.2 mg/kg)	
SAE-16	Chrysotile (5 fibers)		TCDD TEQ (1,760 ppt)	Arsenic (12.6 mg/kg)	
SAE-17	Chrysotile (5 fibers)			Arsenic (33.5 mg/kg)	
SAE-18	Chrysotile (8 fibers); Amphibole (1 fiber)				
SAE-19	Amphibole (1 fiber)				
SAE-20	Chrysotile (14 fibers)				
SAE-21	Chrysotile (13 fibers); Amphibole (1 fiber)				
SAE-23	Chrysotile (8 fibers); Amphibole (1 fiber)				
SAE-24	Chrysotile (4 fibers); Amphibole (1 fiber)				
SAE-42				Arsenic (48.1 mg/kg)	

The surface soil removal areas are shown on Figure 2. Post-scrape samples were collected and analyzed for target constituents that triggered the soil removal at each sample location. The original surface sample data from these locations were replaced with data from the confirmatory samples. A second round of surface soil removal was conducted at sample locations SAE-14R (arsenic [25.4 mg/kg]), SAE-15R (arsenic [32.5 mg/kg]), SAE-16R (arsenic [29.7 mg/kg] and dioxins/furans [1,374 ppt]), SAE-17R (arsenic [23.5 mg/kg]), and SAE-42R (arsenic [11.4 mg/kg]). The original post-scrape surface sample data from these locations were replaced with data from the confirmatory samples. All post-scrape data have been validated.

In June 2009, additional soil samples were collected in accordance with the NDEP-approved *Sewer Alignment Excavation Supplemental Soil Sampling and Analysis Plan* (BRC 2009). These samples were collected to address the following two NFAD conditions: Condition #2 (soils beneath 10 feet bgs have not been evaluated to date); and Condition #5 (the NFAD excluded the area of the Site previously inaccessible due to a land bridge). Although the NFAD was for soil to a depth of 10 feet bgs, there are some portions of the sewer alignment excavation that will be deeper. Therefore, additional samples were collected from a depth of 20 feet bgs in areas of deep excavation In addition; samples were collected from the area previously covered by the land bridge, around sample location SAE-08. The samples collected at 20 feet bgs in June 2009 were SAE-08C, SAE-47D, and SAE-48D. The samples collected from the previously covered area were SAE-08C, SAE-08N, and SAE-08S. Because of elevated levels of dioxins/furans in sample SAE-08S, surface soil was removed from this area. Confirmation samples SAE-08S-C and SAE-08S-S were then collected. All supplemental sample data have been validated.

Although soil removal would affect the concentrations of all analytes, confirmatory sampling only analyzed for the constituent suites that triggered the soil removal. For example, for locations where soil removal was triggered by arsenic only, only metals were analyzed for in the post-scrape samples at that particular location. Therefore, in the absence of post-scrape data, the pre-scrape data are used for all other analytes in the remainder of this data summary and human health risk assessment.

Using the compound-specific information presented in Table 2 of the QAPP (BRC, ERM and MWH 2009), the comparison levels for each chemical included in the investigation were compiled and compared. Specific soil comparison levels used for this effort were as follows:

- NDEP BCLs (NDEP 2009a); and

- NDEP LBCLs protective of groundwater assuming dilution attenuation factors (DAFs) of 1 and 20 (NDEP 2009a).

A DAF of one is used when little or no dilution or attenuation of soil leachate concentrations is expected, and a DAF of 20 may be used when significant attenuation of the leachate is expected due to site specific conditions. For the Site, the LBCLs based on a DAF of 20 is considered appropriate for the following reasons: 1) the property is less than 30 acres, 2) the depth to groundwater ranges from approximately 17 feet bgs at the northern end of the Site to 60 feet bgs at the southern end of the Site (as indicated in the at-depth samples that were collected from the capillary fringe [see Appendix B for sample/capillary fringe depths]), and 3) the absence of fractured media or karst topography, consistent with USEPA (2002b) recommendations. A summary of the data for the property, including identification of number of instances that chemical concentrations exceed each of the comparison levels are listed in Table 1,[1] and summarized below.

Although there are numerous instances where arsenic and radionuclides exceed NDEP outdoor worker BCLs, there are only a few instances where arsenic (13 out of 63 samples) and radionuclides (radium-226 - 4 out of 63 samples; radium-228 - 5 out of 63 samples; thorium-228 - 14 out of 63 samples; and uranium-238 - 2 out of 63 samples) exceeded their respective 2005 shallow soil background levels (presented in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* [BRC and TIMET 2007]). These are evaluated further in the human health risk assessment section of this report (Section 5).

For dioxins/furans, the USEPA toxicity equivalency procedure, developed to describe the cumulative toxicity of these compounds, is applied. This procedure involves assigning individual toxicity equivalency factors (TEFs) to the 2,3,7,8 substituted dioxin/furan congeners and PCB-congeners. TEFs are estimates of the toxicity of dioxin-like compounds relative to the toxicity of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD), which is assigned a TEF of 1.0. Calculating the toxic equivalent (TEQ) of a mixture involves multiplying the concentration of individual congeners by their respective TEF. One-half the detection limit is used for calculating the TEQ for individual congeners that are non-detect in a particular sample. The sum of the TEQ concentrations for the individual congeners is the TEQ concentration for the mixture (referred to

[1] Pre-scrape data for the target constituents are not included in Table 1, that is, these have been replaced by post-scrape data; however, pre-scrape data for the non-target constituents are included in Table 1. Table 1 also only includes data to 10 feet bgs. Because of this, the total number of analyses does not always coincide with the total number of analyses reported in the tables in Appendix B, which include all data, regardless of depth or status.

as the TCDD TEQ). TCDD TEQs were compared to the NDEP BCL (NDEP 2009a) of 1.0 parts per billion (ppb or 1,000 parts per trillion [ppt]). The BCL is used to identify where potential health effects may be of concern at a site. There were no instances where TCDD TEQs exceeded this level.

As discussed above, depth to groundwater at the Site ranges from approximately 17 to 60 feet bgs. There are several instances where metals, radionuclides, alpha-BHC, beta-BHC, hexachlorobenzene, acetone, and dichloromethane exceed their respective NDEP LBCLs. For the organic compounds (alpha-BHC, beta-BHC, hexachlorobenzene, acetone, and dichloro-methane), most of these instances were in surface soil, with only two samples (one each of hexachlorobenzene and dichloromethane) collected at 10 feet bgs above the NDEP LBCL. In the case of hexachlorobenzene (SAE-7), the concentration at 10 feet bgs was less than that measured at the surface (0.11 mg/kg at 10 feet bgs versus 0.36 mg/kg at the surface); while for dichloromethane (SAE-22), the concentration at 10 feet bgs was greater than that measured at the surface (0.0031 at 10 feet bgs mg/kg versus non-detect at the surface). The DAF of 1 for dichloromethane is extremely low (0.001 mg/kg) and is often exceeded by non-detects as well. In addition, dichloromethane is a common laboratory contaminant.

For metals, in most instances Site concentrations were consistent with background concentrations. There are only four instances where concentrations at 10 feet bgs that exceed NDEP LBCLs are both greater than the concentration at the surface, and exceed the maximum background concentration (see Table 1 for the number of LBCL exceedances). These are arsenic (maximum background is 7.2 mg/kg) at SAE-38 (7.9 mg/kg at 10 feet bgs versus 3.7 mg/kg at the surface), barium (maximum background is 836 mg/kg) at SAE-15 (1,100 mg/kg at 10 feet bgs versus 757 mg/kg at the surface), manganese (maximum background is 1,090 mg/kg) at SAE-22 (1,470 mg/kg at 10 feet bgs versus 619 mg/kg at the surface), and nickel (maximum background is 30 mg/kg) at SAE-7 (32.9 mg/kg at 10 feet bgs versus 16.9 mg/kg at the surface). None of these are indicative of contaminants migrating with depth. See Section 5.1.1 for a quantitative comparison of metals and radionuclides data with background.

Given the discussion above, there is no indication that concentrations increase with depth, suggesting that currently the Site is not a likely source of impacts to groundwater. This is further supported by the low level of detected chemicals most associated with potential groundwater impacts (*e.g.*, VOCs, some organochlorine pesticides). In addition, as indicated previously, the Site will be entirely beneath a road surface, effectively serving as a ‘cap’ for the infiltration of water from the surface. Although various infrastructures will exist within the Site (for example, sewerline), which have the potential to leak and become a potential source of downward infiltration, this is considered of minimal likelihood, given current standards for sewer design and construction as well as the focus on leak prevention and associated water loss in Henderson (pers. comm., BRC and City of Henderson). Also, as noted previously, the entire Site will be backfilled with clean pea gravel and overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained, and beneath future roadways under the prospective redevelopment plan. Therefore, potential impacts to groundwater, and subsequent groundwater exposures were not further evaluated. It should be noted that development of the Site will not preclude future groundwater investigation or remediation activities that may need to be conducted by BRC.

The human health risk assessment (Section 5) uses data from the surface to 10 feet bgs. However, data were collected in June 2009 in order to characterize soil conditions to 20 feet bgs at three locations at the Site. Because there are insufficient data from 20 feet bgs to conduct a quantitative analysis, Table 2 provides a qualitative comparison between these data, and maximum concentrations of the data collected at 0 and 10 feet bgs, as well as comparisons to BCLs and LBCLs. As can be seen from Table 2, there are no instances where the concentrations increase with depth (that is, 20 ft bgs > 10 ft bgs > 0 ft bgs). Although there are instances where the 20 ft bgs data may exceed either the 0 ft bgs or 10 ft bgs data for a particular chemical, there are no instances where the 20 ft bgs data exceed both the 0 ft bgs and 10 ft bgs data. Also, only metals and radionuclides were detected at these 20 feet bgs samples. No organic chemicals were detected. The relative difference between the maximum detected concentrations range from 1 percent to 600 percent. Antimony had the highest percent difference (600 percent) in which the 20 feet bgs maximum detection of 1.3 mg/kg is higher than the 10-feet bgs sample of 0.21 mg/kg. However, the 20-feet bgs maximum concentration was lower than the surface maximum of 1.7 mg/kg. Although, as presented in Section 5.1.1, antimony is selected as a COPC in the human health risk assessment, it is not a risk driver. Arsenic, which is a risk driver in the human health risk assessment, has a maximum concentration of 8.9 mg/kg at 20 feet bgs, which is slightly higher than the detection at 10 feet bgs (7.9 mg/kg), but below the maximum detection at the surface of 20.9 mg/kg. Based on this information, it does not appear that the detections at 20 feet bgs would change the overall conclusions of the human health risk assessment. It should be noted that this only applies to the area represented by the three sample locations in which data at 20 feet bgs were collected in June 2009.

5.0 HUMAN HEALTH RISK ASSESSMENT

The comparison levels in Section 4.0 do not take into account cumulative effects, nor do they consider all potential exposure pathways (for example, the construction dust inhalation pathway). Therefore, the purpose of the human health risk assessment is to determine if chemical concentrations in Site soils are: (1) either representative of background conditions; or (2) do not pose an unacceptable risk to human health and the environment under current and anticipated future use conditions.

Human health risks are represented by estimated theoretical upper-bound cancer risks and non-cancer hazards derived in accordance with standard USEPA methods. The acceptable risk levels defined by USEPA for the protection of human health, and following those discussed previously with NDEP, are:

1. For non-carcinogenic compounds, the acceptable criterion is a cumulative hazard index (HI) of one or less. If the total HI is determined to be greater than 1.0, target organ-specific HIs will be calculated for primary and secondary organs. The final risk goal will be to achieve target organ-specific non-carcinogenic HIs of less than 1.0; and

2. For known or suspected chemical and radionuclide carcinogens, the acceptable ceiling for a cumulative incremental lifetime cancer risk (ILCR) ranges from 10^{-6} to 10^{-4}. The risk goal established by the NDEP is 10^{-6}.

3. Where background levels exceed risk level goals, metals and radionuclides in Site soils are targeted to have risks no greater than those associated with background conditions.

4. For lead, the target goal is 400 mg/kg, which is a soil concentration identified by USEPA (based on the Integrated Exposure Uptake Biokinetic Model [IEUBK]) as protective of a residential scenario. However, as this Site represents a non-residential scenario, the NDEP outdoor worker BCL of 800 mg/kg is used instead (NDEP 2009a).

5. For asbestos, calculations are based upon cancer criterion and a risk goal of 10^{-6}.

This human health risk assessment follows the basic procedures outlined in USEPA *Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual* (RAGS; USEPA 1989). Other guidance documents were also consulted for the human health risk assessment. This human health risk assessment also conforms to the methodology included in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007).

5.1 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Broad suite analyses were performed to capture all the chemicals on the SRC list. However, in order to ensure that a risk assessment focuses on those substances that contribute the greatest to the overall risk (USEPA 1989); two procedures were used to eliminate the chemicals for quantitative evaluation in the human health risk assessment:

- Identification of chemicals with detected levels that are similar to background concentrations (where applicable), and
- Identification of chemicals that are infrequently detected at the Site (see Section 5.1.2 for additional detail).

5.1.1 Evaluation of Concentrations Relative to Background Conditions

As indicated in both the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC and TIMET 2007) and the *2008 Supplemental Shallow Soil Background Report* (BRC and ERM 2009a) the Site is in an area of McCullough and Mixed (McCullough Range and River Mountains) lithologies Therefore, comparison of Site-related soil concentrations to background levels was conducted using the shallow soils background dataset presented in BRC and TIMET (2007). Because of the Site lithology, only background data from the McCullough and Mixed lithologies were used from the BRC and TIMET (2007) background dataset. The background dataset used is included in the dataset file on the enclosed report CD in Appendix B.

Background comparisons were performed using the Quantile test, Slippage test, the *t*-test, and the Wilcoxon Rank Sum test with Gehan modification. The computer statistical software program, Guided Interactive Statistical Decision Tools (GiSdT®; Neptune and Company 2009), was used to perform all statistical comparisons. A weight of evidence approach is utilized to interpret the results of these analyses. If the detection frequency in both Site and background datasets are greater than 40 percent then the following rationale is used for evaluation: where one result fails, the constituent is considered consistent with background; where two results fail, the remaining testing and statistical information (boxplots, summary statistics) are reviewed to support decision making whether the chemical should be considered consistent with background (as described by the rationale in the table below); and where three or more statistical tests fail, the constituent is considered inconsistent with background. If the detection frequency is less than

40 percent in either the background or Site datasets, then the constituent is evaluated based on boxplots and summary statistics.

For samples with primary and field duplicate results, the site sample and field duplicate are treated as independent samples and both are included in all subsequent data analyses, regardless of whether one or both are non-detect. This is considered appropriate because field duplicate samples represent a discrete and unique measurement of soil chemical conditions proximal to the primary sample (unlike split samples). Therefore, as distinct soil chemical measurements, they are treated as unique samples in the analyses. The results of the background comparison evaluation are presented in Table 3, and summarized below.

Chemical	Greater than Background?	Basis
Aluminum	NO	Multiple tests
Antimony	YES	Statistical tests indicate the datasets are similar, however, the four max site detects are greater than the max background detect.
Arsenic	YES	Multiple tests
Barium	YES	Multiple tests
Beryllium	NO	Multiple tests
Boron	NO	Multiple tests; low detection frequency; detection limits in background are lower than those at the site
Cadmium	YES	Multiple tests
Calcium	NO	Multiple tests
Chromium (Total)	YES	Multiple tests
Chromium (VI)	YES	Background are non-detect
Cobalt	NO	Multiple tests
Copper	NO	Multiple tests
Iron	NO	Multiple tests
Lead	YES	Multiple tests
Lithium	NO	Multiple tests; low detection frequency; site max detect and median are less than background
Magnesium	NO	Multiple tests
Manganese	YES	Multiple tests
Molybdenum	YES	Multiple tests
Mercury	NO	Multiple tests
Nickel	NO	Multiple tests
Niobium	YES	Multiple tests
Palladium	NO	Multiple tests; maximum detect less than maximum background
Phosphorus	NO	Multiple tests
Platinum	YES	Multiple tests
Potassium	NO	Multiple tests
Selenium	NO	Non-detect at the site
Silicon	NO	Multiple tests
Silver	YES	Low detection frequency; max >10 x max background
Sodium	YES	Max site detect, site median and mean are greater than background
Strontium	NO	Multiple tests
Thallium	NO	Mulitple tests; low detection frequency
Tin	YES	Multiple tests
Titanium	YES	Max site detect is twice the background max detect

Chemical	Greater than Background?	Basis
Tungsten	YES	Multiple tests
Uranium	NO	Multiple tests
Vanadium	YES	Multiple tests
Zinc	YES	Multiple tests
Zirconium	NO	Multiple tests
Radium-226	YES	Multiple tests
Radium-228	YES	Secular equilibrium exhibited; See Note A
Thorium-228	YES	Multiple tests
Thorium-230	YES	Secular equilibrium exhibited; See Note A
Thorium-232	YES	Secular equilibrium exhibited; See Note A
Uranium-233/234	YES	Multiple tests
Uranium-235/236	YES	Secular equilibrium exhibited; See Note A
Uranium-238	YES	Secular equilibrium exhibited; See Note A

[A]While the individual constituent passes multiple background tests, secular equilibrium exhibited with the "parent" constituent; therefore, for the purposes of this analysis, all radionuclides are assumed to be greater than background.

Cumulative probability plots and side-by-side boxplots were also prepared and are included in Appendix D. These plots give a visual indication of the similarities between the Site and background datasets. The results of this comparison indicate that levels of antimony, arsenic, barium, cadmium, total chromium, hexavalent chromium, lead, manganese, molybdenum, niobium, platinum, silver, sodium, tin, titanium, tungsten, vanadium, and zinc exceed background levels. Due to the large number of sample data in both the Site and background datasets, even small differences between the two are identified as statistically significant. The metals and radionuclides identified above as greater than background are evaluated further in the human health risk assessment.

For radionuclides, secular equilibrium exists when the quantity of a radioactive isotope remains constant because its production rate (due to the decay of a parent isotope) is equal to its decay rate. In theory, if secular equilibrium exists, the parent isotope activity should be equivalent to the activity of all daughter radionuclides. Pure secular equilibrium is not expected in environmental samples because of the effect of natural chemical and physical processes. However, approximate secular equilibrium is expected under background conditions (NDEP 2009e). Both the thorium-232 and uranium-238 chains were determined to be in approximate secular equilibrium following equivalence testing outlined in NDEP's *Guidance for Evaluating Secular Equilibrium at the BMI Complex and Common Areas February* (NDEP 2009f). The results of the equivalence testing for secular equilibrium are as follows:

Chain	Equivalence Test Delta	Equivalence Test p-value	Secular Equilibrium?	Mean Proportion Ra-226	Mean Proportion Th-230	Mean Proportion U-233/234	Mean Proportion U-238
U-238	0.1	0	Yes	0.2518	0.2566	0.2681	0.2236
				Ra-228	**Th-228**	**Th-232**	
Th-232	0.1	0.0054	Yes	0.3511	0.3654	0.2835	

Therefore, all radionuclides are considered to be greater than background and are evaluated further in the human health risk assessment.

5.1.2 Additional COPC Selection Procedures

The procedure for evaluating chemicals relative to background conditions was presented above. Further COPC selection was performed on the remaining chemicals by:

- Considering chemicals positively identified in at least one sample for inclusion as potential COPCs, including: (1) chemicals with no qualifiers attached (excluding non-detect results with unusually high detection limits, if warranted), and (2) chemicals with qualifiers attached that indicate known identities but estimated concentrations (*e.g.*, J-qualified data); and

- Further evaluation of chemicals included those detected at levels significantly elevated above levels of the same chemicals detected in associated blank samples (this protocol includes an analyte if it is known to be site-related and its concentration is greater than five times the maximum amount detected in any blank; if the chemical is a common laboratory contaminant [as defined by USEPA 1989], it is included only if its concentration is greater than 10 times the maximum amount detected in any blank).

Another criterion that may warrant chemical reduction is the frequency of detection. In general, chemicals exhibiting a low frequency of detection will not contribute significantly to the risk estimates. USEPA (1989) suggests that chemicals with a frequency of detection less than or equal to five percent, with the exception of metals, known human carcinogens, and persistent, bioaccumulative, and toxic (PBT) chemicals as defined by the USEPA PBT program (USEPA 2008), may be considered for elimination. Prior to eliminating a chemical based on the frequency of detection criteria, (1) any elevated detection limits are addressed, and (2) data distributions within the Site are considered. Results of the selection of COPCs, including the rationale for excluding chemicals as COPCs are presented in Table 4.

5.2 DETERMINATION OF EXPOSURE POINT CONCENTRATIONS

A representative exposure concentration is a COPC-specific and media-specific concentration value. In risk assessment, these exposure concentrations are values incorporated into the exposure assessment equations from which potential baseline human exposures are calculated. As described below, the methods, rationale, and assumptions employed in deriving these concentration values follow USEPA guidance and reflect site-specific conditions.

5.2.1 Soil

Due to the uncertainty associated with determining the true average concentration at a site, where direct measurements of the site average are unavailable, the USEPA recommends using the lower of the maximum detected concentration or the 95 percent upper confidence limit (UCL) as the concentration of a chemical to which an individual could be exposed over time (USEPA 1992b). For the 95 percent UCL concentration approach, the 95 percent UCL was computed in order to represent the area-wide exposure point concentrations. The 95 percent UCL is a statistic that quantifies the uncertainty associated with the sample mean. If randomly drawn subsets of site data are collected and the UCL is computed for each subset, the UCL will equal or exceed the true mean roughly 95 percent of the time. The purpose for using the 95 percent UCL is to derive a conservative, upper-bound estimate of the mean concentration, which takes into account the different concentrations a person may be exposed to at the Site. That is, an individual will be exposed to a range of concentrations that exist at an exposure area, from non-detect to the maximum concentration, over an entire exposure period.

The 95 percent UCL statistical calculations were performed using the computer statistical software program GiSdT® (Neptune and Company 2009). See Section 5.1.1 for how sample locations with field duplicates were treated prior to the 95 percent UCL statistical calculations. For these calculations, chemical non-detect results are assigned a value of one-half the SQL. For radionuclide censored data, the actual reported value is used. The formulas for calculating the 95 percent UCL COPC concentration (as the representative exposure concentration) are presented in USEPA (1992c, 2002c) and GiSdT® (Neptune and Company 2009).

The representativeness of the 95 percent UCLs for each exposure area, that is, a Site-wide mean concentration is valid for both maintenance and construction workers at the Site, is further supported by the intensity plot figures included in Appendix E. Figures for each of the COPCs are included in Appendix E.

Representative exposure concentrations for soil were based on the potential exposure depth for each of the receptors. For both maintenance and construction worker receptors, which are likely to be exposed to on-site surface and sub-surface soils, data from the surface to 10 feet bgs were used. In order to consider the potential that surface exposures might be higher than subsurface exposures, 95 percent UCLs were calculated for both surface soil data only and data from surface to 10 feet bgs. The higher of the two values was used in the risk estimates. The 95 percent UCL for each COPC is presented in Table 5. For indirect exposures, this concentration was used in fate and transport modeling.

The exposure point concentrations for asbestos (USEPA 2003b, NDEP 2009b) were based on the pooled analytical sensitivity of the dataset. The asbestos data and analytical sensitivities are presented in Table 6. Therefore, asbestos exposure point concentrations are determined differently than those for the other COPCs. The pooled analytical sensitivity was calculated as follows:

$$\textit{Pooled Analytical Sensitivity} = 1/\left[\sum_i \textit{(1/analytical sensitivity for trial i)}\right]$$

Two estimates of the asbestos concentration were evaluated, best estimate and upper bound as defined in the draft methodology (USEPA 2003b). The best estimate concentration is similar to a central tendency estimate, while the upper bound concentration is comparable to a reasonable maximum exposure estimate. The pooled analytical sensitivity is multiplied by the number of chrysotile or amphibole structures to estimate concentration:

$$\text{Estimated Bulk Concentration } (10^6 \text{ s/gPM10}) = \text{Long fiber count} \times \text{Pooled analytical sensitivity}$$

For the best estimate, the number of fibers measured across all samples is incorporated into the calculation above. The upper bound of the asbestos concentration was also evaluated. It is calculated as the 95 percent UCL of the Poisson distribution where the mean equals the number of structures detected. In EXCEL, the following equation may be employed to calculate this value:

95% UCL of Poisson Distribution (10^6 s/gPM10) = CHIINV(1-upper confidence percentile, 2 × (Long fiber count + 1))/2

This value is then multiplied by the pooled analytical sensitivity to estimate the upper bound concentration. The intent of the risk assessment methodology was to predict the risk associated with airborne asbestos.

In order to quantify the airborne asbestos concentration, the estimated dust levels or particulate emission factors were used:

$$\text{Estimated Airborne Concentration (s/cm}^3\text{)} = \text{Estimated bulk concentration (}10^6\text{ s/gPM10)} \times \text{Estimated dust level (ug/cm}^3\text{)}$$

See NDEP (2009b) for further explanation on asbestos risk calculations and estimates.

5.2.2 Outdoor Air

Exposure to COPCs bound to dust particles was evaluated using the USEPA's Particulate Emission Factor (PEF) approach (2002b):

$$PEF = Q/C_{wind} \text{ x } \frac{3{,}600 \text{ sec/hr}}{0.036 \text{ x } (1 - V) \text{ x } (U_m / U_t)^3 \text{ x } F(x)}$$

where:

PEF	=	Particulate emission factor (m^3/kg)
Q/C_{wind}	=	Inverse of the ratio of the geometric mean air concentration to the emission flux at the center of a square source (g/m^2 -s per kg/m^2)
V	=	Fraction of vegetative cover (--)
U_m	=	Mean annual windspeed (m/s)
U_t	=	Equivalent threshold value of windspeed at 7m (m/s)
F(x)	=	Function dependent on Um/Ut derived using Cowherd *et al*. (1985) (--)

and

$$Q/C_{wind} = A \times \exp((\ln A_{site} - B)^2/C)$$

where

A_{site}	=	Source Area (acre)
A, B, C	=	Air Dispersion Constants for LV (--)

This equation is presented electronically in the risk calculation workbooks as part of Appendix F (on the enclosed report CD in Appendix B).

The USEPA guidance for dust generated by construction activities (USEPA 2002b) was used for assessing construction worker exposures:

$$PEF = \{1/[(1/PEFsc)+(1/PEFsc\_road)]\}$$

where:

PEF_{sc} = Subchronic particulate emission factor for construction activities (m^3/kg)
PEF_{sc_road} = Subchronic particulate emission factor for unpaved road traffic (m^3/kg)

The construction dust model and all relevant equations and parameters utilized to generate the construction worker PEF from this guidance are provided in Table 7.

For exposures to VOCs in outdoor air, the USEPA volatilization factor approach was used (USEPA 2002b). These factors are presented electronically in the risk calculation workbooks as part of Appendix F (on the enclosed report CD in Appendix B). Input soil concentrations for these models were the exposure point concentrations identified above.

5.3 RISK ASSESSMENT METHODOLOGY

The method used in the human health risk assessment for chemicals, radionuclides, and asbestos consists of several steps. The first step is the calculation of exposure point concentrations representative of the particular area for each COPC (see above). The second step is fate and transport modeling to predict concentrations that may be present when direct measurements are not available. The third step is the exposure assessment for the various receptors present in the particular areas. The next step is to define the toxicity values for each COPC. The final step is risk characterization where theoretical upper-bound ILCRs and non-cancer HIs are calculated for each COPC. The *BRC Closure Plan* (BRC, ERM, and DBSA 2007) provides a full discussion of the risk assessment methodology utilized for both the project as a whole and in the present human health risk assessment for chemicals, asbestos, and radionuclides.

Table 8 presents each of the exposure parameters for the construction workers and maintenance workers used in the human health risk assessment for each pathway identified in Figure 4. Toxicity values, when available, are published by the USEPA in the on-line Integrated Risk Information System (IRIS; USEPA 2009a) Health Effects Assessment Summary Tables (HEAST; USEPA 1997), the Preliminary Remediation Goals for Radionuclides (USEPA 2009b), and from NDEP (2009a). Cancer slope factors (CSFs) are chemical-specific, experimentally-derived potency values used to calculate the risk of cancer resulting from exposure to carcinogenic chemicals. A higher value implies a more potent carcinogen. Reference doses (RfDs) are experimentally derived "no-effect" values used to quantify the extent of adverse non-cancer health effects from exposure to chemicals. Here, a lower RfD implies a more potent toxicant. These criteria are generally developed by USEPA risk assessment work groups and listed in USEPA risk assessment guidance documents and databases. The hierarchy for selecting toxicity criteria presented in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007) was used. The non-cancer, cancer, and radionuclide toxicity criteria for each of the COPCs are presented in Tables 9, 10, and 11, respectively.

6.0 UNCERTAINTY ANALYSIS

Risk estimates are values that have uncertainties associated with them. These uncertainties, which arise at every step of a risk assessment, are evaluated to provide an indication of the uncertainty associated with a risk estimate. Risk assessments are not intended to estimate the true risk to a receptor associated with exposure to chemicals in the environment. In fact, estimating the true risk is impossible because of the variability in the exposed or potentially exposed populations. Therefore, risk assessment is a means of estimating the probability that an adverse health effect (*e.g.*, cancer, impaired reproduction) will occur in a receptor in order to assist in decision making regarding the protection of human health. The use of conservative values for a majority of the assumptions in risk assessments helps guard against the underestimation of risks.

Risk estimates are calculated by combining site data, assumptions about individual receptor's exposures to impacted media, and toxicity data. The uncertainties in this human health risk assessment can be grouped into four main categories that correspond to these steps:

- Uncertainties in environmental sampling and analysis
- Uncertainties in fate and transport modeling
- Uncertainties in assumptions concerning exposure scenarios
- Uncertainties in toxicity data and dose-response extrapolations

General uncertainties associated with the human health risk assessment for the Site are summarized in Table 12. In Table 12, "Low," "Moderate," and "High" are qualitative indicators as to whether the source of uncertainty will likely have a small, medium, or large effect on the risk calculations, respectively. Additional discussion on the uncertainties associated with the human health risk assessment is provided below.

6.1 ENVIRONMENTAL SAMPLING

The human health risk assessment for the Site was based on the sampling results obtained from investigations conducted in 2008. Errors in sampling results can arise from the field sampling, laboratory analyses, and data analyses. Errors in laboratory analysis procedures are possible, although the impacts of these sorts of errors on the risk estimates are likely to be low. The environmental sampling at the Site is one source of uncertainty in the evaluation. However, the number of sampling locations and events is large, widespread and spatially distributed, with consistent analytical results (*i.e.*, no hot spots), and sampling was performed using approved procedures; therefore, the sampling and analysis data is sufficient to characterize the impacts and the associated potential risks.

Because of the surface soil removal for certain chemicals, the new surface layer of the Site could have different chemical concentrations than those that were measured prior to soil removal. Because only the trigger analytes were re-analyzed for in the post-scrape samples, the original measured surface soil data at the Site for all other chemicals was retained for further evaluation. However, it is reasonable to assume that the concentrations are now lower for some chemicals (*e.g.*, metals), because of the removal of some soil.

6.2 ESTIMATES OF EXPOSURE

The selection of exposure pathways is a process, often based on best professional judgment, which attempts to identify the most probable potentially harmful exposure scenarios. In a risk assessment it is possible that risks are not calculated for all of the exposure pathways that may occur, possibly causing some underestimation of risk.

6.2.1 Types of Exposures Examined

The selection of exposure pathways is a process, often based on professional judgment, which attempts to identify the most probable potentially harmful exposure scenarios. In an evaluation, risks are sometimes not calculated for all of the exposure pathways that may occur, possibly causing some underestimation of risk. However, in this case, all principal potential exposure pathways were evaluated. In this assessment, risks were estimated for outdoor worker receptors. Risks for the most likely routes of exposure to these receptors were estimated. Specifically, risks to construction workers were estimated for soil ingestion, skin contact with soil, and inhalation of outdoor air (including dust generation); while risks to maintenance workers were estimated for soil ingestion, skin contact with soil, and inhalation of outdoor air. Although it is possible that other exposure routes could exist, these exposures are expected to be lower than the risks associated with the pathways considered.

6.2.2 Intake Assumptions Used

The risks calculated depend largely on the assumptions used to calculate the rate of COPC intake. For this assessment, standard default values developed by USEPA are used for reasonable maximum exposures frequency and exposure duration for workers. These estimates are conservative values, and the possibility that they underestimate the risk is low. The uncertainties associated with particular parameters used in this risk assessment are described below.

The amount of COPCs the body absorbs may be different from the amount of a COPC contacted. In this human health risk assessment, with the exception of arsenic and dioxins/furans, absorption of ingested and inhaled COPCs is conservatively assumed to be 100 percent. For arsenic, consistent with the *BRC Closure Plan* (BRC, ERM, and DBSA 2007) and scientific literature recommendations on arsenic bioavailability (Roberts *et al*. 2001; Ruby *et al*. 1999; USEPA 2001), an arsenic oral bioavailability of 30 percent was used. The actual oral bioavailability of arsenic (as well as other metals at the Site, for which an oral bioavailability of 100 percent was used) is likely to be lower than this value. For dioxins/furans, an oral bioavailability of 30 percent was used. This is consistent with the value used in the development of the NDEP BCL (2009a) of 1 ppb (based on a study by Kimbrough *et al*. [1984]) and scientific literature recommendations (for example, in Ruby *et al*. (2002) the bioaccessibility of dioxins/furans in soil ranged from 19 to 34 percent [averaged across the 17 2,3,7,8-substituted dioxin/furan congeners], with an average of 25 percent). Published values range from 5-63 percent (Paustenbach *et al*., 2006). An oral bioavailability of 30 percent is considered applicable to the site and is supported by the Ruby *et al*. (2002) study, which specifically used a physiologically based extraction test designed around the anatomic and physiologic characteristics of the human digestive tract. The study also used soils with low total organic carbon content (which is similar to Site soils), and considered all 17 dioxins/furans congeners.

Current USEPA guidance (USEPA 2004d) states that "There are no default dermal absorption values presented for volatile organic compounds nor inorganic classes of compounds. The rationale for this is that in the considered soil exposure scenarios, volatile organic compounds would tend to be volatilized from the soil on skin and should be accounted for via inhalation routes in the combined exposure pathway analysis. For inorganics, the speciation of the compound is critical to the dermal absorption and there are too little data to extrapolate a reasonable default value." However, as requested by NDEP, the risk estimates were calculated using default dermal absorption values for other inorganics from California EPA (1994) and California South Coast Air Quality Management District (SCAQMD 1988) guidance. While USEPA guidance does not specifically state that this pathway should be dismissed, consistent with the approach utilized in current USEPA guidance, the risk estimates in this human health risk assessment do not include a dermal absorption value for VOCs.

6.3 TOXICITY ASSESSMENT

The availability and quality of toxicological data is another source of uncertainty in the risk assessment. Uncertainties associated with animal and human studies may have influenced the toxicity criteria. Carcinogenic criteria are classified according to the amount of evidence available that suggests human carcinogenicity. In the establishment of the non-carcinogenic criteria, conservative multipliers, known as uncertainty and modifying factors, are used.

6.3.1 COPCs Lacking Toxicological Data

Toxicity criteria have not been established for some of the chemicals detected at the Site. These chemicals were not quantitatively evaluated in the human health risk assessment. For example, niobium is a COPC for which no USEPA toxicity criteria have been established. The health effects and levels of concern for niobium in soil are not known. While not including niobium may have resulted in a low degree of underestimation of quantitative Site risk estimates, the available toxicological information suggests that this underestimation will not likely affect the decisions made relative to Site risks.

Because of the inconclusive nature of tentatively identified compounds (TICs) as potentially site-related chemicals, non-cancer surrogate toxicity criteria were not applied. Non-cancer surrogate toxicity criteria were not applied to the inorganic chemicals because of the complexity of ion and metal toxicity. A quantitative estimation of risk was not conducted for these COPCs. Thus, the risks presented in this assessment could be underestimated as a result.

The USEPA has not derived toxicity criteria to evaluate the potential non-cancer health hazards associated with exposure to the carcinogenic PAH COPCs. For the human health risk assessment, a toxicological surrogate (*i.e.*, pyrene) was used to quantify the potential non-carcinogenic effects of the carcinogenic PAHs. This surrogate was selected from a list of six PAHs for which non-cancer oral toxicity criteria have been assigned by the USEPA based on a careful consideration of their relevant toxicity data, target organ(s), dose-response information, and structure-activity relationships. From the available oral non-cancer toxicity data reported by the USEPA, the most sensitive target organs are the liver, kidney, and blood (hematological effects) (IRIS, USEPA 2009). For the carcinogenic PAHs, the non-cancer target organs were found to be the same and the reported toxicological thresholds for these effects are generally in the range for those reported for the non-cancer PAHs (ATSDR 1995). Although naphthalene (2-ring structure) has the most stringent oral non-cancer toxicity criterion (0.02 mg/kg day), pyrene (4-ring structure; oral RfD of 0.03 mg/kg-day) was selected to be the best surrogate due to (1) non-cancer toxicity endpoints are more consistent with those for carcinogenic PAHs and (2) the greater number of rings in the pyrene chemical structure.

6.3.2 Uncertainties in Animal and Human Studies

Extrapolation of toxicological data from animal tests is one of the largest sources of uncertainty in a risk assessment. There may be important, but unidentified, differences in uptake, metabolism, and distribution of chemicals in the body between the test species and humans. For the most part, these uncertainties are addressed through use of conservative assumptions in establishing values for RfDs and CSFs, which results in the likelihood that the risk is overstated.

Typically, animals are administered high doses (*e.g.*, maximum tolerated dose) of a chemical in a standard diet or in air. Humans may be exposed to much lower doses in a highly variable diet, which may affect the toxicity of the chemical. In these studies, animals, usually laboratory rodents, are exposed daily to the chemical agent for various periods of time up to their 2-year lifetimes. Humans have an average 70-year lifetime and may be exposed either intermittently or regularly for an exposure period ranging from months to a full lifetime. Because of these differences, it is not surprising that extrapolation error is a large source of uncertainty in a risk assessment.

6.3.3 Non-Carcinogenic Toxicity Criteria

In the establishment of the non-carcinogenic criteria, conservative multipliers, known as uncertainty factors, are used. Most of the chronic non-carcinogenic toxicity criteria that were located in the IRIS database have uncertainty factors of 1,000. This means that the dose corresponding to a toxicological effect level (*e.g.*, LOAEL) is divided by 1,000 to establish a safe, or “reference”, dose. The purpose of the uncertainty factor is to account for the extrapolation of toxicity data from animals to humans and to insure the protection of sensitive individuals. There are multiple toxicity criteria listed in IRIS and HEAST for vanadium and compounds. The oral RfD listed for vanadium in the NDEP BCL table, which cites IRIS as the source, was used in this human health risk assessment.

6.3.4 Sub-Chronic Non-Carcinogenic Toxicity Criteria

Construction worker exposures are evaluated for an exposure duration of one-year, which is more representative of a sub-chronic exposure rather than a chronic exposure. As such, where available, sub-chronic RfDs were used to characterize non-cancer effects for the construction worker. However, for many COPCs a sub-chronic RfD was not available and the chronic RfD was used. This likely presented an overestimation of non-cancer health risks to the construction worker.

No sub-chronic toxicity criteria are available for manganese in IRIS or HEAST. However, the chronic inhalation reference concentration (RfC) for manganese listed in IRIS includes an uncertainty factor of "…10 for database limitations reflecting both the less-than-chronic periods of exposure and the lack of developmental data, as well as potential but unquantified differences in the toxicity of different forms of Mn." Because construction worker exposures are considered sub-chronic, the chronic RfD for manganese was adjusted by a factor of 10 to account for sub-chronic exposures.

6.3.5 Carcinogenic Toxicity Criteria

Uncertainty due to extrapolation of toxicological data for potential carcinogens tested in animals to human data is more prominent for potentially carcinogenic chemicals than non-carcinogenic ones. USEPA uses the linearized multi-stage model to extrapolate the toxicological data. The linearized multi-stage model assumes that there is no threshold for carcinogenic substances; that is, exposure to even one molecule, fiber, or pCi of a carcinogen is sufficient to cause cancer. This is a highly conservative assumption because the body has several mechanisms to protect against cancer.

The use of the linearized multi-stage model to extrapolate is a well-recognized source of significant uncertainty in the development of carcinogenic toxicity criteria and, subsequently, theoretical carcinogenic risk estimates. At high levels of exposure, there may indeed be a risk of cancer regardless of whether the effect occurs via a threshold mechanism or not. An animal bioassay can't determine what happens at low levels of exposure, however, which are generally typical of human exposure levels.

At low levels of exposure, the probability of cancer cannot be measured but must be extrapolated from higher dosages. To do this, animals are typically exposed to carcinogens at levels that are orders of magnitude greater than those likely to be encountered by humans in the environment. It would be difficult, if not impossible, to perform animal experiments with a large enough number of animals to directly estimate the level of risk at the low exposure levels typically encountered by humans. Thus, to estimate the risk to humans exposed at low levels, dose-response data derived from animals given high dosages are extrapolated downward using mathematical models such as the linearized multi-stage model, which assumes that there is no threshold of response.

The dose-response curve generated by the model is known as the maximum likelihood estimate. The slope of the 95 percent lower confidence interval (*i.e.*, upper-bound limit) curve, which is a function of the variability in the input animal data, is taken as the CSF. CSFs are then used directly in cancer risk assessment.

The federal government, including USEPA itself, has acknowledged the limitations of the high-to-low dose extrapolation models, particularly the linearized multi-stage model (USEPA 1991b). In fact, this aspect of cancer risk assessment has been criticized by many scientists (including regulatory scientists) in recent years. USEPA has recently released revised cancer risk assessment guidelines (USEPA 2005b).

Even for genotoxic (*i.e.*, non-threshold) substances, there are two major sources of bias embedded in the linearized multi-stage model: (1) its inherent conservatism at low doses and (2) the routine use of the linearized form in which the 95 percent upper confidence interval is used instead of the unbiased maximum likelihood estimate. The inherent conservatism at low doses is due in part to the fact that the linearized multi-stage model ignores all of the numerous biological factors that argue against a linear dose- response relationship for genotoxic effects (*e.g.*, DNA repair, immunosurveillance, toxicokinetic factors).

Several other factors inherent in the linearized multi-stage model result in overestimated carcinogenic potency: (1) any exaggerations in the extrapolation that can be produced by some high dose responses (if they occur) are generally neglected, (2) upper confidence limits on the actual response observed in the animal study are used rather than the actual response, resulting in upper-bound low dose extrapolations, which can greatly overestimate risk, and (3) non-genotoxic chemicals (*i.e.*, threshold carcinogens) are modeled in the same manner as highly genotoxic chemicals.

Consistent with the *BRC Closure Plan* (BRC, ERM, and DBSA 2007), if one carcinogenic PAH is considered a COPC then all seven carcinogenic PAHs are considered COPCs, regardless of whether or not they are detected at the Site. Only chrysene was initially considered a COPC as it was detected in four out of 62 samples (6.5 percent). Five of the seven carcinogenic PAHs were detected at the Site; however, all were considered COPCs and evaluated in the human health risk assessment.

6.3.6 Uncertainties with the Asbestos Risk Assessment

For the risk assessment, asbestos concentrations were presented two ways, as a best estimate and upper bound based upon the UCL of the Poisson distribution which assumes the mean amphibole concentration is three long amphibole structures per cubic centimeter. No detections of amphibole fibers were made, but risks were calculated based on the detection limit of the amphibole data.

6.4 CUMULATIVE EFFECT OF UNCERTAINTIES

Uncertainties from different sources are compounded in the human health risk assessment. For example, if a person's daily intake rate for a chemical is compared to an RfD to determine potential health risks, the uncertainties in the concentration measurements, exposure assumptions, and toxicities will all be expressed in the result. Because the exposure assumptions and toxicity criteria are considered conservative, the risk estimates calculated in this human health risk assessment are likely to overestimate rather than underestimate potential risks.

7.0 DATA QUALITY ASSESSMENT

Sample size calculations were conducted for eight analytes (chrysotile asbestos, TCDD TEQ, hexachlorobenzene, beta-BHC, arsenic, hexavalent chromium, manganese, and vanadium) for the Site. The formula used here for calculation of sample size is based on a non-parametric test (the Wilcoxon signed rank test), and on simulation studies performed by Pacific Northwest National Laboratories (PNNL 2009) that formed the basis for an approximate formula that is based on the normal distribution. Essentially, the formula is the one that would be used if a normal-based test were being performed, but an adjustment is made (multiply by 1.16) to account for the intent to perform a non-parametric test. The formula is as follows:

$$n = 1.16\left[\frac{s^2}{\Delta^2}(z_{1-\alpha} + z_{1-\beta(\mu)})^2 + 0.5z_{1-\alpha}^2\right]$$

where,

n	=	number of samples
s	=	estimated standard deviation of concentrations/fibers
Δ	=	width of the gray region (the difference between the threshold value stated in the null hypothesis and the point at which β is specified)
α	=	significance level or Type I error tolerance
β (μ)	=	Type II error tolerance; and
z	=	quantile from the standard normal distribution

For each chemical, inputs for the calculations include an estimate of the variance from the measured data, a desired significance level, and desired power of the test that must be specified at a concentration of interest (which determines the tolerable difference from the threshold value). For arsenic, the site mean concentration exceeds its BCL based on the target cancer risk level of 10^{-6}. It is not appropriate to apply this calculation where the threshold value is less than the mean concentration. Therefore, an adjustment of the threshold value was used based on a 10^{-5} target cancer risk level. The calculations provided here cover a range of Type I and Type II error tolerances, and the point at which the Type II error is specified. Results are presented in Table 13. In Table 13, various combinations of input values are used, including: values of α of 5%, 10% and 15%; values of β of 15%, 20%, and 25%; and a gray region of width 10%, 20% and 30% of the threshold level. It is clear from Table 13 that the number of samples collected is adequate for the Site.

8.0 HUMAN HEALTH RISK ASSESSMENT RESULTS

This human health risk assessment has evaluated potential risks to human health associated with chemicals detected in soil at the Utility Corridor Sub-Area located within the BMI Common Areas in Clark County, Nevada. The calculation of chemical theoretical upper-bound ILCRs and non-cancer health effects are presented in Appendix F (on the enclosed report CD in Appendix B). Asbestos risk calculations are also presented in Appendix F. All calculation spreadsheets for this human health risk assessment are included in Appendix F.

The risk estimates are based on reasonable maximum exposure scenarios, which results in estimates of the potential reasonable maximum, or high-end, risks associated with the Site. The calculated chemical and radionuclide theoretical upper-bound ILCRs and HIs are presented in Tables 14 and 15 for construction and maintenance workers, respectively. Asbestos estimated deaths from lung cancer are presented in Table 16.

8.1 CONSTRUCTION WORKER

The total cumulative non-cancer HI for future construction workers at the Site is 0.26 (Table 14). This total cumulative non-cancer HI is below the target HI of 1.0. The total cumulative non-cancer HI for construction workers is predominantly due to hazards associated with inhalation of manganese in estimated dust generated during construction activities. It should be noted that the Clark County annual arithmetic mean ambient air quality standard for particular matter (PM_{10}) is 50 $\mu g/m^3$. If dust mitigation/suppression is conducted to achieve this level, the total cumulative non-cancer HI for construction workers decreases to 0.2.

The theoretical upper-bound chemical ILCR for future construction workers at the Site is 9×10^{-7} (Table 14). This ILCR is less than the risk goal of 1×10^{-6}. The theoretical upper-bound radionuclide ILCR for future construction workers at the Site is 9×10^{-6} (Table 14). This ILCR is greater than the risk goal of 1×10^{-6}. Although the construction worker radionuclide ILCR is above the risk goal of 1×10^{-6}, it is within USEPA's acceptable risk range of 10^{-6} to 10^{-4} (USEPA 1990) and consistent with the background radionuclide ILCR of 8×10^{-6} (Table 14).

The estimated risks for death from lung cancer and mesothelioma for asbestos exposures to future construction workers were below 1×10^{-6}. For construction workers, the best estimate and upper bound concentrations for chrysotile fibers are 9×10^{-9} and 1×10^{-8}; and zero and 6×10^{-8} for amphibole fibers (Table 16). It should be noted that the reasonable maximum risk estimates are based on an observed count of zero long amphibole structures. No amphibole structures have been detected at the Site. The upper bound estimated risk for death from lung cancer is associated with the UCL of the Poisson distribution which assumes the mean amphibole concentration is equal to three long amphibole structures per cubic centimeter. However, the high-end risk estimate for deaths from lung cancer and mesothelioma is a conservative value for the following reasons:

- It is based on a 95 percent UCL of the Poisson distribution of three long amphibole structures although no long amphibole structures have been detected at the Site; and
- The values from Tables 8-2 of USEPA (2003b) are recommended only for constant lifetime exposures, not short term exposures such as construction activities.

8.2 MAINTENANCE WORKER

The total cumulative non-cancer HI for future maintenance workers at the Site is 0.20 (Table 15). This total cumulative non-cancer HI is below the target HI of 1.0.

The theoretical upper-bound chemical ILCR for future maintenance workers at the Site is 4×10^{-6} (Table 15). Although the ILCR is above the risk goal of 1×10^{-6}, the risks are primarily driven by dioxins/furans. The 95 percent UCL concentration for dioxins/furans used in the human health risk assessment of 212 ppt resulted in a total dioxins/furans ILCR of 3×10^{-6} for future maintenance workers. This 95 percent UCL concentration is below the NDEP BCL (2009a) of 1,000 ppt. The NDEP BCL is equivalent to an ILCR of 1×10^{-5}. The theoretical upper-bound ILCR for future maintenance workers decreases to 1×10^{-6} without including dioxins/furans.

The theoretical upper-bound radionuclide ILCR for future maintenance workers at the Site is 2×10^{-4} (Table 15). Although the maintenance worker radionuclide ILCR is above the risk goal of 1×10^{-6} and USEPA's acceptable risk range, it is equal to the background radionuclide ILCR of 2×10^{-4} (Table 15).

The estimated risks for death from lung cancer and mesothelioma for asbestos exposures to future maintenance workers were below 1×10^{-6}. For maintenance workers, the best estimate and upper bound concentrations for chrysotile fibers are both 1×10^{-9}; and zero and 8×10^{-9} for amphibole fibers (Table 16). See the discussion above regarding the conservative nature of the amphibole fiber risk estimate.

8.3 SUMMARY

Based on the results of the 2008 and 2009 investigations, as well as this data review and human health risk assessment, exposures to residual levels of chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors. In summary, BRC affirms that the NFAD issued by NDEP on September 4, 2009 for the Site is warranted.

9.0 REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. U.S. Department of Health and Human Services, Public Health Service. August.

Basic Remediation Company (BRC). 2008. Sewer Alignment Excavation Soil Sampling and Analysis Plan, BMI Common Areas (Eastside), Clark County, Nevada.

Basic Remediation Company (BRC). 2009. Sewer Alignment Excavation Supplemental Soil Sampling and Analysis Plan. BMI Common Areas (Eastside), Clark County, Nevada. June.

Basic Remediation Company (BRC) and ERM. 2008. Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation, April and August 2008 (Dataset 50), BMI Common Areas, Clark County, Nevada. October.

Basic Remediation Company (BRC) and ERM. 2009a. Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation Re-Analysis - August and October 2008 (Dataset 50a), BMI Common Areas, Clark County, Nevada.

Basic Remediation Company (BRC) and ERM. 2009b. Data Validation Summary Report, Utility Corridor Sub-Area Soil Investigation - June and July 2009 (Dataset 50b), BMI Common Areas, Clark County, Nevada.

Basic Remediation Company (BRC), ERM, and Daniel B. Stephens & Associates, Inc. (DBS&A). 2007. BRC Closure Plan, BMI Common Areas, Clark County, Nevada. May.

Basic Remediation Company (BRC), ERM, and MWH. 2008. BRC Quality Assurance Project Plan. BMI Common Areas, Clark County, Nevada. February.

Basic Remediation Company (BRC), ERM, and MWH. 2007. BRC Field Sampling and Standard operating Procedures. BMI Common Areas, Clark County, Nevada. August.

Basic Remediation Company (BRC) and TIMET. 2007. Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity. Prepared by Tetra Tech and MWH.

Berman, D.W. and Chatfield, E.J. 1990. Interim Superfund Method for the Determination of Asbestos in Ambient Air. Part 2: Technical Background Document, Office of Solid Waste and Remedial Response, U.S. EPA, Washington, D.C., EPA/540/2-90/005b, May.

Berman, D.W. and Kolk, A. 2000. Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Material. May (Revision 1).

CalEPA/DTSC, 1994. Preliminary Endangerment Assessment Guidance Manual. Department of Toxic Substances Control, January (second printing: June, 1999). http://www.dtsc.ca.gov/SiteCleanup/Brownfields/ (under Cleanup Guidance).

Environmental Resources Management (ERM). 1996. Draft Environmental Conditions Investigation Report, BMI Common Areas, Henderson, Nevada. August.

Kimbrough, R.D., H. Falk, P. Stehr, and G. Fries. 1984. Health implications of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) contamination of residential soil. J. Toxicol. Environ. Health 14: 47-93.

Nevada Bureau of Mines and Geology (NBMG). 1980. Las Vegas SE Folio Geologic Map (1977) and the Geologic Map of the Henderson Quadrangle, Nevada.

Nevada Division of Environmental Protection (NDEP). 2008a. Supplemental Guidance for Assessing Data Usability for Environmental Investigations at the BMI Complex and Common Areas in Henderson, Nevada. Bureau of Corrective Actions, Special Projects Branch. October 22.

Nevada Division of Environmental Protection (NDEP). 2008b. Detection Limits and Data Reporting. Bureau of Corrective Actions, Special Projects Branch. December 3.

Nevada Division of Environmental Protection (NDEP). 2009a. User's Guide and Background Technical Document for Nevada Division of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. June.

Nevada Division of Environmental Protection (NDEP). 2009b. Technical Guidance for the Calculation of Asbestos-Related Risk in Soils for the Basic Management Incorporated (BMI) Complex and Common Areas. April.

Nevada Division of Environmental Protection (NDEP). 2009c. Supplemental Guidance on Data Validation. March 19.

Nevada Division of Environmental Protection (NDEP). 2009d. Supplemental Guidance on Data Validation. April 13.

Nevada Division of Environmental Protection (NDEP). 2009e. Guidance for Evaluating Radionuclide Data for the BMI Plant Sites and Common Areas Projects. February 6.

Nevada Division of Environmental Protection (NDEP). 2009f. Guidance for Evaluating Secular Equilibrium at the BMI Complex and Common Areas. BMI Plant Sites and Common Areas Projects, Henderson, Nevada. February 6.

Neptune and Company. 2009. Guided Interactive Statistical Decision Tools (GiSdT). www.gisdt.org.

Pacific Northwest National Laboratory (PNNL). 2009. Visual Sample Plan. http://vsp.pnl.gov.

Paustenbach, D. J. Fehling, K., Scott, P., Harris, M., and Kerger, B.D., 2006. Identifying Soil Cleanup Criteria for Dioxins in Urban Residential Soils: How Have 20 Years of Research and Risk Assessment Experience Affected the Analysis? J. Toxicol. and Environ. Health, Part B: Critical Reviews. 9:1-59. January.

Roberts *et al*. 2001. Measurement of Arsenic Bioavailability in Soil Using a Primate Model. Toxicological Sciences, 67, 2: 303-310.

Ruby, M.V., R. Schoof, W. Brattin, M. Goldale, G. Post, M. Harnios, D. E. Mosby, S. W. Casteel, W. Berti, M. Carpenter, D. Edwards, D. Cragin, and W. Chappell. 1999. Advances in evaluating the oral bioavailability of inorganics in soil for use in human health risk assessment. Environ. Sci. Technol. 33(21):3697-3705.

Ruby, M.V., K.A. Fehling, D.J. Paustenbach, B.D. Landenberger, and M.P. Holsapple. 2002. Oral bioaccessibility of dioxins/furans at low concentrations (50-350 ppt toxicity equivalent) in soil. Environ. Sci. Technol. 36:4905-4911.

South Coast Air Quality Management District (SCAQMD), 1988. Multi-Pathway Health Risk Assessment Input Parameters Guidance document. Prepared by Clement Associates, Inc. for SCAQMD. Cited in CalEPA/DTSC, 1994.

U.S. Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual (Part A). Interim Final. Office of Emergency and Remedial Response, Washington, D.C. USEPA/540/1-89/002. December.

U.S. Environmental Protection Agency (USEPA). 1990. National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CFR Part 300.

U.S. Environmental Protection Agency (USEPA). 1992a. Guidance for Data Usability in Risk Assessment. Part A. Office of Emergency and Remedial Response, Washington D.C. Publication 9285.7-09A. PB92-963356. April.

U.S. Environmental Protection Agency (USEPA). 1992b. Supplemental Guidance to RAGS: Calculating the Concentration Term. Office of Emergency and Remedial Response, Washington, D.C. Publication 9285.7-08I. May.

U.S. Environmental Protection Agency (USEPA). 1992c. Guidelines for Exposure Assessment. Federal Register, 57(104):22888-22938. May 29.

U.S. Environmental Protection Agency (USEPA). 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. Office of Research and Development, Washington, DC. EPA/600/R-93/089. July.

U.S. Environmental Protection Agency (USEPA). 1997. Annual Health Effects Assessment Summary Tables (HEAST) FY 1997. Office of Solid Waste and Emergency Response, Washington DC. EPA 540/R-94/036.

U.S. Environmental Protection Agency (USEPA). 1999. National Functional Guidelines for Organic Data Review. EPA 540/R-99-008. OSWER 9240.1-05A-P. October.

U.S. Environmental Protection Agency (USEPA). 2001. Inorganic Arsenic – Report of the Hazard Identification Assessment Review Committee. Memorandum, From: J. Chen, S. Malish, T. McMathon, Risk Assessment and Science Support Branch; to: N. Cook, Chief, Risk Assessment and Science Support Branch. August 21.

U.S. Environmental Protection Agency (USEPA). 2002a. National Functional Guidelines for Chlorinated Dioxin/Furan Data Review. EPA 540-R-02-003. OSWER 9240.1-37. August.

U.S. Environmental Protection Agency (USEPA). 2002b. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response, Washington, DC. OSWER 9355.4-24. December.

U.S. Environmental Protection Agency (USEPA). 2002c. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. Office of Emergency and Remedial Response, Washington, DC. OSWER9285.6-10. December.

U.S. Environmental Protection Agency (USEPA). 2003a. Contract Laboratory Program Statement of Work for Organic Analysis: Multi-media, Multi-concentration. OLM04.3. Office of Emergency and Remedial Response. March.

U.S. Environmental Protection Agency (USEPA). 2003b. Technical Support Document for a Protocol to Assess Asbestos-Related Risk. Final Draft. Office of Solid Waste and Emergency Response, Washington, DC.

U.S. Environmental Protection Agency (USEPA). 2004a. Contract Laboratory Program Statement of Work for Organic Analysis: Multi-media, Multi-concentration. SOM01.0. Office of Emergency and Remedial Response. October.

U.S. Environmental Protection Agency (USEPA). 2004b. Contract Laboratory Program Statement of Work for Inorganic Analysis: Multi-media, Multi-concentration. ILM05.3. Office of Emergency and Remedial Response. March.

U.S. Environmental Protection Agency (USEPA). 2004c. National Functional Guidelines for Inorganic Data Review. EPA 540-R-04-004. OSWER 9240.1-45. October.

U.S. Environmental Protection Agency (USEPA). 2004d. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Office of Emergency and Remedial Response, Washington, DC. EPA/540/R/99/005. July.

U.S. Environmental Protection Agency (USEPA). 2005a. National Functional Guidelines for Chlorinated Dioxin/Furan Data Review. EPA 540-R-05-001. OSWER 9240.1-51. September.

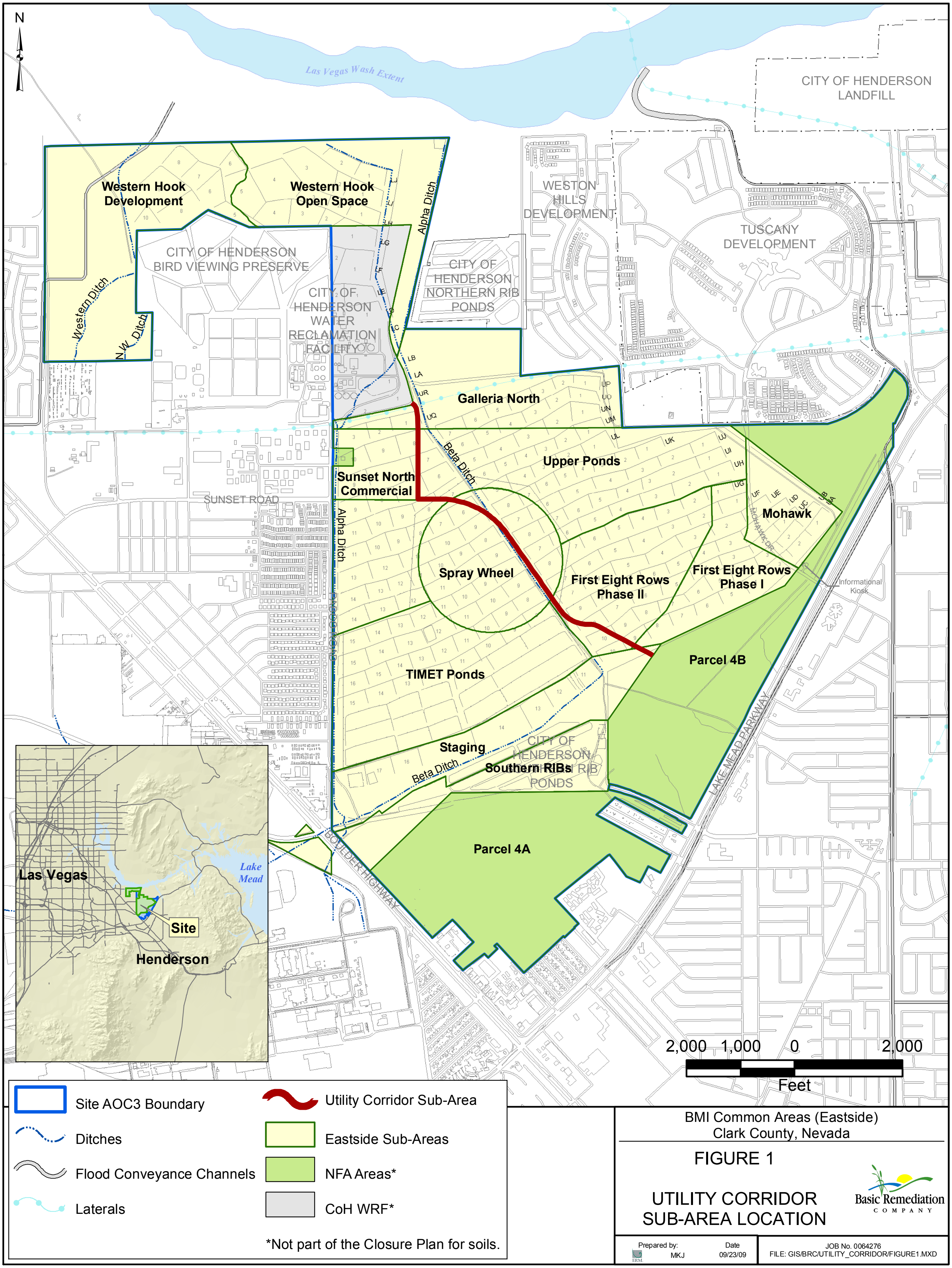
U.S. Environmental Protection Agency (USEPA). 2005b. Guidelines for Carcinogen Risk Assessment. Risk Assessment Forum, Washington, DC. March.

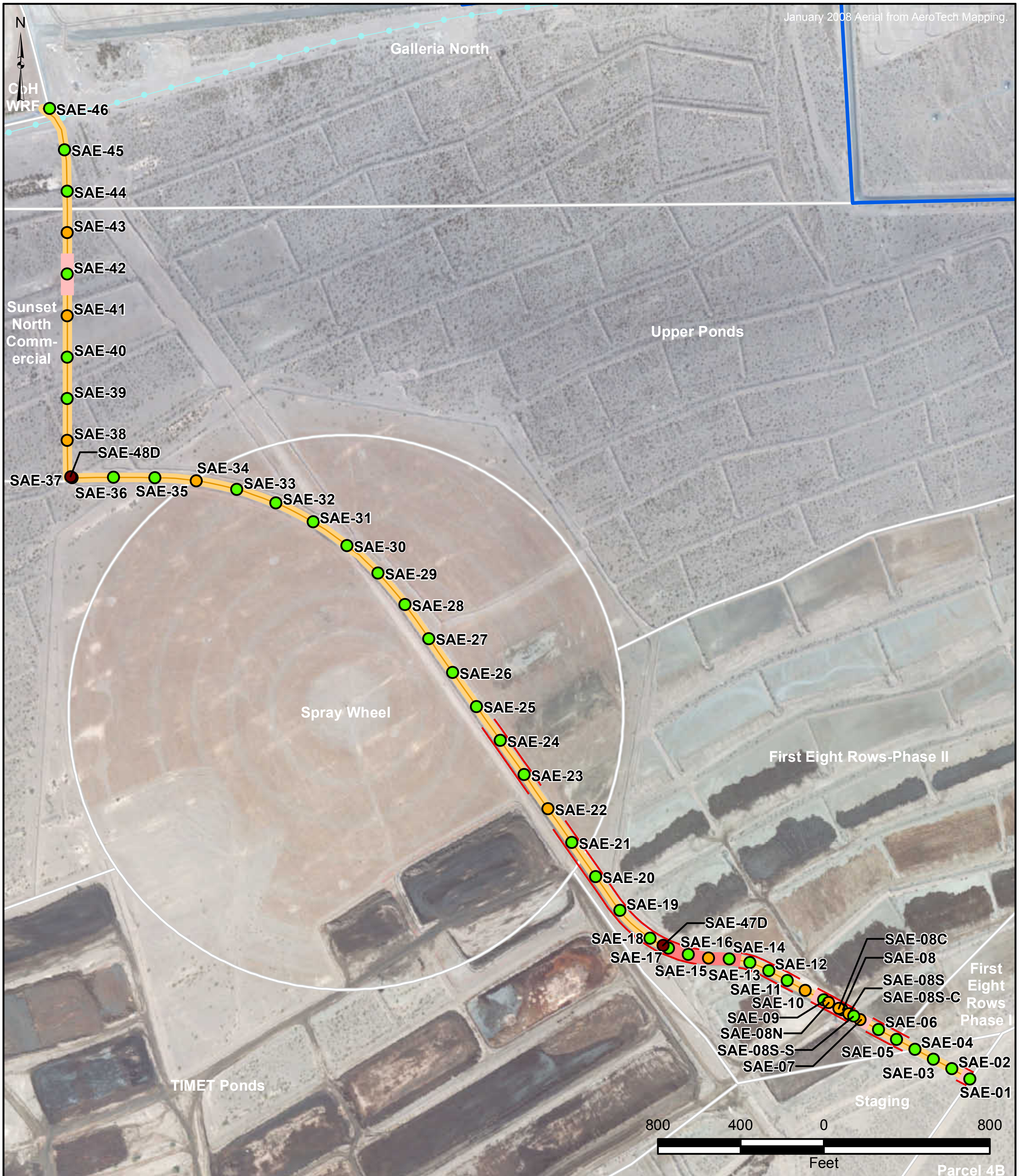
U.S. Environmental Protection Agency (USEPA). 2008. Persistent Bioaccumulative and Toxic (PBT) Chemical Program. USEPA on-line database: http://www.epa.gov/pbt/.

U.S. Environmental Protection Agency (USEPA). 2009a. Integrated Risk Information System. USEPA on-line database: http://www.epa.gov/iris/index.html.

U.S. Environmental Protection Agency (USEPA). 2009b. Preliminary Remediation Goals for Radionuclides. http://epa-prgs.ornl.gov/radionuclides/.

FIGURES


N
Las Vegas Wash Extent
CITY OF HENDERSON LANDFILL
Western Hook Development
Western Hook Open Space
Alpha Ditch
WESTON HILLS DEVELOPMENT
TUSCANY DEVELOPMENT
CITY OF HENDERSON BIRD VIEWING PRESERVE
CITY OF HENDERSON NORTHERN RIB PONDS
CITY OF HENDERSON WATER RECLAMATION FACILITY
Western Ditch
N.W. Ditch
Galleria North
Upper Ponds
Beta Ditch
Sunset North Commercial
SUNSET ROAD
Mohawk
MOHAWK DR
Spray Wheel
First Eight Rows Phase II
First Eight Rows Phase I
Informational Kiosk
Parcel 4B
TIMET Ponds
Staging
CITY OF HENDERSON SOUTHERN RIB PONDS
Southern RIBs
LAKE MEAD PARKWAY
BOULDER HIGHWAY
Parcel 4A
Las Vegas
Lake Mead
Site
Henderson
2,000 1,000 0 2,000
Feet
Site AOC3 Boundary
Ditches
Flood Conveyance Channels
Laterals
Utility Corridor Sub-Area
Eastside Sub-Areas
NFA Areas*
CoH WRF*
*Not part of the Closure Plan for soils.
BMI Common Areas (Eastside)
Clark County, Nevada
FIGURE 1
UTILITY CORRIDOR SUB-AREA LOCATION
Basic Remediation COMPANY
Prepared by: MKJ
Date 09/23/09
JOB No. 0064276
FILE: GIS/BRC/UTILITY_CORRIDOR/FIGURE1.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones (Non-Asbestos)
Remediation Zones (Asbestos)
Pittman Lateral
Utility Corridor Sub-Area
Soil Sample Location
Surface Sample Only
Surface and At-Depth Samples
At-Depth Sample Only

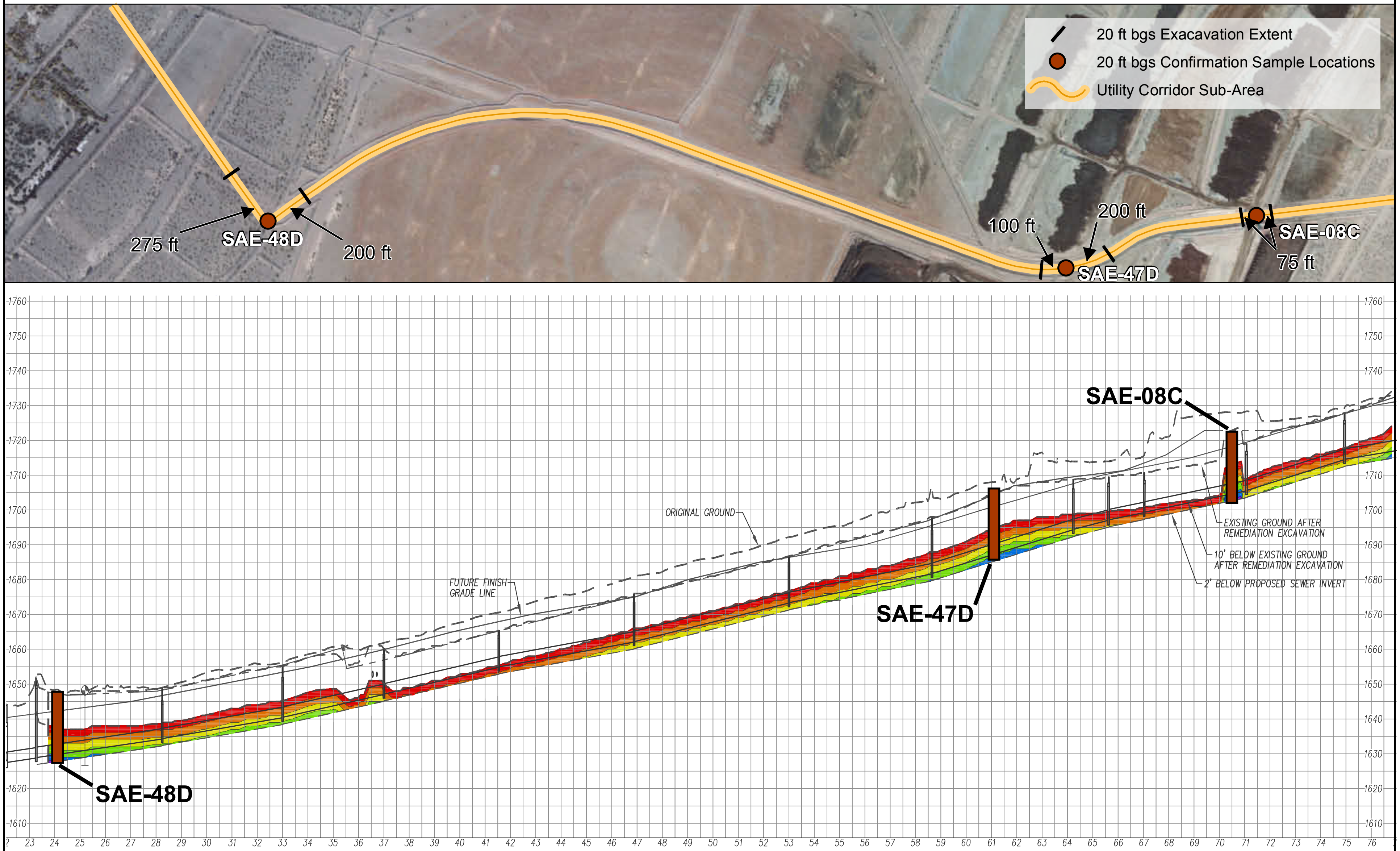
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 2

UTILITY CORRIDOR SUB-AREA SOIL SAMPLE LOCATIONS

Basic Remediation COMPANY

Prepared by: MKJ | Date 09/23/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/FIGURE2.MXD



EXCAVATION DEPTH LEGEND

- 0' – 2'
- 2' – 4'
- 4' – 6'
- 8' – 10'
- 10' – 12'
- 12' – 14'

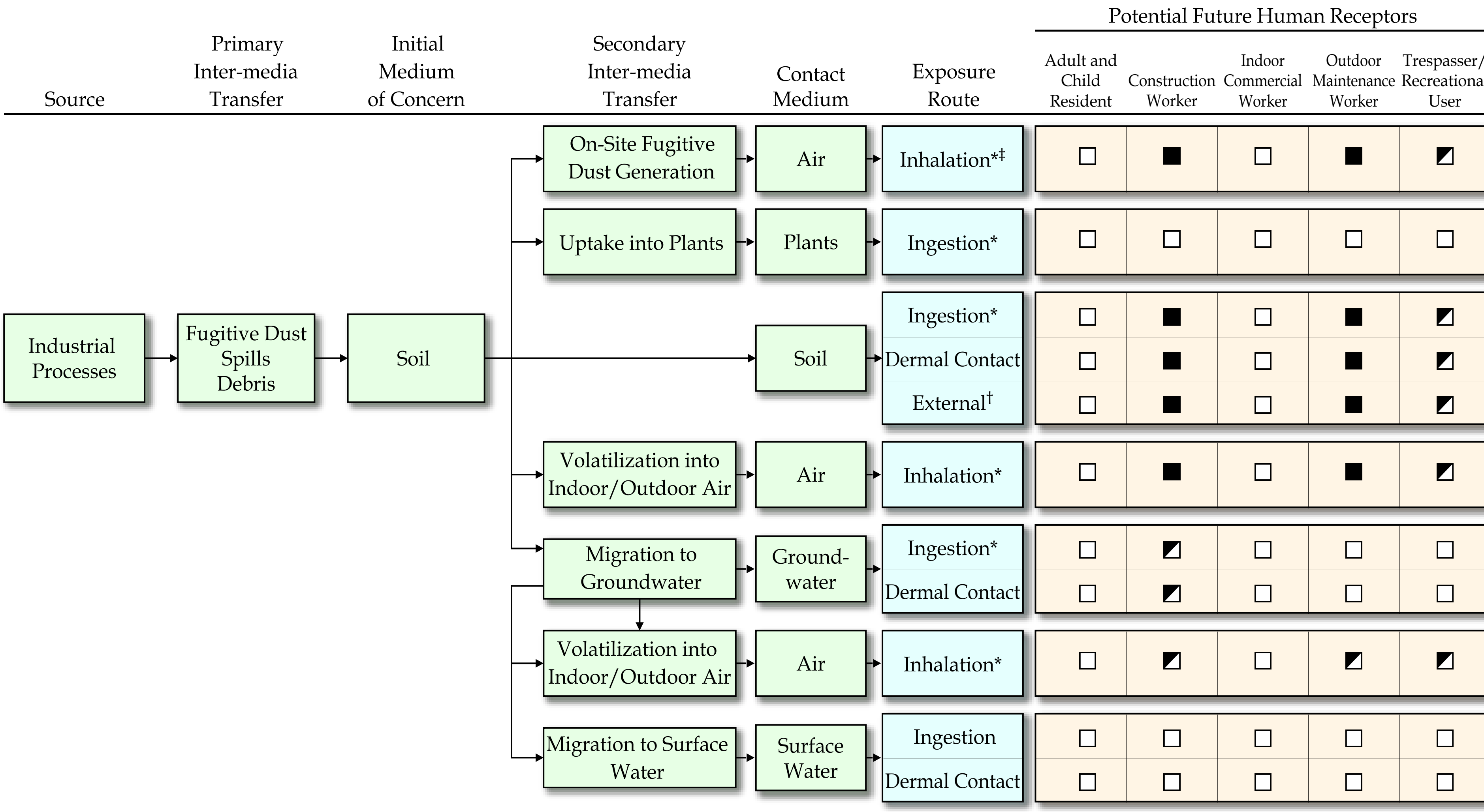
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 3

SEWER ALIGNMENT EXCAVATION WITH 20 FEET BGS EXCAVATION AREAS AND SAMPLE LOCATIONS

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	09/23/09	FILE: GIS/BRC/UC-SUPPL_SAP/FIGURE_3.AI



□ - Incomplete or insignificant exposure pathway.

■ - Complete or potentially complete exposure pathway.

◩ - Although a potentially complete exposure pathway, only outdoor worker receptor soil exposures were evaluated in the health risk assessment and are considered protective of all other receptors (see text).

*Includes radionuclide exposures.

†Only radionuclide exposures.

‡Includes asbestos exposures.

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 4

CONCEPTUAL SITE MODEL DIAGRAM FOR POTENTIAL HUMAN EXPOSURES

Basic Remediation Company

Prepared by: MKJ | Date 09/23/09 | JOB No. 0064276
FILE: GIS/BRC/UTILITY_CORRIDOR/FIGURE4.AI

Utility Corridor Sub-Area

Current Development Plan

- High Density Residential
- Medium Density Residential
- Low Density Residential
- Commercial
- Urban Core
- Schools
- Retail/Commercial
- Parks & Trails
- Roads/Parking

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE 5

CURRENT DEVELOPMENT PLAN

Basic Remediation Company

Prepared by: MKJ | Date 09/23/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/FIGURE4.MXD

TABLES

TABLE 1
2008/2009 SEWER ALIGNMENT EXCAVATION SOIL RESULTS SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

					Censored (Non-Detect) Data							Detected Data[a]														
Parameter of Interest	Compound List	Units	Total Count	Detect Freq.	ND Count	Min	Q1	Median	Mean	Q3	Max	Detect Count	Min	Q1	Median	Mean	Q3	Max	NDEP OW Soil BCL[b]	Count of Detects > BCL	NDEP LBCL (DAF 1)[c]	Count of Detects > DAF 1	NDEP LBCL (DAF 20)[c]	Count of Detects > DAF 20	Max. Bkgrnd[d]	Count of Detects > Bkgrnd
Asbestos[e]	Amphibole	Structures	54	0.0%	54	--	--	--	--	--	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Chrysotile	Structures	54	29.6%	38	--	--	--	--	--	--	16	1	--	--	--	--	8	--	--	--	--	--	--	--	--
Aldehydes	Acetaldehyde	mg/kg	60	46.7%	32	0.3	0.31	0.34	0.34	0.37	0.42	28	0.046	0.052	0.061	0.079	0.08	0.22	26.0	0	--	--	--	--	--	--
	Chloroacetaldehyde	mg/kg	57	0.0%	57	0.12	0.61	0.64	0.62	0.7	0.88	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Formaldehyde	mg/kg	60	31.7%	41	0.203	0.62	0.67	0.66	0.73	0.88	19	0.35	0.38	0.56	0.66	0.89	1.44	42.0	0	--	--	--	--	--	--
Dioxins/Furans	1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	62	72.6%	17	0.14	0.3	0.52	0.96	1.1	5.3	45	2.6	60	300	690	1000	4200	--	--	--	--	--	--	--	--
	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	62	64.5%	22	0	0.24	0.38	0.66	0.56	5.3	40	3.1	12	31	76	110	450	--	--	--	--	--	--	--	--
	1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	62	71.0%	18	0.055	0.16	0.4	0.71	0.64	5.3	44	1.1	26	130	290	420	1700	--	--	--	--	--	--	--	--
	1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	62	71.0%	18	0.09	0.16	0.28	0.71	0.76	5.3	44	1.3	28	150	340	450	2200	--	--	--	--	--	--	--	--
	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	62	45.2%	34	0.052	0.18	0.44	0.79	0.82	5.3	28	0.063	4	8.2	15	24	62	--	--	--	--	--	--	--	--
	1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	62	69.4%	19	0.06	0.11	0.27	0.67	0.57	5.3	43	0.86	17	90	210	330	1200	--	--	--	--	--	--	--	--
	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	62	50.0%	31	0	0.18	0.55	0.95	1.7	5.3	31	1.9	8.4	13	30	46	130	--	--	--	--	--	--	--	--
	1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	62	56.5%	27	0	0.15	0.3	0.8	1.4	5.3	35	2.7	10	19	44	77	180	--	--	--	--	--	--	--	--
	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	62	51.6%	30	0	0.17	0.5	0.85	1.1	5.3	32	1.8	7.4	12	27	44	120	--	--	--	--	--	--	--	--
	1,2,3,7,8-Pentachlorodibenzofuran	pg/g	62	71.0%	18	0.065	0.14	0.35	0.62	0.61	5.3	44	0.64	17	79	200	320	1000	--	--	--	--	--	--	--	--
	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	62	48.4%	32	0.052	0.25	0.61	1	1.5	5.3	30	1	6.6	12	23	36	94	--	--	--	--	--	--	--	--
	2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	62	61.3%	24	0	0.11	0.27	0.81	1.1	5.3	38	3.2	10	28	63	88	300	--	--	--	--	--	--	--	--
	2,3,4,7,8-Pentachlorodibenzofuran	pg/g	62	66.1%	21	0.065	0.15	0.35	0.77	0.69	5.3	41	0.39	13	43	110	180	510	--	--	--	--	--	--	--	--
	2,3,7,8-Tetrachlorodibenzofuran	pg/g	62	72.6%	17	0.074	0.13	0.2	0.27	0.37	1.1	45	0.72	14	48	150	220	1200	--	--	--	--	--	--	--	--
	2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	62	54.8%	28	0.025	0.074	0.2	0.33	0.5	1.1	34	0.4	1.7	2.8	7.1	11	41	--	--	--	--	--	--	--	--
	Octachlorodibenzodioxin	pg/g	62	59.7%	25	0	0.54	0.87	1.7	2.1	11	37	5.6	22	60	100	130	780	--	--	--	--	--	--	--	--
	Octachlorodibenzofuran	pg/g	62	74.2%	16	0.29	0.46	0.86	2.2	3.1	11	46	5.9	260	1200	3000	3500	27000	--	--	--	--	--	--	--	--
	TCDD TEQ	pg/g	62	--[f]	--	--	--	--	--	--	--	62	0.23	1.2	23	130	140	984	1000[f]	0	--	--	--	--	--	--
General Chemistry/ Ions	Ammonia	mg/kg	62	40.3%	37	0.5	0.52	0.79	0.69	0.83	0.85	25	0.51	0.68	0.89	1.1	1.2	3.5	100000	0	--	--	--	--	--	--
	Bromide	mg/kg	62	3.2%	60	0.063	0.064	0.066	0.18	0.26	1.8	2	0.58	--	1.4	1.4	--	2.2	--	--	--	--	--	--	--	--
	Chlorate	mg/kg	62	40.3%	37	0.48	0.55	1	0.79	1	1.1	25	0.8	2.6	4.6	5.8	7.9	16.2	--	--	--	--	--	--	--	--
	Chloride	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	1.4	17	170	540	600	3820	--	--	--	--	--	--	1110	12
	Chlorite	%	57	100.0%	0	--	--	--	--	--	--	57	81	91	95	94	98	99	--	--	--	--	--	--	--	--
	Cyanide (Total)	mg/kg	61	19.7%	49	0.08	0.081	0.082	0.085	0.084	0.12	12	0.084	0.11	0.14	0.15	0.18	0.28	13700	0	2	0	40	0	--	--
	Fluoride	mg/kg	62	95.2%	3	0.1	0.1	0.1	0.1	0.1	0.1	59	0.55	1	1.8	2.6	3	21.4	41000	0	--	--	--	--	2.5	23
	Nitrate (as N)	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	0.64	3.2	16	46	71	441	--	--	--	--	--	--	102	9
	Nitrite (as N)	mg/kg	62	12.9%	54	0.02	0.046	0.51	2.1	2.6	10.5	8	0.052	0.083	0.16	0.28	0.39	0.98	--	--	--	--	--	--	0.21	3
	Orthophosphate as P	mg/kg	62	19.4%	50	0.51	0.53	1.6	1.2	1.7	2.5	12	1.5	2.5	6.3	7.5	11	22.1	--	--	--	--	--	--	--	--
	Percent Moisture	%	59	100.0%	0	--	--	--	--	--	--	59	0.7	1.7	3.1	3.4	5	8.7	--	--	--	--	--	--	--	--
	Perchlorate	mg/kg	62	96.8%	2	0.0019	--	0.00200	0.00200	--	0.002	60	0.0064	0.065	0.19	0.98	0.58	13.8	790	0	--	--	--	--	--	--
	pH (Hydrogen Ion)	--	57	100.0%	0	--	--	--	--	--	--	57	7.4	8.1	8.4	8.5	8.9	9.7	--	--	--	--	--	--	--	--
	Sulfate	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	7.2	59	200	910	800	15500	--	--	--	--	--	--	4130	2
	Sulfide	mg/kg	62	12.9%	54	0.84	1.8	1.9	1.8	1.9	1.9	8	30.3	49	83	99	160	194	--	--	--	--	--	--	--	--
	Total Kjeldahl Nitrogen (TKN)	mg/kg	57	75.4%	14	12.2	12	13	13	13	12.9	43	26	77	97	230	150	5100	--	--	--	--	--	--	--	--
	Total Organic Carbon	mg/kg	57	98.2%	1	0.065	--	0.065	0.065	--	0.065	56	0.52	4100	5800	7100	9500	31600	--	--	--	--	--	--	--	--
Metals	Aluminum	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	4800	7100	8200	8600	9800	12500	100000	0	75	62	1500	62	15300	0
	Antimony	mg/kg	62	50.0%	31	0.045	0.13	0.13	0.15	0.13	0.315	31	0.13	0.18	0.21	0.34	0.37	1.7	450	0	0.3	10	6	0	0.5	4
	Arsenic	mg/kg	63	100.0%	0	--	--	--	--	--	--	63	1.7	3.7	4.7	6	6.9	20.9	1.8	62	1	63	20	1	7.2	13
	Barium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	154	280	360	410	460	1190	100000	0	82	62	1640	0	836	5
	Beryllium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	0.31	0.45	0.53	0.57	0.62	1.2	2150	0	3	0	60	0	0.89	3
	Boron	mg/kg	62	4.8%	59	2.99	6.6	6.6	7.6	6.6	16.5	3	7.8	7.8	8.4	8.8	10	10.1	100000	0	23	0	460	0	11.6	0
	Cadmium	mg/kg	62	85.5%	9	0.047	0.065	0.1	0.091	0.1	0.15	53	0.057	0.082	0.1	0.15	0.15	0.8	550	0	0.4	4	8	0	0.16	11
	Calcium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	2520	15000	20000	21000	26000	55700	--	--	--	--	--	--	82800	0
	Chromium (Total)	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	4.6	10	14	26	21	231	450	0	2	62	40	7	16.7	20
	Chromium (VI)	mg/kg	62	50.0%	31	0.1	1	1.1	1	1.1	1.2	31	0.18	0.56	1.5	3.1	4	20	450.0	0	2	12	40	0	0.251	30
	Cobalt	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	4.7	7.1	7.9	8	8.9	12.4	330	0	33	0	660	0	16.3	0
	Copper	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	9.2	14	16	20	19	112	42200	0	35	4	700	0	30.5	6
	Iron	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	9680	12000	14000	14000	16000	20100	100000	0	7.5	62	150	62	19700	1
	Lead	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	6.2	11	21	36	45	214	800	0	--	--	--	--	35.1	20
	Lithium	mg/kg	62	33.9%	41	3.657	3.7	3.7	5.6	5.5	14.628	21	8	14	15	17	18	29.5	2270	0	--	--	--	--	26.5	1
	Magnesium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	5140	7100	8200	8300	9600	12200	100000	0	649	62	12970	0	17500	0
	Manganese	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	212	420	510	610	680	1700	13700	0	3.3	62	66	62	1090	5
	Mercury	mg/kg	62	29.0%	44	0.00668	0.0067	0.0067	0.0067	0.0067	0.00668	18	0.0054	0.014	0.018	0.044	0.07	0.244	180	0	0.1	1	2	0	0.11	1
	Molybdenum	mg/kg	62	71.0%	18	0.188	0.19	0.19	0.31	0.55	0.83	44	0.29	0.59	0.75	1.1	1.4	3	5680	0	3.6	0	72	0	2	6
	Nickel	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	7.9	13	15	16	17	36.5	20100	0	7	62	140	0	30	2

TABLE 1
2008/2009 SEWER ALIGNMENT EXCAVATION SOIL RESULTS SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

					Censored (Non-Detect) Data							Detected Data[a]														
Parameter of Interest	**Compound List**	**Units**	**Total Count**	**Detect Freq.**	**ND Count**	**Min**	**Q1**	**Median**	**Mean**	**Q3**	**Max**	**Detect Count**	**Min**	**Q1**	**Median**	**Mean**	**Q3**	**Max**	**NDEP OW Soil BCL[b]**	**Count of Detects > BCL**	**NDEP LBCL (DAF 1)[c]**	**Count of Detects > DAF 1**	**NDEP LBCL (DAF 20)[c]**	**Count of Detects > DAF 20**	**Max. Bkgrnd[d]**	**Count of Detects > Bkgrnd**
Metals	Niobium	mg/kg	57	22.8%	44	3	3	3	3	3	3.75	13	3.3	4.1	15	17	20	68	--	--	--	--	--	--	2.8	13
	Palladium	mg/kg	57	100.0%	0	--	--	--	--	--	--	57	0.21	0.38	0.49	0.55	0.64	1.3	--	--	--	--	--	--	1.5	0
	Phosphorus	mg/kg	57	100.0%	0	--	--	--	--	--	--	57	523	1000	1200	1200	1400	1920	--	--	--	--	--	--	--	--
	Platinum	mg/kg	57	14.0%	49	0.048	0.048	0.048	0.048	0.048	0.06	8	0.051	0.057	0.097	0.1	0.15	0.17	--	--	--	--	--	--	0.099	4
	Potassium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	779	1200	1600	1600	1900	3020	--	--	--	--	--	--	3890	0
	Selenium	mg/kg	62	0.0%	62	0.045	0.32	0.32	0.31	0.32	0.4	0	--	--	--	--	--	--	5680	--	0.3	--	6	--	0.6	--
	Silicon	mg/kg	57	100.0%	0	--	--	--	--	--	--	57	122	150	170	360	610	1210	--	--	--	--	--	--	4150	0
	Silver	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	0.051	0.084	0.1	0.17	0.15	1.2	5680	0	2	0	40	0	0.2609	8
	Sodium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	130	370	560	610	820	1580	--	--	--	--	--	--	1320	2
	Strontium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	59.7	150	190	210	270	557	100000	0	--	--	--	--	808	0
	Sulfur	mg/kg	57	21.1%	45	1053.5	1100	1100	1100	1100	1053.5	12	1100	1300	2100	2700	2800	9470	--	--	--	--	--	--	--	--
	Thallium	mg/kg	62	25.8%	46	0.11	0.3	0.3	0.31	0.3	0.75	16	0.35	0.39	0.78	0.92	1.4	2.4	79.0	0	0.4	12	8	0	1.8	1
	Tin	mg/kg	62	83.9%	10	0.15	0.15	0.3	0.33	0.41	0.75	52	0.33	0.44	0.64	1.2	0.99	9.3	100000	0	--	--	--	--	0.8	20
	Titanium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	297	440	510	590	630	2020	100000	0	150030	0	3000600	0	1010	4
	Tungsten	mg/kg	62	58.1%	26	0.3	0.5	0.5	0.65	0.53	1.6	36	0.59	1.1	2	3.6	4.8	19.3	8520	0	41	0	820	0	2.5	15
	Uranium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	0.41	0.76	0.92	1.1	1.2	2.9	3390	0	13.5	0	270	0	2.7	2
	Vanadium	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	24.4	36	44	61	59	319	5680	0	300	1	6000	0	59.1	15
	Zinc	mg/kg	62	100.0%	0	--	--	--	--	--	--	62	23.3	37	43	55	51	218	100000	0	620	0	12400	0	121	4
	Zirconium	mg/kg	57	100.0%	0	--	--	--	--	--	--	57	9.7	14	18	31	23	208	--	--	--	--	--	--	179	2
Organochlorine Pesticides	2,4-DDD	mg/kg	62	12.9%	54	0.00011	0.00012	0.00012	0.00019	0.00019	0.0011	8	0.0028	0.0086	0.016	0.018	0.024	0.048	--	--	--	--	--	--	--	--
	2,4-DDE	mg/kg	62	54.8%	28	0.000091	0.000091	0.00013	0.00018	0.00021	0.00091	34	0.0018	0.0039	0.012	0.11	0.048	0.7	--	--	--	--	--	--	--	--
	4,4-DDD	mg/kg	62	1.6%	61	0.000092	0.00012	0.00016	0.00018	0.00017	0.0016	1	0.0021	--	0.0021	0.0021	--	0.0021	11.0	0	0.8	0	16	0	--	--
	4,4-DDE	mg/kg	62	61.3%	24	0.0002	0.0002	0.00026	0.0004	0.00028	0.0026	38	0.0021	0.0044	0.011	0.067	0.025	0.51	7.8	0	3	0	60	0	--	--
	4,4-DDT	mg/kg	62	33.9%	41	0.00021	0.00024	0.00043	0.0005	0.00044	0.0043	21	0.0026	0.0049	0.0099	0.042	0.079	0.16	7.8	0	2	0	40	0	--	--
	Aldrin	mg/kg	62	4.8%	59	0.000088	0.00009	0.000091	0.00011	0.000096	0.00089	3	0.0022	0.0022	0.0028	0.0036	0.0058	0.0058	0.11	0	0.02	0	0.4	0	--	--
	alpha-BHC	mg/kg	62	4.8%	59	0.000095	0.000098	0.000099	0.00016	0.0001	0.00098	3	0.0017	0.0017	0.0022	0.0045	0.0097	0.0097	0.40	0	0.00003	3	0.0006	3	--	--
	alpha-Chlordane	mg/kg	62	0.0%	62	0.0001	0.0001	0.0001	0.00014	0.00011	0.001	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	beta-BHC	mg/kg	62	24.2%	47	0.00013	0.0002	0.00035	0.0004	0.00036	0.0035	15	0.0021	0.0025	0.0037	0.0043	0.0051	0.014	1.4	0	0.0001	15	0.002	15	--	--
	Chlordane	mg/kg	62	0.0%	62	0.0015	0.0023	0.0023	0.0028	0.0024	0.023	0	--	--	--	--	--	--	7.2	--	0.5	--	10	--	--	--
	delta-BHC	mg/kg	62	0.0%	62	0.000084	0.000085	0.000087	0.00012	0.00011	0.00085	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Dieldrin	mg/kg	62	0.0%	62	0.000073	0.000074	0.000076	0.000096	0.000096	0.00074	0	--	--	--	--	--	--	0.12	--	0.0002	--	0.004	--	--	--
	Endosulfan I	mg/kg	62	0.0%	62	0.000084	0.000085	0.000087	0.00011	0.000098	0.00085	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Endosulfan II	mg/kg	62	0.0%	62	0.000097	0.00012	0.00015	0.00017	0.00015	0.0015	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Endosulfan sulfate	mg/kg	62	0.0%	62	0.00012	0.00012	0.00012	0.00018	0.00014	0.0012	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Endrin	mg/kg	62	0.0%	62	0.000084	0.000085	0.000086	0.00011	0.000088	0.00085	0	--	--	--	--	--	--	210	--	0.05	--	1	--	--	--
	Endrin aldehyde	mg/kg	62	8.1%	57	0.00011	0.00011	0.00011	0.00016	0.00016	0.0011	5	0.0019	0.0054	0.011	0.0098	0.014	0.016	--	--	--	--	--	--	--	--
	Endrin ketone	mg/kg	62	1.6%	61	0.00013	0.00018	0.00039	0.00042	0.0004	0.0039	1	0.003	--	0.003	0.003	--	0.003	--	--	--	--	--	--	--	--
	gamma-Chlordane	mg/kg	62	9.7%	56	0.000086	0.000087	0.000088	0.00011	0.000089	0.00087	6	0.004	0.0049	0.019	0.016	0.022	0.027	--	--	--	--	--	--	--	--
	Heptachlor	mg/kg	62	0.0%	62	0.000096	0.00018	0.0006	0.00062	0.00061	0.006	0	--	--	--	--	--	--	0.43	--	1	--	20	--	--	--
	Heptachlor epoxide	mg/kg	62	9.7%	56	0.00012	0.00012	0.00012	0.00015	0.00013	0.0012	6	0.002	0.0022	0.0036	0.0052	0.0084	0.013	0.21	0	0.03	0	0.6	0	--	--
	Lindane	mg/kg	62	0.0%	62	0.000084	0.000085	0.000087	0.00011	0.00011	0.00085	0	--	--	--	--	--	--	1.9	--	0.0005	--	0.01	--	--	--
	Methoxychlor	mg/kg	62	1.6%	61	0.00033	0.00035	0.00072	0.00077	0.00073	0.0071	1	0.0043	--	0.0043	0.0043	--	0.0043	3420	0	8	0	160	0	--	--
	Toxaphene	mg/kg	62	0.0%	62	0.0057	0.0062	0.0073	0.0085	0.0074	0.073	0	--	--	--	--	--	--	1.7	--	2	--	40	--	--	--
Polyaromatic Hydrocarbons (PAHs)	Acenaphthene	mg/kg	62	0.0%	62	0.00171	0.018	0.018	0.018	0.019	0.034	0	--	--	--	--	--	--	68100	--	29	--	580	--	--	--
	Acenaphthylene	mg/kg	62	0.0%	62	0.00171	0.016	0.016	0.015	0.016	0.034	0	--	--	--	--	--	--	150	--	--	--	--	--	--	--
	Anthracene	mg/kg	62	0.0%	62	0.00067	0.00068	0.0007	0.0019	0.00071	0.034	0	--	--	--	--	--	--	100000	--	590	--	11800	--	--	--
	Benzo(a)anthracene	mg/kg	62	0.0%	62	0.0011	0.0012	0.0012	0.0023	0.0012	0.034	0	--	--	--	--	--	--	2.3	--	0.08	--	1.6	--	--	--
	Benzo(a)pyrene	mg/kg	62	1.6%	61	0.00172	0.002	0.002	0.0031	0.0021	0.034	1	0.00265	--	0.0027	0.0027	--	0.00265	0.23	0	0.4	0	8	0	--	--
	Benzo(b)fluoranthene	mg/kg	62	1.6%	61	0.00172	0.002	0.002	0.0031	0.0021	0.034	1	0.00603	--	0.006	0.006	--	0.00603	2.3	0	0.2	0	4	0	--	--
	Benzo(g,h,i)perylene	mg/kg	62	0.0%	62	0.00171	0.0062	0.0063	0.0069	0.0064	0.034	0	--	--	--	--	--	--	34100	--	--	--	--	--	--	--
	Benzo(k)fluoranthene	mg/kg	62	0.0%	62	0.00171	0.0023	0.0023	0.0033	0.0024	0.034	0	--	--	--	--	--	--	23.0	--	2	--	40	--	--	--
	Chrysene	mg/kg	62	6.5%	58	0.0011	0.0011	0.0011	0.0023	0.0011	0.034	4	0.00388	0.01	0.032	0.026	0.035	0.036	230	0	8	0	160	0	--	--
	Dibenzo(a,h)anthracene	mg/kg	62	3.2%	60	0.00171	0.0038	0.0038	0.0047	0.0039	0.034	2	0.04	--	0.043	0.043	--	0.046	0.23	0	0.08	0	1.6	0	--	--
	Indeno(1,2,3-cd)pyrene	mg/kg	62	3.2%	60	0.00171	0.0019	0.002	0.003	0.002	0.034	2	0.018	--	0.018	0.018	--	0.018	2.3	0	0.7	0	14	0	--	--
	Phenanthrene	mg/kg	62	1.6%	61	0.0017	0.0017	0.0018	0.0028	0.0018	0.034	1	0.00409	--	0.0041	0.0041	--	0.00409	25	0	--	--	--	--	--	--
	Pyrene	mg/kg	62	1.6%	61	0.00172	0.003	0.0031	0.004	0.0031	0.034	1	0.00392	--	0.0039	0.0039	--	0.00392	34100	0	210	0	4200	0	--	--
Polychlorinated Biphenyls	PCB 105 (BZ)	mg/kg	57	71.9%	16	2	2.1	2.1	2.1	2.1	2.2	41	2.5	85	180	860	670	7600	--	--	--	--	--	--	--	--
	PCB 114 (BZ)	mg/kg	57	54.4%	26	2	2	2.1	2.1	2.1	2.2	31	4.4	20	66	290	210	2400	--	--	--	--	--	--	--	--
	PCB 118 (BZ)	mg/kg	57	78.9%	12	2	2.1	2.1	2.1	2.1	2.2	45	2.4	140	360	1700	1100	17000	--	--	--	--	--	--	--	--
	PCB 123 (BZ)	mg/kg	57	45.6%	31	2	2	2.1	2.1	2.1	2.2	26	2.2	7	13	38	31	300	--	--	--	--	--	--	--	--
	PCB 126 (BZ)	mg/kg	57	49.1%	29	2	2	2.1	2.1	2.1	2.2	28	2.4	6.4	13	36	32	210	--	--	--	--	--	--	--	--

TABLE 1
2008/2009 SEWER ALIGNMENT EXCAVATION SOIL RESULTS SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

					Censored (Non-Detect) Data							Detected Data[a]														
Parameter of Interest	Compound List	Units	Total Count	Detect Freq.	ND Count	Min	Q1	Median	Mean	Q3	Max	Detect Count	Min	Q1	Median	Mean	Q3	Max	NDEP OW Soil BCL[b]	Count of Detects > BCL	NDEP LBCL (DAF 1)[c]	Count of Detects > DAF 1	NDEP LBCL (DAF 20)[c]	Count of Detects > DAF 20	Max. Bkgrnd[d]	Count of Detects > Bkgrnd
Polychlorinated Biphenyls	PCB 156 (BZ)	mg/kg	57	68.4%	18	2	2.1	2.1	2.1	2.1	2.2	39	2.6	31	60	260	190	2200	--	--	--	--	--	--	--	--
	PCB 157 (BZ)	mg/kg	57	63.2%	21	2	2.1	2.1	2.1	2.1	2.2	36	2.6	9.4	17	61	54	430	--	--	--	--	--	--	--	--
	PCB 167 (BZ)	mg/kg	57	63.2%	21	2	2.1	2.1	2.1	2.1	2.2	36	4.9	14	31	110	94	750	--	--	--	--	--	--	--	--
	PCB 169 (BZ)	mg/kg	57	35.1%	37	2	2	2.1	2.1	2.1	2.2	20	2.1	3	7.1	15	18	68	--	--	--	--	--	--	--	--
	PCB 189 (BZ)	mg/kg	57	57.9%	24	2	2	2.1	2.1	2.1	2.2	33	4.2	14	23	77	93	530	--	--	--	--	--	--	--	--
	PCB 209 (BZ)	mg/kg	57	77.2%	13	2	2.1	2.1	2.1	2.1	2.2	44	27	1400	6300	14000	15000	110000	--	--	--	--	--	--	--	--
	PCB 77 (BZ)	mg/kg	57	22.8%	44	2	2	2.1	2.1	2.1	2.2	13	23	44	84	220	370	1000	--	--	--	--	--	--	--	--
	PCB 81 (BZ)	mg/kg	57	22.8%	44	2	2	2.1	2.1	2.1	2.2	13	18	45	120	230	370	960	--	--	--	--	--	--	--	--
Radionuclides	Radium-226	pCi/g	63	90.5%	6	--	--	--	--	--	--	57	0.527	1	1.2	1.3	1.6	3.1	--	--	--	--	--	--	--	--
	Radium-228	pCi/g	63	96.8%	2	--	--	--	--	--	--	61	0.286	1.5	1.8	1.9	2.4	5.59	--	--	--	--	--	--	--	--
	Thorium-228	pCi/g	63	95.2%	3	--	--	--	--	--	--	60	0.62	1.5	1.9	1.9	2.2	3.38	--	--	--	--	--	--	--	--
	Thorium-230	pCi/g	63	93.7%	4	--	--	--	--	--	--	59	0.644	0.96	1.2	1.3	1.5	3.71	--	--	--	--	--	--	--	--
	Thorium-232	pCi/g	63	100.0%	0	--	--	--	--	--	--	63	0.791	1.2	1.4	1.5	1.8	3.07	--	--	--	--	--	--	--	--
	Uranium-233/234	pCi/g	63	79.4%	13	--	--	--	--	--	--	50	0.557	1	1.2	1.5	1.7	4.07	--	--	--	--	--	--	--	--
	Uranium-235/236	pCi/g	63	9.5%	57	--	--	--	--	--	--	6	-0.0576	0.057	0.092	0.1	0.14	0.336	--	--	--	--	--	--	--	--
	Uranium-238	pCi/g	63	100.0%	0	--	--	--	--	--	--	63	0.459	0.85	1	1.2	1.5	3.04	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds	1,2,4,5-Tetrachlorobenzene	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	210	--	--	--	--	--	--	--
	1,2-Diphenylhydrazine	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	2.4	--	--	--	--	--	--	--
	1,4-Dioxane	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	170	--	--	--	--	--	--	--
	2,2'-/4,4'-Dichlorobenzil	mg/kg	55	7.3%	51	0.33	0.34	0.35	0.36	0.37	0.77	4	0.18	0.21	0.36	0.44	0.76	0.87	340	0	--	--	--	--	--	--
	2,4,5-Trichlorophenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	68400	--	14	--	280	--	--	--
	2,4,6-Trichlorophenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	170	--	0.008	--	0.16	--	--	--
	2,4-Dichlorophenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	2050	--	0.05	--	1	--	--	--
	2,4-Dimethylphenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	13700	--	0.4	--	8	--	--	--
	2,4-Dinitrophenol	mg/kg	57	0.0%	57	0.33	0.34	0.34	0.34	0.35	0.36	0	--	--	--	--	--	--	1370	--	0.01	--	0.2	--	--	--
	2,4-Dinitrotoluene	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	6.2	--	0.00004	--	0.0008	--	--	--
	2,6-Dinitrotoluene	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	680	--	0.00003	--	0.0006	--	--	--
	2-Chloronaphthalene	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	90800	--	--	--	--	--	--	--
	2-Chlorophenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	5680	--	0.2	--	4	--	--	--
	2-Methylnaphthalene	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2-Nitroaniline	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	2030	--	--	--	--	--	--	--
	2-Nitrophenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3,3'-Dichlorobenzidine	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	4.3	--	0.0003	--	0.006	--	--	--
	3-Methylphenol & 4-Methylphenol	mg/kg	57	0.0%	57	0.067	0.068	0.068	0.069	0.07	0.073	0	--	--	--	--	--	--	34200	--	--	--	--	--	--	--
	3-Nitroaniline	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4-Bromophenyl phenyl ether	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4-Chloro-3-Methylphenol	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4-Chlorophenyl phenyl ether	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4-Chlorothioanisole	mg/kg	57	0.0%	57	0.0077	0.0077	0.0078	0.0079	0.008	0.0083	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4-Nitrophenol	mg/kg	57	0.0%	57	0.33	0.34	0.34	0.34	0.35	0.36	0	--	--	--	--	--	--	5470	--	--	--	--	--	--	--
	Acetophenone	mg/kg	62	0.0%	62	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	1740	--	--	--	--	--	--	--
	Aniline	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.042	0.035	0.124	0	--	--	--	--	--	--	340	--	--	--	--	--	--	--
	Azobenzene	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	14.0	--	--	--	--	--	--	--
	Benzenethiol	mg/kg	62	0.0%	62	0.113	0.13	0.13	0.13	0.13	0.13	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Benzoic acid	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.055	0.035	0.34	0	--	--	--	--	--	--	100000	--	20	--	400	--	--	--
	Benzyl alcohol	mg/kg	62	8.1%	57	0.034	0.034	0.035	0.041	0.035	0.106	5	0.06	0.065	0.076	0.074	0.082	0.086	100000	0	--	--	--	--	--	--
	Benzyl butyl phthalate	mg/kg	62	1.6%	61	0.034	0.034	0.034	0.037	0.035	0.0706	1	0.065	--	0.065	0.065	--	0.065	240	0	810	0	16200	0	--	--
	bis(2-Chloroethoxy) methane	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	bis(2-Chloroethyl) ether	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	0.62	--	0.00002	--	0.0004	--	--	--
	bis(2-Chloroisopropyl) ether	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	8.2	--	--	--	--	--	--	--
	bis(2-Ethylhexyl) phthalate	mg/kg	62	1.6%	61	0.034	0.034	0.035	0.038	0.035	0.0706	1	0.15	--	0.15	0.15	--	0.15	140	0	180	0	3600	0	--	--
	bis(p-Chlorophenyl) disulfide	mg/kg	62	0.0%	62	0.034	0.21	0.21	0.2	0.21	0.22	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	bis(p-Chlorophenyl) sulfone	mg/kg	62	0.0%	62	0.113	0.34	0.34	0.32	0.35	0.36	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Carbazole	mg/kg	62	0.0%	62	0.0103	0.034	0.034	0.033	0.035	0.036	0	--	--	--	--	--	--	96.0	--	0.03	--	0.6	--	--	--
	Dibenzofuran	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	2270	--	--	--	--	--	--	--
	Dibutyl phthalate	mg/kg	62	0.0%	62	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	68400	--	270	--	5400	--	--	--
	Diethyl phthalate	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	100000	--	--	--	--	--	--	--
	Dimethyl phthalate	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	100000	--	--	--	--	--	--	--
	Di-n-octyl phthalate	mg/kg	62	0.0%	62	0.015	0.015	0.015	0.02	0.016	0.0706	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Diphenyl sulfone	mg/kg	62	0.0%	62	0.0067	0.0068	0.0069	0.016	0.007	0.116	0	--	--	--	--	--	--	2050	--	--	--	--	--	--	--
	Fluoranthene	mg/kg	62	0.0%	62	0.0103	0.034	0.034	0.033	0.035	0.036	0	--	--	--	--	--	--	24400	--	210	--	4200	--	--	--

TABLE 1
2008/2009 SEWER ALIGNMENT EXCAVATION SOIL RESULTS SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

					Censored (Non-Detect) Data							Detected Data[a]														
Parameter of Interest	Compound List	Units	Total Count	Detect Freq.	ND Count	Min	Q1	Median	Mean	Q3	Max	Detect Count	Min	Q1	Median	Mean	Q3	Max	NDEP OW Soil BCL[b]	Count of Detects > BCL	NDEP LBCL (DAF 1)[c]	Count of Detects > DAF 1	NDEP LBCL (DAF 20)[c]	Count of Detects > DAF 20	Max. Bkgrnd[d]	Count of Detects > Bkgrnd
Semivolatile Organic Compounds	Fluorene	mg/kg	62	0.0%	62	0.0103	0.034	0.034	0.033	0.035	0.036	0	--	--	--	--	--	--	45400	--	28	--	560	--	--	--
	Hexachloro-1,3-butadiene	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	25	--	0.1	--	2	--	--	--
	Hexachlorobenzene	mg/kg	62	21.0%	49	0.034	0.034	0.035	0.037	0.035	0.0694	13	0.036	0.054	0.27	0.31	0.51	0.91	1.2	0	0.1	8	2	0	--	--
	Hexachlorocyclopentadiene	mg/kg	62	0.0%	62	0.0686	0.34	0.34	0.32	0.35	0.36	0	--	--	--	--	--	--	4060	--	20	--	400	--	--	--
	Hexachloroethane	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	140	--	0.02	--	0.4	--	--	--
	Hydroxymethyl phthalimide	mg/kg	62	0.0%	62	0.044	0.044	0.045	0.052	0.046	0.116	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Isophorone	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	2020	--	0.03	--	0.6	--	--	--
	Naphthalene	mg/kg	62	0.0%	62	0.0103	0.034	0.034	0.033	0.035	0.036	0	--	--	--	--	--	--	6	--	4	--	80	--	--	--
	Nitrobenzene	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	5	--	0.007	--	0.14	--	--	--
	N-nitrosodi-n-propylamine	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	0.27	--	0.000002	--	0.00004	--	--	--
	N-nitrosodiphenylamine	mg/kg	57	0.0%	57	0.034	0.034	0.034	0.035	0.035	0.036	0	--	--	--	--	--	--	390	--	0.06	--	1.2	--	--	--
	o-Cresol	mg/kg	62	0.0%	62	0.034	0.12	0.12	0.12	0.12	0.13	0	--	--	--	--	--	--	34200	--	0.8	--	16	--	--	--
	Octachlorostyrene	mg/kg	62	9.7%	56	0.034	0.034	0.035	0.04	0.035	0.116	6	0.062	0.07	0.14	0.13	0.16	0.19	--	--	--	--	--	--	--	--
	p-Chloroaniline	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	2740	--	0.03	--	0.6	--	--	--
	p-Chlorothiophenol	mg/kg	62	0.0%	62	0.113	0.19	0.19	0.19	0.19	0.34	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Pentachlorobenzene	mg/kg	62	3.2%	60	0.034	0.034	0.035	0.037	0.035	0.0706	2	0.047	--	0.066	0.066	--	0.084	550	0	--	--	--	--	--	--
	Pentachlorophenol	mg/kg	62	0.0%	62	0.0686	0.34	0.34	0.32	0.35	0.36	0	--	--	--	--	--	--	10.0	--	0.001	--	0.02	--	--	--
	Phenol	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.037	0.035	0.0706	0	--	--	--	--	--	--	100000	--	5	--	100	--	--	--
	Phenyl Disulfide	mg/kg	62	0.0%	62	0.029	0.029	0.03	0.037	0.03	0.116	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Phenyl Sulfide	mg/kg	62	0.0%	62	0.0036	0.0036	0.0037	0.013	0.0037	0.116	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Phthalic acid	mg/kg	62	0.0%	62	0.113	0.25	0.26	0.25	0.26	0.27	0	--	--	--	--	--	--	100000	--	--	--	--	--	--	--
	p-Nitroaniline	mg/kg	57	0.0%	57	0.33	0.34	0.34	0.34	0.35	0.36	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Pyridine	mg/kg	62	0.0%	62	0.034	0.034	0.035	0.047	0.035	0.34	0	--	--	--	--	--	--	680	--	--	--	--	--	--	--
Volatile Organic Compounds	1,1,1,2-Tetrachloroethane	mg/kg	62	0.0%	62	0.00023	0.00023	0.00023	0.00025	0.00024	0.0004	0	--	--	--	--	--	--	7.6	--	--	--	--	--	--	--
	1,1,1-Trichloroethane	mg/kg	62	0.0%	62	0.00015	0.00015	0.00015	0.00016	0.00015	0.00025	0	--	--	--	--	--	--	1390	--	0.1	--	2	--	--	--
	1,1,2,2-Tetrachloroethane	mg/kg	62	0.0%	62	0.00014	0.00014	0.00015	0.00017	0.00015	0.00046	0	--	--	--	--	--	--	0.97	--	0.0002	--	0.004	--	--	--
	1,1,2-Trichloroethane	mg/kg	62	0.0%	62	0.00029	0.00029	0.00029	0.0003	0.0003	0.00038	0	--	--	--	--	--	--	2.1	--	0.0009	--	0.018	--	--	--
	1,1-Dichloroethane	mg/kg	62	0.0%	62	0.00037	0.00097	0.00098	0.00093	0.001	0.001	0	--	--	--	--	--	--	8	--	1	--	20	--	--	--
	1,1-Dichloroethylene	mg/kg	62	0.0%	62	0.00024	0.00056	0.00056	0.00054	0.00058	0.0006	0	--	--	--	--	--	--	470	--	0.003	--	0.06	--	--	--
	1,1-Dichloropropene	mg/kg	62	0.0%	62	0.00022	0.0003	0.0003	0.0003	0.00031	0.00032	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1,2,3-Trichlorobenzene	mg/kg	62	3.2%	60	0.00046	0.00079	0.0008	0.00078	0.00082	0.00085	2	0.0022	--	0.0023	0.0023	--	0.0023	--	--	--	--	--	--	--	--
	1,2,3-Trichloropropane	mg/kg	62	0.0%	62	0.00049	0.00057	0.00057	0.00057	0.00058	0.00061	0	--	--	--	--	--	--	1.6	--	--	--	--	--	--	--
	1,2,4-Trichlorobenzene	mg/kg	62	4.8%	59	0.00031	0.00075	0.00075	0.00072	0.00077	0.0008	3	0.0012	0.0012	0.0013	0.0014	0.0018	0.0018	260	0	0.3	0	6	0	--	--
	1,2,4-Trimethylbenzene	mg/kg	62	3.2%	60	0.00022	0.00022	0.00023	0.00025	0.00023	0.00065	2	0.00096	--	0.00098	0.00098	--	0.00099	220	0	--	--	--	--	--	--
	1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	62	3.2%	60	0.0006	0.00091	0.00092	0.0009	0.00094	0.00097	2	0.0024	--	0.003	0.003	--	0.0035	0.020	0	--	--	--	--	--	--
	1,2-Dichlorobenzene	mg/kg	62	3.2%	60	0.00015	0.00015	0.00016	0.00017	0.00016	0.00038	2	0.0011	--	0.0011	0.0011	--	0.0011	370	0	0.9	0	18	0	--	--
	1,2-Dichloroethane	mg/kg	62	0.0%	62	0.00033	0.00045	0.00045	0.00044	0.00046	0.00048	0	--	--	--	--	--	--	0.84	--	0.001	--	0.02	--	--	--
	1,2-Dichloroethylene	mg/kg	62	0.0%	62	0.00055	0.00055	0.00056	0.00057	0.00058	0.00066	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1,2-Dichloropropane	mg/kg	62	0.0%	62	0.00037	0.00038	0.00038	0.00039	0.00039	0.00041	0	--	--	--	--	--	--	1.60	--	0.001	--	0.02	--	--	--
	1,3,5-Trichlorobenzene	mg/kg	62	0.0%	62	0.00051	0.00069	0.0007	0.00069	0.00071	0.00074	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1,3,5-Trimethylbenzene	mg/kg	62	3.2%	60	0.00021	0.00022	0.00022	0.00022	0.00022	0.00026	2	0.0006	--	0.00062	0.00062	--	0.00064	78.0	0	--	--	--	--	--	--
	1,3-Dichlorobenzene	mg/kg	62	3.2%	60	0.00013	0.00013	0.00013	0.00016	0.00014	0.00046	2	0.00032	--	0.00041	0.00041	--	0.0005	370	0	--	--	--	--	--	--
	1,3-Dichloropropane	mg/kg	62	0.0%	62	0.00018	0.00018	0.00019	0.0002	0.00019	0.00043	0	--	--	--	--	--	--	1130	--	0.001	--	0.02	--	--	--
	1,4-Dichlorobenzene	mg/kg	62	3.2%	60	0.00011	0.00011	0.00011	0.00013	0.00011	0.00032	2	0.0014	--	0.0015	0.0015	--	0.0016	5.1	0	0.1	0	2	0	--	--
	1-Nonanal	mg/kg	62	3.2%	60	0.00037	0.00089	0.0009	0.00087	0.00092	0.00096	2	0.0053	--	0.006	0.006	--	0.0067	--	--	--	--	--	--	--	--
	2,2,3-Trimethylbutane	mg/kg	62	0.0%	62	0.00021	0.00021	0.00022	0.00024	0.00022	0.00055	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2,2-Dichloropropane	mg/kg	62	0.0%	62	0.00017	0.00018	0.00018	0.00019	0.00018	0.00032	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2,2-Dimethylpentane	mg/kg	62	0.0%	62	0.00028	0.00028	0.00029	0.00031	0.00029	0.00055	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2,3-Dimethylpentane	mg/kg	62	0.0%	62	0.00023	0.00023	0.00023	0.00025	0.00024	0.00046	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2,4-Dimethylpentane	mg/kg	62	0.0%	62	0.00019	0.0002	0.0002	0.00022	0.0002	0.00051	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2-Chlorotoluene	mg/kg	62	0.0%	62	0.00034	0.00046	0.00047	0.00046	0.00048	0.0005	0	--	--	--	--	--	--	510	--	--	--	--	--	--	--
	2-Nitropropane	mg/kg	62	0.0%	62	0.00032	0.0018	0.0018	0.0017	0.0018	0.0019	0	--	--	--	--	--	--	0.34	--	--	--	--	--	--	--
	2-Phenylbutane	mg/kg	62	3.2%	60	0.00025	0.00025	0.00026	0.00026	0.00026	0.00034	2	0.0005	--	0.0005	0.0005	--	0.0005	220	0	--	--	--	--	--	--
	3,3-Dimethylpentane	mg/kg	62	0.0%	62	0.0002	0.00021	0.00021	0.00023	0.00022	0.0005	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3-Ethylpentane	mg/kg	62	0.0%	62	0.00021	0.00021	0.00022	0.00024	0.00022	0.00047	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3-Methylhexane	mg/kg	62	0.0%	62	0.00014	0.00014	0.00015	0.00017	0.00015	0.00049	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4-Chlorotoluene	mg/kg	62	0.0%	62	0.00025	0.0009	0.00091	0.00086	0.00092	0.00096	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Acetone	mg/kg	62	29.0%	44	0.0038	0.0039	0.004	0.0043	0.0041	0.0068	18	0.01	0.054	0.12	0.23	0.2	1.3	100000	0	0.8	2	16	0	--	--
	Acetonitrile	mg/kg	62	0.0%	62	0.002	0.002	0.0021	0.0022	0.0021	0.0037	0	--	--	--	--	--	--	2280	--	--	--	--	--	--	--
	Benzene	mg/kg	62	0.0%	62	0.00017	0.00017	0.00018	0.00019	0.00018	0.00034	0	--	--	--	--	--	--	1.6	--	0.002	--	0.04	--	--	--
	Bromobenzene	mg/kg	62	0.0%	62	0.00023	0.00023	0.00023	0.00025	0.00024	0.00039	0	--	--	--	--	--	--	100	--	--	--	--	--	--	--

TABLE 1
2008/2009 SEWER ALIGNMENT EXCAVATION SOIL RESULTS SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

					Censored (Non-Detect) Data							Detected Data[a]														
Parameter of Interest	**Compound List**	**Units**	**Total Count**	**Detect Freq.**	**ND Count**	**Min**	**Q1**	**Median**	**Mean**	**Q3**	**Max**	**Detect Count**	**Min**	**Q1**	**Median**	**Mean**	**Q3**	**Max**	**NDEP OW Soil BCL[b]**	**Count of Detects > BCL**	**NDEP LBCL (DAF 1)[c]**	**Count of Detects > DAF 1**	**NDEP LBCL (DAF 20)[c]**	**Count of Detects > DAF 20**	**Max. Bkgrnd[d]**	**Count of Detects > Bkgrnd**
Volatile Organic Compounds	Bromodichloromethane	mg/kg	62	0.0%	62	0.00032	0.00034	0.00034	0.00034	0.00035	0.00037	0	--	--	--	--	--	--	51.0	--	0.03	--	0.6	--	--	--
	Bromomethane	mg/kg	62	0.0%	62	0.00031	0.00032	0.00032	0.00033	0.00033	0.00042	0	--	--	--	--	--	--	15.0	--	0.01	--	0.2	--	--	--
	Carbon disulfide	mg/kg	62	0.0%	62	0.00028	0.00056	0.00057	0.00055	0.00058	0.0006	0	--	--	--	--	--	--	720	--	2	--	40	--	--	--
	Carbon tetrachloride	mg/kg	62	0.0%	62	0.00031	0.00092	0.00093	0.00089	0.00095	0.00099	0	--	--	--	--	--	--	0.58	--	0.003	--	0.06	--	--	--
	CFC-11	mg/kg	62	0.0%	62	0.00031	0.00051	0.00052	0.0005	0.00053	0.00055	0	--	--	--	--	--	--	1420	--	--	--	--	--	--	--
	CFC-12	mg/kg	62	0.0%	62	0.00025	0.00038	0.00038	0.00038	0.00039	0.00041	0	--	--	--	--	--	--	340	--	--	--	--	--	--	--
	Chlorinated fluorocarbon (Freon 113)	mg/kg	62	0.0%	62	0.00025	0.00054	0.00055	0.00053	0.00056	0.00059	0	--	--	--	--	--	--	5550	--	--	--	--	--	--	--
	Chlorobenzene	mg/kg	62	0.0%	62	0.00012	0.00013	0.00013	0.00014	0.00013	0.00032	0	--	--	--	--	--	--	500	--	0.07	--	1.4	--	--	--
	Chlorobromomethane	mg/kg	62	0.0%	62	0.00041	0.00042	0.00043	0.00043	0.00044	0.00046	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Chlorodibromomethane	mg/kg	62	0.0%	62	0.00029	0.00029	0.0003	0.0003	0.0003	0.00032	0	--	--	--	--	--	--	2.3	--	0.02	--	0.4	--	--	--
	Chloroethane	mg/kg	62	0.0%	62	0.00031	0.00036	0.00036	0.00036	0.00037	0.00038	0	--	--	--	--	--	--	1100.0	--	--	--	--	--	--	--
	Chloroform	mg/kg	62	1.6%	61	0.00014	0.00014	0.00015	0.00016	0.00015	0.00037	1	0.00083	--	0.00083	0.00083	--	0.00083	0.58	0	0.03	0	0.6	0	--	--
	Chloromethane	mg/kg	62	0.0%	62	0.00028	0.00045	0.00046	0.00045	0.00047	0.00049	0	--	--	--	--	--	--	3	--	--	--	--	--	--	--
	cis-1,2-Dichloroethylene	mg/kg	62	0.0%	62	0.00034	0.00044	0.00044	0.00044	0.00045	0.00047	0	--	--	--	--	--	--	1200	--	0.02	--	0.4	--	--	--
	cis-1,3-Dichloropropylene	mg/kg	62	0.0%	62	0.00024	0.00074	0.00075	0.00071	0.00076	0.0008	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Cymene	mg/kg	62	0.0%	62	0.00024	0.00024	0.00025	0.00025	0.00025	0.00027	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Dibromomethane	mg/kg	62	0.0%	62	0.00035	0.00036	0.00036	0.00036	0.00037	0.00038	0	--	--	--	--	--	--	11400	--	--	--	--	--	--	--
	Dichloromethane	mg/kg	62	22.6%	48	0.0024	0.0025	0.0026	0.0026	0.0026	0.0027	14	0.0026	0.0035	0.0041	0.0062	0.0073	0.018	22.0	0	0.001	14	0.02	0	--	--
	Ethanol	mg/kg	62	0.0%	62	0.062	0.2	0.2	0.19	0.2	0.21	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ethylbenzene	mg/kg	62	1.6%	61	0.00019	0.00019	0.00019	0.0002	0.0002	0.0003	1	0.0028	--	0.0028	0.0028	--	0.0028	7	0	0.7	0	14	0	--	--
	Hexane, 2-methyl-	mg/kg	62	0.0%	62	0.0002	0.00021	0.00021	0.00024	0.00022	0.00053	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Isopropylbenzene	mg/kg	62	0.0%	62	0.00018	0.00018	0.00018	0.00019	0.00019	0.0003	0	--	--	--	--	--	--	600	--	--	--	--	--	--	--
	m,p-Xylene	mg/kg	62	4.8%	59	0.00046	0.00058	0.00058	0.00058	0.0006	0.00062	3	0.0018	0.0018	0.0066	0.0061	0.01	0.01	210	0	10	0	200	0	--	--
	Methyl disulfide	mg/kg	62	0.0%	62	0.00021	0.00022	0.00022	0.00024	0.00023	0.0005	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Methyl ethyl ketone	mg/kg	62	9.7%	56	0.00058	0.0014	0.0014	0.0013	0.0014	0.0015	6	0.0032	0.0052	0.0066	0.0066	0.0082	0.0093	34100	0	--	--	--	--	--	--
	Methyl iodide	mg/kg	62	0.0%	62	0.00026	0.00026	0.00027	0.00028	0.00027	0.0004	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Methyl isobutyl ketone	mg/kg	62	3.2%	60	0.00031	0.0016	0.0017	0.0015	0.0017	0.0018	2	0.0059	--	0.0066	0.0066	--	0.0072	17200	0	--	--	--	--	--	--
	Methyl n-butyl ketone	mg/kg	62	3.2%	60	0.00028	0.00029	0.00029	0.00029	0.0003	0.00031	2	0.0074	--	0.01	0.01	--	0.013	--	--	--	--	--	--	--	--
	MTBE (Methyl tert-butyl ether)	mg/kg	62	0.0%	62	0.00046	0.00047	0.00047	0.00048	0.00048	0.0005	0	--	--	--	--	--	--	79.0	--	--	--	--	--	--	--
	n-Butyl benzene	mg/kg	62	3.2%	60	0.0003	0.00054	0.00055	0.00053	0.00056	0.00058	2	0.0008	--	0.00083	0.00083	--	0.00085	240	0	--	--	--	--	--	--
	n-Heptane	mg/kg	62	0.0%	62	0.00016	0.00017	0.00017	0.00019	0.00017	0.00039	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	n-Propyl benzene	mg/kg	62	0.0%	62	0.00028	0.00096	0.00097	0.00092	0.00099	0.001	0	--	--	--	--	--	--	240	--	--	--	--	--	--	--
	o-Xylene	mg/kg	62	1.6%	61	0.00024	0.00031	0.00031	0.00031	0.00032	0.00034	1	0.0038	--	0.0038	0.0038	--	0.0038	280	0	9	0	180	0	--	--
	Styrene (monomer)	mg/kg	62	0.0%	62	0.00021	0.0012	0.0012	0.0012	0.0013	0.0013	0	--	--	--	--	--	--	1730	--	0.2	--	4	--	--	--
	tert-Butyl benzene	mg/kg	62	3.2%	60	0.00023	0.00027	0.00027	0.00027	0.00028	0.00029	2	0.00041	--	0.00043	0.00043	--	0.00045	390	0	--	--	--	--	--	--
	Tetrachloroethylene	mg/kg	62	0.0%	62	0.00028	0.00028	0.00028	0.0003	0.00029	0.00049	0	--	--	--	--	--	--	1.7	--	0.003	--	0.06	--	--	--
	Toluene	mg/kg	62	1.6%	61	0.00013	0.00013	0.00014	0.00014	0.00014	0.00028	1	0.00083	--	0.00083	0.00083	--	0.00083	520	0	0.6	0	12	0	--	--
	trans-1,2-Dichloroethylene	mg/kg	62	0.0%	62	0.00022	0.00023	0.00023	0.00024	0.00023	0.00036	0	--	--	--	--	--	--	200	--	0.03	--	0.6	--	--	--
	trans-1,3-Dichloropropylene	mg/kg	62	0.0%	62	0.00018	0.00021	0.00021	0.00021	0.00021	0.00022	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Tribromomethane	mg/kg	62	0.0%	62	0.00025	0.00025	0.00025	0.00027	0.00026	0.00043	0	--	--	--	--	--	--	240	--	0.04	--	0.8	--	--	--
	Trichloroethylene	mg/kg	62	0.0%	62	0.00027	0.00036	0.00037	0.00036	0.00038	0.00039	0	--	--	--	--	--	--	3.40	--	0.003	--	0.06	--	--	--
	Vinyl acetate	mg/kg	62	0.0%	62	0.00018	0.00018	0.00018	0.0002	0.00019	0.0004	0	--	--	--	--	--	--	1550	--	8	--	160	--	--	--
	Vinyl chloride	mg/kg	62	0.0%	62	0.00024	0.00024	0.00025	0.00025	0.00025	0.00034	0	--	--	--	--	--	--	0.86	--	0.0007	--	0.014	--	--	--
	Xylenes (total)	mg/kg	62	4.8%	59	0.00065	0.00087	0.00088	0.00087	0.0009	0.00094	3	0.0018	0.0018	0.0066	0.0075	0.014	0.014	210	0	10	0	200	0	--	--

Notes:
This table includes data only to 10 feet bgs, and does not include data from soil samples that have been excavated. Because of this, the total number of analyses does not always coincide with the total number of analyses reported in the tables in Appendix B, which include all data, regardless of depth or status.
The values used in this are simply a comparison to NDEP BCL values for information purposes only.
Because both non-detect and detected radionuclides have reported activity levels, calculated summary statistics are presented as detected regardless of the lab detect flag. Lab detect flags are represented by the censored (non-detect) and detect count fields in the table.
Values for Q1, median, mean, and Q3 are rounded to 2 significant figures. BCLs are rounded to 2 significant figures.
Max = Maximum
Min = Minimum
Q1 = 1st quartile (25th percentile)
Q3 = 3rd quartile (75th percentile)
a - Range of detections include estimated values of detect results between the detection limit and reporting limit. As such some minimum detected concentrations may be below the minimum reporting limit. In these cases the respective sample results are flagged in the dataset. For radionuclides, detected data is based on the actual reported value and includes non-detect data.
b - BCL = Basic Comparison Levels (BCLs) from NDEP 2009a. Values used are outdoor worker soil BCLs.
c - LBCL = Leaching-based BCLs from NDEP 2009a.
d - Values used are the maximum from the shallow soils background data set presented in the Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity (BRC/TIMET 2007).
e - Asbestos results shown are for long protocol structures (>10um). The minimum and maximum values represent the number of protocol structures in an individual sample. The detect count represents the number of samples with at least one detected protocol structure, not the total number of structures.
f - Agency for Toxic Substances and Disease Registry (ATSDR) action level of 1.0 parts per billion (ppb) (see text). TCDD TEQ values are calculated from congener-specific concentrations. An individual TCDD TEQ value may include detect and non-detect congeners. Therefore, the number of detects and non-detects, and a frequency of detection for TCDD TEQ are not presented.
-- = Not applicable or no value has been established.

TABLE 2
0 VS. 10 VS. 20 FEET BGS SAMPLE DATA COMPARISON
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Class	Chemical	Units	Max. Detect 0 feet bgs	Max. Detect 10 feet bgs	Max. Detect 20 feet bgs	Max. Background	Worker BCL	LBCL DAF1	LBCL DAF20	10 ft > 0 ft?	20 ft > 0 ft?	20 ft > 10 ft?	20 ft > Back	20 ft > BCL?	20 ft > DAF1?	20 ft > DAF20?	20 ft > 10 ft > 0 ft?
Aldehydes	Acetaldehyde	mg/kg	0.17	0.22	--	--	25.9	--	--	**YES**							**NO**
	Chloroacetaldehyde	mg/kg	--	--	--	--	--	--	--								**NO**
	Formaldehyde	mg/kg	0.97	1.4	--	--	41.6	--	--	**YES**							**NO**
Dioxins/Furans	TCDD TEQ (ppt)	ppt	984	1.5	--	--	1000	--	--								**NO**
General Chemistry/ Ions	Ammonia	mg/kg	2.1	1.2	1.1	--	100000	--	--								**NO**
	Bromide	mg/kg	2.2	--	--	--	--	--	--								**NO**
	Chlorate	mg/kg	16.2	14.3	1.6	--	--	--	--								**NO**
	Chloride	mg/kg	3820	2930	233	1110	--	--	--								**NO**
	Chlorite	mg/kg	99	96	--	--	--	--	--								**NO**
	Cyanide (Total)	mg/kg	0.28	--	--	--	13700	2	40								**NO**
	Fluoride	mg/kg	8.5	3.7	5.8	2.5	41000	--	--			**YES**	**YES**				**NO**
	Nitrate (as N)	mg/kg	441	115	5	102	--	--	--								**NO**
	Nitrite (as N)	mg/kg	0.98	--	--	0.21	--	--	--								**NO**
	Orthophosphate as P	mg/kg	22.1	1.5	3.2	--	--	--	--								**NO**
	Perchlorate	mg/kg	13.8	3.57	3.63	--	790	--	--			**YES**					**NO**
	Sulfate	mg/kg	15500	3260	803	4130	--	--	--								**NO**
	Sulfide	mg/kg	194	--	--	--	--	--	--								**NO**
	Total Kjeldahl Nitrogen	mg/kg	5100	85.6	--	--	--	--	--								**NO**
Metals	Aluminum	mg/kg	12000	12500	12200	15300	100000	--	--		**YES**						**NO**
	Antimony	mg/kg	1.7	0.21	1.3	0.5	450	75	1500			**YES**	**YES**				**NO**
	Arsenic	mg/kg	20.9	7.9	8.9	7.2	1.8	0.3	6			**YES**	**YES**	**YES**	**YES**	**YES**	**NO**
	Barium	mg/kg	1190	1100	459	836	100000	1	20						**YES**	**YES**	**NO**
	Beryllium	mg/kg	1.2	0.62	0.68	0.89	2150	82	1640			**YES**					**NO**
	Boron	mg/kg	10.1	7.8	9.7	11.6	100000	3	60			**YES**			**YES**		**NO**
	Cadmium	mg/kg	0.8	0.18	0.077	0.16	550	23	460								**NO**
	Calcium	mg/kg	55700	43800	30400	82800	--	0.4	8						**YES**	**YES**	**NO**
	Chromium (Total)	mg/kg	231	17.7	16	16.7	450	--	--								**NO**
	Chromium (VI)	mg/kg	20	0.46	0.13	0.251	450.0	2	40								**NO**
	Cobalt	mg/kg	11.5	10.7	8.7	16.3	330	2	40						**YES**		**NO**
	Copper	mg/kg	112	19.5	20.1	30.5	42200	33	660			**YES**					**NO**
	Iron	mg/kg	20100	19300	18700	19700	100000	35	700						**YES**	**YES**	**NO**
	Lead	mg/kg	214	25.3	11.2	35.1	800	7.5	150						**YES**		**NO**
	Lithium	mg/kg	17.2	25.4	17.1	26.5	2270	--	--								**NO**
	Magnesium	mg/kg	12200	11200	10600	17500	100000	--	--								**NO**
	Manganese	mg/kg	1700	1470	441	1090	13700	649	12970								**NO**
	Mercury	mg/kg	0.244	0.0167	0.007 J	0.11	180	3.3	66								**NO**
	Molybdenum	mg/kg	3	0.95	1.3	2	5680	0.1	2			**YES**			**YES**		**NO**
	Nickel	mg/kg	22.5	32.9	15.9	30	20100	3.6	72	**YES**					**YES**		**NO**
	Niobium	mg/kg	68	--	--	2.8	--	--	--								**NO**
	Palladium	mg/kg	1.3	1.1	--	1.5	--	--	--								**NO**
	Phosphorus	mg/kg	1920	1750	--	--	--	--	--								**NO**
	Platinum	mg/kg	0.17	--	--	0.099	--	--	--								**NO**
	Potassium	mg/kg	3020	2330	1790	3890	--	--	--								**NO**
	Selenium	mg/kg	--	--	--	0.6	5680	--	--								**NO**
	Silicon	mg/kg	1100	1210	--	4150	--	--	--								**NO**

TABLE 2
0 VS. 10 VS. 20 FEET BGS SAMPLE DATA COMPARISON
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 6)

Class	Chemical	Units	Max. Detect 0 feet bgs	Max. Detect 10 feet bgs	Max. Detect 20 feet bgs	Max. Background	Worker BCL	LBCL DAF1	LBCL DAF20	10 ft > 0 ft?	20 ft > 0 ft?	20 ft > 10 ft?	20 ft > Back	20 ft > BCL?	20 ft > DAF1?	20 ft > DAF20?	20 ft > 10 ft > 0 ft?
Metals	Silver	mg/kg	1.2	0.3	0.11	0.2609	5680	--	--								**NO**
	Sodium	mg/kg	1580	1260	812	1320	--	2	40						**YES**	**YES**	**NO**
	Strontium	mg/kg	417	557	485	808	100000	--	--		**YES**						**NO**
	Sulfur	mg/kg	9470	2160	--	--	--	--	--								**NO**
	Thallium	mg/kg	2.4	0.44	0.47	1.8	79.0	--	--			**YES**					**NO**
	Tin	mg/kg	9.3	0.54	--	0.8	100000	0.4	8								**NO**
	Titanium	mg/kg	2020	626	701	1010	100000	--	--			**YES**					**NO**
	Tungsten	mg/kg	19.3	1.2	1.4	2.5	8520	150030	3000600			**YES**					**NO**
	Uranium	mg/kg	2.9	2.4	1.9	2.37	3390	41	820								**NO**
	Vanadium	mg/kg	319	50.1	53.9	59.1	5680	13.5	270			**YES**			**YES**		**NO**
	Zinc	mg/kg	218	81.9	46.7	121	100000	300	6000								**NO**
	Zirconium	mg/kg	208	17.3	--	179	--	--	--								**NO**
Organochlorine Pesticides	2,4-DDD	mg/kg	0.048	--	--	--	--	--	--								**NO**
	2,4-DDE	mg/kg	0.7	0.034	--	--	--	--	--								**NO**
	4,4-DDD	mg/kg	0.0021	--	--	--	11.0	--	--								**NO**
	4,4-DDE	mg/kg	0.51	0.024	--	--	7.8	0.8	16								**NO**
	4,4-DDT	mg/kg	0.16	0.0079	--	--	7.8	3	60								**NO**
	Aldrin	mg/kg	0.0058	--	--	--	0.11	2	40								**NO**
	alpha-BHC	mg/kg	0.0022	--	--	--	0.40	0.02	0.4								**NO**
	alpha-Chlordane	mg/kg	--	--	--	--	--	0.00003	0.0006								**NO**
	beta-BHC	mg/kg	0.014	--	--	--	1.4	--	--								**NO**
	Chlordane	mg/kg	--	--	--	--	7.2	0.0001	0.002								**NO**
	delta-BHC	mg/kg	--	--	--	--	--	0.5	10								**NO**
	Dieldrin	mg/kg	--	--	--	--	0.12	--	--								**NO**
	Endosulfan I	mg/kg	--	--	--	--	--	0.0002	0.004								**NO**
	Endosulfan II	mg/kg	--	--	--	--	--	--	--								**NO**
	Endosulfan sulfate	mg/kg	--	--	--	--	--	--	--								**NO**
	Endrin	mg/kg	--	--	--	--	210	--	--								**NO**
	Endrin aldehyde	mg/kg	0.016	--	--	--	--	0.05	1								**NO**
	Endrin ketone	mg/kg	0.003	--	--	--	--	--	--								**NO**
	gamma-Chlordane	mg/kg	0.027	--	--	--	--	--	--								**NO**
	Heptachlor	mg/kg	--	--	--	--	0.43	--	--								**NO**
	Heptachlor epoxide	mg/kg	0.013	--	--	--	0.21	1	20								**NO**
	Lindane	mg/kg	--	--	--	--	1.9	0.03	0.6								**NO**
	Methoxychlor	mg/kg	0.0043	--	--	--	3420	0.0005	0.01								**NO**
	Toxaphene	mg/kg	--	--	--	--	1.7	8	160								**NO**
Polyaromatic Hydrocarbons (PAHs)	Acenaphthene	mg/kg	--	--	--	--	68100	2	40								**NO**
	Acenaphthylene	mg/kg	--	--	--	--	150	29	580								**NO**
	Anthracene	mg/kg	--	--	--	--	100000	--	--								**NO**
	Benzo(a)anthracene	mg/kg	--	--	--	--	2.3	590	11800								**NO**
	Benzo(a)pyrene	mg/kg	--	--	--	--	0.23	0.08	1.6								**NO**
	Benzo(b)fluoranthene	mg/kg	--	--	--	--	2.3	0.4	8								**NO**
	Benzo(g,h,i)perylene	mg/kg	--	--	--	--	34100	0.2	4								**NO**
	Benzo(k)fluoranthene	mg/kg	--	--	--	--	23.0	--	--								**NO**

TABLE 2
0 VS. 10 VS. 20 FEET BGS SAMPLE DATA COMPARISON
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Class	Chemical	Units	Max. Detect 0 feet bgs	Max. Detect 10 feet bgs	Max. Detect 20 feet bgs	Max. Background	Worker BCL	LBCL DAF1	LBCL DAF20	10 ft > 0 ft?	20 ft > 0 ft?	20 ft > 10 ft?	20 ft > Back	20 ft > BCL?	20 ft > DAF1?	20 ft > DAF20?	20 ft > 10 ft > 0 ft?
Polyaromatic Hydrocarbons (PAHs)	Chrysene	mg/kg	0.036	--	--	--	230	2	40								**NO**
	Dibenzo(a,h)anthracene	mg/kg	0.046	--	--	--	0.23	8	160								**NO**
	Indeno(1,2,3-cd)pyrene	mg/kg	0.018	--	--	--	2.3	0.08	1.6								**NO**
	Phenanthrene	mg/kg	--	--	--	--	25	0.7	14								**NO**
	Pyrene	mg/kg	--	--	--	--	34100	--	--								**NO**
Radionuclides	Radium-226	pCi/g	3.1	2.2	0.912	2.36	0.023	--	--					**YES**			**NO**
	Radium-228	pCi/g	5.59	2.35	1.69	2.94	0.041	0.016	0.32					**YES**	**YES**	**YES**	**NO**
	Thorium-228	pCi/g	3.38	2.15	1.76	2.28	0.03	0.016	0.32					**YES**	**YES**	**YES**	**NO**
	Thorium-230	pCi/g	3.71	2.57	2.31	3.01	8.3	0.0023	0.045						**YES**	**YES**	**NO**
	Thorium-232	pCi/g	3.07	2.13	1.52	2.23	7.4	0.00084	0.017						**YES**	**YES**	**NO**
	Uranium-233/234	pCi/g	4.07	2.97	1.78	2.84	11	0.0029	0.058						**YES**	**YES**	**NO**
	Uranium-235/236	pCi/g	0.336	0.306	0.254	0.21	0.35	--	--				**YES**				**NO**
	Uranium-238	pCi/g	3.04	2.58	1.43	2.37	1.4	--	--					**YES**			**NO**
Semivolatile Organic Compounds	1,2,4,5-Tetrachlorobenzene	mg/kg	--	--	--	--	210	--	--								**NO**
	1,2-Diphenylhydrazine	mg/kg	--	--	--	--	2.4	--	--								**NO**
	1,4-Dioxane	mg/kg	--	--	--	--	170	--	--								**NO**
	2,2'-/4,4'-Dichlorobenzil	mg/kg	0.87	--	--	--	340	--	--								**NO**
	2,4,5-Trichlorophenol	mg/kg	--	--	--	--	68400	14	280								**NO**
	2,4,6-Trichlorophenol	mg/kg	--	--	--	--	170	0.008	0.16								**NO**
	2,4-Dichlorophenol	mg/kg	--	--	--	--	2050	0.05	1								**NO**
	2,4-Dimethylphenol	mg/kg	--	--	--	--	13700	0.4	8								**NO**
	2,4-Dinitrophenol	mg/kg	--	--	--	--	1370	0.01	0.2								**NO**
	2,4-Dinitrotoluene	mg/kg	--	--	--	--	6.2	0.00004	0.0008								**NO**
	2,6-Dinitrotoluene	mg/kg	--	--	--	--	680	0.00003	0.0006								**NO**
	2-Chloronaphthalene	mg/kg	--	--	--	--	90800	--	--								**NO**
	2-Chlorophenol	mg/kg	--	--	--	--	5680	0.2	4								**NO**
	2-Methylnaphthalene	mg/kg	--	--	--	--	--	--	--								**NO**
	2-Nitroaniline	mg/kg	--	--	--	--	2030	--	--								**NO**
	2-Nitrophenol	mg/kg	--	--	--	--	--	--	--								**NO**
	3,3'-Dichlorobenzidine	mg/kg	--	--	--	--	4.3	0.0003	0.006								**NO**
	3-Methylphenol/4-Methylphenol	mg/kg	--	--	--	--	34200	--	--								**NO**
	3-Nitroaniline	mg/kg	--	--	--	--	--	--	--								**NO**
	4-Bromophenyl phenyl ether	mg/kg	--	--	--	--	--	--	--								**NO**
	4-Chloro-3-Methylphenol	mg/kg	--	--	--	--	--	--	--								**NO**
	4-Chlorophenyl phenyl ether	mg/kg	--	--	--	--	--	--	--								**NO**
	4-Chlorothioanisole	mg/kg	--	--	--	--	--	--	--								**NO**
	4-Nitrophenol	mg/kg	--	--	--	--	5470	--	--								**NO**
	Acetophenone	mg/kg	--	--	--	--	1740	--	--								**NO**
	Aniline	mg/kg	--	--	--	--	340	--	--								**NO**
	Azobenzene	mg/kg	--	--	--	--	14	--	--								**NO**
	Benzenethiol	mg/kg	--	--	--	--	--	--	--								**NO**
	Benzoic acid	mg/kg	--	--	--	--	100000	--	--								**NO**
	Benzyl alcohol	mg/kg	0.086	--	--	--	100000	20	400								**NO**
	Benzyl butyl phthalate	mg/kg	--	0.065	--	--	240	--	--	**YES**							**NO**

TABLE 2
0 VS. 10 VS. 20 FEET BGS SAMPLE DATA COMPARISON
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Class	Chemical	Units	Max. Detect 0 feet bgs	Max. Detect 10 feet bgs	Max. Detect 20 feet bgs	Max. Background	Worker BCL	LBCL DAF1	LBCL DAF20	10 ft > 0 ft?	20 ft > 0 ft?	20 ft > 10 ft?	20 ft > Back	20 ft > BCL?	20 ft > DAF1?	20 ft > DAF20?	20 ft > 10 ft > 0 ft?
Semivolatile Organic Compounds	bis(2-Chloroethoxy) methane	mg/kg	--	--	--	--	--	810	16200								NO
	bis(2-Chloroethyl) ether	mg/kg	--	--	--	--	0.62	--	--								NO
	bis(2-Chloroisopropyl) ether	mg/kg	--	--	--	--	8.2	0.00002	0.0004								NO
	bis(2-Ethylhexyl) phthalate	mg/kg	0.15	--	--	--	140	--	--								NO
	bis(p-Chlorophenyl) disulfide	mg/kg	--	--	--	--	--	180	3600								NO
	bis(p-Chlorophenyl) sulfone	mg/kg	--	--	--	--	--	--	--								NO
	Carbazole	mg/kg	--	--	--	--	96.0	--	--								NO
	Dibenzofuran	mg/kg	--	--	--	--	2270	0.03	0.6								NO
	Dibutyl phthalate	mg/kg	--	--	--	--	68400	--	--								NO
	Diethyl phthalate	mg/kg	--	--	--	--	100000	270	5400								NO
	Dimethyl phthalate	mg/kg	--	--	--	--	100000	--	--								NO
	Di-n-octyl phthalate	mg/kg	--	--	--	--	--	--	--								NO
	Diphenyl sulfone	mg/kg	--	--	--	--	2050	--	--								NO
	Fluoranthene	mg/kg	--	--	--	--	24400	--	--								NO
	Fluorene	mg/kg	--	--	--	--	45400	210	4200								NO
	Hexachloro-1,3-butadiene	mg/kg	--	--	--	--	25	28	560								NO
	Hexachlorobenzene	mg/kg	0.91	0.11	--	--	1.2	0.1	2								NO
	Hexachlorocyclopentadiene	mg/kg	--	--	--	--	4060	0.1	2								NO
	Hexachloroethane	mg/kg	--	--	--	--	140	20	400								NO
	Hydroxymethyl phthalimide	mg/kg	--	--	--	--	--	0.02	0.4								NO
	Isophorone	mg/kg	--	--	--	--	2020	--	--								NO
	Naphthalene	mg/kg	--	--	--	--	6	0.03	0.6								NO
	Nitrobenzene	mg/kg	--	--	--	--	5	4	80								NO
	N-nitrosodi-n-propylamine	mg/kg	--	--	--	--	0.27	0.007	0.14								NO
	N-nitrosodiphenylamine	mg/kg	--	--	--	--	390	0.06	1.2								NO
	o-Cresol	mg/kg	--	--	--	--	34200	0.06	1.2								NO
	Octachlorostyrene	mg/kg	0.19	--	--	--	--	0.8	16								NO
	p-Chloroaniline	mg/kg	--	--	--	--	2740	--	--								NO
	p-Chlorothiophenol	mg/kg	--	--	--	--	--	0.03	0.6								NO
	Pentachlorobenzene	mg/kg	0.084	--	--	--	550	--	--								NO
	Pentachlorophenol	mg/kg	--	--	--	--	10.0	--	--								NO
	Phenol	mg/kg	--	--	--	--	100000	0.001	0.02								NO
	Phenyl Disulfide	mg/kg	--	--	--	--	--	5	100								NO
	Phenyl Sulfide	mg/kg	--	--	--	--	--	--	--								NO
	Phthalic acid	mg/kg	--	--	--	--	100000	--	--								NO
	p-Nitroaniline	mg/kg	--	--	--	--	--	--	--								NO
	Pyridine	mg/kg	--	--	--	--	680	--	--								NO
Volatile Organic Compounds	1,1,1,2-Tetrachloroethane	mg/kg	--	--	--	--	7.6	--	--								NO
	1,1,1-Trichloroethane	mg/kg	--	--	--	--	1390	--	--								NO
	1,1,2,2-Tetrachloroethane	mg/kg	--	--	--	--	0.97	0.1	2								NO
	1,1,2-Trichloroethane	mg/kg	--	--	--	--	2.1	0.0002	0.004								NO
	1,1-Dichloroethane	mg/kg	--	--	--	--	8	0.0009	0.018								NO
	1,1-Dichloroethylene	mg/kg	--	--	--	--	470	1	20								NO
	1,1-Dichloropropene	mg/kg	--	--	--	--	--	0.003	0.06								NO

TABLE 2
0 VS. 10 VS. 20 FEET BGS SAMPLE DATA COMPARISON
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Class	Chemical	Units	Max. Detect 0 feet bgs	Max. Detect 10 feet bgs	Max. Detect 20 feet bgs	Max. Background	Worker BCL	LBCL DAF1	LBCL DAF20	10 ft > 0 ft?	20 ft > 0 ft?	20 ft > 10 ft?	20 ft > Back	20 ft > BCL?	20 ft > DAF1?	20 ft > DAF20?	20 ft > 10 ft > 0 ft?
Volatile Organic Compounds	1,2,3-Trichlorobenzene	mg/kg	0.0023	--	--	--	--	--	--								**NO**
	1,2,3-Trichloropropane	mg/kg	--	--	--	--	1.6	--	--								**NO**
	1,2,4-Trichlorobenzene	mg/kg	0.0018	--	--	--	260	--	--								**NO**
	1,2,4-Trimethylbenzene	mg/kg	0.00099	--	--	--	220	0.3	6								**NO**
	1,2-Dibromo-3-chloropropane	mg/kg	0.0035	--	--	--	0.020	--	--								**NO**
	1,2-Dichlorobenzene	mg/kg	0.0011	--	--	--	370	--	--								**NO**
	1,2-Dichloroethane	mg/kg	--	--	--	--	0.84	0.9	18								**NO**
	1,2-Dichloroethylene	mg/kg	--	--	--	--	--	0.001	0.02								**NO**
	1,2-Dichloropropane	mg/kg	--	--	--	--	1.60	--	--								**NO**
	1,3,5-Trichlorobenzene	mg/kg	--	--	--	--	--	0.001	0.02								**NO**
	1,3,5-Trimethylbenzene	mg/kg	0.00064	--	--	--	78.0	--	--								**NO**
	1,3-Dichlorobenzene	mg/kg	0.0005	--	--	--	370	--	--								**NO**
	1,3-Dichloropropane	mg/kg	--	--	--	--	1130	--	--								**NO**
	1,4-Dichlorobenzene	mg/kg	0.0016	--	--	--	5.1	0.001	0.02								**NO**
	1-Nonanal	mg/kg	0.0067	--	--	--	--	0.1	2								**NO**
	2,2,3-Trimethylbutane	mg/kg	--	--	--	--	--	--	--								**NO**
	2,2-Dichloropropane	mg/kg	--	--	--	--	--	--	--								**NO**
	2,2-Dimethylpentane	mg/kg	--	--	--	--	--	--	--								**NO**
	2,3-Dimethylpentane	mg/kg	--	--	--	--	--	--	--								**NO**
	2,4-Dimethylpentane	mg/kg	--	--	--	--	--	--	--								**NO**
	2-Chlorotoluene	mg/kg	--	--	--	--	510	--	--								**NO**
	2-Nitropropane	mg/kg	--	--	--	--	0.34	--	--								**NO**
	2-Phenylbutane	mg/kg	0.0005	--	--	--	220	--	--								**NO**
	3,3-Dimethylpentane	mg/kg	--	--	--	--	--	--	--								**NO**
	3-Ethylpentane	mg/kg	--	--	--	--	--	--	--								**NO**
	3-Methylhexane	mg/kg	--	--	--	--	--	--	--								**NO**
	4-Chlorotoluene	mg/kg	--	--	--	--	--	--	--								**NO**
	Acetone	mg/kg	1.3	0.01	--	--	100000	--	--								**NO**
	Acetonitrile	mg/kg	--	--	--	--	2280	0.8	16								**NO**
	Benzene	mg/kg	--	--	--	--	1.6	--	--								**NO**
	Bromobenzene	mg/kg	--	--	--	--	100	0.002	0.04								**NO**
	Bromodichloromethane	mg/kg	--	--	--	--	51.0	--	--								**NO**
	Bromomethane	mg/kg	--	--	--	--	15.0	0.03	0.6								**NO**
	Carbon disulfide	mg/kg	--	--	--	--	720	0.01	0.2								**NO**
	Carbon tetrachloride	mg/kg	--	--	--	--	0.58	2	40								**NO**
	CFC-11	mg/kg	--	--	--	--	1420	0.003	0.06								**NO**
	CFC-12	mg/kg	--	--	--	--	340	--	--								**NO**
	Freon 113	mg/kg	--	--	--	--	5550	--	--								**NO**
	Chlorobenzene	mg/kg	--	--	--	--	500	--	--								**NO**
	Chlorobromomethane	mg/kg	--	--	--	--	--	0.07	1.4								**NO**
	Chlorodibromomethane	mg/kg	--	--	--	--	2.3	--	--								**NO**
	Chloroethane	mg/kg	--	--	--	--	1100.0	0.02	0.4								**NO**
	Chloroform	mg/kg	0.00083	--	--	--	0.58	--	--								**NO**
	Chloromethane	mg/kg	--	--	--	--	3	0.03	0.6								**NO**

TABLE 2
0 VS. 10 VS. 20 FEET BGS SAMPLE DATA COMPARISON
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Class	Chemical	Units	Max. Detect 0 feet bgs	Max. Detect 10 feet bgs	Max. Detect 20 feet bgs	Max. Background	Worker BCL	LBCL DAF1	LBCL DAF20	10 ft > 0 ft?	20 ft > 0 ft?	20 ft > 10 ft?	20 ft > Back	20 ft > BCL?	20 ft > DAF1?	20 ft > DAF20?	20 ft > 10 ft > 0 ft?
Volatile Organic Compounds	cis-1,2-Dichloroethylene	mg/kg	--	--	--	--	1200	--	--								NO
	cis-1,3-Dichloropropylene	mg/kg	--	--	--	--	--	0.02	0.4								NO
	Cymene	mg/kg	--	--	--	--	--	--	--								NO
	Dibromomethane	mg/kg	--	--	--	--	11400	--	--								NO
	Dichloromethane	mg/kg	0.018	0.0031	--	--	22.0	--	--								NO
	Ethanol	mg/kg	--	--	--	--	--	0.001	0.02								NO
	Ethylbenzene	mg/kg	0.0028	--	--	--	7	--	--								NO
	Hexane, 2-methyl-	mg/kg	--	--	--	--	--	0.7	14								NO
	Isopropylbenzene	mg/kg	--	--	--	--	600	--	--								NO
	m,p-Xylene	mg/kg	0.01	--	--	--	210	--	--								NO
	Methyl disulfide	mg/kg	--	--	--	--	--	10	200								NO
	Methyl ethyl ketone	mg/kg	0.0093	--	--	--	34100	--	--								NO
	Methyl iodide	mg/kg	--	--	--	--	--	--	--								NO
	Methyl isobutyl ketone	mg/kg	0.0072	--	--	--	17200	--	--								NO
	Methyl n-butyl ketone	mg/kg	0.013	--	--	--	--	--	--								NO
	MTBE (Methyl tert-butyl ether)	mg/kg	--	--	--	--	79.0	--	--								NO
	n-Butyl benzene	mg/kg	0.00085	--	--	--	240	--	--								NO
	n-Heptane	mg/kg	--	--	--	--	--	--	--								NO
	n-Propyl benzene	mg/kg	--	--	--	--	240	--	--								NO
	o-Xylene	mg/kg	0.0038	--	--	--	280	--	--								NO
	Styrene (monomer)	mg/kg	--	--	--	--	1730	9	180								NO
	tert-Butyl benzene	mg/kg	0.00045	--	--	--	390	0.2	4								NO
	Tetrachloroethylene	mg/kg	--	--	--	--	1.7	--	--								NO
	Toluene	mg/kg	0.00083	--	--	--	520	0.003	0.06								NO
	trans-1,2-Dichloroethylene	mg/kg	--	--	--	--	200	0.6	12								NO
	trans-1,3-Dichloropropylene	mg/kg	--	--	--	--	--	0.03	0.6								NO
	Tribromomethane	mg/kg	--	--	--	--	240	--	--								NO
	Trichloroethylene	mg/kg	--	--	--	--	3.40	0.04	0.8								NO
	Vinyl acetate	mg/kg	--	--	--	--	1550	0.003	0.06								NO
	Vinyl chloride	mg/kg	--	--	--	--	0.86	8	160								NO
	Xylenes (total)	mg/kg	0.014	--	--	--	210	0.0007	0.014								NO

BCL = Basic Comparison Levels (BCLs) from NDEP 2009a.
LBCL = Leaching-based BCLs from NDEP 2009a.
Max = Maximum.
-- = Not applicable or no value has been established.
Background values are the maximum from the shallow soils background data set presented in the Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity (BRC/TIMET 2007).

TABLE 3
BACKGROUND COMPARISON SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 4)

Chemical	Background								Site							
	No. of Detects	Total Samples	% Detects	Min. Detect	Max. Detect	Median	Mean	Std. Dev.	No. of Detects	Total Samples	% Detects	Min. Detect	Max. Detect	Median	Mean	Std. Dev.
Aluminum	112	112	100%	3740	15300	8325	8892	2707	62	62	100%	4800	12500	8205	8568	1783
Antimony	49	112	44%	0.12	0.50	0.16	0.19	0.088	31	62	50%	0.13	1.7	0.16	0.21	0.27
Arsenic	112	112	100%	2.1	7.2	4.0	4.2	1.1	63	63	100%	1.7	20.9	4.7	6.0	3.8
Barium	112	112	100%	73	836	185	210	120	62	62	100%	154	1190	362	415	223
Beryllium	112	112	100%	0.16	0.89	0.54	0.57	0.16	62	62	100%	0.31	1.2	0.53	0.57	0.17
Boron	34	104	33%	5.2	11.6	1.6	3.4	2.7	7	62	11%	3.5	10.1	3.3	4.21	2.04
Cadmium	8	112	7%	0.095	0.16	0.065	0.068	0.015	58	62	94%	0.047	0.8	0.097	0.14	0.14
Calcium	104	104	100%	8160	82800	23650	28130	14860	62	62	100%	2520	55700	19750	21070	10320
Chromium (Total)	112	112	100%	2.6	16.7	8.9	9.0	2.9	62	62	100%	4.6	231	14.3	26.3	38.2
Chromium (VI)	0	104	0%	NA	NA	0.13	0.13	0.004202	31	62	50%	0.18	20	0.56	1.8	3.2
Cobalt	112	112	100%	3.7	16.3	8.7	8.5	2.3	62	62	100%	4.7	12.4	7.9	8.00	1.68
Copper	112	112	100%	10.1	30.5	17.7	17.6	3.8	62	62	100%	9.2	112	16.4	20.4	15.6
Iron	112	112	100%	5410	19700	13250	13050	3224	62	62	100%	9680	20100	13850	14130	2673
Lead	112	112	100%	3.0	35.1	7.6	8.9	4.5	62	62	100%	6.2	214	21.2	35.9	38.9
Lithium	104	104	100%	7.5	26.5	12.8	13.9	4.3	21	62	34%	8	29.5	2.7	7.5	7.4
Magnesium	112	112	100%	4580	17500	9575	9777	2957	62	62	100%	5140	12200	8240	8337	1647
Manganese	112	112	100%	151	1090	419	425	137	62	62	100%	212	1700	506	605	324
Mercury	85	112	76%	0.0084	0.11	0.014	0.017	0.016	18	62	29%	0.0054	0.24	0.0033	0.015	0.036
Molybdenum	112	112	100%	0.17	2.0	0.5	0.56	0.28	49	62	79%	0.29	3.0	0.64	0.83	0.73
Nickel	112	112	100%	7.9	30	15.5	15.5	4.1	62	62	100%	7.9	36.5	14.5	15.6	4.9
Niobium	0	104	0%	NA	NA	0.51	0.51	0	13	57	23%	3.3	68	1.5	5.0	10.4
Palladium	104	104	100%	0.14	1.5	0.40	0.46	0.24	57	57	100%	0.21	1.3	0.49	0.55	0.24
Phosphorus	104	104	100%	636	2010	1460	1415	328	57	57	100%	523	1920	1190	1182	288
Platinum	5	104	5%	0.045	0.099	0.022	0.024	0.011	8	57	14%	0.051	0.17	0.024	0.04	0.03

TABLE 3
BACKGROUND COMPARISON SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

	Background								Site							
Chemical	**No. of Detects**	**Total Samples**	**% Detects**	**Min. Detect**	**Max. Detect**	**Median**	**Mean**	**Std. Dev.**	**No. of Detects**	**Total Samples**	**% Detects**	**Min. Detect**	**Max. Detect**	**Median**	**Mean**	**Std. Dev.**
Potassium	104	104	100%	625	3890	1535	1730	733	62	62	100%	779	3020	1560	1593	453
Selenium	47	112	42%	0.10	0.60	0.079	0.18	0.13	0	62	0%	NA	NA	0.16	0.15	0.04
Silicon	104	104	100%	335	4150	720	981	780	57	57	100%	122	1210	167	364	297
Silver	8	112	7%	0.043	0.083	0.13	0.13	0.019	62	62	100%	0.051	1.2	0.1	0.17	0.20
Sodium	104	104	100%	111	1320	452	485.7	286	62	62	100%	130	1580	562	612	324
Strontium	104	104	100%	69	808	186	223	132	62	62	100%	59.7	557	189	214	91.3
Thallium	34	112	30%	0.12	1.8	0.27	0.52	0.48	21	62	34%	0.11	2.4	0.15	0.37	0.45
Tin	103	104	99%	0.2	0.8	0.49	0.48	0.13	52	62	84%	0.33	9.3	0.52	1.04	1.62
Titanium	112	112	100%	200	1010	511	525	167	62	62	100%	297	2020	508	589	303
Tungsten	0	104	0%	NA	NA	0.0088	0.0088	0	41	62	66%	0.3	19.3	0.93	2.3	3.6
Uranium	103	103	100%	0.43	2.7	0.94	1.0	0.31	62	62	100%	0.41	2.9	0.92	1.1	0.60
Vanadium	112	112	100%	19.2	59.1	36.1	36.8	9.6	62	62	100%	24.4	319	43.9	61.3	53.4
Zinc	112	112	100%	15.4	121	37.8	37.7	12.9	62	62	100%	23.3	218	43.0	54.8	37.1
Zirconium	104	104	100%	60.1	179	125	126	26.7	57	57	100%	9.7	208	17.9	31.0	39.1
Radium-226	104	104	100%	0.49	2.4	1.1	1.1	0.35	57	63	90%	0.53	3.1	1.2	1.3	0.6
Radium-228	84	84	100%	0.95	2.9	2.0	1.9	0.40	61	63	97%	0.794	5.6	1.8	1.9	0.79
Thorium-228	112	112	100%	1.2	2.3	1.7	1.7	0.27	60	63	95%	0.976	3.4	1.9	1.9	0.65
Thorium-230	112	112	100%	0.66	3.0	1.2	1.3	0.39	62	63	98%	0.644	3.7	1.2	1.3	0.62
Thorium-232	112	112	100%	1.1	2.2	1.6	1.6	0.26	63	63	100%	0.791	3.1	1.4	1.5	0.44
Uranium-233/234	112	112	100%	0.47	2.8	1.0	1.1	0.46	50	63	79%	0.59	4.1	1.2	1.5	0.72
Uranium-235/236	50	112	45%	0.037	0.21	0.060	0.069	0.037	6	63	10%	0.13	0.31	0.092	0.10	0.080
Uranium-238	112	112	100%	0.57	2.4	1.0	1.1	0.37	63	63	100%	0.46	3.0	1.0	1.2	0.53

Note: Summary and background comparison statistics were performed using one-half the detection limit for metals and using GiSdT® (Neptune and Company 2009).
BOLD with Highlight indicates Site concentrations are greater than background.
WRS = Wilcoxon Rank Sum Test with the Gehan Modification

TABLE 3
BACKGROUND COMPARISON SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	T Test *p*	Quantile Test *p*	Slippage Test *p*	WRS Test *p*	Greater than Background?	Units	Basis
Aluminum	8.3 E-1	1.0 E+0	1.0 E+0	6.2 E-1	NO	mg/kg	Multiple tests
Antimony	2.8 E-1	1.4 E-1	1.5 E-2	1.0 E+0	YES	mg/kg	Statistical tests indicate datasets are similar, however, the four max site detects are greater than the background max detect.
Arsenic	1.8 E-4	1.5 E-4	7.1 E-7	3.3 E-4	YES	mg/kg	Multiple tests
Barium	1.3 E-9	6.3 E-10	5.2 E-3	4.4 E-16	YES	mg/kg	Multiple tests
Beryllium	6.1 E-1	9.9 E-1	4.4 E-2	7.5 E-1	NO	mg/kg	Multiple tests
Boron	1.6 E-2	1.0 E+0	1.0 E+0	2.1 E-14	NO	mg/kg	Multiple tests; low detection frequency; detection limits in background are lower than those at the site
Cadmium	8.1 E-5	7.7 E-8	6.3 E-6	1.0 E+0	YES	mg/kg	Multiple tests
Calcium	1.0 E+0	9.9 E-1	1.0 E+0	1.0 E+0	NO	mg/kg	Multiple tests
Chromium (Total)	3.6 E-4	2.8 E-13	1.1 E-10	1.2 E-13	YES	mg/kg	Multiple tests
Chromium (VI)	5.2 E-5	4.9 E-16	NA	0.0 E+0	YES	mg/kg	Background are non-detect
Cobalt	9.5 E-1	1.0 E+0	1.0 E+0	9.3 E-1	NO	mg/kg	Multiple tests
Copper	8.7 E-2	7.9 E-1	1.7 E-3	8.6 E-1	NO	mg/kg	Multiple tests
Iron	9.7 E-3	3.8 E-1	3.6 E-1	3.5 E-2	NO	mg/kg	Multiple tests
Lead	4.7 E-7	1.5 E-14	1.1 E-10	0.0 E+0	YES	mg/kg	Multiple tests
Lithium	1.0 E+0	9.7 E-1	3.7 E-1	1.0 E+0	NO	mg/kg	Multiple tests; low detection frequency; site max detect and median are less than background
Magnesium	1.0 E+0	1.0 E+0	1.0 E+0	1.0 E+0	NO	mg/kg	Multiple tests
Manganese	4.1 E-5	5.1 E-5	5.2 E-3	2.0 E-5	YES	mg/kg	Multiple tests
Mercury	6.8 E-1	1.0 E+0	3.6 E-1	1.0 E+0	NO	mg/kg	Multiple tests
Molybdenum	3.6 E-3	4.6 E-3	1.7 E-3	9.9 E-3	YES	mg/kg	Multiple tests
Nickel	4.3 E-1	9.0 E-1	1.3 E-1	6.8 E-1	NO	mg/kg	Multiple tests
Niobium	8.9 E-4	4.5 E-8	NA	0.0 E+0	YES	mg/kg	Multiple tests
Palladium	1.8 E-2	1.5 E-1	1.0 E+0	2.7 E-3	NO	mg/kg	Multiple tests; maximum detect less than maximum background
Phosphorus	1.0 E+0	1.0 E+0	1.0 E+0	1.0 E+0	NO	mg/kg	Multiple tests
Platinum	6.6 E-3	1.0 E-2	1.5 E-2	0.0 E+0	YES	mg/kg	Multiple tests

TABLE 3
BACKGROUND COMPARISON SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	T Test *p*	Quantile Test *p*	Slippage Test *p*	WRS Test *p*	Greater than Background?	Units	Basis
Potassium	9.3 E-1	9.2 E-1	1.0 E+0	6.7 E-1	NO	mg/kg	Multiple tests
Selenium	9.5 E-1	1.0 E+0	1.0 E+0	1.3 E-10	NO	mg/kg	Non-detect at the site
Silicon	1.0 E+0	1.0 E+0	1.0 E+0	1.0 E+0	NO	mg/kg	Multiple tests
Silver	3.9 E-2	1.9 E-4	5.2 E-5	1.0 E+0	YES	mg/kg	Low detection frequency; max >10 x max background
Sodium	6.4 E-3	3.9 E-2	1.4 E-1	5.5 E-3	YES	mg/kg	Max site detect, site median and mean are greater than background
Strontium	7.0 E-1	3.8 E-1	1.0 E+0	2.6 E-1	NO	mg/kg	Multiple tests
Thallium	9.8 E-1	3.8 E-1	3.6 E-1	1.0 E+0	NO	mg/kg	Mulitple tests; low detection frequency
Tin	3.9 E-3	4.5 E-5	2.9 E-10	3.0 E-3	YES	mg/kg	Multiple tests
Titanium	6.4 E-2	5.2 E-1	1.5 E-2	3.2 E-1	YES	mg/kg	Max site detect is twice the background max detect
Tungsten	3.8 E-6	1.3 E-23	NA	0.0 E+0	YES	mg/kg	Multiple tests
Uranium	7.4 E-2	4.8 E-2	1.4 E-1	6.9 E-1	NO	mg/kg	Multiple tests
Vanadium	3.2 E-4	4.5 E-4	5.6 E-8	6.2 E-6	YES	mg/kg	Multiple tests
Zinc	3.8 E-4	1.8 E-2	1.5 E-2	6.8 E-5	YES	mg/kg	Multiple tests
Zirconium	1.0 E+0	1.0 E+0	1.2 E-1	1.0 E+0	NO	mg/kg	Multiple tests
Radium-226	1.7 E-2	7.6 E-3	1.9 E-2	8.0 E-3	YES	pCi/g	Multiple tests
Radium-228	4.8 E-1	5.8 E-2	1.3 E-2	7.9 E-1	YES	pCi/g	While passes multiple tests, secular equilibrium exhibited with other constituents that fail several tests.
Thorium-228	1.4 E-2	2.7 E-4	2.2 E-7	2.0 E-2	YES	pCi/g	Multiple tests
Thorium-230	1.7 E-1	4.9 E-1	1.3 E-1	4.5 E-1	YES	pCi/g	While passes multiple tests, secular equilibrium exhibited with other constituents that fail several tests.
Thorium-232	9.8 E-1	8.6 E-1	4.5 E-2	1.0 E+0	YES	pCi/g	While passes multiple tests, secular equilibrium exhibited with other constituents that fail several tests.
Uranium-233/234	3.1 E-2	1.9 E-3	1.6 E-2	6.0 E-4	YES	pCi/g	Multiple tests
Uranium-235/236	2.6 E-1	1.0 E+0	1.2 E-1	6.1 E-4	YES	pCi/g	While passes multiple tests, secular equilibrium exhibited with other constituents that fail several tests.
Uranium-238	1.8 E-1	4.0 E-1	1.3 E-1	5.0 E-1	YES	pCi/g	While passes multiple tests, secular equilibrium exhibited with other constituents that fail several tests.

Note: Summary and background comparison statistics were performed using one-half the detection limit for metals and using GiSdT® (Neptune and Company 2009).
BOLD with Highlight indicates Site concentrations are greater than background.
WRS = Wilcoxon Rank Sum Test with the Gehan Modification

TABLE 4
CHEMICALS OF POTENTIAL CONCERN (COPC) SELECTION
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 3)

Chemical[a]	Units	Number of Detects	Total Count	Detect Freq.	Minimum Detect	Maximum Detect	Greater than Background?	PBT(1) or Class A Carcinogen?	COPC?	Rationale
Dioxins / Furans										
TCDD TEQ	pg/g	--	60	--	0.23	984	N/A	Yes	Yes	(1)(3)(10)
Inorganics										
Aluminum	mg/kg	62	62	100%	4800	12500	NO	No	No	(5)(6)
Antimony	mg/kg	31	62	50%	0.13	1.7	YES	No	Yes	(5)(9)
Arsenic	mg/kg	63	63	100%	1.7	20.9	YES	Yes	Yes	(5)(9)
Asbestos	Structures	16	52	31%	1	10	N/A	Yes	Yes	(1)(5)
Barium	mg/kg	62	62	100%	154	1190	YES	No	Yes	(5)(9)
Beryllium	mg/kg	62	62	100%	0.31	1.2	NO	No	No	(5)(6)
Boron	mg/kg	3	62	5%	7.8	10.1	NO	No	No	(5)(6)
Bromide	mg/kg	2	62	3%	0.58	2.2	NA	No	No	(11)
Cadmium	mg/kg	53	62	85%	0.057	0.8	YES	No	Yes	(5)(9)
Calcium	mg/kg	62	62	100%	2520	55700	NO	No	No	(5)(6)
Chloride	mg/kg	62	62	100%	1.4	3820	N/A	No	No	(11)
Chlorate	mg/kg	25	62	40%	0.8	16.2	N/A	No	No	(11)
Chlorite	mg/kg	57	57	100%	81	99	N/A	No	No	(11)
Chromium (Total)	mg/kg	62	62	100%	4.6	231	YES	No	Yes	(5)(9)
Chromium (VI)	mg/kg	31	62	50%	0.18	20	YES	Yes	Yes	(5)(9)
Cobalt	mg/kg	62	62	100%	4.7	12.4	NO	No	No	(5)(6)
Copper	mg/kg	62	62	100%	9.2	112	NO	No	No	(5)(6)
Cyanide (Total)	mg/kg	12	61	20%	0.084	0.28	N/A	No	Yes	(5)
Fluoride	mg/kg	59	62	95%	0.55	21.4	N/A	No	Yes	(5)
Iron	mg/kg	62	62	100%	9680	20100	NO	No	No	(5)(6)
Lead	mg/kg	62	62	100%	6.2	214	YES	Yes	No	(13)
Lithium	mg/kg	21	62	34%	8	29.5	NO	No	No	(5)(6)
Magnesium	mg/kg	62	62	100%	5140	12200	NO	No	No	(5)(6)
Manganese	mg/kg	62	62	100%	212	1700	YES	Yes	Yes	(5)(9)
Mercury	mg/kg	18	62	29%	0.0054	0.244	NO	No	No	(5)(6)
Molybdenum	mg/kg	44	62	71%	0.29	3	YES	No	Yes	(5)(9)
Nickel	mg/kg	62	62	100%	7.9	36.5	NO	No	No	(5)(6)
Niobium	mg/kg	13	57	23%	3.3	68	YES	No	No	(11)
Nitrate (as N)	mg/kg	62	62	100%	0.64	441	N/A	No	Yes	(5)(9)
Nitrite (as N)	mg/kg	8	62	13%	0.052	0.98	N/A	No	Yes	(5)(9)
Orthophosphate as P	mg/kg	12	62	19%	1.5	22.1	N/A	No	No	(11)
Palladium	mg/kg	57	57	100%	0.21	1.3	NO	No	No	(5)(6)
Perchlorate	mg/kg	60	62	97%	0.0064	13.8	N/A	No	Yes	(5)
Phosphorus	mg/kg	57	57	100%	523	1920	NO	No	No	(5)(6)
Platinum	mg/kg	8	57	14%	0.051	0.17	YES	No	No	(11)
Potassium	mg/kg	62	62	100%	779	3020	NO	No	No	(5)(6)
Silicon	mg/kg	57	57	100%	122	1210	NO	No	No	(5)(6)
Silver	mg/kg	62	62	100%	0.051	1.2	YES	No	Yes	(5)(9)

TABLE 4
CHEMICALS OF POTENTIAL CONCERN (COPC) SELECTION
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical[a]	Units	Number of Detects	Total Count	Detect Freq.	Minimum Detect	Maximum Detect	Greater than Background?	PBT(1) or Class A Carcinogen?	COPC?	Rationale
Sodium	mg/kg	62	62	100%	130	1580	YES	No	No	(11)
Strontium	mg/kg	62	62	100%	59.7	557	NO	No	No	(5)(6)
Sulfate	mg/kg	62	62	100%	7.2	15500	N/A	No	No	(11)
Sulfide	mg/kg	8	62	13%	30.3	194	N/A	No	No	(11)
Sulfur	mg/kg	12	57	21%	1100	9470	N/A	No	No	(11)
Thallium	mg/kg	16	62	26%	0.35	2.4	NO	No	No	(5)(6)
Tin	mg/kg	52	62	84%	0.33	9.3	YES	No	Yes	(5)(9)
Titanium	mg/kg	62	62	100%	297	2020	YES	No	Yes	(5)(9)
Total Kjeldahl Nitrogen (TKN)	mg/kg	43	57	75%	26	5100	N/A	No	No	(11)
Tungsten	mg/kg	36	62	58%	0.59	19.3	YES	No	Yes	(5)(9)
Uranium	mg/kg	62	62	100%	0.41	2.9	NO	No	No	(5)(6)
Vanadium	mg/kg	62	62	100%	24.4	319	YES	No	Yes	(5)(9)
Zinc	mg/kg	62	62	100%	23.3	218	YES	No	Yes	(5)(9)
Zirconium	mg/kg	57	57	100%	9.7	208	NO	No	No	(5)(6)
Organochlorine Pesticides										
2,4-DDE	mg/kg	34	62	55%	0.0018	0.7	N/A	Yes	Yes	(1)(5)
2,4-DDD	mg/kg	8	62	13%	0.0028	0.048	N/A	Yes	Yes	(1)(5)
4,4-DDD	mg/kg	1	62	2%	0.0021	0.0021	N/A	Yes	Yes	(7)
4,4-DDE	mg/kg	38	62	61%	0.0021	0.51	N/A	Yes	Yes	(1)(5)
4,4-DDT	mg/kg	21	62	34%	0.0026	0.16	N/A	Yes	Yes	(1)(5)
beta-BHC	mg/kg	15	62	24%	0.0021	0.014	N/A	No	Yes	(5)
Endrin aldehyde	mg/kg	5	62	8%	0.0019	0.016	N/A	No	Yes	(5)
Endrin ketone	mg/kg	1	62	2%	0.003	0.003	N/A	No	No	(4)
Heptachlor epoxide	mg/kg	6	62	10%	0.002	0.013	N/A	No	Yes	(5)
Methoxychlor	mg/kg	1	62	2%	0.0043	0.0043	N/A	No	No	(4)
Octachlorostyrene	mg/kg	6	62	10%	0.062	0.19	N/A	Yes	No	(11)
Semi-Volatile Organic Compounds										
Benzyl alcohol	mg/kg	5	62	8%	0.06	0.086	N/A	No	Yes	(5)
bis(2-Ethylhexyl) phthalate	mg/kg	1	62	2%	0.15	0.15	N/A	No	No	(4)
Benzyl butyl phthalate	mg/kg	1	62	2%	0.065	0.065	N/A	No	No	(4)
Hexachlorobenzene	mg/kg	13	62	21%	0.036	0.91	N/A	Yes	Yes	(1)(5)
1-Nonanal	mg/kg	2	62	3%	0.0053	0.0067	N/A	No	No	(4)
Volatile Organic Compounds										
Acetone	mg/kg	18	62	29%	0.01	1.3	N/A	No	Yes	(5)
Acetaldehyde	mg/kg	28	60	47%	0.046	0.22	N/A	No	Yes	(5)
Ammonia	mg/kg	25	62	40%	0.51	3.5	N/A	No	Yes	(5)
Chloroform	mg/kg	1	62	2%	0.00083	0.00083	N/A	No	No	(4)
Dichloromethane	mg/kg	14	62	23%	0.0026	0.018	N/A	No	Yes	(5)
Ethylbenzene	mg/kg	1	62	2%	0.0028	0.0028	N/A	No	No	(4)
Formaldehyde	mg/kg	19	60	32%	0.35	1.44	N/A	No	Yes	(5)
m,p-Xylene	mg/kg	3	62	5%	0.0018	0.01	N/A	No	Yes	(5)

TABLE 4
CHEMICALS OF POTENTIAL CONCERN (COPC) SELECTION
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical[a]	Units	Number of Detects	Total Count	Detect Freq.	Minimum Detect	Maximum Detect	Greater than Background?	PBT(1) or Class A Carcinogen?	COPC?	Rationale
Methyl ethyl ketone	mg/kg	6	62	10%	0.0032	0.0093	N/A	No	Yes	(5)
o-Xylene	mg/kg	1	62	2%	0.0038	0.0038	N/A	No	No	(4)
Toluene	mg/kg	1	62	2%	0.00083	0.00083	N/A	No	No	(4)
Xylenes (total)	mg/kg	3	62	5%	0.0018	0.014	N/A	No	No	(8)
Polynuclear Aromatic Hydrocarbons										
Benzo(a)anthracene	mg/kg	0	62	0%	--	--	N/A	No	Yes	(12)
Benzo(a)pyrene	mg/kg	1	62	2%	0.00265	0.00265	N/A	No	Yes	(12)
Benzo(b)fluoranthene	mg/kg	1	62	2%	0.00603	0.00603	N/A	No	Yes	(12)
Benzo(k)fluoranthene	mg/kg	0	62	0%	--	--	N/A	No	Yes	(12)
Chrysene	mg/kg	4	62	6%	0.00388	0.036	N/A	No	Yes	(5)
Dibenzo(a,h)anthracene	mg/kg	2	62	3%	0.04	0.046	N/A	No	Yes	(12)
Indeno(1,2,3-cd)pyrene	mg/kg	2	62	3%	0.018	0.018	N/A	No	Yes	(12)
Radionuclides										
Radium-226	pCi/g	57	63	90%	0.527	3.1	YES	No	Yes	(5)(9)
Radium-228	pCi/g	61	63	97%	0.286	5.59	YES	Yes	Yes	(5)(14)
Thorium-228	pCi/g	60	63	95%	0.62	3.38	YES	Yes	Yes	(5)(9)
Thorium-230	pCi/g	59	63	94%	0.644	3.71	YES	No	Yes	(5)(14)
Thorium-232	pCi/g	63	63	100%	0.791	3.07	YES	Yes	Yes	(5)(14)
Uranium-233/234	pCi/g	50	63	79%	0.557	4.07	YES	No	Yes	(5)(9)
Uranium-235/236	pCi/g	6	63	10%	-0.0576	0.336	YES	Yes	Yes	(5)(14)
Uranium-238	pCi/g	63	63	100%	0.459	3.04	YES	No	Yes	(5)(14)

N/A - Data are not available for this chemical in the background data set. Background comparison was not applicable for this chemical.
Highlight indicates selected as COPC.
[a] - Only detected chemicals are included in the COPC selection table.
(1) Persistent, Bioaccumulative, and Toxic (PBT) Program.
(2) Not detected.
(3) Dioxin congeners are not evaluated separately. Dioxins are evaluated as TCDD TEQ.
(4) Chemical detected in less than 5 percent of the samples and is not a PBT or Class A carcinogen.
(5) Chemical detected in greater than 5 percent of samples.
(6) Chemical concentrations are equivalent to background.
(7) Chemical detected in less than 5 percent of the samples, but is a PBT or Class A carcinogen.
(8) Xylenes are evaluated as individual xylene isomers (ortho-, meta-, and para-) data instead of total xylene data.
(9) Based on statistical tests, Site concentrations are elevated compared to background.
(10) Individual dioxin/furan congeners are considered as COPCs and are evaluated further as TCDD TEQ.
(11) No toxicity criteria or applicable surrogate criteria are available.
(12) If one carcinogenic PAH is selected as a COPC, then all carcinogenic PAHs are selected as COPCs.
(13) Lead detections below screening level of 800 mg/kg are not evaluated.
(14) Several radionuclides are statistically greater than background; since approximate secular equilibrium appears to exist, for this assessment all radionuclides are considered COPCs.

TABLE 5
EXPOSURE POINT CONCENTRATIONS IN SOIL
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 3)

Chemical	Number of Samples	Number of Detections	Percent Detected	Minimum Detection	Maximum Detection	95% UCL 0-10 ft bgs	UCL Calc Method	95% UCL 0-2 ft bgs	UCL Calc Method	EPC[1]
Dioxins / Furans										
TCDD TEQ	62	--	--	0.00000023	0.00098	0.00017	Bootstrap Percentile UCL	0.00021	Student's-t UCL	0.00021
Inorganics										
Antimony	62	31	50%	0.13	1.7	0.28	BcaUCL	0.34	BcaUCL	0.34
Arsenic	63	63	100%	1.7	20.9	6.8	Student's-t UCL	7.2	Bootstrap Percentile UCL	7.2
Barium	62	62	100%	154	1190	462	Bootstrap Percentile UCL	464	Bootstrap Percentile UCL	464
Cadmium	62	53	85%	0.057	0.8	0.17	Bootstrap Percentile UCL	0.19	Bootstrap Percentile UCL	0.19
Chromium (Total)	62	62	100%	4.6	231	34	Student's-t UCL	40	Bootstrap Percentile UCL	40
Chromium (VI)	62	31	50%	0.18	20	2.5	Student's-t UCL	3.0	Student's-t UCL	3.0
Manganese	62	62	100%	212	1700	672	Bootstrap Percentile UCL	704	Bootstrap Percentile UCL	704
Molybdenum	62	44	71%	0.29	3	1.0	Student's-t UCL	1.1	Student's-t UCL	1.1
Silver	62	62	100%	0.051	1.2	0.21	Bootstrap Percentile UCL	0.24	Student's-t UCL	0.24
Tin	62	52	84%	0.33	9.3	1.4	Student's-t UCL	1.7	Student's-t UCL	1.7
Titanium	62	62	100%	297	2020	653	Student's-t UCL	713	Student's-t UCL	713
Tungsten	62	36	58%	0.59	19.3	3.1	Student's-t UCL	3.7	Student's-t UCL	3.7
Vanadium	62	62	100%	24.4	319	73	Student's-t UCL	82	Student's-t UCL	82
Zinc	62	62	100%	23.3	218	63	Student's-t UCL	65	Bootstrap Percentile UCL	65
Perchlorate	62	60	97%	0.0064	13.8	1.5	Student's-t UCL	1.7	Student's-t UCL	1.7
Ammonia	62	25	40%	0.51	3.5	0.75	Student's-t UCL	0.78	Student's-t UCL	0.78
Cyanide (Total)	61	12	20%	0.084	0.28	0.074	Student's-t UCL	0.082	Bootstrap Percentile UCL	0.082
Fluoride	62	59	95%	0.55	21.4	3.1	Student's-t UCL	3.3	Student's-t UCL	3.3
Nitrate (as N)	62	62	100%	0.64	441	60	Student's-t UCL	68	Student's-t UCL	68
Nitrite (as N)	62	8	13%	0.052	0.98	1.3	Student's-t UCL	1.5	Student's-t UCL	0.98
Organochlorine Pesticides										
2,4-DDD	62	8	13%	0.0028	0.048	0.0041	Student's-t UCL	0.0050	Bootstrap Percentile UCL	0.0050
2,4-DDE	62	34	55%	0.0018	0.7	0.094	Student's-t UCL	0.12	Student's-t UCL	0.12
4,4-DDD	62	1	2%	0.0021	0.0021	0.00018	Student's-t UCL	0.00022	Student's-t UCL	0.00022
4,4-DDE	62	38	61%	0.0021	0.51	0.064	Student's-t UCL	0.080	Student's-t UCL	0.080
4,4-DDT	62	21	34%	0.0026	0.16	0.022	Student's-t UCL	0.028	Student's-t UCL	0.028
beta-BHC	62	15	24%	0.0021	0.014	0.0017	Student's-t UCL	0.0020	Student's-t UCL	0.0020
Endrin aldehyde	62	5	8%	0.0019	0.016	0.0015	Student's-t UCL	0.0019	Student's-t UCL	0.0019
Heptachlor epoxide	62	6	10%	0.0020	0.013	0.0012	BcaUCL	0.0015	BcaUCL	0.0015

TABLE 5
EXPOSURE POINT CONCENTRATIONS IN SOIL
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 3)

Chemical	Number of Samples	Number of Detections	Percent Detected	Minimum Detection	Maximum Detection	95% UCL 0-10 ft bgs	UCL Calc Method	95% UCL 0-2 ft bgs	UCL Calc Method	EPC[1]
Polynuclear Aromatic Hydrocarbons										
Benzo(a)anthracene	62	0	0%	--	--	0.0020	BcaUCL	0.0020	BcaUCL	0.0020
Benzo(a)pyrene	62	1	2%	0.00265	0.00265	0.0024	BcaUCL	0.0024	BcaUCL	0.0024
Benzo(b)fluoranthene	62	1	2%	0.00603	0.00603	0.0024	BcaUCL	0.0024	BcaUCL	0.0024
Benzo(k)fluoranthene	62	0	0%	--	--	0.0028	BcaUCL	0.0028	BcaUCL	0.0028
Chrysene	62	4	6%	0.00388	0.036	0.0049	BcaUCL	0.0049	BcaUCL	0.0049
Dibenzo(a,h)anthracene	62	2	3%	0.04	0.046	0.0065	BcaUCL	0.0065	BcaUCL	0.0065
Indeno(1,2,3-cd)pyrene	62	2	3%	0.018	0.018	0.0032	BcaUCL	0.0038	BcaUCL	0.0038
Aldehydes										
Acetaldehyde	60	28	47%	0.046	0.22	0.14	Student's-t UCL	0.14	Bootstrap BCa UCL	0.14
Formaldehyde	60	19	32%	0.35	1.44	0.49	Student's-t UCL	0.49	Student's-t UCL	0.49
Volatile Organic Compounds										
Acetone	62	18	29%	0.01	1.3	0.11	Student's-t UCL	0.14	Student's-t UCL	0.14
Dichloromethane	62	14	23%	0.0026	0.018	0.0030	Student's-t UCL	0.0034	Student's-t UCL	0.0034
m,p-Xylene	62	3	5%	0.0018	0.01	0.00088	Student's-t UCL	0.0010	Student's-t UCL	0.0010
Methyl ethyl ketone	62	6	10%	0.0032	0.0093	0.0016	Student's-t UCL	0.0019	Bootstrap Percentile UCL	0.0019
Semivolatile Organic Compounds										
Benzyl alcohol	62	5	8%	0.06	0.086	0.028	Bootstrap Percentile UCL	0.030	Student's-t UCL	0.030
Hexachlorobenzene	62	13	21%	0.036	0.91	0.12	Student's-t UCL	0.13	Student's-t UCL	0.13
Radionuclide Compounds - Site										
Radium-226	63	57	90%	0.527	3.1	1.459	Bootstrap Percentile UCL	1.461	Student's-t UCL	1.461
Radium-228	63	61	97%	0.286	5.59	2.08	Bootstrap Percentile UCL	2.22	Bootstrap Percentile UCL	2.22
Thorium-228	63	60	95%	0.62	3.38	2.064	Bootstrap Percentile UCL	2.197	Bootstrap Percentile UCL	2.197
Thorium-230	63	59	94%	0.644	3.71	1.48	Bootstrap Percentile UCL	1.50	Student's-t UCL	1.50
Thorium-232	63	63	100%	0.791	3.07	1.601	Student's-t UCL	1.621	Bootstrap Percentile UCL	1.621
Uranium-233/234	63	50	79%	0.557	4.07	1.59	Bootstrap Percentile UCL	1.56	Bootstrap Percentile UCL	1.59
Uranium-235/236	63	6	10%	-0.0576	0.336	0.118	Student's-t UCL	0.114	Bootstrap Percentile UCL	0.118
Uranium-238	63	63	100%	0.459	3.04	1.29	Student's-t UCL	1.29	Bootstrap Percentile UCL	1.29
Radionuclide Compounds - Background										
Radium-226	104	104	100%	0.494	2.4	1.2	BcaUCL	1.1	Student's-t UCL	1.2
Radium-228	84	84	100%	0.946	1.96	2.07	Student's-t UCL	1.99	BcaUCL	2.0
Thorium-228	112	112	100%	1.15	2.3	1.8	Student's-t UCL	1.8	Student's-t UCL	1.8
Thorium-230	112	112	100%	0.66	1.195	1.17	Student's-t UCL	1.32	BcaUCL	1.2
Thorium-232	112	112	100%	1.05	1.6	1.77	Student's-t UCL	1.67	Student's-t UCL	1.6

TABLE 5
EXPOSURE POINT CONCENTRATIONS IN SOIL
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	Number of Samples	Number of Detections	Percent Detected	Minimum Detection	Maximum Detection	95% UCL 0-10 ft bgs	UCL Calc Method	95% UCL 0-2 ft bgs	UCL Calc Method	EPC[1]
Uranium-233/234	112	112	100%	0.47	2.8	1.2	Bootstrap Percentile UCL	0.95	Student's-t UCL	1.2
Uranium-235/236	112	50	45%	0.037	0.0595	0.07	Student's-t UCL	0.08	BcaUCL	0.1
Uranium-238	112	112	100%	0.57	1.02	0.97	Student's-t UCL	1.18	BcaUCL	1.0

95% UCL is the maximum of Students-t, Bootstrap percentile, and Bootstrap Bca tests
1 - The EPC is either the maximum of the 0-2 ft or 0-10 ft 95 UCLs unless it exceeds the maximum detection concentration, then it is the maximum detected concentration.
EPC - Exposure point concentration.
UCL - Upper Confidence Limit
Units are in mg/kg for nonradionuclides. For radnionuclides units are pCi/g.

TABLE 6
ASBESTOS RESULTS AND ANALYTICAL SENSITIVITIES
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

Sample	Analytical Sensitivity (10^6 s/gPM$_{10}$)	Concentration Protocol Structures$^{(2)}$				Number of Protocol Structures$^{(1)}$			
		Chrysotile (10^6 s/gPM$_{10}$)		Amphibole (10^6 s/gPM$_{10}$)		Chrysotile		Amphibole	
						Total	Long	Total	Long
SAE-01R	2.979	<	2.979 E+6	<	2.979 E+6	0	0	0	0
SAE-02	2.932	<	2.932 E+6	<	2.932 E+6	0	0	0	0
SAE-03	2.998	<	2.998 E+6	<	2.998 E+6	0	0	0	0
SAE-04	2.987	<	2.987 E+6	<	2.987 E+6	0	0	0	0
SAE-05R	2.998	<	2.998 E+6	<	2.998 E+6	1	0	0	0
SAE-05R-FD	2.991	<	2.991 E+6	<	2.991 E+6	0	0	0	0
SAE-06R	2.979		1.192 E+7	<	2.979 E+6	6	4	0	0
SAE-07	2.999	<	2.999 E+6	<	2.999 E+6	0	0	0	0
SAE-08C	2.985	<	2.985 E+6	<	2.985 E+6	0	0	0	0
SAE-08N	2.961	<	2.961 E+6	<	2.961 E+6	0	0	0	0
SAE-08S	2.983		2.983 E+6	<	2.983 E+6	3	1	0	0
SAE-08S-FD	2.960	<	2.960 E+6	<	2.960 E+6	1	0	0	0
SAE-09R	2.988		5.976 E+6	<	2.988 E+6	4	2	0	0
SAE-10R	2.969	<	2.969 E+6	<	2.969 E+6	0	0	0	0
SAE-11R	2.988		2.988 E+6	<	2.988 E+6	2	1	0	0
SAE-12R	2.973		1.486 E+7	<	2.973 E+6	5	5	0	0
SAE-13R	2.991	<	2.991 E+6	<	2.991 E+6	1	0	0	0
SAE-14	0.297		5.938 E+5	<	2.969 E+5	2	2	0	0
SAE-15	2.993	<	2.993 E+6	<	2.993 E+6	0	0	0	0
SAE-16R	2.975		1.488 E+7	<	2.975 E+6	6	5	0	0
SAE-17R	2.998		5.995 E+6	<	2.998 E+6	3	2	0	0
SAE-18R	2.972		2.972 E+6	<	2.972 E+6	1	1	0	0
SAE-19R	2.979	<	2.979 E+6	<	2.979 E+6	0	0	0	0
SAE-20R	2.978		5.956 E+6	<	2.978 E+6	3	2	0	0
SAE-20R-FD	2.992		8.976 E+6	<	2.992 E+6	4	3	0	0
SAE-21R	2.966	<	2.966 E+6	<	2.966 E+6	1	0	0	0
SAE-22	2.966	<	2.966 E+6	<	2.966 E+6	0	0	0	0
SAE-23R	2.967		2.373 E+7	<	2.967 E+6	8	8	0	0
SAE-24R	2.987		2.389 E+7	<	2.987 E+6	8	8	0	0
SAE-25	2.969	<	2.969 E+6	<	2.969 E+6	1	0	0	0
SAE-26	2.957	<	2.957 E+6	<	2.957 E+6	0	0	0	0
SAE-27	2.959	<	2.959 E+6	<	2.959 E+6	0	0	0	0
SAE-28	0.030		2.975 E+4	<	2.975 E+4	1	1	0	0
SAE-29	0.030	<	2.992 E+4	<	2.992 E+4	0	0	0	0
SAE-30	2.987	<	2.987 E+6	<	2.987 E+6	0	0	0	0
SAE-31	2.969	<	2.969 E+6	<	2.969 E+6	0	0	0	0
SAE-32	2.990		2.990 E+6	<	2.990 E+6	1	1	0	0
SAE-32-FD	2.994	<	2.994 E+6	<	2.994 E+6	0	0	0	0
SAE-33	2.967		2.967 E+6	<	2.967 E+6	1	1	0	0
SAE-34	2.973	<	2.973 E+6	<	2.973 E+6	0	0	0	0
SAE-35	2.975	<	2.975 E+6	<	2.975 E+6	0	0	0	0
SAE-36	2.998	<	2.998 E+6	<	2.998 E+6	0	0	0	0
SAE-37	2.959	<	2.959 E+6	<	2.959 E+6	0	0	0	0
SAE-38	2.961	<	2.961 E+6	<	2.961 E+6	0	0	0	0

TABLE 6
ASBESTOS RESULTS AND ANALYTICAL SENSITIVITIES
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Sample	Analytical Sensitivity (10^6 s/gPM$_{10}$)	Concentration Protocol Structures[2] Chrysotile (10^6 s/gPM$_{10}$)	Concentration Protocol Structures[2] Amphibole (10^6 s/gPM$_{10}$)	Number of Protocol Structures[1] Chrysotile Total	Chrysotile Long	Amphibole Total	Amphibole Long
SAE-39	2.966	< 2.966 E+6	< 2.966 E+6	0	0	0	0
SAE-39-FD	2.998	< 2.998 E+6	< 2.998 E+6	0	0	0	0
SAE-40	2.983	< 2.983 E+6	< 2.983 E+6	0	0	0	0
SAE-41	2.967	< 2.967 E+6	< 2.967 E+6	0	0	0	0
SAE-42	2.994	< 2.994 E+6	< 2.994 E+6	0	0	0	0
SAE-43	2.990	< 2.990 E+6	< 2.990 E+6	0	0	0	0
SAE-44	2.779	< 2.779 E+6	< 2.779 E+6	0	0	0	0
SAE-44-FD	2.995	< 2.995 E+6	< 2.995 E+6	0	0	0	0
SAE-45	2.998	< 2.998 E+6	< 2.998 E+6	0	0	0	0
SAE-46	2.983	< 2.983 E+6	< 2.983 E+6	0	0	0	0
				Total	47	Total	0

0.011 **Pooled Analytical Sensitivity**

$$\text{Pooled Analytical Sensitivity} = 1/\left[\sum_i (1/\text{analytical sensitivity for trial } i)\right]$$

[1]Fiber dimensions are presented in the respective analytical reports for each sample.

[2]Only long structures present a potential risk and are used for estimating asbestos risks. Total fiber concentrations are presented for informational purposes only.

TABLE 7
CONSTRUCTION DUST MODEL
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

Parameter	Abbrev.	Units	Value
Wind Erosion and Construction Activities			
Fugitive dust from wind erosion[(1)]	M_{wind}	g	91761.7
Fraction of vegetative cover[(2)]	V	--	0
Mean annual wind speed[(3)]	U_m	m/s	4.0
Equivalent threshold value of wind speed[(2)]	U_t	m/s	11.32
Function dependent on U/U_t[(2)]	F(x)	--	0.194
Areal Extent of site surface contamination[(4)]	A_{surf}	m^2	33994.8
Exposure duration[(5)]	ED	year	1
Fugitive dust from excavation[(6)]	M_{excav}	g	15699.0
Wet soil bulk density[(7)]	ρ_{soil}	Mg/m^3	1.83
Percent moisture in soil[(8)]	M	%	3.2
Areal extent of site excavation[(9)]	A_{excav}	m^2	6799.0
Depth of site excavation[(2)]	d_{excav}	m	1
Number of times soil is dumped[(2)]	N_A	--	2
Fugitive dust from dozing[(10)]	M_{doz}	g	7222.9
Percent weight of silt in soil[(7)]	s	%	9.6
Percent moisture in soil[(8)]	M	%	3.2
Mean vehicle speed[(2)]	S_{doz}	km/hr	11.4
Sum dozing kilometers traveled[(11)]	VKT_{doz}	km	41.8
Fugitive dust from grading[(12)]	M_{grade}	g	18251.3
Mean vehicle speed[(2)]	S_{grade}	km/hr	11.4
Sum dozing kilometers traveled[(12)]	VKT_{grade}	km	41.8
Fugitive dust from tilling[(13)]	M_{till}	g	5810.7
Percent weight of silt in soil[(7)]	s	%	9.6
Areal extent of site tilling[(9)]	A_{till}	acre	1.68
Number of times soil is tilled[(2)]	N_A	--	2
Total Time Averaged PM_{10} Emission[(14)]	J'_T	g/m2-sec	1.29 E-7
Duration of construction[(2)]	T	sec	31536000
Subchronic Dispersion Factor for Area Source[(15)]	Q/C_{sa}	g/m^2-sec per kg/m^3	8.66
Constant A[(2)]	A	--	2.45
Constant B[(2)]	B	--	17.57
Constant C[(2)]	C	--	189.04
Areal Extent of site surface contamination[(4)]	A_{surf}	acres	8.4
Dispersion correction factor[(16)]	F_D	--	0.19
Subchronic PEF for Construction Activities[(17)]	**PEF_{sc}**	**m^3/kg**	**3.60 E+8**

TABLE 7
CONSTRUCTION DUST MODEL
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Parameter	Abbrev.	Units	Value
Unpaved Road Traffic			
Length of road segment(18)	L_R	m	184.4
Width of road segment(2)	W_R	m	6.1
Surface area of road segment(19)	A_R	m^2	1124.0
Percent weight of silt in road surface(7)	s	%	9.6
Mean vehicle weight(2)	W	tons	8
Percent moisture in dry road surface(20)	M	%	3.2
Number of days/year ≥ 0.01 inches(3)	p	days	27
Sum vehicle kilometers traveled(21)	VKT_{road}	km	719.1
Subchronic Dispersion Factor for road segment(22)	Q/C_{sr}	g/m^2-sec per kg/m^3	15.5
Constant A(2)	A		12.94
Constant B(2)	B		5.74
Constant C(2)	C		71.77
Areal Extent of site surface contamination	A_{surf}	acres	8.4
Subchronic PEF for Unpaved Road Traffic(23)	**PEF_{sc_road}**	**m^3/kg**	**1.12 E+7**
Total (uncontrolled) construction related PEF(24)	PEF_{sc_total}	m^3/kg	1.09 E+7
Total (uncontrolled) outdoor ambient air dust concentration(25)	C_{const_dust}	kg/m^3	9.17 E-8
Clark County Air Regulations, Particulate Matter (PM10)(26)	$CCAAQS_{PM10}$	kg/m^3	5.00 E-8

(1) From USEPA. (2002b). Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites.×
Office of Solid Waste and Emergency Response, Washington, DC. OSWER 9355.4-24. December.
- Mwind = 0.036 × (1-V) × (Um/Ut)^3 × F(x) × Asurf × ED × 8760hr/yr.

(2) Assumed value for the site based upon USEPA (2002b).
(3) Based on long-term weather data for the area of interest (n-line. http://www.wrcc.dri.edu/).
(4) Site area of 8.4 acres.
(5) Construction worker ED, See Table 5.
(6) From USEPA 2002b - Mexcav = 0.35 × 0.0016 × [(Um/2.2)1.3/(M/2)1.4] × rsoil × Aexcav × dexcav × NA × 103g/kg.
(7) Based on data from vicinity investigations (from data collected by GES 2006).
(8) Average of site data from 0 to 10 feet bgs.
(9) Assumed value of one fifth of the site based upon USEPA (2002b).
(10) From USEPA 2002b - Mdoz = 0.75 × [(0.45 × s1.5)/(M)1.4] × ∑VKTdoz/Sdoz × 103g/kg.
(11) From USEPA 2002b - VKTdoz = [(Asurf0.5/2.44m) × Asurf0.5 × 3]/1,000 m/km.
(12) From USEPA 2002b - Mgrade = 0.60 × (0.0056 × S2.0) × ∑VKTgrade × 103g/kg.
(13) From USEPA 2002b - Mtill = 1.1 × s0.6 × Atill × 4,047m2/acre × 10-4ha/m2 × 103g/kg × NA.
(14) From USEPA 2002b - J'T = (Mwind + Mexcav + Mdoz + Mgrade + Mtill)/(Asurf × T).
(15) From USEPA 2002b - Q/Csa = A × exp[(ln(Asurf) - B)2/C].
(16) From USEPA 2002b - FD = 0.1852 + (5.3537/tc)+(-9.6318/tc2), tc = T/(3,600sec/hour).
(17) From USEPA 2002b - PEFsc = Q/Csa × (1/FD) × (1/J'T).
(18) Assumed value of the square root of the site area, based upon USEPA (2002b).
(19) From USEPA 2002b - AR = LR × WR
(20) Average of site data from 0 to 10 feet bgs.
(21) From USEPA 2002b - VKTroad = 30 vehicles × LR × [(52 wks/yr)/2] × (5 days/week) / (1000 m/km).
(22) From USEPA 2002b - Q/Csr = A × exp[(ln(Asurf) - B)2/C].
(23) From USEPA 2002b - PEFsc_road = Q/Csr × (1/FD) × T × AR /
{[2.6 × (s/12)0.8 × (W/3)0.4/(M/0.2)0.3] × [(365-p)/365] × 281.9 × ∑VKTroad}.
(24) $PEF_{sc\_total} = \{1/[(1/PEF_{sc})+(1/PEF_{sc\_road})]\}$.
(25) $C_{const\_dust} = 1/PEF_{sc\_total}$.
(26) Air quality regulations for Clark County (http://www.accessclarkcounty.com/depts/daqem/aq/rules/Documents/Rules/SECT11_07-01-04.pdf. Annual average (50 ug/m^3) for PM_{10}.
It is presumed that dust control measures will be required to prevent exceedances of dust regulations.

TABLE 8
HEALTH RISK ASSESSMENT EXPOSURE FACTORS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 1)

Parameter	Abbrev.	Value	Units	Reference
Dermal absorption fraction	ABS	---chemical-specific---		USEPA 2004d
Construction worker dermal adherence factor	AF_{cw}	0.3	mg/cm^2	USEPA 2004d
Maintenance worker dermal adherence factor	AF_{mw}	0.2	mg/cm^2	USEPA 2004d
Averaging time, carcinogenic	AT_c	70	years	USEPA 2002b
Averaging time, non-carcinogenic, construction worker	$AT_{nc,cw}$	1	years	Based on ED
Averaging time, non-carcinogenic, maintenance worker	$AT_{nc,mw}$	25	years	Based on ED
Maintenance worker soil exposure frequency	EF_{mw}	225	days/year	USEPA 2002b
Maintenance worker soil exposure duration	ED_{mw}	25	years	USEPA 2002b
Construction worker soil exposure frequency	EF_{cw}	250	days/year	USEPA 2002b
Construction worker soil exposure duration	ED_{cw}	1	years	(1)
Adult body weight	BW_a	70	kg	USEPA 2002b
Adult inhalation rate	IR_a	20	m^3/day	USEPA 2002b
Construction worker exposed surface area	SA_{cw}	3,300	cm^2/day	USEPA 2004d
Construction worker soil ingestion rate	IR_{cw}	330	mg/day	USEPA 2002b
Maintenance worker exposed surface area	SA_{mw}	3,300	cm^2/day	USEPA 2004d
Maintenance worker soil ingestion rate	IR_{mw}	100	mg/day	USEPA 2002b
Radionuclide-specific factors				
Exposure time fraction, outdoors	ET_o	0.33	unitless	USEPA 2009b

(1) Based on site data. A one-year exposure duration is appropriate for carcinogenic effects, because the methodology averages exposures over a lifetime (see USEPA 2002b).

TABLE 9
NON-CANCER TOXICITY CRITERIA
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	Inhalation - Chronic		Inhalation - Subchronic		Oral(1) - Chronic		Oral(1) - Subchronic		Oral BIO	Dermal ABS(2)
	Value	Reference	Value	Reference	Value	Reference	Value	Reference		
Non-Carcinogenic (mg/kg-day)										
Inorganics										
Antimony	4.0 E-4	route-to-route	4.0 E-4	Chronic	4.0 E-4	USEPA 2008b	4.0 E-4	Chronic	1.0	0.01
Arsenic	4.3 E-6	Cal/EPA (NDEP 2009a)	4.3 E-6	Chronic	3.0 E-4	USEPA 2009a	3.0 E-4	USEPA 1997	0.3	0.03
Barium	2.0 E-1	route-to-route	2.0 E-1	Chronic	2.0 E-1	USEPA 2009a	2.0 E-1	Chronic	1.0	0.01
Cadmium	NA		NA		5.0 E-4	USEPA 2009a	5.0 E-4	Chronic	1.0	0.001
Chromium (Total)	NA		NA		1.5 E+0	USEPA 2009a (3)	1.5 E+0	Chronic	1.0	0.01
Fluoride	NA		NA		6.0 E-2	USEPA 2009a	6.0 E-2	Chronic	1.0	0.01
Chromium (VI)	2.9 E-5	USEPA 2009a	2.9 E-5	Chronic	3.0 E-3	USEPA 2009a	3.0 E-3	Chronic	1.0	0.01
Manganese	1.4 E-5	USEPA 2009a	1.4 E-4	USEPA 1997	2.4 E-2	USEPA 2009a	1.4 E-1	USEPA 1997	1.0	0.01
Molybdenum	NA		NA		5.0 E-3	USEPA 2009a	5.0 E-3	USEPA 1997	1.0	0.01
Nitrate (as N)	NA		NA		1.6 E+0	USEPA 2009a	1.6 E+0	Chronic	1.0	0.01
Perchlorate	NA		NA		7.0 E-4	USEPA 2009a	7.0 E-4	Chronic	1.0	0.01
Silver	NA		NA		5.0 E-3	USEPA 2009a	5.0 E-3	Chronic	1.0	0.01
Tin	NA		NA		6.0 E-1	PPRTV	6.0 E-1	Chronic	1.0	0.01
Titanium	8.6 E-3	NCEA	8.6 E-3	Chronic	4.0 E+0	NCEA	4.0 E+0	Chronic	1.0	0.01
Tungsten	9.4 E-4	NDEP 2009a	9.4 E-4	NDEP 2009a	7.5 E-3	NDEP 2009a	7.5 E-2	NDEP 2009a	1.0	0.01
Uranium	8.6 E-5	ATSDR 2004	8.6 E-5	ATSDR 2004	3.0 E-3	USEPA 2009a	2.0 E-3	ATSDR 2004	1.0	0.01
Vanadium	NA		NA		5.0 E-3	USEPA 2009a	7.0 E-3	USEPA 1997	1.0	0.01
Zinc	NA		NA		3.0 E-1	USEPA 2009a	3.0 E-1	Chronic	1.0	0.01
Ammonia	2.9 E-2	USEPA 2009a	2.9 E-2	Chronic	NA		NA		1.0	0.01
Cyanide (Total)	NA		NA		2.0 E-2	USEPA 2009a	2.0 E-2	Chronic	1.0	0.1
Nitrite (as N)	NA		NA		1.0 E-1	USEPA 2009a	1.0 E-1	Chronic	1.0	0.01
Organic Compounds										
2,4-DDD	NA		NA		NA		NA		1.0	0.03
2,4-DDE	NA		NA		NA		NA		1.0	0.03
4,4-DDE	NA		NA		NA		NA		1.0	0.03
4,4-DDD	NA		NA		NA		NA		1.0	0.03
4,4-DDT	5.0 E-4	route-to-route	5.0 E-4	Chronic	5.0 E-4	USEPA 2009a	5.0 E-4	Chronic	1.0	0.03
Acetone	9.0 E-1	route-to-route	8.8 E+0	ATSDR 2004	9.0 E-1	USEPA 2009a	1.0 E+0	USEPA 1997	1.0	0.10
Acetaldehyde	2.6 E-3	USEPA 2009a	2.6 E-3	Chronic	NA		NA		1.0	0.10
Benzo(a)anthracene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Benzo(a)pyrene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Benzo(b)fluoranthene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Benzo(k)fluoranthene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Benzyl Alcohol	3.0 E-1	route-to-route	3.0 E-1	Chronic	3.0 E-1	USEPA 1997	5.0 E-4	Chronic	1.0	0.10
beta-BHC	NA		NA		NA		NA		1.0	0.04

TABLE 9
NON-CANCER TOXICITY CRITERIA
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Chemical	Inhalation - Chronic		Inhalation - Subchronic		Oral(1) - Chronic		Oral(1) - Subchronic		Oral BIO	Dermal ABS(2)
	Value	Reference	Value	Reference	Value	Reference	Value	Reference		
Non-Carcinogenic (mg/kg-day)										
Chrysene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Dibenzo(a,h)anthracene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Dieldrin	5.0 E-5	route-to-route	5.0 E-5	Chronic	5.0 E-5	USEPA 2009a	5.0 E-5	USEPA 1997	1.0	0.10
Endrin Aldehyde	3.0 E-4	route-to-route	3.0 E-4	Chronic	3.0 E-4	USEPA 2009a	5.0 E-4	Chronic	1.0	0.10
Formaldehyde	1.5 E-1	route-to-route	1.5 E-1	Chronic	1.5 E-1	USEPA 2009a	2.0 E-1	USEPA 1997	1.0	0.1
Heptachlor epoxide	1.3 E-5	USEPA 2008b	1.3 E-5	Chronic	1.3 E-5	USEPA 2009a	1.3 E-5	Chronic	1.0	0.1
Hexachlorobenzene	8.0 E-4	route-to-route	8.0 E-4	Chronic	8.0 E-4	USEPA 2009a	8.0 E-4	Chronic	1.0	0.1
Indeno(1,2,3-cd)pyrene	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	3.0 E-2	pyrene as surrogate	3.0 E-1	USEPA 1997	1.0	0.13
Dichloromethane	8.6 E-1	USEPA 1997	8.6 E-1	Chronic	6.0 E-2	USEPA 2009a	6.0 E-2	Chronic	1.0	0.10
Methyl ethyl ketone	1.4 E+0	USEPA 2009a	1.4 E+0	Chronic	6.0 E-1	USEPA 2009a	2.0 E+0	USEPA 1997	1.0	0.10
TCDD TEQ	NA		NA		1.0 E-9	ATSDR 2004	2.0 E-8	ATSDR 2004	0.3	0.03
m,p-Xylene	2.9 E-2	USEPA 2009a	2.9 E-2	Chronic	2.0 E-1	USEPA 2009a	2.0 E-1	Chronic	1.0	0.10

NA = Not applicable. Data is either not applicable for this chemical (e.g., not carcinogenic) or not available.
BIO = bioavailability - NOTE: The basis for the arsenic oral bioavailability is presented in Closure Plan.
ABS = dermal absorption efficiency
PPRTV = Provisional Peer Reviewed Toxicity Values, National Center for Environmental Assessment (USEPA), as referenced in NDEP BCL table (NDEP 2009a).
NCEA = National Center for Environmental Assessment (USEPA), as referenced in NDEP BCL table (NDEP 2009a).
(1) Only cadmium required the adjustment of the oral toxicity criteria for the dermal soil exposure pathway (USEPA 2004d).
(2) Dermal absorption factors obtained from USEPA 2004d.
(3) Because Cr (VI) is analyzed for separately total chromium is assessed using Cr(III) toxicity criteria.

TABLE 10
CANCER TOXICITY CRITERIA
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	Inhalation		Oral(1)		Oral BIO	Dermal ABS(2)
	Value	Reference	Value	Reference		
Carcinogenic (mg/kg-day)$^{-1}$						
Inorganics						
Antimony	NA		NA		1.0	0.01
Arsenic	1.5 E+1	USEPA 2009a	1.5 E+0	USEPA 2009a	0.3	0.03
Barium	NA		NA		1.0	0.01
Cadmium	6.3 E+0	USEPA 2009a	NA		1.0	0.001
Chromium (Total)	NA		NA		1.0	0.01
Fluoride	NA		NA		1.0	0.01
Chromium (VI)	2.9 E+2	USEPA 2009a	NA		1.0	0.01
Manganese	NA		NA		1.0	0.01
Molybdenum	NA		NA		1.0	0.01
Nitrate (as N)	NA		NA		1.0	0.01
Perchlorate	NA		NA		1.0	0.01
Silver	NA		NA		1.0	0.01
Tin	NA		NA		1.0	0.01
Titanium	NA		NA		1.0	0.01
Tungsten	NA		NA		1.0	0.01
Uranium	NA		NA		1.0	0.01
Vanadium	NA		NA		1.0	0.01
Zinc	NA		NA		1.0	0.01
Ammonia	NA		NA		1.0	0.01
Cyanide (Total)	NA		NA		1.0	0.1
Nitrite (as N)	NA		NA		1.0	0.01
Organic Compounds						
2,4-DDD	2.4 E-1	route-to-route	2.4 E-1	4,4'-DDD as surrogate	1.0	0.03
2,4-DDE	3.4 E-1	route-to-route	3.4 E-1	4,4'-DDE as surrogate	1.0	0.03
4,4-DDE	3.4 E-1	route-to-route	3.4 E-1	USEPA 2009a	1.0	0.03
4,4-DDD	2.4 E-1	route-to-route	2.4 E-1	USEPA 2009a	1.0	0.03
4,4-DDT	3.4 E-1	USEPA 2009a	3.4 E-1	USEPA 2009a	1.0	0.03
Acetaldehyde	7.7 E-3	USEPA 2009a	7.7 E-3	route-to-route	1.0	0.1
Acetone	NA		NA		1.0	0.1
Benzo(a)anthracene	3.9 E-1	OEHHA 2009	7.3 E-1	USEPA 1993 (3)	1.0	0.13
Benzo(a)pyrene	3.9 E-1	OEHHA 2009	7.3 E+0	USEPA 2009a	1.0	0.13
Benzo(b)fluoranthene	3.9 E-1	OEHHA 2009	7.3 E-1	USEPA 1993 (3)	1.0	0.13
Benzo(k)fluoranthene	3.9 E-1	OEHHA 2009	7.3 E-2	USEPA 1993 (3)	1.0	0.13
Chrysene	3.9 E-2	OEHHA 2009	7.3 E-3	USEPA 1993 (3)	1.0	0.13
Dibenzo(a,h)anthracene	3.9 E-2	OEHHA 2009	7.3 E+0	USEPA 1993 (3)	1.0	0.13
Endrin Aldehyde	NA		NA		1.0	0.1
Formaldehyde	4.6 E-2	USEPA 2009a	4.6 E-2	route-to-route	1.0	0.1
Heptachlor epoxide	9.1 E+0	USEPA 2009a	9.1 E+0	USEPA 2009a	1.0	0.1
Hexachlorobenzene	1.6 E+0	USEPA 2009a	1.6 E+0	USEPA 2009a	1.0	0.1
Indeno(1,2,3-cd)pyrene	3.9 E-1	OEHHA 2009	7.3 E-1	USEPA 1993 (3)	1.0	0.13
Dichloromethane	1.6 E-3	USEPA 2009a	7.5 E-3	USEPA 2009a	1.0	0.1
Methyl ethyl ketone	NA		NA		1.0	0.1
TCDD TEQ	1.5 E+5	USEPA 1997	1.5 E+5	USEPA 1997	0.3	0.03
m,p-Xylene	NA		NA		1.0	0.1

NA = Not applicable. Data is either not applicable for this chemical (*i.e.* , not carcinogenic) or not available.
BIO = bioavailability - NOTE: The basis for the arsenic oral bioavailability is presented in Closure Plan.
ABS = dermal absorption efficiency
(1) No COPCs required oral toxicity criteria adjustment for the dermal soil exposure pathway (USEPA 2004d).
(2) Dermal absorption factors obtained from USEPA 2004d.
(4) The relative potency factor from USEPA (1993) was multiplied by the oral carcinogenic slope factor for benzo(a)pyrene found in IRIS to generate the appropriate oral carcinogenic slope factor for the individual PAH's.

TABLE 11
RADIONUCLIDE TOXICITY CRITERIA
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

		Slope Factor		
Radionuclide	GI Absorption Fraction	Soil Ingestion - Adult (Risk/pCi)	Inhalation (Risk/pCi)	External Exposure (Risk/y per pCi/g)
Radium-226+D	0.2	2.95 E-10	1.16 E-08	8.49 E-06
Radium-228+D	0.2	6.70 E-10	5.23 E-09	4.53 E-06
Thorium-228+D	0.0005	1.62 E-10	1.43 E-07	7.76 E-06
Thorium-230	0.0005	7.73 E-11	2.85 E-08	8.19 E-10
Thorium-232	0.0005	8.47 E-11	4.33 E-08	3.42 E-10
Uranium-233/234	0.02	5.22 E-11	1.16 E-08	9.82 E-10
Uranium-235/236+D	0.02	5.03 E-11	1.01 E-08	5.43 E-07
Uranium-238+D	0.02	5.62 E-11	9.35 E-09	1.14 E-07

All values are from USEPA 2009b "Preliminary Remediation Goals for Radionuclides."
(+D) indicates that the risks from associated short-lived radioactive decay products (i.e., those decay products with radioactive half-lives less than or equal to six months) are also included.

TABLE 12
UNCERTAINTY ANALYSIS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 3)

Source of Uncertainty	May Underestimate Risk	May Overestimate Risk	May Under or Overestimate Risk
Environmental Sampling and Analysis			
Sampling and laboratory analyses may have been inadequate to fully characterize the concentrations at the site.			Moderate
Systematic or random errors in the chemical analyses may yield erroneous data.			Low
The risk estimates are based on the COPCs only. Other chemicals were not quantified.	Moderate		
Exposure Assumptions			
Fate and transport modeling did not take into account biodegradation or other degradation processes.		Moderate	
Modeling did not take into account interactions that may occur among the different chemicals which may influence their migration		Moderate	
Only primary receptors of concern were evaluated. Other populations (*e.g.*, trespassers) were not assessed.	Low		
Only primary exposure pathways were evaluated. Other pathways were not assessed.	Low		
Some of the exposure point concentrations used in the exposure assessment were based on modeled, rather than measured, levels in various media (*e.g.*, air).			Moderate

TABLE 12
UNCERTAINTY ANALYSIS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Source of Uncertainty	May Underestimate Risk	May Overestimate Risk	May Under or Overestimate Risk
Reasonable maximum exposure values were combined to arrive at the ADD and LADD estimates. There is a low probability that all of the various upper bound assumptions used in the exposure assessment would occur at the point of maximum chemical concentration.		Moderate	
Exposure point concentrations and the amount of media intake were assumed to be constant over time.		Low	
Toxicological Data			
Sub-chronic RfDs are used to characterize non-cancer effects for short-term exposures (*i.e.*, construction workers). However, for many COPCs a sub-chronic RfD was not available and the chronic RfD was used.		Moderate	
RfDs are derived and extrapolated from laboratory animal studies that expose animals to relatively high intakes. Errors are inherent in the extrapolation of data from animals to humans, from high to low doses, and from one exposure route to another.			Moderate
RfDs used to estimate non-carcinogenic risk are derived from NOAELs which are based on the sensitive endpoints in the sensitive species. As a result, extrapolation of toxicity data from animals to humans is uncertain. There may be differences in metabolism, uptake, or distribution of chemicals in the body between animals and humans. To account for this, NOAELs are divided by uncertainty factors spanning several orders of magnitude to establish the RfD. The combination of these two conservative assumptions may establish RfDs which greatly overprotect human health.		Moderate	

TABLE 12
UNCERTAINTY ANALYSIS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Source of Uncertainty	May Underestimate Risk	May Overestimate Risk	May Under or Overestimate Risk
CSFs used for the animal carcinogens are the 95% UCL derived from the linearized multistage model using animal chronic bioassay data, which tends to greatly overestimate carcinogenic risk in humans. The linearized multistage model ignores many known factors that have been documented to protect humans against the carcinogenic actions of chemicals, such as DNA repair and immunosurveillence.		High	
RfDs, CSFs and defensible carcinogenicity data were not available for some COPCs, which were therefore not quantitatively evaluated.	Low		

TABLE 13
DATA ADEQUACY EVALUATION
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Table 13a: Sample Size Results for Chrysotile Asbestos (8 long fibers = 1 x 10-6)

Number of samples = 54		s = 1.86		
Threshold = 8 long fibers		α = 5%	α = 10%	α = 15%
MDD = 10% (0.8 long fibers)	β = 15%	47	35	28
	β = 20%	40	29	23
	β = 25%	35	25	19
MDD = 20% (1.6 long fibers)	β = 15%	13	9	7
	β = 20%	11	8	6
	β = 25%	10	7	5
MDD = 30% (2.4 long fibers)	β = 15%	7	5	4
	β = 20%	6	4	3
	β = 25%	5	4	3

Table 13b: Sample Size Results for TCDD TEQ with BCL = 1,000 pg/g

Number of samples = 62		s = 219.3		
Threshold = 1,000 pg/g		α = 5%	α = 10%	α = 15%
MDD = 10% (100 pg/g)	β = 15%	42	31	25
	β = 20%	36	26	20
	β = 25%	32	22	17
MDD = 20% (200 pg/g)	β = 15%	12	8	7
	β = 20%	10	7	6
	β = 25%	9	6	5
MDD = 30% (300 pg/g)	β = 15%	6	4	3
	β = 20%	5	4	3
	β = 25%	5	3	2

Table 13c: Sample Size Results for Hexachlorobenzene with BCL = 1.2 mg/kg

Number of samples = 62		s = 0.17		
Threshold = 1.2 mg/kg		α = 5%	α = 10%	α = 15%
MDD = 10% (0.12 mg/kg)	β = 15%	18	13	10
	β = 20%	15	11	9
	β = 25%	14	10	7
MDD = 20% (0.24 mg/kg)	β = 15%	6	4	3
	β = 20%	5	3	3
	β = 25%	5	3	2
MDD = 30% (0.36 mg/kg)	β = 15%	3	2	2
	β = 20%	3	2	2
	β = 25%	3	2	1

Table 13d: Sample Size Results for Manganese with BCL = 13,700 mg/kg

Number of samples = 62		s = 324.0		
Threshold = 13,700 mg/kg		α = 5%	α = 10%	α = 15%
MDD = 10% (1370 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 20% (2740 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 30% (4110 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1

TABLE 13
DATA ADEQUACY EVALUATION
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Table 13e: Sample Size Results for Vanadium with BCL = 5,680 mg/kg

Number of samples = 62		s = 53.4		
Threshold = 5,680 mg/kg		α = 5%	α = 10%	α = 15%
MDD = 10% (568 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 20% (1136 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 30% (1704 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1

Table 13f: Sample Size Results for Chromium VI with BCL = 450 mg/kg

Number of samples = 62		s = 3.20		
Threshold = 450 mg/kg		α = 5%	α = 10%	α = 15%
MDD = 10% (45 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 20% (90 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 30% (135 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1

Table 13g: Sample Size Results for beta-BHC with BCL = 1.4 mg/kg

Number of samples = 62		s = 0.0023		
Threshold = 1.4 mg/kg		α = 5%	α = 10%	α = 15%
MDD = 10% (0.14 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 20% (0.28 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1
MDD = 30% (0.42 mg/kg)	β = 15%	2	1	1
	β = 20%	2	1	1
	β = 25%	2	1	1

Table 13h: Sample Size Results for Arsenic with BCL (x10) = 18 mg/kg

Number of samples = 63		s = 3.81		
Threshold = 18 mg/kg		α = 5%	α = 10%	α = 15%
MDD = 10% (1.8 mg/kg)	β = 15%	39	29	23
	β = 20%	34	24	19
	β = 25%	30	21	16
MDD = 20% (3.6 mg/kg)	β = 15%	11	8	6
	β = 20%	10	7	5
	β = 25%	9	6	4
MDD = 30% (5.4 mg/kg)	β = 15%	6	4	3
	β = 20%	5	4	3
	β = 25%	5	3	2

α = alpha
β = beta
s = standard deviation of sample data

TABLE 14
CHEMICAL AND RADIONUCLIDE RISK SUMMARY FOR CONSTRUCTION WORKER RECEPTORS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	Soil Concentration (mg/kg)	Oral HQ	Dermal HQ	Outdoor Inhal HQ	Total HI	Oral ILCR	Dermal ILCR	Outdoor Inhal ILCR	Total ILCR
Dioxins / Furans									
TCDD TEQ	2.1 E-4	1.0 E-2	3.1 E-3	NA	0.013	4 E-7	4 E-9	8 E-9	5 E-7
Inorganics									
Antimony	3.4 E-1	2.7 E-3	8.1 E-5	1.5 E-5	0.0028	NA	NA	NA	NA
Arsenic	7.2 E+0	2.3 E-2	7.0 E-3	3.0 E-2	0.061	2 E-7	1 E-9	3 E-8	2 E-7
Barium	4.6 E+2	7.5 E-3	2.2 E-4	4.2 E-5	0.0078	NA	NA	NA	NA
Cadmium	1.9 E-1	1.2 E-3	3.7 E-6	NA	0.0012	NA	NA	3 E-10	3 E-10
Chromium (Total)	4.0 E+1	8.7 E-5	2.6 E-6	NA	0.000089	NA	NA	NA	NA
Chromium (VI)	3.0 E+0	3.2 E-3	9.7 E-5	1.9 E-3	0.0052	NA	NA	2 E-7	2 E-7
Manganese	7.0 E+2	1.6 E-2	4.9 E-4	8.8 E-2	0.11	NA	NA	NA	NA
Molybdenum	1.1 E+0	7.1 E-4	2.1 E-5	NA	0.00073	NA	NA	NA	NA
Silver	2.4 E-1	1.5 E-4	4.6 E-6	NA	0.00016	NA	NA	NA	NA
Tin	1.7 E+0	8.9 E-6	2.7 E-7	NA	<0.00001	NA	NA	NA	NA
Titanium	7.1 E+2	5.8 E-4	1.7 E-5	1.5 E-3	0.0021	NA	NA	NA	NA
Tungsten	3.7 E+0	1.6 E-4	4.8 E-6	7.1 E-5	0.00023	NA	NA	NA	NA
Vanadium	8.2 E+1	3.8 E-2	1.1 E-3	NA	0.039	NA	NA	NA	NA
Zinc	6.5 E+1	6.9 E-4	2.1 E-5	NA	0.00072	NA	NA	NA	NA
Perchlorate	1.7 E+0	7.7 E-3	2.3 E-4	NA	0.0080	NA	NA	NA	NA
Ammonia	7.8 E-1	NA	NA	4.9 E-7	<0.00001	NA	NA	NA	NA
Cyanide (Total)	8.2 E-2	1.3 E-5	4.0 E-6	NA	0.000017	NA	NA	NA	NA
Fluoride	3.3 E+0	1.8 E-4	5.3 E-6	NA	0.00018	NA	NA	NA	NA
Nitrate (as N)	6.8 E+1	1.4 E-4	4.1 E-6	NA	0.00014	NA	NA	NA	NA
Nitrite (as N)	9.8 E-1	3.2 E-5	9.5 E-7	NA	0.000033	NA	NA	NA	NA
Organochlorine Pesticides									
2,4-DDD	5.0 E-3	NA	NA	NA	NA	6 E-11	1 E-13	3 E-13	6 E-11
2,4-DDE	1.2 E-1	NA	NA	NA	NA	2 E-9	5 E-12	1 E-11	2 E-9
4,4-DDD	2.2 E-4	NA	NA	NA	NA	2 E-12	6 E-15	1 E-14	2 E-12
4,4-DDE	8.0 E-2	NA	NA	NA	NA	1 E-9	3 E-12	7 E-12	1 E-9
4,4-DDT	2.8 E-2	1.8 E-4	1.6 E-5	9.9 E-7	0.00019	4 E-10	1 E-12	2 E-12	4 E-10
beta-BHC	2.0 E-3	NA	NA	NA	NA	2 E-10	8 E-13	9 E-13	2 E-10
Endrin aldehyde	1.9 E-3	1.2 E-5	3.6 E-6	1.1 E-7	0.000016	NA	NA	NA	NA
Heptachlor epoxide	1.5 E-3	3.8 E-4	1.1 E-4	2.1 E-6	0.00049	6 E-10	2 E-11	4 E-12	7 E-10
Aldehydes									
Acetaldehyde	1.4 E-1	NA	NA	1.3 E-2	0.013	5 E-11	1 E-12	4 E-9	4 E-9
Formaldehyde	4.9 E-1	7.9 E-6	2.4 E-6	1.1 E-4	0.00012	1 E-9	3 E-11	1 E-8	1 E-8

TABLE 14
CHEMICAL AND RADIONUCLIDE RISK SUMMARY FOR CONSTRUCTION WORKER RECEPTORS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Chemical	Soil Concentration (mg/kg)	Oral HQ	Dermal HQ	Outdoor Inhal HQ	Total HI	Oral ILCR	Dermal ILCR	Outdoor Inhal ILCR	Total ILCR
Volatile Organic Compounds									
Acetone	1.4 E-1	4.5 E-7	1.4 E-7	3.8 E-6	<0.00001	NA	NA	NA	NA
Dichloromethane	3.4 E-3	1.8 E-7	5.5 E-8	4.8 E-6	<0.00001	1 E-12	4 E-14	1 E-10	1 E-10
m,p-Xylene	1.0 E-3	1.7 E-8	5.0 E-9	1.8 E-5	0.000018	NA	NA	NA	NA
Methyl ethyl ketone	1.9 E-3	3.0 E-9	9.1 E-10	1.6 E-6	<0.00001	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons									
Benzo(a)anthracene	2.0 E-3	2.1 E-8	8.3 E-9	1.2 E-10	<0.00001	7 E-11	3 E-12	2 E-13	7 E-11
Benzo(a)pyrene	2.4 E-3	2.6 E-8	1.0 E-8	1.4 E-10	<0.00001	8 E-10	4 E-11	2 E-13	8 E-10
Benzo(b)fluoranthene	2.4 E-3	2.6 E-8	1.0 E-8	1.4 E-10	<0.00001	8 E-11	4 E-12	2 E-13	8 E-11
Benzo(k)fluoranthene	2.8 E-3	3.0 E-8	1.2 E-8	1.7 E-10	<0.00001	9 E-12	5 E-13	3 E-13	1 E-11
Chrysene	4.9 E-3	5.3 E-8	2.1 E-8	2.9 E-10	<0.00001	2 E-12	8 E-14	5 E-14	2 E-12
Dibenzo(a,h)anthracene	6.5 E-3	7.0 E-8	2.7 E-8	3.9 E-10	<0.00001	2 E-9	1 E-10	6 E-14	2 E-9
Indeno(1,2,3-cd)pyrene	3.8 E-3	4.0 E-8	1.6 E-8	2.2 E-10	<0.00001	1 E-10	6 E-12	4 E-13	1 E-10
Semi-Volatile Organic Compounds									
Benzyl alcohol	3.0 E-2	1.9 E-4	5.7 E-5	1.8 E-9	0.00025	NA	NA	NA	NA
Hexachlorobenzene	1.3 E-1	5.2 E-4	1.6 E-4	2.9 E-6	0.00068	1 E-8	3 E-10	5 E-11	1 E-8
Total	**--**	**0.11**	**0.013**	**0.14**	**0.26**	**6 E-7**	**6 E-9**	**3 E-7**	**9 E-7**

Radionuclide	Soil Concentration (pCi/g)	Oral ILCR	Inhalation ILCR	External ILCR	Total ILCR
Radium-226	1.5 E+0	4 E-8	8 E-15	3 E-6	3 E-6
Radium-228	2.2 E+0	1 E-7	5 E-15	2 E-6	2 E-6
Thorium-228	2.2 E+0	3 E-8	1 E-13	4 E-6	4 E-6
Thorium-230	1.5 E+0	1 E-8	2 E-14	3 E-10	1 E-8
Thorium-232	1.6 E+0	1 E-8	3 E-14	1 E-10	1 E-8
Uranium-233/234	1.6 E+0	7 E-9	8 E-15	4 E-10	7 E-9
Uranium-235/236	1.2 E-1	5 E-10	5 E-16	1 E-8	1 E-8
Uranium-238	1.3 E+0	6 E-9	6 E-15	3 E-8	4 E-8
Total	**--**	**2 E-7**	**2 E-13**	**9 E-6**	**9 E-6**
Background Risk Total	**--**	**--**	**--**	**--**	**8 E-6**

Note: Risk calculation spreadsheets are provided in Appendix F (on CD).
HQ = hazard quotient
HI - hazard index
ILCR = incremental lifetime cancer risk

TABLE 15
CHEMICAL AND RADIONUCLIDE RISK SUMMARY FOR MAINTENANCE WORKER RECEPTORS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

Chemical	Soil Concentration (mg/kg)	Oral HQ	Dermal HQ	Outdoor Inhal HQ	Total HI	Oral ILCR	Dermal ILCR	Outdoor Inhal ILCR	Total ILCR
Dioxins / Furans									
TCDD TEQ	2.1 E-4	5.6 E-2	3.7 E-2	NA	0.093	3 E-6	6 E-8	1 E-9	3 E-6
Inorganics									
Antimony	3.4 E-1	7.4 E-4	4.9 E-5	1.4 E-5	0.00080	NA	NA	NA	NA
Arsenic	7.2 E+0	6.4 E-3	4.2 E-3	1.5 E-4	0.011	1 E-6	2 E-8	4 E-9	1 E-6
Barium	4.6 E+2	2.0 E-3	1.3 E-4	2.1 E-7	0.0022	NA	NA	NA	NA
Cadmium	1.9 E-1	3.3 E-4	4.4 E-5	NA	0.00038	NA	NA	4 E-11	4 E-11
Chromium (Total)	4.0 E+1	2.4 E-5	1.2 E-4	NA	0.00014	NA	NA	NA	NA
Chromium (VI)	3.0 E+0	8.9 E-4	5.8 E-5	9.4 E-6	0.0010	NA	NA	3 E-8	3 E-8
Manganese	7.0 E+2	2.6 E-2	4.3 E-2	4.5 E-3	0.073	NA	NA	NA	NA
Molybdenum	1.1 E+0	1.9 E-4	1.3 E-5	NA	0.00021	NA	NA	NA	NA
Silver	2.4 E-1	4.2 E-5	2.8 E-6	NA	0.000045	NA	NA	NA	NA
Tin	1.7 E+0	2.4 E-6	1.6 E-7	NA	<0.00001	NA	NA	NA	NA
Titanium	7.1 E+2	1.6 E-4	1.0 E-5	7.5 E-6	0.00017	NA	NA	NA	NA
Tungsten	3.7 E+0	4.4 E-4	2.9 E-5	3.6 E-7	0.00046	NA	NA	NA	NA
Vanadium	8.2 E+1	1.4 E-2	9.5 E-4	NA	0.015	NA	NA	NA	NA
Zinc	6.5 E+1	1.9 E-4	1.3 E-5	NA	0.00020	NA	NA	NA	NA
Perchlorate	1.7 E+0	2.1 E-3	1.4 E-4	NA	0.0023	NA	NA	NA	NA
Ammonia	7.8 E-1	NA	NA	2.5 E-9	<0.00001	NA	NA	NA	NA
Cyanide (Total)	8.2 E-2	3.6 E-6	2.4 E-6	NA	<0.00001	NA	NA	NA	NA
Fluoride	3.3 E+0	4.8 E-5	3.2 E-6	NA	0.000051	NA	NA	NA	NA
Nitrate (as N)	6.8 E+1	3.7 E-5	2.5 E-6	NA	0.000040	NA	NA	NA	NA
Nitrite (as N)	9.8 E-1	8.6 E-6	5.7 E-7	NA	<0.00001	NA	NA	NA	NA
Organochlorine Pesticides									
2,4-DDD	5.0 E-3	NA	NA	NA	NA	4 E-10	2 E-12	4 E-14	4 E-10
2,4-DDE	1.2 E-1	NA	NA	NA	NA	1 E-8	7 E-11	1 E-12	1 E-8
4,4-DDD	2.2 E-4	NA	NA	NA	NA	2 E-11	1 E-13	2 E-15	2 E-11
4,4-DDE	8.0 E-2	NA	NA	NA	NA	9 E-9	5 E-11	9 E-13	9 E-9
4,4-DDT	2.8 E-2	4.9 E-5	9.6 E-6	5.0 E-9	0.000058	3 E-9	2 E-11	3 E-13	3 E-9
beta-BHC	2.0 E-3	NA	NA	NA	NA	1 E-9	1 E-11	1 E-13	1 E-9
Endrin aldehyde	1.9 E-3	5.4 E-6	3.6 E-6	5.6 E-10	<0.00001	NA	NA	NA	NA
Heptachlor epoxide	1.5 E-3	1.0 E-4	6.8 E-5	1.5 E-8	0.00017	4 E-9	3 E-10	6 E-13	5 E-9
Aldehydes									
Acetaldehyde	1.4 E-1	NA	NA	2.3 E-3	0.0023	3 E-10	2 E-11	2 E-8	2 E-8
Formaldehyde	4.9 E-1	2.9 E-6	1.9 E-6	2.1 E-5	0.000025	7 E-9	5 E-10	5 E-8	6 E-8

TABLE 15
CHEMICAL AND RADIONUCLIDE RISK SUMMARY FOR MAINTENANCE WORKER RECEPTORS
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Chemical	Soil Concentration (mg/kg)	Oral HQ	Dermal HQ	Outdoor Inhal HQ	Total HI	Oral ILCR	Dermal ILCR	Outdoor Inhal ILCR	Total ILCR
Volatile Organic Compounds									
Acetone	1.4 E-1	1.4 E-7	9.0 E-8	6.7 E-6	<0.00001	NA	NA	NA	NA
Dichloromethane	3.4 E-3	5.0 E-8	3.3 E-8	8.6 E-7	<0.00001	8 E-12	5 E-13	4 E-10	4 E-10
m,p-Xylene	1.0 E-3	4.6 E-9	3.0 E-9	3.2 E-6	<0.00001	NA	NA	NA	NA
Methyl ethyl ketone	1.9 E-3	2.8 E-9	1.8 E-9	2.9 E-7	<0.00001	NA	NA	NA	NA
Polynuclear Aromatic Hydrocarbons									
Benzo(a)anthracene	2.0 E-3	5.8 E-8	5.0 E-8	6.0 E-12	<0.00001	5 E-10	5 E-11	2 E-14	5 E-10
Benzo(a)pyrene	2.4 E-3	7.0 E-8	6.0 E-8	7.2 E-12	<0.00001	5 E-9	6 E-10	3 E-14	6 E-9
Benzo(b)fluoranthene	2.4 E-3	7.0 E-8	6.0 E-8	7.2 E-12	<0.00001	5 E-10	6 E-11	3 E-14	6 E-10
Benzo(k)fluoranthene	2.8 E-3	8.2 E-8	7.0 E-8	8.4 E-12	<0.00001	6 E-11	7 E-12	3 E-14	7 E-11
Chrysene	4.9 E-3	1.4 E-7	1.2 E-7	1.5 E-11	<0.00001	1 E-11	1 E-12	6 E-15	1 E-11
Dibenzo(a,h)anthracene	6.5 E-3	1.9 E-7	1.6 E-7	2.0 E-11	<0.00001	1 E-8	2 E-9	8 E-15	2 E-8
Indeno(1,2,3-cd)pyrene	3.8 E-3	1.1 E-7	9.5 E-8	1.1 E-11	<0.00001	9 E-10	1 E-10	5 E-14	1 E-9
Semi-Volatile Organic Compounds									
Benzyl alcohol	3.0 E-2	8.7 E-8	5.7 E-8	8.9 E-12	<0.00001	NA	NA	NA	NA
Hexachlorobenzene	1.3 E-1	1.4 E-4	9.4 E-5	1.5 E-8	0.00024	7 E-8	4 E-9	7 E-12	7 E-8
Total	**--**	**0.11**	**0.086**	**0.0070**	**0.20**	**4 E-6**	**9 E-8**	**1 E-7**	**4 E-6**

Radionuclide	Soil Concentration (pCi/g)	Oral ILCR	Inhalation ILCR	External ILCR	Total ILCR
Radium-226	1.5 E+0	2 E-7	1 E-15	6 E-5	6 E-5
Radium-228	2.2 E+0	8 E-7	7 E-16	5 E-5	5 E-5
Thorium-228	2.2 E+0	2 E-7	2 E-14	9 E-5	9 E-5
Thorium-230	1.5 E+0	7 E-8	2 E-15	6 E-9	7 E-8
Thorium-232	1.6 E+0	8 E-8	4 E-15	3 E-9	8 E-8
Uranium-233/234	1.6 E+0	5 E-8	1 E-15	8 E-9	5 E-8
Uranium-235/236	1.2 E-1	3 E-9	7 E-17	3 E-7	3 E-7
Uranium-238	1.3 E+0	4 E-8	7 E-16	8 E-7	8 E-7
Total	**--**	**2 E-6**	**3 E-14**	**2 E-4**	**2 E-4**
Background Risk Total	**--**	**--**	**--**	**--**	**2 E-4**

Note: Risk calculation spreadsheets are provided in Appendix F (on CD).
HQ = hazard quotient
HI - hazard index
ILCR = incremental lifetime cancer risk

TABLE 16
ASBESTOS RISK SUMMARY
UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Scenario	Estimated Airborne Chrysotile Concentrations[(1)] (s/cm^3)	Estimated Airborne Amphibole Concentrations[(1)] (s/cm^3)	Adjusted Chrysotile URF[(2)] $(s/cm^3)^{-1}$	Adjusted Amphibole URF[(2)] $(s/cm^3)^{-1}$	Estimated Chrysotile[(3)] Risk	Estimated Amphibole[(3)] Risk
LONG FIBERS						
Construction Worker-Best Estimate (No Dust Mit./1 Yr Exp.)	4.9 E-5	0 E+0	1.9 E-4	2.1 E-2	9 E-9	0 E+0
Construction Worker-Upper Bound (No Dust Mit./1 Yr Exp.)	6.3 E-5	3.1 E-6	1.9 E-4	2.1 E-2	1 E-8	6 E-8
Future Maintenance Worker-Best Estimate	2.8 E-7	0 E+0	4.2 E-3	4.6 E-1	1 E-9	0 E+0
Future Maintenance Worker-Upper Bound	3.5 E-7	1.8 E-8	4.2 E-3	4.6 E-1	1 E-9	8 E-9

Note: Risk calculation spreadsheets are provided in Attachment E (on CD).
(1) Calculated based on estimated dust estimates and asbestos fiber concentrations.
(2) Calculated using equation information from Table 8-2 of 2003 Methodology (USEPA 2003b).
(3) Estimated airborne concentrations × URF.
Best Estimate - Based on the pooled analytical sensitivity multiplied by the number of asbestos fibers found.
Upper Bound - Based on the 95% UCL of the Poisson distribution.

APPENDIX A

NDEP COMMENTS AND BRC'S RESPONSE TO COMMENTS

Response to NDEP Comments Received September 4, 2009 on the Data Review and Human Health Risk Assessment for the Utility Corridor Sub-Area dated August 2009

1. General comment, the basis for concluding that isotopic radium, thorium, and uranium are consistent with background is unclear and insufficiently documented. Many of the radionuclides fail background comparisons. Instead reference is made to NDEP's Guidance document on secular equilibrium, and, specifically, to calculations presented for the Utility Corridor in that guidance document. However, the dataset used in NDEP's guidance is not the same dataset used in this report. In addition, the decision logic presented in the NDEP guidance document has not been followed by BRC (see specific comments below). Instead, the decision logic has been misinterpreted so that background comparisons for one radionuclide (Uranium-238), which happen to pass, are combined with the secular equilibrium test results to conclude that radionuclides are consistent with background. This is despite the numbers of failures of background comparisons for most of the radionuclides. Also, Table 1 indicates that the site maximum exceeds the background maximum for all radionuclides, which emphasizes the need to carefully describe the basis for concluding that concentrations of these analytes are consistent with background. And, despite the plots and summary statistics that show relatively high values for several of the radionuclides when compared to background. The radionuclide analysis needs to be performed again. The results will probably lead to carrying radionuclides forward in the risk assessment, which will result in a relatively high risk (since background radium generates a risk for residential receptors of 3x10-4. Some risk management decisions can then be made, considering a large proportion of the risk will be associated with background, the soil data come from soil that will be covered by a considerable amount of clean soil, capped with asphalt, etc.

Response: *The report has been revised to include an updated radionuclide background comparison. For this report, if any of the radionuclide parent or decay chain constituents are demonstrated to be above background, because indications are that secular equilibrium is approached, all detected radionuclides are carried forward in the risk assessment. Also the radionuclide risk calculations do not include a decay constant in the equations.*

2. General comment, Section 4 and Table 1 show some radionuclides with counts above the NDEP leaching-based Basic Comparison Level (LBCL) with a dilution attenuation factor (DAF) 20 screening value. If concentrations of radionuclides are indeed consistent with background, screening these analytes for groundwater protection is not necessary. On the other hand, if one or more radionuclides are identified as chemicals of potential concern (COPCs), attributes that should be discussed in the risk assessment for determining whether analysis beyond the screening is warranted include 1) the relationship of the 95 upper confidence limits (UCL(s)) to the LBCL, 2) the spatial characteristics of contamination, and 3) possible additive impacts of multiple chemicals reaching groundwater.

Response: *As indicated in previous correspondence with NDEP, Table 1 simply shows results in relation to comparison values for site characterization purposes only. No interpretations based* *on this are given or inferred. Radionuclides are further addressed in the human health risk assessment.*

3. General comment, a BCL screening is shown in Section 4. Given the current conclusions of the background comparisons (Section 5), what is the purpose of the radionuclide BCL screening and what conclusions can be drawn from these comparisons? Please provide this information in the report or eliminate the comparisons of site data to radionuclide BCLs. See also comments above and below.

Response: *See response to comment #3 above. As requested by this comment, these comparisons have been removed from Table 1 for radionuclides.*

4. Some of the other background conclusions are also questionable. For example, the main reason antimony does not fail the background comparison tests is driven by differences in detection limits for the two datasets (site and background). The comparability issue between site and background data has not been addressed sufficiently throughout.

Response: *Antimony has been added as a COPC for evaluation in the risk assessment*

5. General comment, the comparison of the 0, 0-10, and 10-20 foot data is insufficient. Conclusions cannot be drawn by comparing maximum concentrations. If conclusions are needed then summary statistics are needed, along with plots (e.g., box plots), and statistical comparisons (e.g., ANOVA, Kruskal-Wallis, and multiple comparisons).

Response: *See response to comment 11 below. Also, there were only three 20 feet bgs samples collected at selected areas slated for deeper excavations at the Site. This is insufficient data to conduct quantitative statistical comparisons, thus the qualitatitive nature of the analysis. As noted in comment 11, "Based on the information provided, it does not appear that the detections at 20-feet bgs would change the overall conclusions of the HRA." This information has been provided in the report.*

6. General comment, the radionuclides and asbestos risk assessments need more work to bring them more in line with what is presented for chemicals, and with the processes laid out in the United States Environmental Protection Agency (USEPA) Risk Assessment Guidance for Superfund (RAGS). The text of the risk assessment is heavily weighted towards the chemical risk assessment methods and results. For example, the asbestos risk assessment receives only two sentences within eight pages of the Uncertainty Analysis. Section 9.7.4 of the BRC Closure Plan states that risks from radionuclides will be evaluated separately from chemical contaminants. Section 9.7.5 of the BRC Closure Plan presents a separate methodology for asbestos risk assessment. The risk assessment should be revised, therefore, to provide separate risk assessments for radionuclides and asbestos. In the current document, the information presented in the risk assessment is inadequate to allow review of the methods used to conclude that radionuclides are present at concentrations consistent with background levels (see general comment above). Conclusions based on the asbestos risk calculations are

appropriate, although an error in one aspect of the calculations was identified (see below). However, the defensibility of the asbestos risk assessment is impaired by inadequate supporting information and discussion specific to this analyte.

Response: *All data and calculations are presented in the risk assessment, and have been adequately presented to allow for review of the methods used. In addition, similar to the discussion for chemicals, reference is provided to the Closure Plan for additional methodology discussions. No changes have been made to the document in response to this comment; however, future sub-area risk assessments will provide additional information.*

7. General comment, for the asbestos risk calculations, it appears that the particulate emission factor (PEF) for the construction worker scenario is being overestimated by BRC, thus overestimating asbestos risk. The PEF calculation is based on a specific set of events (such as tilling [2 times per year]; wind erosion [over an entire year]; soil dumping [2 times per year]) that are averaged over the entire year (J'T). The duration of construction parameter (T) that is used for calculating the total time-averaged PM10 emission should not be dependent on the given receptor's exposure time (the receptor exposure time is taken into account in the overall risk equation). Therefore, BRC should be calculating the parameter T by:

   $$T = ED * 365 \text{ d/yr} * 24 \text{ hr/d} * 60 \text{ min/hr} * 60 \text{ sec/min}$$

   This results in an overall risk that is lower than what BRC reports in this revision of the document. Please change the corresponding spreadsheets, tables, and risk results reported in the text using the above T parameter in the construction PEF.

Response: *Based on discussions with Neptune regarding this issue, no changes have been made to the document. It is BRC's understanding that NDEP is looking into this issue further and will provide guidance.*

8. General comment, the conceptual site model (CSM) for the site indicates that a large pipe will be placed in the ground. Recent figures that have been sent by e-mail show the depth of the ditch that will be needed to accommodate the pipe, and the relief at grade. This figure should be clarified (for legibility as it is quite busy and hard to interpret), included in the report, and further discussion should be provided. It appears that considerable amounts of fill material will be brought in to cover the pipe and serve as road-base for the planned road. To complete the risk assessment, some discussion is needed on the depths involved, the amount of cover material that will be brought in (depth of cover), and the nature of the fill material (i.e. noting that it will have also received a No Further Action (NFA) determination from other sub-areas).

Response: *Additional discussion has been added to the report on pages ES-1, 2-2, 2-3, and 4-5. In addition, the referenced figure as been added to the document as Figure 3.*

9. Regarding the organization of this document. Sections 4 – 8. The material related to radionuclides and asbestos should be reorganized and supplemented in a manner consistent

with USEPA RAGS. The following general outline is provided as a suggestion for how to organize the separate assessments for radionuclides and asbestos. This outline assumes that information on site description and history, conceptual site model, previous investigations, and similar material common to all types of contaminants is provided in previous report sections. The bullets summarize typical information for each section but are not meant to be exhaustive. In addition, the NDEP understands that it may not be practical to revise the report to address all of these issues at this sub-area, however, the intent of this comment must be addressed. Contact the NDEP for additional details.

1) Data Adequacy- number, locations, depths, field protocol, analytical method, QA/QC, etc
2) Identification of Contaminants of Potential Concern - discussion of data characteristics of site and background data: spatial trends, exploratory data analysis; background comparisons; other factors.
3) Calculation of Exposure Point Concentrations in Sampled Media - discussion of data characteristics: spatial trends, exploratory data analysis; identification of subareas for computing EPCs, as necessary; methods for computing a 95UCL.
4) Exposure Assessment - summary of land use scenarios, receptors, and potentially complete exposure pathways (taken from the CSM section); use of models to calculate EPCs in unsampled media or at future times; descriptions and equations. (dust resuspension, uptake into foods raised on-site, leaching to groundwater – including comparisons to LBCLs, etc.); equations for the calculation of contaminant intake; external radiation; exposure parameter values and references; explanation of the relationship of referenced values to the exposure models described in the CSM
5) Toxicity Assessment - sources of toxicity criteria; discussion of methods.
6) Risk Characterization- risk equations; discussion of threshold criteria; assumptions for assessing risk from multiple radionuclides; presentation and discussion of risk assessment results (identification of key radionuclide COPCs and exposure pathways for each scenario).
7) Uncertainty Analysis (focused on the key COPCs and exposure pathways)- uncertainty related to sampling and analysis; analytical issues, data adequacy, etc; uncertainty related to the exposure assessment; EPCs, transport models, receptor behavior, etc; uncertainty related to the toxicity assessment; cancer slope factors and unit risks.

Response: *Agreed. Each of these elements are included in the current risk assessment; however, BRC will incorporate additional information in all future sub-area reports.*

10. Cover letter, page 2 and Tables CL-1 and CL-2. In June 2009, samples were collected at 20 feet below ground surface (bgs) at three sample locations (i.e., SAE-08C, SAE-47D, and SAE-48D). According to the subject document, these data have been validated and reviewed for usability in risk assessment. It appears that only inorganics and radionuclides were detected at these 20-feet below ground surface (bgs) samples. BRC conducted a comparison of the maximum detected concentrations at 20-feet bgs to the maximum detected concentrations at the surface and 10-feet bgs. For some inorganics, the maximum detected concentration at 20-feet was either detected at a higher concentration than the surface maximum concentration or the 10-feet bgs maximum concentration, but not both. The relative difference between the maximum detected concentrations range from 1% to 600%. Antimony had the highest percent difference (600%) in which the 20-feet bgs maximum

detection of 1.3 mg/kg was higher than the 10-feet bgs sample of 0.21 mg/kg. However, the 20-feet bgs maximum concentration was lower than the surface maximum of 1.7 mg/kg. Antimony was not selected as a COPC in the HRA because it was found to be within background levels at the Site. Arsenic, which was a chemical-risk driver in the document, was found to have a maximum concentration of 8.9 mg/kg at 20-feet bgs which is slightly higher than the detection at 10-feet bgs (7.9 mg/kg), but below the maximum detection at the surface of 20.9 mg/kg. Based on the information provided, it does not appear that the detections at 20-feet bgs would change the overall conclusions of the HRA. It should be noted that this only applies to the area represented by the 3 sample locations in which data at 20-feet bgs were provided. This clarification applies to several areas of the report, however, this comment will not be repeated.

1. Additionally, addressing this important issue as an attachment to the cover letter is not appropriate or acceptable. This issue should be addressed within the body of the report.

Response: *The information in the cover letter and this comment have been incorporated into the main report on page 4-5.*

11. Page ES-1; last sentence. Please change "…with this revised…" to "…in this revised…".

Response: *The purpose of the report has been changed from requesting an NFAD to supporting the NFAD that was issued by NDEP. Therefore, the last part of this sentence has been removed.*

12. Page ES-1 and ES-2, Conceptual Site Model section; More information is needed on the planned use of the site, including depth of pipe, depth of cover, cover materials (fill material, road-based, asphalt), etc. See General Comment above.

Response: *Additional text on this issue has been added on page ES-1.*

13. Page ES-2, Data Review and Usability Evaluation, 5th line. The conclusion that there is no difference by depth appears to be based on comparisons of maximum concentrations. This is insufficient for drawing such conclusions. See General Comment above.

Response: *Agreed. No changes have been made to the Executive Summary text; however, additional text has been added to Section 4 on page 4-5.*

14. Page ES-2 and ES-3; The Human Health Risk Assessment section states that the data review did not take into account cumulative effects, however the Risk Characterization Results section states that cumulative non-cancer metrics (Hazard Index) were used in this report. Please clarify.

Response: *The cited text infers that the Data Review Section (Section 4) does not take into account cumulative effects, which is why the calculation of risks in Section 5-8 is undertaken. The text in ES-2 and ES-3 has been modified to reflect: "The data review section (Section 4) did* *not take into account cumulative effects, nor all potential exposure pathways. Therefore, a human health risk assessment was conducted (Section 5 through 8) to determine if chemical concentrations in Site soils are:"*

15. Page ES-3; Risk Characterization Results, last sentence. Estimated risks from asbestos exposure should be characterized in terms of death from mesothelioma. The unit risk factors (URFs) for asbestos are driven primarily by mesothelioma occurrence, and only somewhat by lung cancer.

Response: *The text has been amended on page ES-3 to state: "the estimated risks for death from mesothelioma (primarily) and lung cancer (secondarily) for asbestos exposures"*

16. Page ES-3; Summary section, 2nd sentence. Please change "…exposures to residual levels chemicals…" to "…exposures to residual levels of chemicals…".

Response: *The text has been revised on page ES-4 as suggested.*

17. Page ES-3, Risk Characterization Results. For clarification purposes, the citation for the 1.0 parts per billion (ppb or 1,000 parts per trillion [ppt]) as the screening level for dioxins/furans for a worker exposure scenario should be the NDEP Basic Comparison Levels (BCLs) (NDEP, 2009a) and not the Agency for Toxic Substances and Disease Registry (ATSDR, 1997), which addresses residential exposure scenarios only. This comment also refers to other places in the document, however, this comment will not be repeated.

Response: *The reference(s) has been revised to reflect NDEP BCLs as the citation for the screening level.*

18. Page 1-1; Section 1.1, 2nd sentence. This sentence indicates that a number of conditions were placed on the NFAD. These conditions should be listed.

Response: *The conditions of the September 4, 2009 NFAD are listed on pages 1-1 and 1-2 of the report.*

19. Page 1-2; Section 1.1, 1st full sentence. Please change "…BRC…" to "…BRC's…".

Response: *Because of revisions to the report based on the purpose of the report changing from requesting an NFAD to supporting the NFAD that was issued by NDEP, the last part of this sentence has been removed.*

20. Page 1-2; Section 1.2, last bullet. This bullet (and consequent Section) should be renamed Data Quality Assessment. This is different than data adequacy, which is usually associated with data usability. Instead, this is verification that the data quality objectives (DQOs) have been met. Since DQOs steps 6 and 7 were not established (by agreement with NDEP), this

DQA serves as a retrospective evaluation of possible DQOs, with the intent of demonstrating that the sample sizes would satisfy a wide variety of possible DQOs, had they been established.

Response: *The bullet and section have been revised on page 1-3 to read "data quality assessment."*

21. Page 2-2; Section 2.2, last paragraph, 3rd sentence. Please change "…composite sampling…" to "…composite samples…".

Response: *The text has been revised on page 2-2 as suggested.*

22. Page 2-3; Section 2.3, 2nd full paragraph, 2nd to last sentence. The nature of the fill material is again relevant here.

Response: *Text regarding the fill material has been added to this sentence on page 2-3.*

23. Page 3-1; Section 3.0, 1st paragraph under bullets. The NDEP Data Usability Guidance step for data analysis is not described in a separate subsection of Section 3.0. Please clarify.

Response: *The text has been reordered and clarified on page 3-1 to state: "A summary of these six criteria for determining data usability is provided below. In addition to the six principal evaluation criteria, NDEP's Data Usability Guidance includes a step for data usability analysis. Data usability evaluation tables are provided electronically in Appendix C (on the enclosed report CD in Appendix B)."*

24. Page 3-3; Section 3.2. BRC should incorporate the NDEP asbestos guidance reference into the discussion on the measurement of asbestos.

Response: *The reference to NDEP guidance (2009b) has been included in the revised report on page 3-3.*

25. Page 3-4; Section 3.4, Criterion IV. BRC should also consider background. In particular, BRC should discuss if the sample quantitation limits (SQLs) for the site data are similar to SQLs for the background data. If they are not similar the consequences should be discussed.

Response: *A discussion on this issue has been added to page 3-5.*

26. Page 3-5; Section 3.4, 1st full paragraph, 3rd sentence. Please change "…below in the Section 3…" to "…in Section 4.0…"

Response: *The text has been revised on page 3-5 as suggested.*

27. Page 3-5, Section 3.5, second paragraph. BRC states "Although certain laboratory limits, such as percent recovery (PR) and relative percent difference (RPD) between sample and duplicate, were exceeded for certain compounds or analyses…there does not appear to be a wide-spread effect on the quality of the analytical results…the laboratory does not believe that the observed exceedances of laboratory criteria represent a concern". We note that the laboratory's evaluation of the data does not necessarily address HRA data usability criteria. We assume that BRC evaluated the data point-by-point and that the specific data points that were outside of laboratory control limits still meet data usability criteria for HRA. This is not clear from the "Reason for Inclusion/Exclusion" in the data usability tables in Appendix C, as rationale provided is not sample-specific. We recognize that sample-specific data usability issues were examined, but recommend, for future documents, avoiding the term "wide-spread" when making conclusions regarding data usability. This comment also refers to other places in the document, however, this comment will not be repeated.

Response: *The text has been revised on page 3-5 to read: "…none of the exceedances resulted in rejection of a data point nor did they reflect a larger concern on a particular compound, sample, or method."*

28. Page 3-6; Section 3.5, 1st full paragraph, last sentence. Please add a comma after "DVSRs" and insert "and" before "…are used in the human health risk assessment."

Response: *The text has been revised on page 3-6 accordingly.*

29. Page 3-6; Section 3.6, Criterion V, last paragraph. NDEP has issued guidance on evaluation of blanks, use of field duplicates, detection limits, and data validation, all of which should be referenced here or in other appropriate sections of Chapter 3.

Response: *References to the guidance documents have been added to Sections 3.4 and 3.5.*

30. Page 3-8; Section 3.6. A previous comment was not completely addressed with respect to comparability regarding background datasets. Comparability of detection limits for site and background data has not been achieved for some metals. This needs to be addressed in more detail, since the lack of comparability compromises the background comparisons that are presented later in this document.

Response: *There is discussion in the text similar to that provided in the Supplemental Shallow Background report. The following change has been made to this paragraph on page 3-8: "Note that for constituents with SQLs that meet data quality objectives,…" has been replaced with "Note that for constituents with SQLs that meet project limit requirements,…"*

31. Page 3-8; Section 3.6, 1st full paragraph, 4th sentence. BRC states: "The ranges of sample results from the current investigation are comparable to recent results at the Eastside (for example, the Mohawk sub-area), as well as the site background datasets." If such statements

are going to be made, then some data analysis results need to be presented to support the argument. There are some potentially obvious exceptions to this statement (See Appendix D plots for Boron, Niobium, Selenium, Silicon, Tungsten, Zirconium, and Radionuclides). Please revise this statement accordingly.

Response: *This sentence has been revised on page 3-8.*

32. Page 4-3; 1st paragraph under bullets. The discussion on the dilution attenuation factors needs to be reworked to make the use of DAF 1 vs. DAF 20 understandable. Some explanation is offered, but conclusions cannot be clearly drawn about which DAF is more appropriate from the information as presented. The second sentence of the paragraph needs rewording as well.

Response: *The section cited has been reworked on page 4-3 to improve the clarity of selection of LBCLs based on a DAF of 1 vs. a DAF of 20.*

33. Page 4-3; Section 4.0, 2nd paragraph under bullets. Perhaps the paragraph and subsequent paragraphs can be reworded, reorganized, or reformatted. It is difficult to follow when the first sentence says "Except as discussed below". Please discuss if this applies only to arsenic and radionuclides, or also to dioxins and metals.

Response: *The sentence on page 4-3 containing "except as discussed below" has been removed from the revised document. The remaining text outlines and described for each chemical/chemical class the presence of or lack of chemical concentrations that exceed LBCLs.*

34. Page 4-4, Section 4.0, 2nd full paragraph. We assume that BRC meant that for hexachlorobenzene (SAE-7) the following (0.36 mg/kg at the surface versus 0.11 mg/kg at 10 feet bgs).

Response: *Agreed. The hexachlorobenzene concentration for SAE-7 at surface and 10 ft bgs depths were incorrectly interchanged in the document. The text has been revised accordingly.*

35. Page 4-4; Section 4.0, 3rd full paragraph last sentence and continuation in first sentence of the next paragraph. The presentation is based on maximum concentrations, which is fine for simple comparison to note that there are a few samples with somewhat higher concentrations. However, it is not appropriate to then draw conclusions that there is no indication that concentrations increase with depth. Such conclusions can only be drawn based on a more appropriate analysis of the data (see General Comment above).

Response: *Agreed. Because a quantitative analysis on this issue was not conducted, the phrase "…supporting the conclusion…" has been replaced with "…suggesting that …" on page 4-4.*

36. Page 4-4; Section 4.0, last paragraph. Some discussion of the fill material is warranted here as noted above.

Response: *The following sentence has been added on page 4-5 before the last sentence of this paragraph: "Also, as noted previously, the entire Site will be backfilled with clean pea gravel and overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained, and beneath future roadways under the prospective redevelopment plan."*

37. Page 5-1; Section 5.0, 1st sentence. Please change "Section 3" to "Section 4.0" and remove the word "above".

Response: *The text has been revised on page 5-1 to include above mentioned changes.*

38. Page 5-2; Section 5.1, 1st bullet. Please reword to "Identification of chemicals with detected levels that are similar to background concentrations (where applicable), and". The point is that site data cannot be less than background unless something is wrong or not understood well enough yet.

Response: *The text has been reworded on page 5-2 to include above mentioned revisions.*

39. Page 5-2, Section 5.1, second bullet. BRC should also note that this list also includes consideration of qualified data and results for blanks, as described elsewhere in the health risk assessment (HRA). More detail is needed in this bullet, which is provided in Section 5.1.2. Provide more detail here, or reference Section 5.1.2. for more detail.

Response: *The following has been added to the bullet as requested: "(see Section 5.1.2 for additional detail)."*

40. Page 5-2; Section 5.1.1, 1st paragraph. A discussion of the decision logic associated with the interpretation of the background test results would be helpful. How is a chemical determined to have passed or failed background comparisons? The move towards a significance level of 0.025 for each test is one that suggests that failure of any 1 test is sufficient to fail background comparisons.

Response: *Additional text has been added on page 5-2 to clarify the decision logic utilized.*

41. Page 5-2; Section 5.1.1, 1st paragraph. This paragraph would benefit from being expanded to include information regarding the selection of an appropriate background dataset (or subset of a dataset) based on geology. Also, response-to-comment (RTC) 12 does not completely address the related comment.

Response: *Additional discussion has been provided on page 5-2 regarding the selection of the appropriate background dataset for the Site. Discussions on data comparability are provided in Sections 3.4 and 3.6.*

42. Page 5-2; Section 5.1.1, 2nd paragraph. Some justification for this decision regarding field duplicates is needed. The NDEP guidance suggests this as a good option, but also requires justification of this choice.

Response: *Additional language has been added to the section on page 5-3 describing why treatment of field duplicates in this manner is appropriate.*

43. Page 5-2; Section 5.1.1, Table. NDEP disagrees on the conclusions for the background comparisons for antimony. This is part of a larger concern, but might only affect antimony in this case. The antimony conclusions are driven by the SQLs for the non-detects. In particular, the SQLs for the site data are about 0.13 and for the background data are about 0.3. This difference is enough, given the frequency of detection, to drive the conclusions that are presented. However, the plots suggest that antimony should not pass all the background tests. NDEP has provided input before on possible approaches to dealing with situations in which NDs and SQLs have a potentially significant effect on background comparisons. For this document, similar issues appear to be associated with at least copper, mercury, and selenium. A more thorough analysis is needed.

Response: *Antimony has been added as a chemical of potential concern. The SQL is not an issue for copper, as it was detected in 100 percent of both the Site and background data, therefore, the conclusions for it have not been changed. Mercury and selenium both have lower frequencies of detection for the Site data than the background data; in fact selenium was not detected in any Site samples. Therefore, the conclusions have not been changed for these metals.*

44. Page 5-4; Section 5.1.1, 1st full paragraph. The basis for concluding that isotopic radium, thorium, and uranium are consistent with background is unclear. At a minimum, the secular equilibrium results should be reported as a table in this report. It is also noted that the dataset that accompanied this revision contains 78 samples, rather than 70 samples (from the previous revision) that were used to calculate the secular equilibrium results in the NDEP radionuclide guidance. Please clarify why these datasets differ in size, calculate the secular equilibrium results for both the U-238 and Th-232 chains, and present them in the text as discussed above.

Response: *See response to comment 46 below.*

45. Page 5-4, Section 5.1.2, 2nd bullet – We assume the 2nd bullet meant that "Further evaluation of chemicals included those (detected at levels significantly…)".

Response: *The text has been reworded on page 5-5 as suggested.*

46. Page 5-4; Section 5.1.1, 1st full paragraph, NDEP radionuclide guidance reference. The decision logic that was defined as part of the NDEP radionuclide guidance was not followed. Although the radionuclides appear to exhibit secular equilibrium, there are certain radionuclides that still fail background comparison (e.g., Ra-226). Implementing the guidance decision logic would indicate that although approximate secular equilibrium exists, all radionuclides are not within background, therefore all radionuclides in the chain are considered COPCs and should be carried forward. Please reference the flow diagram from the NDEP guidance.

Response: *In response to this comment, because a number of radionuclides are statistically greater than background, all radionuclides are brought forward as COPCs for the revised document. The secular equilibrium results are presented on page 5-5.*

47. Page 5-4; Section 5.1.2, 1st sentence. Please change "…COPCs…" to "…COPC…".

Response: *The text has been revised on page 5-5.*

48. Page 5-4; Section 5.1.2, 2nd bullet. Please reword the first part of this bullet.

Response: *See response to comment 45 above.*

49. Page 5-5; Section 5.2.1, bottom of page. It is not clear how non-detects (NDs) were treated for these calculations. A statement is needed in the document regarding how the NDs were treated for each statistical analysis performed.

Response: *The text has been amended on page 5-6 to state that in calculating 95 percent UCLs, "For these calculations, chemical non-detect results are assigned a value of one-half the SQL. For radionuclide censored data, the actual reported value is used."*

50. Pages 5-5 to 5-6; Section 5.2.1. Previous NDEP comment #29 was not addressed entirely. The same definition of a UCL is given in this version of the report as was used in the previous version. Please replace it with the following "The 95 percent UCL is a statistic that quantifies the uncertainty associated with the sample mean. If randomly drawn subsets of site data are collected and the UCL is computed for each subset, the UCL will equal or exceed the true mean roughly 95 percent of the time." Also, not much in the way of describing the UCL methods used is included in this version. Please clarify.

Response: *The definition of the 95 percent UCL was excerpted directly from the referenced USEPA guidance document; however, the text requested above has been incorporated into the revised report on page 5-6.*

51. Page 5-6; Section 5.2.1. The discussion of the approach for asbestos should include a formal reference to the NDEP guidance for characterizing asbestos related risk.

Response: *A reference to the NDEP guidance (2009b) has been added to this section on this page 5-7.*

52. Page 5-7; Section 5.2.2. The PEF equation given in the text is for commercial workers (i.e., maintenance workers) but nothing is given for the construction worker scenario. Please refer to the NDEP guidance for characterizing asbestos related risk and incorporate the appropriate PEF (Note: the construction scenario PEF is broken into 1) subchronic PEF for construction activities and 2) subchronic PEF for unpaved road traffic).

Response: *Additional text has been added showing the generic equation for construction worker PEF. References to the table containing the specific detailed equations utilized to generate this parameter are in the text and the equations individually are detailed in Table 6.*

53. Page 5-8, Section 5.3, 2nd paragraph. We assume that future health risk assessment (HRA) documents will follow the USEPA RAGS Part F guidance (USEPA, 2009a) when assessing risks/hazard indices via inhalation exposures. This also applies to the Tables 8 and 9 and the risk calculation spreadsheets.

Response: *Agreed. Future health risk assessment guidance documents will incorporate the USEPA RAGS F Guidance.*

54. Pages 6-1 to 6-2, Section 6.1. BRC should clarify that the analytical results and spatial distribution of the COPCs was also considered in determining the sufficiency of site data.

Response: *Text referring to these two issues as been added on pages 6-1 and 6-2.*

55. Page 6-2; Section 6.2.1, 3rd sentence. This sentence contradicts the text on page ES-2 relating to the extent of evaluation of potential exposure pathways (i.e., page ES-2 indicates that not all potential exposure pathways were evaluated, while page 6-2 indicates that all principal potential exposure pathways were evaluated).

Response: *The sentence on page ES-2 specifically states the data review (i.e. comparison to BCLs) in Section 4.0 does not take into account all potential exposure pathways that is why the human health risk assessment was conducted. No change to the document is necessary.*

56. Page 6-4; Section 6.3.1, 1st paragraph, last sentence. Please change "…relative Site risks…" to "…relative to Site risks…".

Response: *The text has been revised on page 6-4 to include the requested change.*

57. Page 6-4, Section 6.3.1, 4th full paragraph. According to Table 1, this paragraph does not appear to have been updated. We assume that the text should refer to the following: "Only Chrysene was initially considered a COPC as it was detected in four (not three) out of 62 (not 59) samples (6.5 percent and not 5.1 percent). Five (deleted only) of the seven…" This paragraph would be more appropriate in Section 6.3.5, pages 6-7 to 6-8.

Response: *Agreed. This paragraph has been updated and moved to Section 6.3.5.*

58. Page 6-6, Section 6.3.4. We assume that BRC considered the lack of developmental data in deriving the sub-chronic reference dose (RfD) for manganese.

Response: *BRC did not 'derive' the sub-chronic RfD for manganese. This value was obtained directly from the sub-chronic toxicity criteria cited in USEPA's Health Effects Assessment Summary Tables (HEAST); a source listed in USEPA's (and the Closure Plan) hierarchy for selecting toxicity criteria.*

59. Page 6-6; Section 6.3.4, 2nd sentence. Please change "…RFD…" to "…RFDs…".

Response: *The text has been revised on page 6-5 to "RfDs".*

60. Page 7-1; Section 7.0. The title of this Section should be changed to Data Quality Assessment. See comment on Section 1.2. Data Adequacy is addressed as part of data usability are requires, instead addressing the following issues: 1) analytical data quality, 2) confidence in the conceptual model describing releases and receiving media, 3) relationship of the analytical suites and sampling design to potentially impacted media and locations described in the CSM, 4) adequacy of background and site data sets for identifying COPCs by statistical methods, 5) relationship of sampling density to the potential exposure areas described in the CSM. Section 7 is, instead, about Data Quality Assessment, per USEPA's guidance.

Response: *The section has been renamed as suggested.*

61. Page 7-1; Section 7.0. NDEP Comment #41 from the previous round of comments was not addressed. Please change the text in the parentheses of the Delta definition to "the difference between the threshold value stated in the null hypothesis and the point at which beta is specified".

Response: *The text has been revised accordingly on page 7-1.*

62. Page 8-2; Section 8.1. 1st paragraph, last sentence. Please include "…and mesothelioma…" after "…lung cancer…". The asbestos risk estimates are for deaths associated with the combination of mesothelioma and lung cancer. Mesothelioma is the main driver.

Response: *The text has been revised accordingly on page 8-1.*

63. Page 8-2; Section 8.2, last paragraph, 2nd to last sentence. Table 14 indicates that the upper bound amphibole risk is 8 x 10-9 while the text indicates 3 x 10-7 for maintenance workers. Please clarify.

Response: *The upper amphibole risk for maintenance workers is 8 x 10-9, as shown in Table 14, but was incorrectly documented as 3 x 10-7 in the text. The text has been revised accordingly.*

64. Page 8-3; Section 8.3, 1st two sentences. Please reword or remove one of these sentences. This seems to be repetitive.

Response: *The text has been revised on page 8-3 as requested.*

65. Page 9-2; Please include the year "2009" with the PNNL Visual Sample Plan reference.

Response: *The text has been revised accordingly.*

66. Figure 3, Conceptual Site Model. We assume the footnotes regarding radionuclide exposures were included in this version of the document in error, as the radionuclides were found to be within background post-remediation.

Response: *Pursuant to comment responses above regarding inclusion of radionuclides as COPCs, the text in these footnotes is now relevant. Regardless, this figure presents all potential migration pathways, exposure pathways, routes of exposure and receptors, possible at a Site. It does not factor in the actual chemicals of potential concern, which are not selected until much later in the report.*

67. Table 1; the entries for asbestos indicate a minimum and maximum detection value. It is unclear as to what these values indicate. Do these indicate the number of structures identified in a given sample? If so, this should be stated. This could be added to Table footnote e.

Response: *The following has been added to footnote e: "The minimum and maximum values represent the number of protocol structures in an individual sample. The detect count represents the number of samples with at least one detected protocol structure, not the total number of structures."*

68. Table 2; results of the statistical tests for individual isotopes are presented, but the basis of tests is shown as "Uranium metal; secular equilibrium exhibited". NDEP disagrees with this conclusion based on NDEP's secular equilibrium guidance. See above.

Response: *The rationale has been revised on this table (now Table 3). See response to comment 1 for further discussion.*

69. Table 3; the entries in the rationale column need to be reconsidered. For example, it is not acceptable to state that the rationale for declaring that an analyte is greater than background is "(9) Chemical concentrations are above background".

Response: *The rationale has been changed on this table (now Table 4) to "Based on statistical tests, Site concentrations are elevated compared to background."*

70. Table 3; The use of a 5% detection threshold as a basis for eliminating an analyte as a COPC should be done in conjunction with other criteria, as discussed in Section 5.9.3 of USEPA RAGS, Part A.

Response: *The use of 5 percent detection threshold was used as described in the Closure Plan which is consistent with RAGS, Part A. This is one decision criteria done in conjunction with other criteria. No change to this table (now Table 4) is necessary.*

71. Table 3; The rationale for heptachlor epoxide seems to be incorrect as it is detected in >5% of site samples.

Response: *Agreed. Heptachlor epoxide has been added as a COPC in this table (now Table 4).*

72. Table 5. It would be helpful if this table contained totals, since the pooled analytical sensitivity is based on all the samples, and the risk assessment is based on the total number of fibers, and the UCL of that number.

Response: *A row displaying the total number of fibers has been added to this table (now Table 6).*

73. Table 8. We assume that the citation for the inhalation reference dose (chronic and sub-chronic) for tungsten is NDEP, 2009a. In addition, based on a spot check of the non-cancer toxicity criteria, the chronic oral reference dose for manganese is not 1.4E-02 as shown in Table 8 and used in the risk calculation spreadsheets but should be 1.4E-01 (USEPA, 2009b). Manganese is not a chemical driver in the HRA. Therefore, this error in the manganese chronic oral reference dose does not affect the overall conclusions of the HRA.

Response: *The manganese reference dose for non-food exposures was included (0.024 mg/kg/day). Reference to NDEP has been added for tungsten in this table (now Table 9).*

74. Table 9. A route-to-route extrapolation of the oral cancer slope factors for the potentially carcinogenic PAHs for the inhalation cancer slope factor is conservative. Although an inhalation cancer slope factor is not cited in the USEPA's IRIS toxicity database, the California EPA's inhalation cancer slope factor for the potentially carcinogenic PAHs is about 50% lower than the oral cancer slope factor. The potentially carcinogenic PAHs were not chemical drivers in the HRA. Therefore, this change would not affect the overall conclusions of the HRA.

Response: *California EPA's inhalation cancer slope factors have been included in this table (now Table 10).*

75. Tables 8, 9, 12 and 13, including Appendix F, Human Health Risk Assessment Calculation Spreadsheets. As discussed in Section 6.2.2 Intake Assumptions Used, page 6-3, 2nd complete paragraph, NDEP had requested that default dermal absorption values from California EPA (1994) be used. This was not consistently applied in the risk calculation spreadsheets or cited in Tables 8 and 9 (e.g., tungsten). This affects the results reported on Tables 12 and 13; however, these changes do not affect the overall conclusions of the HRA.

Response: *The calculations have been revised to include the default dermal absorption values from California EPA.*

76. Table 11. It is unclear where the standard deviation estimate from table 11a came from.

Response: *The standard deviations in this table (now Table 13) were estimated based on the risk assessment dataset presented in Appendix B of the report, and are consistent with those shown in Table 3.*

Response to NDEP Comments Received January 8, 2009 on the Data Review and Human Health Risk Assessment for the Utility Corridor Sub-Area dated December 2008

General Comments

1. The headings for each table in this document should be reworded. Currently the headings indicate this document is still a technical memorandum.

> ***Response:*** *The headings for the report, tables, and appendices have been corrected.*

2. The structure of BRC's TRECO and Borrow Pit risk assessment reports has been followed to a large extent, but the content of some of the sections does not match. This is partly because those previous risk assessment reports were prepared before the Closure Plan, and this Utility Corridor risk assessment report refers to the Closure Plan for some content and material. Nevertheless, some improvements can be made along the lines of the TRECO and Borrow Pit reports. Examples follow:
   a. Since this is a risk assessment report, an Executive Summary is appropriate.

> ***Response:*** *An Executive Summary has been added to the report*

   b. The introduction could explain more about what is being done and why (goals, objectives, etc.).

> ***Response:*** *A section on the purpose of the report has been added to page 1-1.*

   c. Section 2 could provide some information on historical land use to explain the contamination that exists at the site. This site is more highly contaminated than many of the sites, so some explanation of why would provide context for the actions taken at the site, and the residual contamination that remains. Some summary from the Closure Plan would be helpful.

> ***Response:*** *Section 2.2 on page 2-2 has been expanded to add additional historical land use for the Site.*

   d. In Section 3, more is needed for the parameters concerning the site and the background data. Background comparisons are performed, and the site and background data need to be comparable.

> ***Response:*** *The discussion on comparability has been expanded on page 3-8.*

   e. Section 5 should be reorganized so that the approach is described before the background comparisons are performed.

Basic Remediation COMPANY

Response: *Section 5 has been reorganized as suggested by this comment.*

f. Section 5.2 has logical inconsistencies, and the statistical language in Section 5.3 needs to be improved.

Response: *Portions of these sections have been reworded for clarification*

g. The uncertainty analysis does not appear to cover as much ground as in the TRECO report, and hence seems to be missing some uncertainties.

Response: *The uncertainty analysis has been expanded to be more consistent with the TRECO report.*

h. Specific subsections in Section 6 would also help with structure.

Response: *Subsections have been added to the report.*

i. The data adequacy section could stand more explanation of why a target of 10-5 is reasonable statistically (the issue in part is that the tests are 1-sided, so targeting a level less than the mean concentration does not make statistical sense).

Response: *Additional discussion on the 10-5 target for arsenic has been added on page 7-1.*

j. Section 8.0, Human Health Risk Assessment Results, would benefit from restructuring by receptor with a summary that describes the risk estimates for each receptor.

Response: *Subsections for receptors have been added to Section 8.*

k. Tables should be referenced that point specifically to the risk estimates.

Response: *Table references have been added as suggested.*

l. It is also suggested that data and results for asbestos (analytical sensitivity, PEFs, etc) be included in the print version of this report. This is a case of material being removed to electronic versions only – some of this material should be pulled into the main report (Appendices).

Response: *This information has been provided in Table 5 of the report.*

3. It is noted, however, that the calculations appear to have been performed correctly, the assumptions seem reasonable, and the risks appear to be sufficiently low that the proposed land use with current residual contamination should not pose an unacceptable risk.

Specific Comments

4. Table of Contents, Tables. Please interchange the table reference numbers for Tables 5 and 6. Table 5 is the Construction Dust Model and Table 6 is the Health Risk Assessment Exposure Factors.

Response: *This change has been made to the Table of Contents and tables (now Tables 6 and 7).*

5. Section 1.0, Page 1-1; last paragraph, 2nd to last sentence. Please change "…Section 7, number of samples…" to "…Section 7, the number of samples…".

Response: *This change has been made on page 1-2.*

6. Section 1.0, Page 1-2; first paragraph. The stated objective is to request an NFAD. This should probably be clarified considering the NFAD will apply only to the top 10 feet of soil, and to the land use scenario evaluated (industrial – although in this case the land use is a road through the middle of the site, with graded material on each side, presumably).

Response: *Reference to the January 8, 2009 NFAD, and its conditions addressed in this report have been added to page 1-1.*

7. Section 2.3, Page 2-3, last paragraph. The word "potential" could be placed in front of "exposure" in both cases.

Response: *Agreed. 'Potential' has been placed in both instances.*

8. Section 3.3, Page 3-4; 2nd sentence and elsewhere in the document (e.g., pages 3-4 (again), 5-1, and 5-5). Please reference the "Summary of Existing Data" section correctly (i.e., Section 2.2).

Response: *Section references have been corrected in the report.*

9. Section 3.5, Page 3-5; last sentence. Please clarify. The only anomalous data noted in the data validation summary report (DVSR) is related to blank contamination. Also the sentence implies detects less than the sample quantitation limit (SQL) are used in the health risk assessment (HRA) and this should be clarified.

Response: *Agreed. This sentence has been re-worded on page 3-6.*

10. Section 3.6, Page 3-7; representativeness. Since background comparisons are performed, some attention needs to be paid to the representativeness of the background data.

Response: *Reference to the background report, and its representativeness has been added on page 3-7.*

11. Section 3.6, Page 3-7; completeness. Since background comparisons are performed, some attention needs to be paid to the completeness of the background data.

Response: *The completeness of the background dataset has been added on page 3-8.*

12. Section 3.6, Page 3-7; comparability. Since background comparisons are performed, some attention needs to be paid to the comparability with the background data. There are some detection limit differences that need to be addressed.

Response: *See response to general comment 1d above.*

13. Section 4.0, Page 4-2; first bullet, and elsewhere. Please reference the Nevada Basic Comparison Levels (BCLs) dated December 18, 2008 in all future Deliverables.

Response: *Reference to the newest version of the BCLs is used in the report.*

14. Section 4.0, Page 4-2; last line. Change "constitent" to "constituent".

Response: *This change has been made on page 4-3.*

15. Section 4.0, Page 4-3; last 2 lines. The references to SAE-7 and SAE-22 need to be improved. Examples on the next page are reasonable.

Response: *These changes have been made on page 4-4 consistent with the examples cited.*

16. Section 4.0, Page 4-4; 1st full paragraph, 2nd sentence. Change "that exceed" to "exceed".

Response: *This change has been made on page 4-4.*

17. Section 4.0, page 4-4, first full paragraph. Please delete references to pre-scrape data.

Response: *This change has been made on page 4-4.*

18. Section 4.0, Page 4-4; 2nd paragraph. A previous comment was not addressed. Please include a reference (i.e., Table 1) that points to the instances where Site exceeds USEPA

SSLs and background concentrations. If the instances in the text refer to Table 1, then there are more metals that should be listed in the text that meet the identified criteria.

Response: *Reference to Table 1 has been added on page 4-4. The text notes instances where metals exceed both their background and LBCL values and the concentration at 10 feet is greater than at the surface. Manganese at sample location SAE-22 has been added to the text.*

19. Section 4.0, Page 4-4; 2nd full paragraph, 4th sentence. Can a reference be provided for the statement regarding minimal likelihood of leakage of modern pipes?

Response: *Reference to personal communications between BRC staff and City of Henderson engineers has been added on page 4-5.*

20. Section 5.1, Page 5-2; 1st paragraph, 3rd sentence. Change "in included" to "is included".

Response: *This change has been made on page 5-2.*

21. Section 5.1, Page 5-2; Table and Tables at the end of the main text. Note that uranium as a metal passes background, but 3 of the 8 radionuclides fail background, including U-233/4. Is there any reason to expect radionuclide contamination at the site? Is secular equilibrium a reasonable assumption? Are there any analytical issues associated with the radionuclide analyses still? Some explanation is warranted for why uranium as a metal passes background, but some radionuclide isotopes do not.

Response: *In response to this comment, and NDEP's Guidance for Evaluating Secular Equilibrium, which notes that both the uranium and thorium decay chains appear to exhibit approximate secular equilibrium at the Site, radionuclides have been removed from list of COPCs further evaluated in the risk assessment. Discussion on this is provided on page 5-4.*

22. Section 5.1, Page 5-3; 1st paragraph. It would be helpful if the background data were included in the probability plots.

Response: *Background data has been added to the probability plots.*

23. Section 5.1, Page 5-3; 1st paragraph. It would be helpful if the probability plots and the box plots differentiated between detects and non-detects.

Response: *The boxplots do differentiate between detects and non-detects. Limitations with the software used preclude adding this information to the probability plots.*

24. Section 5.2, Page 5-3. It is not clear why this section comes after the background comparisons, since this section lays out the approach to chemicals of potential concern (COPC) selection, of which background comparisons are a part.

Response: *See response to general comment 1e above.*

25. Section 5.2, Page 5-3; 1st sentence. Please reword. Something like “Broad suite analyses were performed to capture all the chemicals on the SRC list.

Response: *This change has been made on page 5-2.*

26. Section 5.2, Page 5-3; bullet at the bottom. Background comparisons have been addressed in the previous section. Sections should be reordered.

Response: *See response to general comment 1e above.*

27. Page 5-4; 1st paragraph. This paragraph does not make sense. It is not from the list of COPCs identified in the background comparisons that the frequency of detection (FOD) approach is applied. It is applied to the remaining chemicals, and possibly to some metals.

Response: *This paragraph has been reworded on page 5-4.*

28. Section 5.2, Page 5-4; two bullets and paragraph after the 1st paragraph. The first bullet indicates that any chemical that was detected at least once is carried through as a COPC. Consequently, it seems doubtful that the next bullet applies. The second bullet starts by “including chemicals detected”, a case that is already covered in the first bullet. The paragraph following then addresses the issue of 5% FOD, per USEPA guidelines, however, the 1st bullet addresses chemicals that were detected at least once, in which case, it is not clear that this paragraph is relevant either. These bullets and paragraph need to be cleaned up for decisions that were actually made, and if the second bullet and last paragraph in this section were used to select some COPCs, it would be interesting to know which ones.

Response: *The first bullet indicates that chemicals that are detected are ‘potential’ COPCs. Further selection is done via blank contamination and frequency of detection, accounting for other criteria such as known human carcinogens. This approach and language is consistent with the BRC Closure Plan.*

29. Pages 5-5 and 5-6, Sections 5.3 and 5.3.1. These sections needs to be re-written, examples follow:
    a. The definition of an upper confidence limit (UCL) is not accurate. It is requested that BRC consider the following text: “The 95 percent UCL is the value calculated from a method with the property that, if values were calculated repeatedly via the same method

for randomly drawn samples of site data, 95 percent of the resulting values would exceed the true site mean."

***Response:** The text has been revised on page 5-5 with language from USEPA guidance.*

b. The 2nd to last sentence of the 1st paragraph is not accurate, the purpose of the UCL is to provide a conservative estimate of the mean concentration – it does not take into account the different concentrations a person may be exposed to at the site – that is the role of the mean, not the UCL.

***Response:** This sentence has been reworded on page 5-5.*

c. The second paragraph should be reworded to address the section references.

***Response:** Section references have been corrected in the report.*

d. The last sentence of the second paragraph provides USEPA references for the UCL methods, however, neither reference includes the BCa approach that is the UCL method used for most UCLs in this risk assessment. Some explanation of the UCL methods is warranted, since they are not described elsewhere. Then separate references can be provided for each method, if necessary.

***Response:** Reference to GiSdT has been added to this sentence on page 5-5.*

e. 3rd paragraph – these are not strictly bubble plots. Bubble plots imply a continuous formula for the size of the bubble as a function of concentration. Color implies an intensity plot. So, these are a combination of bubble and intensity, where in both cases discretization is used. Please clarify.

***Response:** Reference to these plots has been changed to intensity plots on page 5-6.*

f. Page 5-6, second equation – the long fiber count is across all samples, so it is a sum across samples, and probably should be conveyed as such.

***Response:** Reference to 'across all samples' has been added to the first sentence below this equation on page 5-6.*

g. More generally, the asbestos calculations could be better explained, or reference could be provided to previous documentation on how asbestos risks are calculated.

***Response:** Reference to NDEP's asbestos guidance has been added on page 5-7.*

h. The asbestos data and analytical sensitivities do not appear to be in the printed document. This raw data should be provided in the printed version.

Response: *Table 5 has been added which presents these data.*

30. Section 5.3.2, Pages 5-6 and 5-7, second sentence and in the next paragraph. It is not clear what these equations are. An electronic presentation in an EXCEL spreadsheet seems inadequate; it is not obvious what the equation is from the formulas in the spreadsheet, the formula should be written out, or referenced to another document.

Response: *The PEF equations have been added on page 5-7. The construction dust model is provided in Table 6.*

31. Section 5.4, page 5-7. The toxicity values are only provided in the risk calculation excel file. For all future HRA submittals, please include this information as a primary table in the HRA.

Response: *The toxicity criteria are now provided in Tables 8 and 9.*

32. Section 5.4, Page 5-7, 1st paragraph, last sentence. Reword after the comma (poor sentence formation).

Response: *This sentence has been reworded on page 5-8.*

33. Section 5.4, Page 5-7; last paragraph, last sentence. A previous comment was not addressed. Please provide the toxicity values used in this HRA in the form of a table for non-carcinogens, carcinogens, and radionuclides.

Response: *See response to specific comment 31 above.*

34. Section 6.0, Page 6-1; 1st paragraph, last sentence. Not all the assumptions are conservative. Perhaps it would be better to refer to the majority of the risks are conservative and clarify accordingly.

Response: *This sentence has been reworded on page 6-1.*

35. Section 6.0, Page 6-2; 3rd paragraph, 2nd to last sentence. This sentence is confusing and should be reworded (e.g.: “study specifically study”, there is an extra “study”).

Response: *This sentence has been reworded on page 6-3.*

36. Section 6.0, Page 6-2, 3rd full paragraph. Please expand on the discussion that the soil type in Las Vegas is similar to that found in Midland, Michigan, which is the basis of the

bioaccessibility study conducted by Dow Chemicals for dioxins. According to Ruby et al. 2002, the total organic carbon content ranged from 0.81-3.94% at the Midland site (not much clay, generally characterized as a loamy sand). The default Foc used in the HRA was 0.6%. It would provide better support if BRC-specific data were discussed to support the dioxin bioavailability value of 30%.

Response: *This issue has been discussed with and approved by NDEP as a value to be used for the BRC project. The references provided in the report are considered adequate to support the use of a bioavailability value of 30 percent. No changes have been made to the report in response to this comment.*

37. Section 6.0, Page 6-3; 1st paragraph. Page 6-3; 1st paragraph. BRC's interpretation of the current guidance is correct in stating that a default value for dermal absorption is not provided, however NDEP does not concur that this means the pathway should not be evaluated. USEPA's guidance recognizes a shortcoming, but also indicates that this pathway should be addressed in the uncertainty analysis. NDEP believes the paragraph should be reworded to some extent to recognize that USEPA has not dismissed this as a pathway of concern.

Response: *This pathway is now evaluated in the risk assessment. This paragraph has been reworded on page 6-3.*

38. Section 6.0, Page 6-3; 1st paragraph, 2nd last sentence. Change "are are" to "are".

Response: *This sentence has been removed from the report, in response to specific comment 37 above.*

39. Section 6.0, Page 6-3; 2nd paragraph, last sentence. This conclusion does not seem to reflect the rest of the paragraph. There does appear to be some indication that lack of inclusion of tungsten in the risk assessment will underestimate risk. Please clarify.

Response: *Tungsten has been added to the risk assessment, using NDEP's toxicity criteria. Reference is now made to niobium as a chemical lacking toxicity criteria and the sentence has been reworded accordingly.*

40. Section 7.0, Page 7-1; 1st paragraph. The simulation studies can probably be referenced to the software package Visual Sampling Plan (VSP) by PNL. The simulation studies were performed first, but PNL ultimately included the 1.16 factor in its VSP software, which perhaps provides a reference for this formula.

Response: *Reference to the PNNL VSP website is now provided in the report.*

41. Section 7.0, Page 7-1; formula. The Delta definition should be changed to “with of gray region (the difference between the threshold value stated in the null hypothesis and the point at which beta is specified)”.

Response: *This change has been made on page 7-1.*

42. Page 7-1; last paragraph. Further explanation is needed for why 10-5 is the appropriate point of comparison for arsenic. It comes down to a statistical issue related to 1-sided hypothesis testing. It makes no sense to have a threshold less than the mean for this calculation, so an adjustment is necessary. Also, the sample size is acceptable because of the distance of the estimated mean from the 10-5 threshold, and hence it is assumed that the sample size is sufficient.

Response: *Additional information regarding this issue has been provided on page 7-1.*

43. Section 8.0, Page 8-1; last paragraph. Per pervious comment, it is not entirely clear why a radionuclide risk assessment has been performed. The issue is the differences in the background comparisons.

Response: *See response to specific comment 21 above.*

44. Section 8.0, Page 8-2; 1st full paragraph, 2nd sentence. The word “range” should not be used like this. Just say “are” instead of “range from” (with other needed changes).

Response: *Use of the word range has been removed from this section.*

45. Section 8.0, Page 8-2; 1st full paragraph, last sentence. It is not clear where the 1 x 10-5 number comes from. Please clarify.

Response: *Reference to 1x10-5 has been removed.*

46. Section 9.0, a reference to the recently approved DVSR 50a should be included here and in the text. There are likely several areas of the text that will need to be revised to accommodate this change.

Response: *Refererence to both DVSR 50a and DVSR 50b have been added to the report where appropriate.*

47. Section 9.0, Page 9-1, ERM, 1996b reference - Please remove the "b" since there is only one ERM 1996 citation.

Response: *The ‘b’ has been removed from this reference.*

48. Table 3. For future HRA submittals, xylenes should be evaluated as total xylenes.

Response: *Agreed.*

49. Table 4. Tungsten should be deleted from this table as it was not evaluated as a COPC based on lack of toxicity criteria.

Response: *Tungsten is evaluated in the revised report, using the NDEP toxicity criteria.*

50. Table 5, footnote 4. Please replace 8 acres with 8.4 acres to support the value of 33,994.8 square meters used in the PEF calculation.

Response: *The footnote has been changed as suggested.*

51. Table 7, Uncertainty Analysis Table. Please include that it is conservative when using chronic RfDs for sub-chronic receptors such as construction workers.

Response: *The uncertainty regarding use of chronic RfDs, for sub-chronic exposures has been added to Table 10.*

52. Table 9. It is not clear why background risk has been calculated and presented in this table for radionuclides. For consistency, either remove this risk calculation, or perform background risk calculations for the other chemicals.

Response: *See response to specific comment 21 above. However, as noted in Section 5, where background levels exceed risk level goals, metals and radionuclides in Site soils are targeted to have risks no greater than those associated with background conditions. Therefore, because radionuclide risks typically exceed the cancer risk goal of 10-6, it is necessary to calculate the risks for background radionuclides.*

53. Attachment A, the NDEP has the following comments:
    a. Page A-2, General Comment No. 8, lack of toxicity criteria for tungsten, please note that NDEP issued a memorandum on December 22, 2008 which contains recommended toxicity criteria for tungsten and titanium. We note that the HRA employs the recommended toxicity criteria for titanium. We verified that the risk characterization does not change if tungsten is quantitatively evaluated using the recently recommended toxicity criteria (no response required).

Response: *Tungsten is evaluated in the revised report, using the NDEP toxicity criteria.*

b. Page A-3, Comment No. 20a Data Summary, the BRC response notes that post-scrape data for the metals have been incorporated into the data review and HRA. As discussed on the teleconference on December 16, 2008, the HRA should confirm that these new data have been validated and carried through the data usability evaluation.

Response: *All data used in the risk assessment have been validated.*

c. Page A-4, Comment No. 18 Data Usability Evaluation, please note that the information requested by NDEP is contained in Appendix C (not Appendix B).

Response: *The Appendix changed from revision 0 to revision 1, for which these comments were prepared. But as noted in this comment (and report text), the Data Usability Evaluation is in Appendix C.*

d. Page A-6, Comment No. 20h Data Summary, based on information provided in Table 1, total chromium and beta-BHC appear to fall into the same category as arsenic, barium and nickel (concentrations greater than background and greater than SSL based on DAF of 20).

Response: *See response to specific comment 18 above.*

54. Tables B-1 through B-4. The legends for these tables do not include a full description for certain items (i.e., the text appears to be cut off). Please correct this.

Response: *The full legends are provided in the revised report.*

55. Electronic Files, Utility Corridor Risk Calculation Spreadsheet (BRC Utility Corridor Sub-Area Data Review-HRA_Tables-Calcs_Rev1.xls file). The headings for each data grouping in tabs “CW_Rad Exp Calcs –BG” and “MW_Rad Exp Calcs – BG” suggest that these data are for Site when in fact they are background.

Response: *See response to specific comment 21 above.*

Response to NDEP Comments Received December 14, 2008 on the Technical Memorandum—Data Review and Health Risk Assessment for the Utility Corridor Sub-Area dated December 3, 2008

1. General comment, please note that the NDEP's review of this document should not be considered comprehensive. Due to the issues noted below the NDEP did not complete its review. It is expected that BRC will address these issues and complete a thorough technical review prior to resubmittal.

Response: *BRC believes that these issues have been addressed in the revised document.*

2. General comment, NDEP has concerns that the document is written as a Technical Memorandum for Data Review and Risk Assessment. Whereas, NDEP recognizes the unique circumstances under which this approach was taken for Parcels 4A and 4B, NDEP expects full risk assessment reports for all of the BRC sub-areas. The only exception to this is a screening-level risk assessment for sub-areas that are sufficiently remediated.

Response: *Agreed. The revised document has been reformatted into a report format.*

3. General comment, it is difficult to match the references to specific attachments (e.g., Attachment E) and some tables (e.g., Table 6) in the text to file names on the CD. The reference to Attachment A is also very confusing as certain portions of the text refer to it as containing historical data, while others refer to it as having the data set that was used to perform the human health risk assessment.

Response: *Clarification has been added to the text, especially regarding Attachment A (now Appendix B) and Attachment E (now Appendix F). Appendix B consists of both the data tables in hardcopy format, as well as an Excel spreadsheet on the report CD included in Appendix B. This Excel spreadsheet (BRC Utility Corridor Sub-Area Data Review-HRA_Dataset.xls) contains five worksheets: "SewerAlignment_DataAll" (all 2008 data); "RA_Dataset" (the 2008 data used in the data summary and risk calculations); "Background" (the background dataset—lithologies included are identified in Section 5.1, page 5-2), "Historical Data" (the pre-2008 data within the site), and "Asbestos" (2008 asbestos data).*

4. General comment, in future deliverables, it would facilitate the review process if a table of contents was provided and if sections and subsections were numbered. It would be helpful if sections were standardized for each subsequent sub-area risk assessment report, similar to the consistency with which the sampling and analysis plans (SAPs) are currently submitted.

Response: *As indicated in response to comment #2 above, the document has been reformatted as a report, which includes a table of contents and numbered sections/subsections.*

5. General comment, it would be helpful for the data usability (DU) evaluation if information from the data validation summary report (DVSR) report is brought forth into the health risk assessment (HRA) to identify data issues such as the results that fall outside of laboratory control limits. These should be discussed on a case-by-case basis in the DU evaluation and, for each case, it should be determined whether or not the data are usable for the HRA.

Response: *Discussions of data usability on a case-by-case basis, and whether or not the data are usable for the risk assessment are provided electronically in the tables in Appendix C on the enclosed CD (in Appendix B).*

6. General comment, dermal exposures were not quantified for many of the metal chemicals of potential concern (COPCs). USEPA Part E RAGS only provides dermal absorbance (ABS) values for arsenic and cadmium; however, the CalEPA Preliminary Endangerment Assessment (PEA) guidance (CalEPA/DTSC, 1994, Table 2, p. A-6) recommends a default dermal ABS of 0.01 for metals other than arsenic and cadmium. This recommendation is based on the Multi-Pathway Health Risk Assessment Input Parameters Guidance document prepared by Clement Associates, Inc. for California's South Coast Air Quality Management District (SCAQMD, 1988). NDEP recommends that the default ABS value be used for metals other than arsenic and cadmium.

Response: *Although BRC would prefer to use more recent USEPA guidance on this manner, for example, USEPA's RAGS Part E , and USEPA Region6 MSSLs, which specifically recommends against the use of default dermal absorption factors ("A default absorption factor for inorganics and volatile organic chemicals is no longer recommended."),and has done so in the main portion of the report; nonetheless, as requested in this comment, the risk estimates have also been calculated using the default dermal absorption factors from the references cited in this comment. These calculations are provided electronically on the report CD in a separate workbook (with a '_DERM_ABS' filename suffix. This issue is discussed in the uncertainty section of the report, on page 6-3.*

7. General comment, BRC has applied an oral bioavailability value of 0.3 (or 30%) for dioxins. This value is based on the 30% used by Kimbrough et al. 1984 in deriving the 1 ppb screening value. It is also within the range of those values published by Ruby et al. 2002 for the Dow Midland Michigan site (Paustenbach et al, 2006). Published values range from 5-63% (Paustenbach et al, 2006). Accordingly, some discussion should be provided in the uncertainty analysis as to the defensibility of the 30% value used for this site.

Response: *Additional discussion on this issue has been added to the uncertainty section of the report, on page 6-2.*

8. General comment, please discuss the lack of toxicity criteria for tungsten and the potential impact on the hazard index (HI).

Response: *Discussion on this issue has been added to the uncertainty section of the report, on page 6-3.*

9. Introduction, Page 1. 3rd paragraph, please clarify if the “Staging Area” is part of the “Southern RIBs sub-area” or a separate sub-area.

Response: *The text has been revised on page 2-3 to indicate that utility corridor passes through the Staging area, and not the Southern RIBs sub-area.*

10. Introduction, Page 2, 3rd paragraph, what does “enough samples” denote? How many samples are “enough”? Please clarify.

Response: *Language has been added, with reference to the data adequacy section, to page 1-1 clarifying this statement.*

11. Introduction, Page 2, 4th paragraph, 2nd sentence, it is suggested that “health risk assessment” be changed to “human health risk assessment” as the majority of the current/future receptors are humans.

Response: *All references to health risk assessment have been changed to human health risk assessment.*

12. Conceptual Site Model, Page 3; 3rd paragraph, 1st sentence. This sentence is confusing and needs to be reworded.

Response: *The sentence has been reworded on page 2-1.*

13. Data Usability Evaluation, Page 6; 2nd and 3rd bullets. Where are the analytical methods and detection limits (DLs) located in Attachment A? Isn’t Attachment A presenting the historical data as stated in the last sentence of paragraph 1 on page 4?

Response: *See response to comment #3 above. This information is provided in the electronic database included on the CD in Appendix B. Text has been added regarding this on page 3-2.*

14. Data Usability Evaluation, Page 7; 1st full paragraph. Berman and Crump (2001) and USEPA (2003) characterize risk differently based on different fiber size classes. It is recommended that Berman and Crump (2001) be removed from the text to avoid confusion as this risk assessment is based solely on USEPA (2003) for asbestos.

Response: *References to Berman and Crump (2001) have been removed from the document.*

15. Data Usability Evaluation, Page 7; 3rd paragraph, 1st sentence. Change "…incorporates collection…" to "…incorporates a collection…"

Response: *The sentence has been modified on page 3-3 as suggested.*

16. Data Usability Evaluation, Page 7; 3rd paragraph, 2nd sentence. Remove "…of…" from "…and concentrated of as…"

Response: *The sentence has been modified on page 3-3 as suggested.*

17. Data Usability Evaluation, Page 8; "Criterion IV subsection" and elsewhere in the text. Similar to a previous comment, Attachment A is referenced in the text as historical data and the file "BRC Utility Corridor Sub-Area Data Review-HRA Tech Memo_AttachmentA.xls" on the CD does not list the USEPA methods used in conducting the laboratory analysis of soil samples. It is recommended that this issue be clarified by referencing specific files on the CD or renaming the files contained on the CD to match what is actually being referenced (e.g., Appendix E).

Response: *Clarification has been added to the text directing the reader to where this information is provided on the CD.*

18. Data Usability Evaluation, Page 9; 2nd paragraph, 1st sentence. Please list the specific exceedances in the text.

Response: *These exceedances are listed in the electronic tables of Appendix C on the enclosed report CD (in Appendix B).*

19. Data Usability Evaluation, Page 10; 2nd Bullet. Please define the acronym "LCS".

Response: *The acronym has been defined on page 3-6.*

20. Data Summary, the NDEP has the following comments:
    a. Pages 11 through 13 discuss the data used in the HRA after post-remediation sampling. Please note that there are two footnotes indicating that a) additional soil removal is planned for SAE-8 due to chrysotile asbestos, however this area is currently inaccessible and b) locations with post-scrape arsenic data are pending for other metals. The post-scrape data for those other metals will ultimately replace the existing results (i.e., currently, BRC has used the post-remediation data for arsenic and the pre-remediation data for other metals). BRC should use all of the available post-scrape data in the final HRA and should make clear prior to the final HRA that, until that time, the risk characterization is based on pre-scrape data for metals other than arsenic. Since the post-scrape data are now available, NDEP expects these data to be used in a resubmittal.

Response: *Post-scrape data for the metals have been incorporated into the data review and human health risk assessment (and pre-scrape data removed from further evaluation).*

b. Page 12; Table. How many amphibole fibers were found at sample locations SAE18, SAE21, SAE23, and SAE24? The word "Amphibole" appears in the table, but the number of fibers found is not specified. Also, why are the locations where asbestos fibers were found not highlighted on Figure 2? If soil removal was performed only for analytes other than asbestos, this should be stated in the text.

Response: *The number of amphibole fibers has been added to the table on page 4-1. In addition, the soil removal areas for asbestos has been added to Figure 2. It should be noted that some areas were scraped for asbestos only. In these instances, pre-scrape data for all other analytes were used in the document. A sentence has been added discussing what was analyzed for in post-scrape data, and if an analyte/suite was not analyzed for in the post-scrape data, then the pre-scrape data were used in the data summary and human health risk assessment.*

c. Page 13; 1st full paragraph under bullets, 2nd sentence. The text that currently resides in parentheses should be placed in a footnote so it is easier to read this sentence.

Response: *The sentence has been modified on page 4-2 as suggested.*

d. Page 13, please note that the NDEP does not concur with BRC's justification for the use of the dilution attenuation factor (DAF) of 20. For example, there are areas of the Site with groundwater as shallow as 17' below ground surface (bgs). This is not consistent with the guidance for use of a DAF of 20. It is expected that the revised document with utilize a DAF of one.

Response: *As indicated in both Table 1 and the text, concentrations were compared to both a DAF of 1 and a DAF of 20. The text merely states that SSLs using a DAF of 20 were also considered appropriate for comparison purposes for the Site. The text primarily discusses exceedances of the DAF of 1; however, given depth to groundwater in the southern portion of the site is 60 feet bgs, information regarding exceedances of a DAF of 20 is also considered useful.*

e. Page 13; last sentence. The text indicates that despite exceedances of USEPA outdoor worker Soil medium specific screening levels (MSSLs), there are only a few instances where arsenic and radionuclides exceed background. Both arsenic and Thorium-228 exceed background in ~20% of the total number of detected samples. Please clarify.

Response: *The number of exceedances for each of these is now identified in the text on page 4-3.*

f. Page 13, the data that is noted as missing in footnote 2 on this page is now available. This needs to be incorporated into the revised document.

Response: *Post-scrape data for the metals have been incorporated into the data review and human health risk assessment (and pre-scrape data removed from further evaluation).*

g. Page 14; 3rd full paragraph. Alpha-BHC and acetone also exceeded the USEPA soils screening levels (SSLs) but are not listed in the text. Please address this and all other inconsistencies in the revised document.

Response: *All chemicals with exceedances are now listed in the text on page 4-3.*

h. Page 14; last paragraph. Is this paragraph referring to Table 1? If so, there are a number of other metals that were missed.

Response: *This is a list of metals which had concentrations exceeding background, and for which the concentration at 10 feet bgs was greater than at the surface. This list is comprehensive, but has been revised to reflect the newer data.*

21. Health Risk Assessment, the NDEP has the following comments:

a. Page 18; 4th sentence. Please list out those metals that exceed background but have practically small significant differences.

Response: *This sentence has been removed from the document.*

b. Page 18; 1st sentence under "Selection of Chemicals of Potential Concern" subsection. Please reference the list of COPCs.

Response: *The list of COPCs (Table 3) is referenced at the end of the Selection of Chemicals of Potential Concern section on page 5-4.*

c. Page 21; The equation used to calculate the 95% UCL of Poisson Distribution is incorrect. The equation should look like this:

95% UCL of Poisson Distribution (106 s/gPM10) = CHIINV(1-upper confidence percentile, 2 x (Long fiber count + 1))/2

Response: *This equation has been corrected on page 5-6.*

d. Page 22; 2nd paragraph. CSFs and RfDs should be referenced (i.e., point to a particular table or attachment).

Response: *Reference to the electronic Excel workbooks of Appendix E on the enclosed report CD (in Appendix B) has been provided on page 5-7.*

e. Page 23; 1st paragraph under bullets. Where is Table 6 in the electronic data file that accompanies this risk assessment?

Response: *Table 6 (now Table 7) has been provided on the report CD.*

f. Page 24; 3rd paragraph, 2nd sentence: Please change "quantitative" to "quantitatively".

Response: *The sentence has been modified on page 6-3 as suggested.*

g. Page 26; last paragraph, 3rd sentence. Risk estimates for maintenance workers might not be correct if the estimated dust levels are incorrect. The value (7.35E-7) for estimated dust levels is hard-coded into the risk assessment spreadsheet. It is not clear how this value was derived. This appears to be a default value, probably from the USEPA SSL guidance (although NDEP cannot find that actual value). If a site-specific value was used, the risk assessment could look different. Some clarification is needed.

Response: *The maintenance worker dust calculations were based on USEPA's default PEF value of 1.36 x 10^9 m^3/kg. This equation is now provided in the electronic Excel workbooks of Appendix E on the enclosed report CD (in Appendix B) and has been modified to incorporate site- and regional-specific values.*

h. Page 26: The NDEP used BRC's spreadsheet to confirm the value of 8E-7 referenced on page 26, 3rd full paragraph, last line. The value we calculated is 9E-07.

Response: *The risk calculations and results have been revised in the document based on NDEP's comments and the inclusion of newer data.*

22. Data Adequacy, Page 27; The data adequacy subsection provides one formula, however, the Appendix Tables indicate two different approaches, one for background comparisons for arsenic and one for other chemicals for risk assessment. In addition, the final comment that the conclusions are clear does not match the tables that show that more samples are needed for some chemicals. Some clarification is needed.

Response: *The data adequacy has been adjusted to use outdoor worker MSSL values for all of the chemicals, except chyrsotile asbestos, for which a risk-based level of 8 long fibers, equivalent to a 1x10-6 risk level, is used. In addition, the outdoor worker MSSL values for 2,3,7,8-TCDD and arsenic have been adjusted to a risk level of 1x10-5 to provide better insight into the adequacy of the current data.*

23. Figure 4: What does the color red in the northeastern portion of the figure denote?

Response: *This color /definition has been added to the legend of the figure.*

24. Table 1; Some maximum non-detect values are greater than minimum detect values (e.g., Chromium(VI), Perchlorate, etc.). If the summary statistics for the detects are provided, then this cannot happen. Please see the recent NDEP guidance on summary statistics tables. It is expected that the revised document will comply with the recent NDEP guidance.

Response: *BRC has used NDEP's guidance on summary statistics tables. Censored and uncensored data are summarized separately, and the SQL/RDL values are used for non-detect results (except radionuclides for which the reported value is used and only detected summary statistics are included). Maximum non-detect values can in fact be greater than the minimum detect values, since these are summary statistics for a number of different samples. Some samples may have increased sample dilution/volume then others (and in some cases different sampling events), so not all SQL/RDLs are necessarily the same. However, BRC continues to work with the laboratories to provide consistent data for the project. Also, in the case of perchlorate, this was a data entry error. The table has been QC'ed for any other errors.*

25. Table 2, the "Total Samples" column and the "No. of Detects" column appear to be switched. Please correct.

Response: *These columns have been corrected.*

26. Table 4, regarding the number of detections and frequency of detections for TCDD TEQ. The table currently shows "--", which is not defined. Based on the other parameters listed in the table for TCDD TEQ, it appears there should be a value inserted for number of detections and percent detected.

Response: *This is because TCDD TEQ is a calculated value from several different congeners. In any one particular sample, one or more congeners may be detected, while others may not. In some samples all congeners may be detected, or none. The frequency of detections for each of the individual congeners is provided in Table 1; however, in both Table 1 and Table 2 frequency of detections are not included because it is not applicable to TCDD TEQ.*

27. Table 4, lead is listed here, but it should be removed as it is not a COPC.

Response: *Lead has been removed from this table.*

28. Table 10; What are the parameters "s", "a", and "b"? If they are in reference to the standard deviation, alpha, and beta, please specify this as a footnote in the table.

Response: *These factors have been defined in a footnote to the table (now Table 11).*

29. Table "NC tox" in the Microsoft Excel risk workbook, please identify all of the target organs for the COPCs. For example, the target organ listed in the table for thallium is blood,

however IRIS and/or ATSDR list other organs (e.g. liver); lungs for titanium; lymphatics for TCDD sub-chronic. Please also note that the arsenic sub-chronic value is actually the chronic value (please edit accordingly).

Response: *Because target organs are not used in this human health risk assessment, they are no longer included in the 'NC Tox criteria' worksheet.*

30. VF calculation, the exposure time is listed as 30 years but should be 25 years for the maintenance worker or 1 year for construction worker.

Response: *The VF calculation has been revised for both maintenance worker and construction worker exposure scenarios.*

31. Attachment D Figures, please label other Eastside sub-area features (e.g., Spray Wheel).

Response: *Sub-areas have been identified in the Attachment D (now Appendix E) figures. In addition, the 0 and 10 ft bgs samples are presented side-by-side in one figure for each COPC for ease in viewing concentrations differences with depth.*

REDLINE/STRIKEOUT TEXT

EXECUTIVE SUMMARY

Basic Remediation Company (BRC) has prepared this Data Review and Human Health Risk Assessment for the Utility Corridor Sub-Area of the Basic Management, Inc. (BMI) Common Areas (Eastside) in Clark County, Nevada. The purpose of the report is to support the ~~request a~~ No Further Action Determination (NFAD) by the Nevada Division of Environmental Protection (NDEP) in order to facilitate the installation of a new 48-inch sewer line along this alignment. The ~~Although the~~ NFAD for the Site was issued by NDEP on September 4~~January 8~~, 2009~~, several conditions were placed, three of which are addressed with this revised report~~.

BACKGROUND

An investigation was conducted at the Site in 2008 (with additional data collected in 2009) in accordance with a NDEP-approved Sampling and Analysis Plan (SAP). The Site investigation involved collection of soil matrix samples placed along the entire length of the sewer alignment excavation. Samples were collected every 100 feet within the southern portion of the excavation, through the Southern RIBs and First Eight Rows sub-areas; and every 200 feet along the Beta Ditch and through the Spray Wheel and Upper Ponds sub-areas. Several subsequent rounds of soil remediation and confirmation sampling were performed. The final number of samples collected was determined to be adequate for the completion of a statistically robust dataset upon which to perform a human health risk assessment.

The Site is a linear feature that is approximately 7,300 feet in length, 50 feet across, running north-south, and comprised of approximately 8.4 acres. It consists of undeveloped land with very little surface relief that is gently sloping to the northwest. It crosses through the waste conveyance and disposal ponds historically operated by the BMI Complex, including the Beta Ditch and Upper Ponds. The Site includes the length of the sewer alignment excavation north of the Parcel 4B sub-area until it meets up with the tie-in location at the City of Henderson Water Reclamation Facility (WRF) at the northern boundary of the Upper Ponds sub-area (see Figure 1).

The sewer alignment excavation will be constructed to a depth ranging from 2 to 14 feet below ground surface (bgs). Following placement of the sewer pipe, the site will be backfilled with clean pea gravel, then overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained. The entire Site is beneath future roadways under the prospective redevelopment plan.

CONCEPTUAL SITE MODEL

The conceptual site model (CSM) for the Site considers current and potential future land-use conditions. Currently, the Site is undeveloped. Current receptors that may use the Site include on-site trespassers. Therefore, current exposures to native soils at the Site are likely to be minimal. In addition, exposures to future receptors will be much greater than current exposures. Because the Site will be an infrastructure easement in support of future development of the Eastside, the CSM includes construction workers (sewer installation) and future maintenance workers (repair and upkeep of the infrastructure). It is important to note that the entire Site is beneath future roadways under the prospective redevelopment plan. This, therefore, precludes potential exposures to future residential receptors to Site soils.

DATA REVIEW AND USABILITY EVALUATION

A data review and usability evaluation was performed to identify appropriate data for use in the human health risk assessment. The results of the data usability evaluation indicate that the data collected in 2008 and 2009 are adequate for use in a risk assessment. As part of the data review process, data were compared to both NDEP (2009a) Basic Comparison Levels (BCLs) and leaching-based BCLs (LBCLs). The data review showed no indication that concentrations increase with depth, supporting the conclusion that currently the Site is not a likely source of impacts to groundwater. In addition, as indicated above, the Site will be entirely beneath a road surface, effectively serving as a 'cap' for the infiltration of water from the surface. Although various infrastructures will exist within the Site (for example, sewerline), which have the potential to leak and become a potential source of downward infiltration, this is considered of minimal likelihood, given current standards for sewer design and construction as well as the focus on leak prevention and associated water loss in Henderson. Therefore, potential impacts to groundwater, and subsequent groundwater exposures were not further evaluated. It should be noted that development of the Site will not preclude future groundwater investigation or remediation activities that may need to be conducted by BRC.

HUMAN HEALTH RISK ASSESSMENT

The data review section (Section 4) did not take into account cumulative effects, nor all potential exposure pathways. Therefore, a human health risk assessment was conducted (Section 5) to determine if chemical concentrations in Site soils are: (1) either representative of background conditions; or (2) do not pose an unacceptable risk to human health and the environment under current and anticipated future use conditions. The human health risk assessment followed the basic procedures outlined in U.S. Environmental Protection Agency (USEPA) and NDEP guidance documents. The human health risk assessment also conforms to the methodology included in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007).

RISK CHARACTERIZATION RESULTS

The total cumulative non-cancer HI for future construction workers is 0.26~~7~~. The total cumulative non-cancer HI for future maintenance workers is 0.20. These total cumulative non-cancer HIs are below the target HI of 1.0. The chemical theoretical upper-bound ILCR for future construction workers is 9~~2~~ $\times 10^{-7\cancel{6}}$. The chemical theoretical upper-bound ILCR for future maintenance workers is 4×10^{-6}. Although the maintenance worker chemical ILCR is ~~ILCRs are~~ above the risk goal of 1×10^{-6}, dioxins/furans are a major contributor to the ILCR~~s~~. However, all dioxins/furans concentrations are below the NDEP BCL~~Agency for Toxic Substances and Disease Registry (ATSDR) action level~~ of 1.0 parts per billion (ppb or 1,000 parts per trillion [ppt]; NDEP 2009a~~ATSDR 1997~~). The theoretical chemical upper-bound ILCR~~ILCRs~~ for ~~both~~ future ~~construction workers and~~ maintenance workers decreases to ~~at or below~~ 1×10^{-6} without including dioxins/furans.

The radionuclide theoretical upper-bound ILCR for future construction workers is 9×10^{-6}. Although the construction worker radionuclide ILCR is above the risk goal of 1×10^{-6}, it is within USEPA's acceptable risk range of 10^{-6} to 10^{-4}, and consistent with the background radionuclide ILCR of 8×10^{-6}. The radionuclide theoretical upper-bound ILCR for future maintenance workers is 2×10^{-4}. Although the maintenance worker radionuclide ILCR is above the risk goal of 1×10^{-6} and USEPA's acceptable risk range, it is equal to the background radionuclide ILCR of 2×10^{-4}.

In addition, the estimated risks for death from mesothelioma (primarily) and lung cancer (secondarily) for asbestos exposures to both future construction workers and maintenance workers are below 1×10^{-6}.

The human health risk assessment used data from the surface to 10 feet bgs. However, data were collected in June 2009 in order to characterize soil conditions to 20 feet bgs at three locations at the Site. It does not appear that the detections at 20 feet bgs at these three sample locations would change the overall conclusions of the human health risk assessment.

EVALUATION OF UNCERTAINTIES

Risk estimates are values that have uncertainties associated with them. These uncertainties, which arise at every step of a risk assessment, are evaluated in the report to provide an indication of the uncertainty associated with a risk estimate. Uncertainties from different sources are compounded in the human health risk assessment. Because the exposure assumptions and toxicity criteria are considered conservative, the risk estimates calculated in this human health risk assessment are likely to overestimate rather than underestimate potential risks.

SUMMARY

The results of the human health risk assessment indicate that exposures to chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors. Therefore, based on the results of the 2008 and 2009 investigations, and this data review and human health risk assessment, exposures to residual levels of chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors. In summary, BRC reaffirms that the~~an~~ NFAD for the Site is warranted~~, and that conditions 2, 5, and 6 from the January 8, 2009 NFAD be removed. That is, it is BRC's intent to expand the NFAD for soil to a depth of 20 feet bgs and for the area previously covered by the land bridge~~.

1.0 INTRODUCTION

This report presents the results of an investigation and human health risk assessment Basic Remediation Company (BRC) performed for the Utility Corridor Sub-Area of the Basic Management, Inc. (BMI) Common Areas (Eastside) in Clark County, Nevada. The Utility Corridor Sub-Area will be referred to as the Site for the purposes of this report. Figure 1 shows the location of the Site within the Eastside property.

This revision of the report, Revision 3~~2~~, incorporates: 1) comments received from the NDEP, dated September 4, 2009, on Revision 2 of the report, dated August 2009; 2) comments received from the NDEP, dated January 8, 2009, on Revision 1 of the report, dated December 19, 2008; and 3) comments received from the NDEP, dated December 14, 2008, on Revision 0 of the report, dated December 3, 2008. The NDEP comments and BRC's response to these comments are included in Appendix A. Also included in Appendix A is a redline/strikeout version of the text showing the revisions from the August 2009~~December 19, 2008~~ version of the report. An electronic version of the entire report, as well as original format files (MS Word and MS Excel) of all text, tables and risk calculations are included in Appendix B.

1.1 PURPOSE OF THE REPORT

The purpose of this report is to support the No Further Action Determination (NFAD) by the Nevada Division of Environmental Protection (NDEP) in order to facilitate the installation of a new 48-inch sewer line along this alignment. The NFAD was obtained from NDEP on September 4, 2009, with the following conditions:

1. BRC retains the responsibility to address any environmental impacts to groundwater beneath the property referred to as the Utility Corridor Sub-Area. As such, additional investigation may be necessary on this property as it relates to BRC's responsibilities. BRC must be granted access to the site for activities such as well or soil boring installations or other investigative or remedial efforts.

2. The site soils beneath 10' below ground surface have not been evaluated to date with the exception of a limited investigation of soils to 20' below ground surface (bgs). The limited area of investigation to 20' below ground surface is shown on the Attached Figure A [see Section 2.1 of this report]. The property owner should note that soils that have not been addressed by these investigations should not be disturbed without additional investigation or evaluation.

Basic Remediation COMPANY

3. To limit liability, the property owner should ensure that activities at the property do not exacerbate existing, sub-surface, environmental conditions.

4. The site use is suitable for purposes of commercial or industrial use.

5. Comments are provided in Attachment A [see Appendix A of this report]. Based upon the NDEP's review it appears that these comments will not alter the No Further Action determination, however, BRC must revise and resubmit the document. BRC may proceed with site development in parallel with this resubmittal.

Therefore, as indicated above, this report supports the NFAD issued by the NDEP for the Site, and addresses Condition #5 of the NFAD.

~~The purpose of this report is to request a No Further Action Determination (NFAD) by the Nevada Division of Environmental Protection (NDEP) in order to facilitate the installation of a new 48-inch sewer line along this alignment. Although an NFAD was obtained from NDEP on January 8, 2009, a number of conditions were placed on the NFAD. Three of these conditions are addressed in this revised report:~~

- ~~Condition #2: site soils beneath 10 feet below ground surface (bgs) have not been evaluated to date. The property owner should note that these soils should not be disturbed without additional investigation or evaluation;~~

- ~~Condition #5; the NFAD excludes the area of the Site that is currently inaccessible. It is expected that the inaccessible area of the Site will be addressed at a later date; and~~

- ~~Condition #6; a revised report must be submitted to address the comments contained in Attachment A of the NFAD. These comments are intended to clarify the Administrative Record and should not materially affect the conclusions of the report.~~

~~That is, 1) additional samples have been collected to 20 feet bgs, the maximum proposed extent excavation, 2), the land bridge used during remediation operations that made the area around sample location SAE-08 previously inaccessible has been removed allowing access to the soil in this area and 3) this revised report addresses the comments included with the NFAD. Therefore, with this report, it is BRC intent to expand the NFAD for soil to a depth of 20 feet bgs and for the area previously covered by the land bridge.~~

1.2 PROJECT BACKGROUND

The sewer alignment was excavated to varying depths, at first, based on visual indications of contamination (*i.e.*, discolored soils). Confirmation samples were then collected from the post-excavated alignment. Subsequently, additional soils were also removed, in targeted areas, based on confirmation sampling. The current analysis uses data based on the most recent post-excavation, confirmation sample results. It does not use any historical (*i.e.*, associated with excavated soils) data within the footprint of the excavation since these are no longer considered 'existing' data.

The sampling was conducted in accordance with the NDEP-approved *Sewer Alignment Excavation Soil Sampling and Analysis Plan* (SAP; BRC 2008) and *Sewer Alignment Excavation Supplemental Soil Sampling and Analysis Plan* (BRC 2009). The Site investigations involved collection of soil matrix samples placed along the entire length of the sewer alignment excavation. Samples were collected every 100 feet within the southern portion of the excavation, through the Southern RIBs and First Eight Rows sub-areas; and every 200 feet along the Beta Ditch and through the Spray Wheel and Upper Ponds sub-areas. As discussed in Section 7, the number of samples collected is adequate for the completion of a statistically robust dataset upon which to perform a human health risk assessment. A site map, showing the sample locations, is provided on Figure 2.

Samples that were collected were depth-discrete soil matrix samples. Specifically, the objective of the sampling was to support the request for an NFAD for this Site, via a human health risk assessment for the exposure scenarios discussed below. Therefore, this report includes the following primary tasks:

- Conceptual site model (CSM);
- Data usability evaluation;
- Summary of data, including evaluation to comparison levels;
- Human health risk assessment, including statistical comparison to background concentrations; and
- Data quality assessment.
- ~~Data adequacy evaluation.~~

Each of these tasks is discussed in the following sections of the report.

2.0 CONCEPTUAL SITE MODEL

The CSM is used to describe relationships between chemicals and potentially exposed human receptor populations, thereby delineating the relationships between the suspected sources of chemicals identified at the Site, the mechanisms by which the chemicals might be released and transported in the environment, and the means by which the receptors could come in contact with the chemicals. The CSM provides a basis for defining data quality objectives and developing exposure scenarios.

2.1 SITE DESCRIPTION

The BMI Common Areas and Complex are located in Clark County, Nevada, and are situated approximately two miles west of the River Mountains and one mile north of the McCullough Range. The local surface topography slopes in a westerly to northwesterly direction from the River Mountains and in a northerly to northeasterly direction from the McCullough Range. Near the BMI Common Areas and Complex, the surface topography slopes north toward the Las Vegas Wash. According to the Nevada Bureau of Mines and Geology (NBMG) *Las Vegas SE Folio Geologic Map (1977) and the Geologic Map of the Henderson Quadrangle, Nevada* (NBMG 1980), the River Mountains and McCullough Range consist of volcanic rocks: dacite in the River Mountains and andesite in the McCullough Range.

The Site is a linear feature that is approximately 7,300 feet in length, 50 feet across, running north-south, and comprised of approximately 8.4 acres (Figure 1). It consists of undeveloped land with very little surface relief that is gently sloping to the northwest. It crosses through the waste conveyance and disposal ponds historically operated by the BMI Complex, including the Beta Ditch and Upper Ponds. Land use in the vicinity is mixed, ranging from industrial in the BMI Complex to light industrial at the margins of the Complex to commercial and residential on the periphery of the Eastside property. Lands surrounding the Eastside property are zoned commercial and residential, and are mostly developed.

The Site, consisting of a 50-foot wide ditch, passes through the Staging, First Eight Rows, Spray Wheel, and Upper Ponds sub-areas of the Eastside Area. As noted in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007), all of the Eastside sub-areas are planned for redevelopment according to a mixed-use master plan, which will include above- and below-ground utilities (potable water, sewerlines, power, gas), roadways, trails, parks, homes, schools, shops, and municipal buildings. The Site includes the length of the sewer alignment excavation north of the Parcel 4B sub-area until it meets up with the tie-in location at the City of Henderson Water

Reclamation Facility (WRF) at the northern boundary of the Upper Ponds sub-area (see Figure 1).

Figure 3 presents a cross-section of the sewer alignment excavation, indicating that the excavation will be constructed to a depth ranging from 2 to 14 feet bgs. Following placement of the sewer pipe, the site will be backfilled with clean pea gravel, then overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained. As shown on Figure 3, the entire Site is beneath future roadways under the prospective redevelopment plan.

2.2 SUMMARY OF EXISTING DATA

As noted above, the Site runs north-south through the middle of the Eastside property, on which unlined wastewater effluent ponds (and associated conveyance ditches) were built and into which various industrial plant wastewaters were discharged from 1942 through 1976. These historical waste disposal practices have impacted soil and groundwater at the Site. In addition, the Site runs through the Spray Wheel sub-area which was used for the evaporative disposal of aqueous salt waste (see Figure 1).

Most of the environmental investigations conducted at the Eastside property have focused on the adjacent operating facilities and Upper Ponds and Ditches areas of the BMI Common Areas. Some of the data collected at the Eastside property have been collected from within the Site in support of those efforts. Only five soil samples from historical sampling events are located within the Site. These sample locations are all associated with the BMI Common Areas Environmental Conditions Investigation (ECI) conducted during March and April 1996 (Dataset 1a; ERM 1996). These sample locations include discrete samples collected from two locations along the Beta Ditch (sample locations BDB-16 and BDB-17) and composite samples from three ponds (PUA-9, PUB-10, and PUC-8). Soil samples from these locations were collected and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), organochlorine pesticides, polychlorinated biphenyls (PCBs), metals, perchlorate, and/or radionuclides.

Although elevated concentrations of several of these compounds were detected in these soil samples, not unexpected given they were collected from known contaminated ponds and ditch, as discussed above, excavation of the sewer alignment consisted of the removal and stockpiling of soil from the entire length of the sewer alignment to a depth of approximately four feet bgs and 50 feet across. Therefore, historical surface soil data within the footprint of the excavation are no longer considered ‘existing’ data. In addition, many of the previous samples were composite samples~~sampling~~, all soil samples were collected over 10 years ago, and not all of the previous samples have been analyzed for all of the major chemicals or chemical families and several used different analytical methods. Therefore, because of these factors, and because the current investigation results are considered representative of current site conditions, previous results are not evaluated further in this report. The historical results are provided in dataset file on the enclosed report CD in Appendix B.

2.3 POTENTIAL HUMAN EXPOSURE SCENARIOS

The CSM considers current and potential future land-use conditions. Currently, the Site is undeveloped. Current receptors that may use the Site include on-site trespassers. Therefore, current exposures to native soils at the Site are likely to be minimal. In addition, exposures to future receptors will be much greater than current exposures. For example, future receptors include potential workers who are assumed to be exposed to soil at the Site for 225 days per year for 25 years which is much greater than any current exposures.

U.S. Environmental Protection Agency (USEPA; 1989) guidance states that potential future land use should be considered in addition to current land use when evaluating the potential for human exposure at a site. Therefore, the CSM also considers other future land-uses. For example, because the Site will be an infrastructure easement in support of future development of the Eastside, the CSM includes construction workers (sewer installation) and future maintenance workers (repair and upkeep of the infrastructure). Potential migration pathways, exposure pathways, and routes of exposure are shown on Figure 4.~~3.~~ It is important to note that the entire Site will be backfilled with clean pea gravel and overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained, and ~~is~~ beneath future roadways under the prospective redevelopment plan. This, therefore, precludes potential exposures to future residential receptors to Site soils. The current development plan for the Site is shown on Figure 5.~~Figure 4.~~

Although several potential human receptors may occur on the Site in the future, the human health risk assessment focuses on the future potential maintenance worker and construction worker receptors. These receptors are considered to have the highest level of potential exposure at the Site, as supported by the projected land use (infrastructure easement and sewer installation). Other receptors generally have lower potential exposures, and thus lower risk estimates. Therefore, risk estimates generated for the worker receptors will be protective of other potential receptors at the Site.

3.0 DATA USABILITY EVALUATION

The primary objective of the data review and usability evaluation was to identify appropriate data for use in the human health risk assessment. The analytical data were reviewed for applicability and usability following procedures in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a) and USEPA (1989) and NDEP's *Data Usability Guidance for the BMI Complex and Common Areas* (NDEP 2008a). A quality assurance/quality control (QA/QC) review of the analytical results was conducted during the sampling events. According to the USEPA Data Usability Guidance, there are six principal evaluation criteria by which data are judged for usability in risk assessment. The six criteria are:

- reports to risk assessor (availability of information associated with site data)
- documentation;
- data sources;
- analytical methods and detection limits;
- data review; and
- data quality indicators, including precision, accuracy, representativeness, comparability, and completeness.

A summary of these six criteria for determining data usability is provided below. In addition to the six principal evaluation criteria, NDEP's Data Usability Guidance includes a step for data usability analysis. ~~A summary of these six criteria for determining data usability is provided below.~~ Data usability evaluation tables are provided electronically in Appendix C (on the enclosed report CD in Appendix B).

3.1 CRITERION I – REPORTS TO RISK ASSESSOR (AVAILABILITY OF INFORMATION ASSOCIATED WITH SITE DATA)

The usability analysis of the site characterization data requires the availability of sufficient data for review. The required information is available from documentation associated with the site data and data collection efforts. Data have been validated per the NDEP-approved *Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation, April and August 2008 (Dataset 50)* (DVSR; BRC and ERM 2008), the NDEP-approved *Data Validation*

Summary Report, Sewer Alignment Excavation Soil Investigation Re-Analysis - August and October 2008 (Dataset 50a) (BRC and ERM 2009a), and *Data Validation Summary Report, Utility Corridor Sub-Area Soil Investigation - June and July 2009 (Dataset 50b)* (BRC and ERM 2009b). The following lists the information sources and the availability of such information for the data usability process:

- A Site description provided in this report and the NDEP-approved SAPs (BRC 2008, 2009) identifies the location and features of the Site, the characteristics of the vicinity, and contaminant transport mechanisms.
- A site map with sample locations is provided in Figure 2.
- Sampling design and procedures were provided in the NDEP-approved SAPs (BRC 2008, 2009).
- Analytical methods and sample quantitation limits (SQLs) are provided in the dataset file on the enclosed report CD in Appendix B.
- A complete dataset is provided in the dataset file on the enclosed report CD in Appendix B.
- A narrative of qualified data is provided with each analytical data package, the laboratory provided a narrative of QA/QC procedures and results. These narratives are included as part of the DVSRs (BRC and ERM 2008, 2009a,b).
- QC results are provided by the laboratory, including blanks, replicates, and spikes. The laboratory QC results are included as part of the DVSRs (BRC and ERM 2008, 2009a,b).
- Data flags used by the laboratory were defined adequately
- Electronic files containing the raw data made available by the laboratory are included as part of the DVSRs (BRC and ERM 2008, 2009a,b).

3.2 CRITERION II – DOCUMENTATION REVIEW

The objective of the documentation review is to confirm that the analytical results provided are associated with a specific sample location and collection procedure, using available documentation. For the purposes of this data usability analysis, the chain-of-custody forms prepared in the field were reviewed and compared to the analytical data results provided by the laboratory to ensure completeness of the dataset as discussed in the DVSRs (BRC and ERM

2008, 2009a,b). Based on the documentation review, all samples analyzed by the laboratory were correlated to the correct geographic location at the Site and are shown in Figure 2. The samples were collected in accordance with the SAPs (BRC 2008, 2009), the standard operating procedures (SOPs) developed for the BMI Common Areas as provided in the *Field Sampling and Standard Operating Procedures* (FSSOP; BRC, ERM and MWH 2008). Field procedures included documentation of sample times, dates and locations, other sample specific information such as sample depth were also recorded. Information from field forms generated during sample collection activities was imported into the project database.

Measurement of asbestos was conducted consistent with NDEP (2009b) guidance. The analytical data were reported in a format that provides adequate information for evaluation, including appropriate quality control measures and acceptance criteria. Each laboratory report describes the analytical method used, provides results on a sample by sample basis along with sample specific SQLs, and provides the results of appropriate quality control samples such as laboratory control spike samples, sample surrogates and internal standards, and matrix spike samples. All laboratory reports, except for asbestos, provided the documentation required by USEPA's Contract Laboratory Program (USEPA 2003a, 2004a,b) which includes chain of custody records, calibration data, QC results for blanks, duplicates, and spike samples from the field and laboratory, and all supporting raw data generated during sample analysis. Reported sample analysis results were imported into the project database.

The recommended method for providing asbestos data which are useful for risk assessment purposes was performed by EMSL Analytical Inc in Westmont, New Jersey. This laboratory is not currently certified in the State of Nevada, but has California and national accreditation for asbestos analysis.

To interpret measurements of asbestos in soils, it is necessary to establish the relationship between the asbestos concentrations observed in soils and concentrations that will occur in air when such soil is disturbed by natural or anthropogenic forces. This is because asbestos is a hazard when inhaled (see, for example, USEPA 2003b). In fact, the Modified Elutriator Method (Berman and Kolk 2000), which was the method employed to perform the analyses presented in this report, was designed specifically to facilitate prediction of airborne asbestos exposures based on bulk measurements (see, for example, Berman and Chatfield 1990).

The Modified Elutriator Method incorporates a collection of samples that are re-suspended and then forced through an airway and filter. Asbestos structures are isolated and concentrated as part of the respirable dust fraction of a sample and analytical measurements are reported as the number of asbestos structures per mass of respirable dust in the sample. These are precisely the dimensions required to combine such measurements with published dust emission and dispersion models to convert them to asbestos emission and dispersion estimates. Thus, because published dust emission and dispersion models can be used to address many of the exposure pathways of interest in this study, these can be combined with measurements from the Modified Elutriator Method to predict airborne exposures and assess the attendant risks.

3.3 CRITERION III – DATA SOURCES

The review of data sources is performed to determine whether the analytical techniques used in the site characterization process are appropriate for risk assessment purposes. The data collection activities were developed to characterize a broad spectrum of chemicals potentially present on the Site, including asbestos, aldehydes, general chemistry/ions, VOCs, SVOCs, metals, dioxins/furans, polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides, radionuclides, and PCBs. As discussed above in the Section 2.2, historical data collected from the Site are not evaluated further in this data review, or the human health risk assessment. Figure 2 demonstrates that samples were collected over the entire Site.

The State of Nevada is in the process of certifying the laboratories used to generate the analytical data. As such, standards of practice in these laboratories follow the quality program developed by the Nevada Revised Statutes (NRS) and are within the guidelines of the analytical methodologies established by the USEPA. Based on the review of the available information, the data sources for chemical and physical parameter measurements are adequate for use in a risk assessment.

3.4 CRITERION IV – ANALYTICAL METHODS AND DETECTION LIMITS

In addition to the appropriateness of the analytical techniques evaluated as part of Criterion III, it is necessary to evaluate whether the detection limits are low enough to allow adequate characterization of risks. At a minimum, this data usability criterion can be met through the determination that routine USEPA reference analytical methods were used in analyzing samples collected from the Site. The USEPA methods that were used in conducting the laboratory analysis of soil samples are identified in the dataset file on the enclosed report CD in Appendix B. Each of the identified USEPA methods is considered the most appropriate method for the respective constituent class and each was approved by NDEP as part of the SAPs (BRC

2008, 2009). As recommended by NDEP's guidance on *Detection Limits and Data Reporting* (NDEP 2008b) the laboratory reported SQL was used in evaluating detection limits.

Laboratory SQLs were based on those outlined in the reference method, the SAPs, and the *BRC Quality Assurance Project Plan* (QAPP; BRC, ERM and MWH 2009). In accordance with respective laboratory standard operating procedures (SOPs), the analytical processes included performing instrument calibration, laboratory method blanks, and other verification standards used to ensure quality control during the analyses of collected samples.

The range of SQLs achieved in field samples was compared to NDEP Basic Comparison Levels (BCLs; NDEP 2009a). No chemicals had SQLs that exceeded their respective BCLs. Several chemicals had SQLs above the leaching-based BCLs (LBCLs); however, given the discussion provided below in the Section 4~~3~~, migration of chemicals at the Site to groundwater is considered unlikely. Therefore, the SQLs are considered adequate for risk assessment purposes.

As discussed in the *2008 Supplemental Shallow Soil Background Report* (BRC and ERM 2009a), there are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits.

3.5 CRITERION V – DATA REVIEW

The data review portion of the data usability process focuses primarily of the quality of the analytical data received from the laboratory. Soil sample data were subject to data validation. DVSRs were prepared as separate deliverables (BRC and ERM 2008, 2009a,b). The analytical data were validated according to the internal procedures using the principles of USEPA National Functional Guidelines (USEPA 1999, 2004c, 2005a) and were designed to ensure completeness and adequacy of the dataset. Additionally, DVSR 50b was issued utilizing NDEP's two *Supplemental Guidance on Data Validation* documents (NDEP 2009c,d). Any analytical errors and/or limitations in the data have been addressed and an explanation for data qualification provided in the respective data tables. The results of ERM's data review for these issues are presented in the DVSRs and are summarized below.

Although certain laboratory limits, such as percent recovery (PR) and relative percent difference (RPD) between sample and duplicate, were exceeded for certain compounds or analyses, as identified by the laboratory (and confirmed during ERM's review of the data), none of the exceedances resulted in rejection of a data point nor did they reflect a larger concern on a particular compound, sample, or method~~there does not appear to be a wide-spread effect on the quality of the analytical results~~. Furthermore, based on a review of the laboratory narratives (provided in the laboratory reports in the DVSRs), ERM~~the laboratory~~ does not believe that the observed exceedances of laboratory criteria represent a concern.

For 1,734 out of 21,430 analytical results, quality criteria were not met and various data qualifiers were added to indicate limitations and/or bias in the data. The definitions for the data qualifiers, or data validation flags, used during validation are those defined in SOP-40 (BRC, ERM and MWH 2007) and the project QAPP (BRC, ERM and MWH 2009). Sample results were rejected based on findings of serious deficiencies in the ability to properly collect or analyze the sample and meet QC criteria. Only rejected data were considered unusable for decision-making purposes and rejected analytical results are not used in the human health risk assessment. Only four samples, three of which were hexavalent chromium in rinsate samples, and one cyanide soil sample (at sample location SAE-39), were rejected in the Site dataset.

Sample results qualified as estimated were affected by special circumstances and are likely to be quantitatively biased to some degree; estimated analytical results are used in the human health risk assessment. Data qualified as anomalous, as defined in the DVSRs, refers to data that were qualified ("U") due to blank contamination, and are used in the human health risk assessment. These data usability decisions follow the guidelines provided in the *Guidance for Data Usability in Risk Assessment (Part A)* (USEPA 1992a).

3.6 CRITERION VI – DATA QUALITY INDICATORS

Data quality indicators (DQIs) are used to verify that sampling and analytical systems used in support of project activities are in control and the quality of the data generated for this project is appropriate for making decisions affecting future activities. The DQIs address the field and analytical data quality aspects as they affect uncertainties in the data collected for site characterization and risk assessment. The DQIs include precision, accuracy, representativeness, comparability, and completeness (PARCC). The project QAPP provides the definitions and specific criteria for assessing DQIs using field and laboratory QC samples and is the basis for determining the overall quality of the dataset. Data validation activities included the evaluation of PARCC parameters, and all data not meeting the established PARCC criteria were qualified during the validation process using the guidelines presented in the National Functional

Guidelines for Laboratory Data Review, Organics and Inorganics and Dioxin/Furans (USEPA 1999, 2004c, 2005a).

Precision is a measure of the degree of agreement between replicate measurements of the same source or sample. Precision is expressed by RPD between replicate measurements. Replicate measurements can be made on the same sample or on two samples from the same source. Precision is generally assessed using a subset of the measurements made. The precision of the data was evaluated using several laboratory QA/QC procedures. Based on ERM's review of the results of these procedures, there do not appear to be any ~~wide spread~~ data usability issues associated with precision for~~with~~ either the Utility Corridor Sub-Area data or the background data (BRC and TIMET 2007) that limit the usability of a particular analyte, sample, or method.

Accuracy measures the level of bias that an analytical method or measurement exhibits. To measure accuracy, a standard or reference material containing a known concentration is analyzed or measured and the result is compared to the known value. Several QC parameters are used to evaluate the accuracy of reported analytical results:

- Holding times and sample temperatures;
- Laboratory control sample (LCS) percent recovery;
- Matrix spike/matrix spike duplicate (MS/MSD) percent recovery (organics);
- Spike sample recovery (inorganics)
- Surrogate spike recovery; and
- Blank sample results.

Detailed discussions of and tables with specific exceedances, with respect to precision and accuracy, are provided in the NDEP-approved DVSRs (BRC and ERM 2008, 2009a,b) and data qualified as a result of this evaluation are presented with qualifiers in the data usability tables in Appendix C.

Representativeness is the degree to which data accurately and precisely represent a characteristic of the population at a sampling point or an environmental condition (USEPA 2002a). There is no standard method or formula for evaluating representativeness, which is a qualitative term. Representativeness is achieved through selection of sampling locations that are appropriate relative to the objective of the specific sampling task, and by collection of an adequate number of samples from the relevant types of locations. The sampling locations at the Site were based on both systematic sampling with random point placement within each grid cell, as well as focused samples collected from specific areas to further investigate potential areas. The samples were analyzed for a broad spectrum of chemical classes across the Site. Samples were delivered to the laboratory in coolers with ice to minimize the loss of analytes. At times the samples were analyzed beyond the holding time. Sample specific results are discussed in the DVSRs. A discussion of representativeness for the background dataset is provided in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC and TIMET 2007).

Completeness is commonly expressed as a percentage of measurements that are valid and usable relative to the total number of measurements made. Analytical completeness is a measure of the number of overall accepted analytical results, including estimated values, compared to the total number of analytical results requested on samples submitted for analysis after review of the analytical data. Some of the data were eliminated due to data usability concerns. The percent completeness for the Site is 99.98 percent. The percent completeness in the background dataset is 98.5 percent (BRC and TIMET 2007).

Comparability is a qualitative characteristic expressing the confidence with which one dataset can be compared with another. The desire for comparability is the basis for specifying the analytical methods; these methods are generally consistent with those used in previous investigations of the Site. The comparability goal is achieved through using standard techniques to collect and analyze representative samples and reporting analytical results in appropriate units. The ranges of detected sample results from the current investigation are generally comparable to recent results at the Eastside (for example, the Mohawk sub-area), as well as the site background datasets (see Section 5.1.1). There are differences in SQLs among datasets which may affect data comparability for datasets comprised primarily of non-detected values. For these datasets, left-censored data can result in difficulties in differentiating whether datasets are actually different or merely an artifact of detection limits. Note that for constituents with SQLs that meet project limit requirements~~data quality objectives~~, comparisons between site and background may be less important as these left-censored data are likely to indicate conditions that pose an “acceptable” risk and further evaluation is not necessary.

4.0 DATA SUMMARY

Initially, 67 samples were collected from 46 sample locations. Sample locations for this current investigation are shown on Figure 2. Results of the investigation are presented in Appendix B, and electronically on CD. As noted above, all data have been validated.

Following the first round of sampling, because of elevated levels of the following constituents at the surface soil locations listed below, surface soil was scraped and removed from around these locations.

Sample Location	Asbestos	SVOCs	Dioxins/Furans	Metals	Radionuclides
SAE-01	Chrysotile (9 fibers)				*e.g.*, Th-228 (6.4 pCi/g)
SAE-05	Chrysotile (9 fibers)				
SAE-06	Chrysotile (8 fibers)				
SAE-07		Hexachlorobenz-ene (2 mg/kg)	TCDD TEQ (3,704 ppt)	Arsenic (34.5 mg/kg)	
SAE-09	Chrysotile (4 fibers)			Arsenic (28.7 mg/kg)	
SAE-11	Chrysotile (7 fibers)				
SAE-12	Chrysotile (7 fibers)				
SAE-13	Chrysotile (4 fibers)				
SAE-14		Hexachlorobenz-ene (1.4 mg/kg)		Arsenic (60.2 mg/kg)	*e.g.*, U-238 (4.67 pCi/g)
SAE-15				Arsenic (10.2 mg/kg)	
SAE-16	Chrysotile (5 fibers)		TCDD TEQ (1,760 ppt)	Arsenic (12.6 mg/kg)	
SAE-17	Chrysotile (5 fibers)			Arsenic (33.5 mg/kg)	
SAE-18	Chrysotile (8 fibers); Amphibole (1 fiber)				
SAE-19	Amphibole (1 fiber)				
SAE-20	Chrysotile (14 fibers)				
SAE-21	Chrysotile (13 fibers); Amphibole (1 fiber)				
SAE-23	Chrysotile (8 fibers); Amphibole (1 fiber)				
SAE-24	Chrysotile (4 fibers); Amphibole (1 fiber)				
SAE-42				Arsenic (48.1 mg/kg)	

The surface soil removal areas are shown on Figure 2. Post-scrape samples were collected and analyzed for target constituents that triggered the soil removal at each sample location. The original surface sample data from these locations were replaced with data from the confirmatory samples. A second round of surface soil removal was conducted at sample locations SAE-14R (arsenic [25.4 mg/kg]), SAE-15R (arsenic [32.5 mg/kg]), SAE-16R (arsenic [29.7 mg/kg] and dioxins/furans [1,374 ppt]), SAE-17R (arsenic [23.5 mg/kg]), and SAE-42R (arsenic [11.4 mg/kg]). The original post-scrape surface sample data from these locations were replaced with data from the confirmatory samples. All post-scrape data have been validated.

In June 2009, additional soil samples were collected in accordance with the NDEP-approved *Sewer Alignment Excavation Supplemental Soil Sampling and Analysis Plan* (BRC 2009). These samples were collected to address the following two NFAD conditions: Condition #2 (soils beneath 10 feet bgs have not been evaluated to date); and Condition #5 (the NFAD excluded the area of the Site previously inaccessible due to a land bridge). Although the NFAD was for soil to a depth of 10 feet bgs, there are some portions of the sewer alignment excavation that will be deeper. Therefore, additional samples were collected from a depth of 20 feet bgs in areas of deep excavation In addition; samples were collected from the area previously covered by the land bridge, around sample location SAE-08. The samples collected at 20 feet bgs in June 2009 were SAE-08C, SAE-47D, and SAE-48D. The samples collected from the previously covered area were SAE-08C, SAE-08N, and SAE-08S. Because of elevated levels of dioxins/furans in sample SAE-08S, surface soil was removed from this area. Confirmation samples SAE-08S-C and SAE-08S-S were then collected. All supplemental sample data have been validated.

Although soil removal would affect the concentrations of all analytes, confirmatory sampling only analyzed for the constituent suites that triggered the soil removal. For example, for locations where soil removal was triggered by arsenic only, only metals were analyzed for in the post-scrape samples at that particular location. Therefore, in the absence of post-scrape data, the pre-scrape data are used for all other analytes in the remainder of this data summary and human health risk assessment.

Using the compound-specific information presented in Table 2 of the QAPP (BRC, ERM and MWH 2009), the comparison levels for each chemical included in the investigation were compiled and compared. Specific soil comparison levels used for this effort were as follows:

- NDEP BCLs (NDEP 2009a); and
- NDEP LBCLs protective of groundwater assuming dilution attenuation factors (DAFs) of 1 and 20 (NDEP 2009a).

A DAF of one is used when little or no dilution or attenuation of soil leachate concentrations is expected, and a DAF of 20 may be used when significant attenuation of the leachate is expected due to site specific conditions. For the Site, the LBCLs based on a DAF of 20 is considered appropriate for the following reasons: 1) ~~. Because~~ the property is less than 30 acres, 2) ~~because of~~ the depth to groundwater ranges~~, ranging~~ from approximately 17 feet bgs at the northern end of the Site to 60 feet bgs at the southern end of the Site (~~,~~ as indicated in the at-depth samples that were collected from the capillary fringe [~~(~~see Appendix B for sample/capillary fringe depths]), and 3) the absence of fractured media or karst topography, consistent with USEPA (2002b) recommendations~~, LBCLs using a DAF of 20 were also considered appropriate for comparison purposes for the Site~~. A summary of the data for the property, including identification of number of instances that chemical concentrations exceed each of the comparison levels are listed in Table 1,[1] ~~(pre-scrape data for the target constituents are not included, that is, these have been replaced by post-scrape data; however, pre-scrape data for the non-target constituents are included in Table 1),~~ and summarized below.

~~Except as discussed below, there are no chemicals or instances where concentrations exceed NDEP outdoor worker soil BCLs.~~ Although there are numerous instances where arsenic and radionuclides exceed NDEP outdoor worker BCLs, there are only a few instances where arsenic (13 out of 63 samples) and radionuclides (radium-226 - 4 out of 63 samples; radium-228 - 5 out of 63 samples; thorium-228 - 14 out of 63 samples; and uranium-238 - 2 out of 63 samples) exceeded their respective 2005 shallow soil background levels (presented in the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* [BRC and TIMET 2007]). These are evaluated further in the human health risk assessment section of this report (Section 5).

For dioxins/furans, the USEPA toxicity equivalency procedure, developed to describe the cumulative toxicity of these compounds, is applied. This procedure involves assigning individual toxicity equivalency factors (TEFs) to the 2,3,7,8 substituted dioxin/furan congeners and PCB-

[1] Pre-scrape data for the target constituents are not included in Table 1, that is, these have been replaced by post-scrape data; however, pre-scrape data for the non-target constituents are included in Table 1. Table 1 also only includes data to 10 feet bgs. Because of this, the total number of analyses does not always coincide with the total number of analyses reported in the tables in Appendix B, which include all data, regardless of depth or status.

congeners. TEFs are estimates of the toxicity of dioxin-like compounds relative to the toxicity of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD), which is assigned a TEF of 1.0. Calculating the toxic equivalent (TEQ) of a mixture involves multiplying the concentration of individual congeners by their respective TEF. One-half the detection limit is used for calculating the TEQ for individual congeners that are non-detect in a particular sample. The sum of the TEQ concentrations for the individual congeners is the TEQ concentration for the mixture (referred to as the TCDD TEQ).

TCDD TEQs were compared to the NDEP BCL (NDEP 2009a)~~Agency for Toxic Substances and Disease Registry (ATSDR) action level~~ of 1.0 parts per billion (ppb or 1,000 parts per trillion [ppt]~~]; ATSDR 1997~~). The BCL ~~ATSDR action level~~ is used to identify where potential health effects may be of concern at a site. There were no instances where TCDD TEQs exceeded this level.

As discussed above, depth to groundwater at the Site ranges from approximately 17 to 60 feet bgs. There are several instances where metals, radionuclides, alpha-BHC, beta-BHC, hexachlorobenzene, acetone, and dichloromethane exceed their respective NDEP LBCLs. For the organic compounds (alpha-BHC, beta-BHC, hexachlorobenzene, acetone, and dichloromethane), most of these instances were in surface soil, with only two samples (one each of hexachlorobenzene and dichloromethane) collected at 10 feet bgs above the NDEP LBCL. In the case of hexachlorobenzene (SAE-7), the concentration at 10 feet bgs was less than that measured at the surface (0.11~~36~~ mg/kg at 10 feet bgs versus 0.36~~11~~ mg/kg at the surface); while for dichloromethane (SAE-22), the concentration at 10 feet bgs was greater than that measured at the surface (0.0031 at 10 feet bgs mg/kg versus non-detect at the surface). The DAF of 1 for dichloromethane is extremely low (0.001 mg/kg) and is often exceeded by non-detects as well. In addition, dichloromethane is a common laboratory contaminant.

For metals, in most instances Site concentrations were consistent with background concentrations. There are only four instances where concentrations at 10 feet bgs that exceed NDEP LBCLs are both greater than the concentration at the surface, and exceed the maximum background concentration (see Table 1 for the number of LBCL exceedances). These are arsenic (maximum background is 7.2 mg/kg) at SAE-38 (7.9 mg/kg at 10 feet bgs versus 3.7 mg/kg at the surface), barium (maximum background is 836 mg/kg) at SAE-15 (1,100 mg/kg at 10 feet bgs versus 757 mg/kg at the surface), manganese (maximum background is 1,090 mg/kg) at SAE-22 (1,470 mg/kg at 10 feet bgs versus 619 mg/kg at the surface), and nickel (maximum background is 30 mg/kg) at SAE-7 (32.9 mg/kg at 10 feet bgs versus 16.9 mg/kg at the surface).

None of these are indicative of contaminants migrating with depth. See Section 5.1.1 for a quantitative comparison of metals and radionuclides data with background.

Given the discussion above, there is no indication that concentrations increase with depth, suggesting~~supporting the conclusion~~ that currently the Site is not a likely source of impacts to groundwater. This is further supported by the low level of detected chemicals most associated with potential groundwater impacts (*e.g.*, VOCs, some organochlorine pesticides). In addition, as indicated previously, the Site will be entirely beneath a road surface, effectively serving as a 'cap' for the infiltration of water from the surface. Although various infrastructures will exist within the Site (for example, sewerline), which have the potential to leak and become a potential source of downward infiltration, this is considered of minimal likelihood, given current standards for sewer design and construction as well as the focus on leak prevention and associated water loss in Henderson (pers. comm., BRC and City of Henderson). Also, as noted previously, the entire Site will be backfilled with clean pea gravel and overlain with soil obtained from surrounding sub-areas, for which an NFAD has been obtained, and beneath future roadways under the prospective redevelopment plan. Therefore, potential impacts to groundwater, and subsequent groundwater exposures were not further evaluated. It should be noted that development of the Site will not preclude future groundwater investigation or remediation activities that may need to be conducted by BRC.

The human health risk assessment (Section 5) uses data from the surface to 10 feet bgs. However, data were collected in June 2009 in order to characterize soil conditions to 20 feet bgs at three locations at the Site. Because there are insufficient data from 20 feet bgs to conduct a quantitative analysis, Table 2 provides a qualitative comparison between these data, and maximum concentrations of the data collected at 0 and 10 feet bgs, as well as comparisons to BCLs and LBCLs. As can be seen from Table 2, there are no instances where the concentrations increase with depth (that is, 20 ft bgs > 10 ft bgs > 0 ft bgs). Although there are instances where the 20 ft bgs data may exceed either the 0 ft bgs or 10 ft bgs data for a particular chemical, there are no instances where the 20 ft bgs data exceed both the 0 ft bgs and 10 ft bgs data. Also, only metals and radionuclides were detected at these 20 feet bgs samples. No organic chemicals were detected. The relative difference between the maximum detected concentrations range from 1 percent to 600 percent. Antimony had the highest percent difference (600 percent) in which the 20 feet bgs maximum detection of 1.3 mg/kg is higher than the 10-feet bgs sample of 0.21 mg/kg. However, the 20-feet bgs maximum concentration was lower than the surface maximum of 1.7 mg/kg. Although, as presented in Section 5.1.1, antimony is selected as a COPC in the human health risk assessment, it is not a risk driver. Arsenic, which is a risk driver in the human health risk assessment, has a maximum concentration of 8.9 mg/kg at 20 feet bgs, which is slightly higher than the detection at 10 feet bgs (7.9 mg/kg), but below the maximum detection at the surface of 20.9 mg/kg. Based on this information, it does not appear that the detections at 20 feet bgs would change the overall conclusions of the human health risk assessment. It should be noted that this only applies to the area represented by the three sample locations in which data at 20 feet bgs were collected in June 2009.

5.0 HUMAN HEALTH RISK ASSESSMENT

The comparison levels in Section 4.0~~3 above~~ do not take into account cumulative effects, nor do they consider all potential exposure pathways (for example, the construction dust inhalation pathway). Therefore, the purpose of the human health risk assessment is to determine if chemical concentrations in Site soils are: (1) either representative of background conditions; or (2) do not pose an unacceptable risk to human health and the environment under current and anticipated future use conditions.

Human health risks are represented by estimated theoretical upper-bound cancer risks and non-cancer hazards derived in accordance with standard USEPA methods. The acceptable risk levels defined by USEPA for the protection of human health, and following those discussed previously with NDEP, are:

1. For non-carcinogenic compounds, the acceptable criterion is a cumulative hazard index (HI) of one or less. If the total HI is determined to be greater than 1.0, target organ-specific HIs will be calculated for primary and secondary organs. The final risk goal will be to achieve target organ-specific non-carcinogenic HIs of less than 1.0; and

2. For known or suspected chemical and radionuclide carcinogens, the acceptable ceiling for a cumulative incremental lifetime cancer risk (ILCR) ranges from 10^{-6} to 10^{-4}. The risk goal established by the NDEP is 10^{-6}.

3. Where background levels exceed risk level goals, metals and radionuclides in Site soils are targeted to have risks no greater than those associated with background conditions.

4. For lead, the target goal is 400 mg/kg, which is a soil concentration identified by USEPA (based on the Integrated Exposure Uptake Biokinetic Model [IEUBK]) as protective of a residential scenario. However, as this Site represents a non-residential scenario, the NDEP outdoor worker BCL of 800 mg/kg is used instead (NDEP 2009a).

5. For asbestos, calculations are based upon cancer criterion and a risk goal of 10^{-6}.

This human health risk assessment follows the basic procedures outlined in USEPA *Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual* (RAGS; USEPA 1989). Other guidance documents were also consulted for the human health risk assessment. This human health risk assessment also conforms to the methodology included in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007).

5.1 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Broad suite analyses were performed to capture all the chemicals on the SRC list. However, in order to ensure that a risk assessment focuses on those substances that contribute the greatest to the overall risk (USEPA 1989); two procedures were used to eliminate the chemicals for quantitative evaluation in the human health risk assessment:

- Identification of chemicals with detected levels that~~which~~ are similar to~~at or less than~~ background concentrations (where applicable), and
- Identification of chemicals that are infrequently detected at the Site (see Section 5.1.2 for additional detail).

5.1.1 Evaluation of Concentrations Relative to Background Conditions

As indicated in both the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (BRC and TIMET 2007) and the *2008 Supplemental Shallow Soil Background Report* (BRC and ERM 2009a) the Site is in an area of McCullough and Mixed (McCullough Range and River Mountains) lithologies Therefore, ~~The~~ comparison of Site-related soil concentrations to background levels was conducted using the ~~existing,~~ shallow soils background dataset presented in ~~the *Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity* (~~BRC and TIMET (2007). Because of the Site lithology~~ of the Site~~, only background data from the McCullough and Mixed lithologies were used from the BRC and TIMET (2007) background dataset. The background dataset used is included in the dataset file on the enclosed report CD in Appendix B.

Background comparisons were performed using the Quantile test, Slippage test, the *t*-test, and the Wilcoxon Rank Sum test with Gehan modification. The computer statistical software program, Guided Interactive Statistical Decision Tools (GiSdT®; Neptune and Company 2009), was used to perform all statistical comparisons. A weight of evidence approach is utilized to interpret the results of these analyses. If the detection frequency in both Site and background datasets are greater than 40 percent then the following rationale is used for evaluation: where one result fails, the constituent is considered consistent with background; where two results fail, the remaining testing and statistical information (boxplots, summary statistics) are reviewed to support decision making whether the chemical should be considered consistent with background (as described by the rationale in the table below); and where three or more statistical tests fail, the constituent is considered inconsistent with background. If the detection frequency is less than

40 percent in either the background or Site datasets, then the constituent is evaluated based on boxplots and summary statistics.

For samples with primary and field duplicate results, the site sample and field duplicate are treated as independent samples and both are included in all subsequent data analyses, regardless of whether one or both are non-detect. This is considered appropriate because field duplicate samples represent a discrete and unique measurement of soil chemical conditions proximal to the primary sample (unlike split samples). Therefore, as distinct soil chemical measurements, they are treated as unique samples in the analyses. The results of the background comparison evaluation are presented in Table 3~~2~~, and summarized below.

Chemical	Greater than Background?	Basis
Aluminum	NO	Multiple tests
Antimony	YES~~NO~~	Statistical~~Multiple~~ tests indicate the datasets are similar, however, the four max site detects are greater than the max background detect.
Arsenic	YES	Multiple tests
Barium	YES	Multiple tests
Beryllium	NO	Multiple tests
Boron	NO	Multiple tests; low detection frequency; detection limits in background are lower than those at the site
Cadmium	YES	Multiple tests
Calcium	NO	Multiple tests
Chromium (Total)	YES	Multiple tests
Chromium (VI)	YES	Background are non-detect
Cobalt	NO	Multiple tests
Copper	NO	Multiple tests
Iron	NO	Multiple tests
Lead	YES	Multiple tests
Lithium	NO	Multiple tests; low detection frequency; site max detect and median are less than background
Magnesium	NO	Multiple tests
Manganese	YES	Multiple tests
Molybdenum	YES	Multiple tests
Mercury	NO	Multiple tests
Nickel	NO	Multiple tests
Niobium	YES	Multiple tests
Palladium	NO	Multiple tests; maximum detect less than maximum background
Phosphorus	NO	Multiple tests
Platinum	YES	Multiple tests
Potassium	NO	Multiple tests
Selenium	NO	Non-detect at the site
Silicon	NO	Multiple tests
Silver	YES	Low detection frequency; max >10 x max background
Sodium	YES	Max site detect, site median and mean are greater than background
Strontium	NO	Multiple tests
Thallium	NO	Mulitple tests; low detection frequency

Chemical	Greater than Background?	Basis
Tin	YES	Multiple tests
Titanium	YES	Max site detect is twice the background max detect
Tungsten	YES	Multiple tests
Uranium	NO	Multiple tests
Vanadium	YES	Multiple tests
Zinc	YES	Multiple tests
Zirconium	NO	Multiple tests
Radium-226	YES~~NO~~	Multiple tests~~Uranium metal; secular equilibrium exhibited~~
Radium-228	YES~~NO~~	Secular~~Uranium metal; secular~~ equilibrium exhibited; See Note A
Thorium-228	YES~~NO~~	Multiple tests~~Uranium metal; secular equilibrium exhibited~~
Thorium-230	YES~~NO~~	Secular~~Uranium metal; secular~~ equilibrium exhibited; See Note A
Thorium-232	YES~~NO~~	Secular~~Uranium metal; secular~~ equilibrium exhibited; See Note A
Uranium-233/234	YES~~NO~~	Multiple tests~~Uranium metal; secular equilibrium exhibited~~
Uranium-235/236	YES~~NO~~	Secular~~Uranium metal; secular~~ equilibrium exhibited; See Note A
Uranium-238	YES~~NO~~	Secular~~Uranium metal; secular~~ equilibrium exhibited; See Note A

[A] While the individual constituent passes multiple background tests, secular equilibrium exhibited with the "parent" constituent; therefore, for the purposes of this analysis, all radionuclides are assumed to be greater than background.

Cumulative probability plots and side-by-side boxplots were also prepared and are included in Appendix D. These plots give a visual indication of the similarities between the Site and background datasets. The results of this comparison indicate that levels of antimony, arsenic, barium, cadmium, total chromium, hexavalent chromium, lead, manganese, molybdenum, niobium, platinum, silver, sodium, tin, titanium, tungsten, vanadium, and zinc exceed background levels. Due to the large number of sample data in both the Site and background datasets, even small differences between the two are identified as statistically significant. The metals and radionuclides identified above as greater than background are evaluated further in the human health risk assessment.

For radionuclides, secular equilibrium exists when the quantity of a radioactive isotope remains constant because its production rate (due to the decay of a parent isotope) is equal to its decay rate. In theory, if secular equilibrium exists, the parent isotope activity should be equivalent to the activity of all daughter radionuclides. Pure secular equilibrium is not expected in environmental samples because of the effect of natural chemical and physical processes. However, approximate secular equilibrium is expected under background conditions (NDEP 2009e). Both the thorium-232 and uranium-238 chains were determined to be in approximate secular equilibrium following equivalence testing outlined~~2009b). As noted~~ in NDEP's

Guidance for Evaluating Secular Equilibrium at the BMI Complex and Common Areas February (NDEP 2009f). The results of the equivalence testing for secular equilibrium are as follows:

Chain	Equivalence Test		Secular Equilibrium?	Mean Proportion			
	Delta	p-value		Ra-226	Th-230	U-233/234	U-238
U-238	0.1	0	Yes	0.2518	0.2566	0.2681	0.2236
				Ra-228	Th-228	Th-232	
Th-232	0.1	0.0054	Yes	0.3511	0.3654	0.2835	

~~2009c) both the uranium and thorium decay chains appear to exhibit approximate secular equilibrium at the Site. In addition, uranium metal concentrations at the Site are similar to background.~~ Therefore, all radionuclides are considered ~~similar~~ to be greater than background and are ~~not~~ evaluated further in the human health risk assessment.

5.1.2 Additional COPC Selection Procedures

The procedure for evaluating chemicals relative to background conditions was presented above. Further COPC~~COPCs~~ selection was performed on the remaining chemicals by:

- Considering chemicals positively identified in at least one sample for inclusion as potential COPCs, including: (1) chemicals with no qualifiers attached (excluding non-detect results with unusually high detection limits, if warranted), and (2) chemicals with qualifiers attached that indicate known identities but estimated concentrations (*e.g.*, J-qualified data); and

- Further evaluation of ~~include~~ chemicals included those detected at levels significantly elevated above levels of the same chemicals detected in associated blank samples (this protocol includes an analyte if it is known to be site-related and its concentration is greater than five times the maximum amount detected in any blank; if the chemical is a common laboratory contaminant [as defined by USEPA 1989], it is included only if its concentration is greater than 10 times the maximum amount detected in any blank).

Another criterion that may warrant chemical reduction is the frequency of detection. In general, chemicals exhibiting a low frequency of detection will not contribute significantly to the risk estimates. USEPA (1989) suggests that chemicals with a frequency of detection less than or equal to five percent, with the exception of metals, known human carcinogens, and persistent, bioaccumulative, and toxic (PBT) chemicals as defined by the USEPA PBT program (USEPA 2008), may be considered for elimination. Prior to eliminating a chemical based on the frequency of detection criteria, (1) any elevated detection limits are addressed, and (2) data distributions within the Site are considered. Results of the selection of COPCs, including the rationale for excluding chemicals as COPCs are presented in Table 4~~3~~.

5.2 DETERMINATION OF EXPOSURE POINT CONCENTRATIONS

A representative exposure concentration is a COPC-specific and media-specific concentration value. In risk assessment, these exposure concentrations are values incorporated into the exposure assessment equations from which potential baseline human exposures are calculated. As described below, the methods, rationale, and assumptions employed in deriving these concentration values follow USEPA guidance and reflect site-specific conditions.

5.2.1 Soil

Due to the uncertainty associated with determining the true average concentration at a site, where direct measurements of the site average are unavailable, the USEPA recommends using the lower of the maximum detected concentration or the 95 percent upper confidence limit (UCL) as the concentration of a chemical to which an individual could be exposed over time (USEPA 1992b). For the 95 percent UCL concentration approach, the 95 percent UCL was computed in order to represent the area-wide exposure point concentrations. ~~USEPA defines the 95 percent UCL as follows: "~~The 95 percent UCL is a statistic that quantifies the uncertainty associated with~~defined as~~ the sample mean. If ~~value that, when calculated repeatedly for~~ randomly drawn subsets of site data are collected and the UCL is computed for each subset, the UCL will equal~~,~~ ~~equals~~ or exceed~~exceeds~~ the true mean roughly 95 percent of the time~~." (USEPA 1992b)~~. The purpose for using the 95 percent UCL is to derive a conservative, upper-bound estimate of the mean concentration, which takes into account the different concentrations a person may be exposed to at the Site. That is, an individual will be exposed to a range of concentrations that exist at an exposure area, from non-detect to the maximum concentration, over an entire exposure period.

The 95 percent UCL statistical calculations were performed using the computer statistical software program GiSdT® (Neptune and Company 2009). See Section 5.1.1 for how sample locations with field duplicates were treated prior to the 95 percent UCL statistical calculations. For these calculations, chemical non-detect results are assigned a value of one-half the SQL. For radionuclide censored data, the actual reported value is used. The formulas for calculating the 95 percent UCL COPC concentration (as the representative exposure concentration) are presented in USEPA (1992c, 2002c) and GiSdT® (Neptune and Company 2009).

The representativeness of the 95 percent UCLs for each exposure area, that is, a Site-wide mean concentration is valid for both maintenance and construction workers at the Site, is further supported by the intensity plot figures included in Appendix E. Figures for each of the COPCs are included in Appendix E.

Representative exposure concentrations for soil were based on the potential exposure depth for each of the receptors. For both maintenance and construction worker receptors, which are likely to be exposed to on-site surface and sub-surface soils, data from the surface to 10 feet bgs were used. In order to consider the potential that surface exposures might be higher than subsurface exposures, 95 percent UCLs were calculated for both surface soil data only and data from surface to 10 feet bgs. The higher of the two values was used in the risk estimates. The 95 percent UCL for each COPC is presented in Table 5.~~4.~~ For indirect exposures, this concentration was used in fate and transport modeling.

The exposure point concentrations for asbestos (USEPA 2003b, NDEP 2009b) were based on the pooled analytical sensitivity of the dataset. The asbestos data and analytical sensitivities are presented in Table 6.~~5.~~ Therefore, asbestos exposure point concentrations are determined differently than those for the other COPCs. The pooled analytical sensitivity was calculated as follows:

$$\textit{Pooled Analytical Sensitivity} = 1/\left[\sum_i (1/\textit{analytical sensitivity for trial } i)\right]$$

Two estimates of the asbestos concentration were evaluated, best estimate and upper bound as defined in the draft methodology (USEPA 2003b). The best estimate concentration is similar to a central tendency estimate, while the upper bound concentration is comparable to a reasonable maximum exposure estimate. The pooled analytical sensitivity is multiplied by the number of chrysotile or amphibole structures to estimate concentration:

$$\text{Estimated Bulk Concentration } (10^6\ \text{s/gPM10}) = \text{Long fiber count} \times \text{Pooled analytical sensitivity}$$

For the best estimate, the number of fibers measured across all samples is incorporated into the calculation above. The upper bound of the asbestos concentration was also evaluated. It is calculated as the 95 percent UCL of the Poisson distribution where the mean equals the number of structures detected. In EXCEL, the following equation may be employed to calculate this value:

95% UCL of Poisson Distribution (10^6 s/gPM10) = CHIINV(1-upper confidence percentile, 2 × (Long fiber count + 1))/2

This value is then multiplied by the pooled analytical sensitivity to estimate the upper bound concentration. The intent of the risk assessment methodology was to predict the risk associated with airborne asbestos.

In order to quantify the airborne asbestos concentration, the estimated dust levels or particulate emission factors were used:

$$\text{Estimated Airborne Concentration } (s/cm^3) = \text{Estimated bulk concentration } (10^6 \text{ s/gPM10}) \times \text{Estimated dust level } (ug/cm^3)$$

See NDEP (2009b~~2009d~~) for further explanation on asbestos risk calculations and estimates.

5.2.2 Outdoor Air

Exposure to COPCs bound to dust particles was evaluated using the USEPA's Particulate Emission Factor (PEF) approach (2002b):

$$PEF = Q/C_{wind} \text{ x } \frac{3{,}600 \text{ sec/hr}}{0.036 \text{ x } (1 - V) \text{ x } (U_m / U_t)^3 \text{ x } F(x)}$$

where:

PEF	=	Particulate emission factor (m^3/kg)
Q/C_{wind}	=	Inverse of the ratio of the geometric mean air concentration to the emission flux at the center of a square source (g/m^2 -s per kg/m^2)
V	=	Fraction of vegetative cover (--)
U_m	=	Mean annual windspeed (m/s)
U_t	=	Equivalent threshold value of windspeed at 7m (m/s)
F(x)	=	Function dependent on Um/Ut derived using Cowherd et al. (1985) (--)

and

$$Q/C_{wind} = A \times \exp((\ln A_{site} - B)^2/C)$$

where

A_{site}	=	Source Area (acre)

A, B, C = Air Dispersion Constants for LV (--)

This equation is presented electronically in the risk calculation workbooks as part of Appendix F (on the enclosed report CD in Appendix B).

The USEPA guidance for dust generated by construction activities (USEPA 2002b) was used for assessing construction worker exposures:

$$PEF = \{1/[(1/PEFsc)+(1/PEFsc\_road)]\}$$

where:

PEF_{sc} = Subchronic particulate emission factor for construction activities (m^3/kg)
PEF_{sc_road} = Subchronic particulate emission factor for unpaved road traffic (m^3/kg)

~~.~~The construction dust model and all relevant equations and parameters utilized to generate the construction worker PEF from this guidance are~~is~~ provided in Table 7.

~~6.~~For exposures to VOCs in outdoor air, the USEPA volatilization factor approach was used (USEPA 2002b). These factors are presented electronically in the risk calculation workbooks as part of Appendix F (on the enclosed report CD in Appendix B). Input soil concentrations for these models were the exposure point concentrations identified above.

5.3 RISK ASSESSMENT METHODOLOGY

The method used in the human health risk assessment for chemicals, radionuclides, and asbestos consists of several steps. The first step is the calculation of exposure point concentrations representative of the particular area for each COPC (see above). The second step is fate and transport modeling to predict concentrations that may be present when direct measurements are not available. The third step is the exposure assessment for the various receptors present in the particular areas. The next step is to define the toxicity values for each COPC. The final step is risk characterization where theoretical upper-bound ILCRs and non-cancer HIs are calculated for each COPC. The *BRC Closure Plan* (BRC, ERM, and DBSA 2007) provides a full discussion of the risk assessment methodology utilized for both the project as a whole and in the present human health risk assessment for chemicals, asbestos, and radionuclides.

Table 8 ~~7~~ presents each of the exposure parameters for the construction workers and maintenance workers used in the human health risk assessment for each pathway identified in Figure 4.~~3.~~

Toxicity values, when available, are published by the USEPA in the on-line Integrated Risk Information System (IRIS; USEPA 2009a) ~~) and the~~ Health Effects Assessment Summary Tables (HEAST; USEPA 1997), the Preliminary Remediation Goals for Radionuclides (USEPA 2009b), and from NDEP (2009a). Cancer slope factors (CSFs) are chemical-specific, experimentally-derived potency values used to calculate the risk of cancer resulting from exposure to carcinogenic chemicals. A higher value implies a more potent carcinogen. Reference doses (RfDs) are experimentally derived "no-effect" values used to quantify the extent of adverse non-cancer health effects from exposure to chemicals. Here, a lower RfD implies a more potent toxicant. These criteria are generally developed by USEPA risk assessment work groups and listed in USEPA risk assessment guidance documents and databases. The hierarchy for selecting toxicity criteria presented in the *BRC Closure Plan* (BRC, ERM, and DBSA 2007) was used. The non-cancer, ~~and~~ cancer, and radionuclide toxicity criteria for each of the COPCs are presented in Tables ~~8 and~~ 9, 10, and 11, respectively.

6.0 UNCERTAINTY ANALYSIS

Risk estimates are values that have uncertainties associated with them. These uncertainties, which arise at every step of a risk assessment, are evaluated to provide an indication of the uncertainty associated with a risk estimate. Risk assessments are not intended to estimate the true risk to a receptor associated with exposure to chemicals in the environment. In fact, estimating the true risk is impossible because of the variability in the exposed or potentially exposed populations. Therefore, risk assessment is a means of estimating the probability that an adverse health effect (*e.g.*, cancer, impaired reproduction) will occur in a receptor in order to assist in decision making regarding the protection of human health. The use of conservative values for a majority of the assumptions in risk assessments helps guard against the underestimation of risks.

Risk estimates are calculated by combining site data, assumptions about individual receptor's exposures to impacted media, and toxicity data. The uncertainties in this human health risk assessment can be grouped into four main categories that correspond to these steps:

- Uncertainties in environmental sampling and analysis
- Uncertainties in fate and transport modeling
- Uncertainties in assumptions concerning exposure scenarios
- Uncertainties in toxicity data and dose-response extrapolations

General uncertainties associated with the human health risk assessment for the Site are summarized in Table 12.~~10.~~ In Table 12~~10~~, "Low," "Moderate," and "High" are qualitative indicators as to whether the source of uncertainty will likely have a small, medium, or large effect on the risk calculations, respectively. Additional discussion on the uncertainties associated with the human health risk assessment is provided below.

6.1 ENVIRONMENTAL SAMPLING

The human health risk assessment for the Site was based on the sampling results obtained from investigations conducted in 2008. Errors in sampling results can arise from the field sampling, laboratory analyses, and data analyses. Errors in laboratory analysis procedures are possible, although the impacts of these sorts of errors on the risk estimates are likely to be low. The environmental sampling at the Site is one source of uncertainty in the evaluation. However, the number of sampling locations and events is large, ~~and~~ widespread and spatially distributed, with consistent analytical results (*i.e.*, no hot spots), and sampling was performed using approved procedures; therefore, the sampling and analysis data is sufficient to characterize the impacts and the associated potential risks.

Because of the surface soil removal for certain chemicals, the new surface layer of the Site could have different chemical concentrations than those that were measured prior to soil removal. Because only the trigger analytes were re-analyzed for in the post-scrape samples, the original measured surface soil data at the Site for all other chemicals was retained for further evaluation. However, it is reasonable to assume that the concentrations are now lower for some chemicals (*e.g.*, metals), because of the removal of some soil.

6.2 ESTIMATES OF EXPOSURE

The selection of exposure pathways is a process, often based on best professional judgment, which attempts to identify the most probable potentially harmful exposure scenarios. In a risk assessment it is possible that risks are not calculated for all of the exposure pathways that may occur, possibly causing some underestimation of risk.

6.2.1 Types of Exposures Examined

The selection of exposure pathways is a process, often based on professional judgment, which attempts to identify the most probable potentially harmful exposure scenarios. In an evaluation, risks are sometimes not calculated for all of the exposure pathways that may occur, possibly causing some underestimation of risk. However, in this case, all principal potential exposure pathways were evaluated. In this assessment, risks were estimated for outdoor worker receptors. Risks for the most likely routes of exposure to these receptors were estimated. Specifically, risks to construction workers were estimated for soil ingestion, skin contact with soil, and inhalation of outdoor air (including dust generation); while risks to maintenance workers were estimated for soil ingestion, skin contact with soil, and inhalation of outdoor air. Although it is possible that other exposure routes could exist, these exposures are expected to be lower than the risks associated with the pathways considered.

6.2.2 Intake Assumptions Used

The risks calculated depend largely on the assumptions used to calculate the rate of COPC intake. For this assessment, standard default values developed by USEPA are used for reasonable maximum exposures frequency and exposure duration for workers. These estimates are conservative values, and the possibility that they underestimate the risk is low. The uncertainties associated with particular parameters used in this risk assessment are described below.

The amount of COPCs the body absorbs may be different from the amount of a COPC contacted. In this human health risk assessment, with the exception of arsenic and dioxins/furans, absorption of ingested and inhaled COPCs is conservatively assumed to be 100 percent. For arsenic, consistent with the *BRC Closure Plan* (BRC, ERM, and DBSA 2007) and scientific literature recommendations on arsenic bioavailability (Roberts *et al*. 2001; Ruby *et al*. 1999; USEPA 2001), an arsenic oral bioavailability of 30 percent was used. The actual oral bioavailability of arsenic (as well as other metals at the Site, for which an oral bioavailability of 100 percent was used) is likely to be lower than this value. For dioxins/furans, an oral bioavailability of 30 percent was used. This is consistent with the value used in the development of the NDEP BCL (2009a)~~ATSDR action level~~ of 1 ppb (based on a study by Kimbrough *et al*. [1984]) and scientific literature recommendations (for example, in Ruby *et al*. (2002) the bioaccessibility of dioxins/furans in soil ranged from 19 to 34 percent [averaged across the 17 2,3,7,8-substituted dioxin/furan congeners], with an average of 25 percent). Published values range from 5-63 percent (Paustenbach *et al*., 2006). An oral bioavailability of 30 percent is considered applicable to the site and is supported by the Ruby *et al*. (2002) study, which specifically used a physiologically based extraction test designed around the anatomic and physiologic characteristics of the human digestive tract. The study also used soils with low total organic carbon content (which is similar to Site soils), and considered all 17 dioxins/furans congeners.

Current USEPA guidance (USEPA 2004d) states that "There are no default dermal absorption values presented for volatile organic compounds nor inorganic classes of compounds. The rationale for this is that in the considered soil exposure scenarios, volatile organic compounds would tend to be volatilized from the soil on skin and should be accounted for via inhalation routes in the combined exposure pathway analysis. For inorganics, the speciation of the compound is critical to the dermal absorption and there are too little data to extrapolate a reasonable default value." However, as requested by NDEP, the risk estimates were calculated using default dermal absorption values for other inorganics from California EPA (1994) and California South Coast Air Quality Management District (SCAQMD 1988) guidance. While USEPA guidance does not specifically state that this pathway should be dismissed, consistent with the approach utilized in current USEPA guidance, the risk estimates in this human health risk assessment do not include a dermal absorption value for VOCs.

6.3 TOXICITY ASSESSMENT

The availability and quality of toxicological data is another source of uncertainty in the risk assessment. Uncertainties associated with animal and human studies may have influenced the toxicity criteria. Carcinogenic criteria are classified according to the amount of evidence available that suggests human carcinogenicity. In the establishment of the non-carcinogenic criteria, conservative multipliers, known as uncertainty and modifying factors, are used.

6.3.1 COPCs Lacking Toxicological Data

Toxicity criteria have not been established for some of the chemicals detected at the Site. These chemicals were not quantitatively evaluated in the human health risk assessment. For example, niobium is a COPC for which no USEPA toxicity criteria have been established. The health effects and levels of concern for niobium in soil are not known. While not including niobium may have resulted in a low degree of underestimation of quantitative Site risk estimates, the available toxicological information suggests that this underestimation will not likely affect the decisions made relative to Site risks.

Because of the inconclusive nature of tentatively identified compounds (TICs) as potentially site-related chemicals, non-cancer surrogate toxicity criteria were not applied. Non-cancer surrogate toxicity criteria were not applied to the inorganic chemicals because of the complexity of ion and metal toxicity. A quantitative estimation of risk was not conducted for these COPCs. Thus, the risks presented in this assessment could be underestimated as a result.

~~Consistent with the *BRC Closure Plan* (BRC, ERM, and DBSA 2007), if one carcinogenic PAH is considered a COPC then all seven carcinogenic PAHs are considered COPCs, regardless of whether or not they are detected at the Site. Only chrysene was initially considered a COPC as it was detected in three out of 59 samples (5.1 percent). Only three of the seven carcinogenic PAHs were detected at the Site; however, all were considered COPCs and evaluated in the human health risk assessment.~~

The USEPA has not derived toxicity criteria to evaluate the potential non-cancer health hazards associated with exposure to the carcinogenic PAH COPCs. For the human health risk assessment, a toxicological surrogate (*i.e.*, pyrene) was used to quantify the potential non-carcinogenic effects of the carcinogenic PAHs. This surrogate was selected from a list of six PAHs for which non-cancer oral toxicity criteria have been assigned by the USEPA based on a careful consideration of their relevant toxicity data, target organ(s), dose-response information, and structure-activity relationships. From the available oral non-cancer toxicity data reported by the USEPA, the most sensitive target organs are the liver, kidney, and blood (hematological effects) (IRIS, USEPA 2009). For the carcinogenic PAHs, the non-cancer target organs were found to be the same and the reported toxicological thresholds for these effects are generally in the range for those reported for the non-cancer PAHs (ATSDR 1995). Although naphthalene (2-ring structure) has the most stringent oral non-cancer toxicity criterion (0.02 mg/kg day), pyrene (4-ring structure; oral RfD of 0.03 mg/kg-day) was selected to be the best surrogate due to (1) non-cancer toxicity endpoints are more consistent with those for carcinogenic PAHs and (2) the greater number of rings in the pyrene chemical structure.

6.3.2 Uncertainties in Animal and Human Studies

Extrapolation of toxicological data from animal tests is one of the largest sources of uncertainty in a risk assessment. There may be important, but unidentified, differences in uptake, metabolism, and distribution of chemicals in the body between the test species and humans. For the most part, these uncertainties are addressed through use of conservative assumptions in establishing values for RfDs and CSFs, which results in the likelihood that the risk is overstated.

Typically, animals are administered high doses (*e.g.*, maximum tolerated dose) of a chemical in a standard diet or in air. Humans may be exposed to much lower doses in a highly variable diet, which may affect the toxicity of the chemical. In these studies, animals, usually laboratory rodents, are exposed daily to the chemical agent for various periods of time up to their 2-year lifetimes. Humans have an average 70-year lifetime and may be exposed either intermittently or regularly for an exposure period ranging from months to a full lifetime. Because of these differences, it is not surprising that extrapolation error is a large source of uncertainty in a risk assessment.

6.3.3 Non-Carcinogenic Toxicity Criteria

In the establishment of the non-carcinogenic criteria, conservative multipliers, known as uncertainty factors, are used. Most of the chronic non-carcinogenic toxicity criteria that were located in the IRIS database have uncertainty factors of 1,000. This means that the dose corresponding to a toxicological effect level (*e.g.*, LOAEL) is divided by 1,000 to establish a safe, or "reference", dose. The purpose of the uncertainty factor is to account for the extrapolation of toxicity data from animals to humans and to insure the protection of sensitive individuals. There are multiple toxicity criteria listed in IRIS and HEAST for vanadium and compounds. The oral RfD listed for vanadium in the NDEP BCL table, which cites IRIS as the source, was used in this human health risk assessment.

6.3.4 Sub-Chronic Non-Carcinogenic Toxicity Criteria

Construction worker exposures are evaluated for an exposure duration of one-year, which is more representative of a sub-chronic exposure rather than a chronic exposure. As such, where available, sub-chronic RfDs ~~RfD~~ were used to characterize non-cancer effects for the construction worker. However, for many COPCs a sub-chronic RfD was not available and the chronic RfD was used. This likely presented an overestimation of non-cancer health risks to the construction worker.

No sub-chronic toxicity criteria are available for manganese in IRIS or HEAST. However, the chronic inhalation reference concentration (RfC) for manganese listed in IRIS includes an uncertainty factor of "…10 for database limitations reflecting both the less-than-chronic periods of exposure and the lack of developmental data, as well as potential but unquantified differences in the toxicity of different forms of Mn." Because construction worker exposures are considered sub-chronic, the chronic RfD for manganese was adjusted by a factor of 10 to account for sub-chronic exposures.

6.3.5 Carcinogenic Toxicity Criteria

Uncertainty due to extrapolation of toxicological data for potential carcinogens tested in animals to human data is more prominent for potentially carcinogenic chemicals than non-carcinogenic ones. USEPA uses the linearized multi-stage model to extrapolate the toxicological data. The linearized multi-stage model assumes that there is no threshold for carcinogenic substances; that is, exposure to even one molecule, fiber, or pCi of a carcinogen is sufficient to cause cancer. This is a highly conservative assumption because the body has several mechanisms to protect against cancer.

The use of the linearized multi-stage model to extrapolate is a well-recognized source of significant uncertainty in the development of carcinogenic toxicity criteria and, subsequently, theoretical carcinogenic risk estimates. At high levels of exposure, there may indeed be a risk of cancer regardless of whether the effect occurs via a threshold mechanism or not. An animal bioassay can't determine what happens at low levels of exposure, however, which are generally typical of human exposure levels.

At low levels of exposure, the probability of cancer cannot be measured but must be extrapolated from higher dosages. To do this, animals are typically exposed to carcinogens at levels that are orders of magnitude greater than those likely to be encountered by humans in the environment. It would be difficult, if not impossible, to perform animal experiments with a large enough number of animals to directly estimate the level of risk at the low exposure levels typically encountered by humans. Thus, to estimate the risk to humans exposed at low levels, dose-response data derived from animals given high dosages are extrapolated downward using mathematical models such as the linearized multi-stage model, which assumes that there is no threshold of response. The dose-response curve generated by the model is known as the maximum likelihood estimate. The slope of the 95 percent lower confidence interval (*i.e.*, upper-bound limit) curve, which is a function of the variability in the input animal data, is taken as the CSF. CSFs are then used directly in cancer risk assessment.

The federal government, including USEPA itself, has acknowledged the limitations of the high-to-low dose extrapolation models, particularly the linearized multi-stage model (USEPA 1991b). In fact, this aspect of cancer risk assessment has been criticized by many scientists (including regulatory scientists) in recent years. USEPA has recently released revised cancer risk assessment guidelines (USEPA 2005b).

Even for genotoxic (*i.e.*, non-threshold) substances, there are two major sources of bias embedded in the linearized multi-stage model: (1) its inherent conservatism at low doses and (2) the routine use of the linearized form in which the 95 percent upper confidence interval is used instead of the unbiased maximum likelihood estimate. The inherent conservatism at low doses is due in part to the fact that the linearized multi-stage model ignores all of the numerous biological factors that argue against a linear dose- response relationship for genotoxic effects (*e.g.*, DNA repair, immunosurveillance, toxicokinetic factors).

Several other factors inherent in the linearized multi-stage model result in overestimated carcinogenic potency: (1) any exaggerations in the extrapolation that can be produced by some high dose responses (if they occur) are generally neglected, (2) upper confidence limits on the actual response observed in the animal study are used rather than the actual response, resulting in upper-bound low dose extrapolations, which can greatly overestimate risk, and (3) non-genotoxic chemicals (*i.e.*, threshold carcinogens) are modeled in the same manner as highly genotoxic chemicals.

Consistent with the *BRC Closure Plan* (BRC, ERM, and DBSA 2007), if one carcinogenic PAH is considered a COPC then all seven carcinogenic PAHs are considered COPCs, regardless of whether or not they are detected at the Site. Only chrysene was initially considered a COPC as it was detected in four~~three~~ out of 62~~59~~ samples (6.5~~.1~~ percent). Five~~Only three~~ of the seven carcinogenic PAHs were detected at the Site; however, all were considered COPCs and evaluated in the human health risk assessment.

6.3.6 Uncertainties with the Asbestos Risk Assessment

For the risk assessment, asbestos concentrations were presented two ways, as a best estimate and upper bound based upon the UCL of the Poisson distribution which assumes the mean amphibole concentration is three long amphibole structures per cubic centimeter. No detections of amphibole fibers were made, but risks were calculated based on the detection limit of the amphibole data.

6.4 CUMULATIVE EFFECT OF UNCERTAINTIES

Uncertainties from different sources are compounded in the human health risk assessment. For example, if a person's daily intake rate for a chemical is compared to an RfD to determine potential health risks, the uncertainties in the concentration measurements, exposure assumptions, and toxicities will all be expressed in the result. Because the exposure assumptions and toxicity criteria are considered conservative, the risk estimates calculated in this human health risk assessment are likely to overestimate rather than underestimate potential risks.

7.0 DATA QUALITY ASSESSMENT~~ADEQUACY~~

Sample size calculations were conducted for eight analytes (chrysotile asbestos, TCDD TEQ, hexachlorobenzene, beta-BHC, arsenic, hexavalent chromium, manganese, and vanadium) for the Site. The formula used here for calculation of sample size is based on a non-parametric test (the Wilcoxon signed rank test), and on simulation studies performed by Pacific Northwest National Laboratories (PNNL 2009) that formed the basis for an approximate formula that is based on the normal distribution. Essentially, the formula is the one that would be used if a normal-based test were being performed, but an adjustment is made (multiply by 1.16) to account for the intent to perform a non-parametric test. The formula is as follows:

$$n = 1.16\left[\frac{s^2}{\Delta^2}(z_{1-\alpha} + z_{1-\beta(\mu)})^2 + 0.5z_{1-\alpha}^2\right]$$

where,

n	=	number of samples
s	=	estimated standard deviation of concentrations/fibers
Δ	=	width of the gray region (the difference between the threshold value ~~in~~ stated in the null hypothesis and the point at which β is specified)
α	=	significance level or Type I error tolerance
β (μ)	=	Type II error tolerance; and
z	=	quantile from the standard normal distribution

For each chemical, inputs for the calculations include an estimate of the variance from the measured data, a desired significance level, and desired power of the test that must be specified at a concentration of interest (which determines the tolerable difference from the threshold value). For arsenic, the site mean concentration exceeds its BCL based on the target cancer risk level of 10^{-6}. It is not appropriate to apply this calculation where the threshold value is less than the mean concentration. Therefore, an adjustment of the threshold value was used based on a 10^{-5} target cancer risk level. The calculations provided here cover a range of Type I and Type II error tolerances, and the point at which the Type II error is specified. Results are presented in Table 13.~~11.~~ In Table 13~~11~~, various combinations of input values are used, including: values of α of 5%, 10% and 15%; values of β of 15%, 20%, and 25%; and a gray region of width 10%, 20% and 30% of the threshold level. It is clear from Table 13~~11~~ that the number of samples collected is adequate for the Site.

8.0 HUMAN HEALTH RISK ASSESSMENT RESULTS

This human health risk assessment has evaluated potential risks to human health associated with chemicals detected in soil at the Utility Corridor Sub-Area located within the BMI Common Areas in Clark County, Nevada. The calculation of chemical theoretical upper-bound ILCRs and non-cancer health effects are presented in Appendix F (on the enclosed report CD in Appendix B). Asbestos risk calculations are also presented in Appendix F. All calculation spreadsheets for this human health risk assessment are included in Appendix F.

The risk estimates are based on reasonable maximum exposure scenarios, which results in estimates of the potential reasonable maximum, or high-end, risks associated with the Site. The calculated chemical and radionuclide theoretical upper-bound ILCRs and HIs are presented in Tables 14~~12~~ and 15 for construction and maintenance workers, respectively.~~13.~~ Asbestos estimated deaths from lung cancer are presented in Table 16. ~~14.~~

8.1 CONSTRUCTION WORKER

The total cumulative non-cancer HI for future construction workers at the Site is 0.26 (Table 14).~~7 (Table 12).~~ This total cumulative non-cancer HI is below the target HI of 1.0. The total cumulative non-cancer HI for construction workers is predominantly due to hazards associated with inhalation of manganese in estimated dust generated during construction activities. It should be noted that the Clark County annual arithmetic mean ambient air quality standard for particular matter (PM_{10}) is 50 µg/m^3. If dust mitigation/suppression is conducted to achieve this level, the total cumulative non-cancer HI for construction workers decreases to 0.2.

The theoretical upper-bound chemical ILCR for future construction workers at the Site is 9×10^{-7} (Table 14). This ILCR is less than the risk goal of 1~~2~~ $\times 10^{-6}$. The theoretical upper-bound radionuclide ILCR for future construction workers at the Site is 9×10^{-6} (Table 14). This ILCR is greater than the risk goal of 1×10^{-6}.~~12).~~ Although the construction worker radionuclide ILCR is above the risk goal of 1×10^{-6}, it is within USEPA's acceptable risk range of 10^{-6}~~dioxins/furans are a major contributor~~ to 10^{-4} (USEPA 1990) and consistent with the background radionuclide ILCR of 8×10^{-6} (Table 14). ~~. The 95 percent UCL concentration for dioxins/furans used in the human health risk assessment of 212 ppt resulted in a total dioxins/furans ILCR of 5×10^{-7} for future construction workers. This 95 percent UCL concentration is below the ATSDR action level of 1,000 ppt. The ATSDR action level is equivalent to an ILCR of 1×10^{-5}. The theoretical upper-bound ILCR for future construction workers decreases to 1×10^{-6} without including dioxins/furans. If dust mitigation/suppression is~~

~~conducted to achieve the Clark County annual arithmetic mean ambient air quality standard for~~ ~~PM_{10}, the theoretical upper-bound ILCR for future construction workers decreases to 8×10^{-7}.~~

The estimated risks for death from lung cancer and mesothelioma for asbestos exposures to future construction workers were below 1×10^{-6}. For construction workers, the best estimate and upper bound concentrations for chrysotile fibers are $9\cancel{4} \times 10^{-9\cancel{8}}$ and $1\cancel{5} \times 10^{-8}$; and zero and $6\cancel{3} \times 10^{-8\cancel{7}}$ for amphibole fibers (Table 16~~14~~). It should be noted that the reasonable maximum risk estimates are based on an observed count of zero long amphibole structures. No amphibole structures have been detected at the Site. The upper bound estimated risk for death from lung cancer is associated with the UCL of the Poisson distribution which assumes the mean amphibole concentration is equal to three long amphibole structures per cubic centimeter. However, the high-end risk estimate for deaths from lung cancer and mesothelioma is a conservative value for the following reasons:

- It is based on a 95 percent UCL of the Poisson distribution of three long amphibole structures although no long amphibole structures have been detected at the Site; and
- The values from Tables 8-2 of USEPA (2003b) are recommended only for constant lifetime exposures, not short term exposures such as construction activities.

8.2 MAINTENANCE WORKER

The total cumulative non-cancer HI for future maintenance workers at the Site is 0.20 (Table 15).~~Table 13).~~ This total cumulative non-cancer HI is below the target HI of 1.0.

The theoretical upper-bound chemical ILCR for future maintenance workers at the Site is 4×10^{-6} (Table 15~~13~~). Although the ILCR is above the risk goal of 1×10^{-6}, the risks are primarily driven by dioxins/furans. The 95 percent UCL concentration for dioxins/furans used in the human health risk assessment of 212 ppt resulted in a total dioxins/furans ILCR of 3×10^{-6} for future maintenance workers. This 95 percent UCL concentration is below the NDEP BCL (2009a)~~ATSDR action level~~ of 1,000 ppt. The NDEP BCL~~ATSDR action level~~ is equivalent to an ILCR of 1×10^{-5}. The theoretical upper-bound ILCR for future maintenance workers decreases to 1×10^{-6} without including dioxins/furans.

The theoretical upper-bound radionuclide ILCR for future maintenance workers at the Site is 2×10^{-4} (Table 15). Although the maintenance worker radionuclide ILCR is above the risk goal of 1×10^{-6} and USEPA's acceptable risk range, it is equal to the background radionuclide ILCR of 2×10^{-4} (Table 15).

The estimated risks for death from lung cancer and mesothelioma for asbestos exposures to future maintenance workers were below 1×10^{-6}. For maintenance workers, the best estimate and upper bound concentrations for chrysotile fibers are both 1×10^{-9}; and zero and $8\cancel{3} \times 10^{-9\cancel{7}}$ for amphibole fibers (Table 16~~14~~). See the discussion above regarding the conservative nature of the amphibole fiber risk estimate.

8.3 SUMMARY

Based on the~~The~~ results of the 2008 and 2009 investigations, as well as this data review and human health risk assessment,~~, indicate that~~ exposures to residual levels of chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors.~~ Therefore, based on the results of the 2008 and 2009 investigations, and this data review and human health risk assessment, exposures to residual levels chemicals in soil at the Site should not result in adverse health effects to all future on-site receptors.~~ In summary, BRC ~~re~~affirms that the~~an~~ NFAD issued by NDEP on September 4, 2009 for the Site is warranted.~~, and that conditions 2, 5, and 6 from the January 8, 2009 NFAD be removed. That is, it is BRC's intent to expand the NFAD for soil to a depth of 20 feet bgs and for the area previously covered by the land bridge.~~

9.0 REFERENCES

~~Agency for Toxic Substances and Disease Registry (ATSDR). 1997. Dioxin and Dioxin-Like Compounds in Soil, Part 1: ATSDR Interim Policy Guideline. U.S. Department of Health and Human Services, Atlanta, GA.~~

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological Profile for Polycyclic Aromatic Hydrocarbons. U.S. Department of Health and Human Services, Public Health Service. August.

Basic Remediation Company (BRC). 2008. Sewer Alignment Excavation Soil Sampling and Analysis Plan, BMI Common Areas (Eastside), Clark County, Nevada.

Basic Remediation Company (BRC). 2009. Sewer Alignment Excavation Supplemental Soil Sampling and Analysis Plan. BMI Common Areas (Eastside), Clark County, Nevada. June.

Basic Remediation Company (BRC) and ERM. 2008. Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation, April and August 2008 (Dataset 50), BMI Common Areas, Clark County, Nevada. October.

Basic Remediation Company (BRC) and ERM. 2009a. Data Validation Summary Report, Sewer Alignment Excavation Soil Investigation Re-Analysis - August and October 2008 (Dataset 50a), BMI Common Areas, Clark County, Nevada.

Basic Remediation Company (BRC) and ERM. 2009b. Data Validation Summary Report, Utility Corridor Sub-Area Soil Investigation - June and July 2009 (Dataset 50b), BMI Common Areas, Clark County, Nevada.

Basic Remediation Company (BRC), ERM, and Daniel B. Stephens & Associates, Inc. (DBS&A). 2007. BRC Closure Plan, BMI Common Areas, Clark County, Nevada. May.

Basic Remediation Company (BRC), ERM, and MWH. 2008. BRC Quality Assurance Project Plan. BMI Common Areas, Clark County, Nevada. February.

Basic Remediation Company (BRC), ERM, and MWH. 2007. BRC Field Sampling and Standard operating Procedures. BMI Common Areas, Clark County, Nevada. August.

Basic Remediation Company (BRC) and TIMET. 2007. Background Shallow Soil Summary Report, BMI Complex and Common Area Vicinity. Prepared by Tetra Tech and MWH.

Berman, D.W. and Chatfield, E.J. 1990. Interim Superfund Method for the Determination of Asbestos in Ambient Air. Part 2: Technical Background Document, Office of Solid Waste and Remedial Response, U.S. EPA, Washington, D.C., EPA/540/2-90/005b, May.

Berman, D.W. and Kolk, A. 2000. Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Material. May (Revision 1).

CalEPA/DTSC, 1994. Preliminary Endangerment Assessment Guidance Manual. Department of Toxic Substances Control, January (second printing: June, 1999). http://www.dtsc.ca.gov/SiteCleanup/Brownfields/ (under Cleanup Guidance).

Environmental Resources Management (ERM). 1996. Draft Environmental Conditions Investigation Report, BMI Common Areas, Henderson, Nevada. August.

Kimbrough, R.D., H. Falk, P. Stehr, and G. Fries. 1984. Health implications of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) contamination of residential soil. J. Toxicol. Environ. Health 14: 47-93.

Nevada Bureau of Mines and Geology (NBMG). 1980. Las Vegas SE Folio Geologic Map (1977) and the Geologic Map of the Henderson Quadrangle, Nevada.

Nevada Division of Environmental Protection (NDEP). 2008a. Supplemental Guidance for Assessing Data Usability for Environmental Investigations at the BMI Complex and Common Areas in Henderson, Nevada. Bureau of Corrective Actions, Special Projects Branch. October 22.

Nevada Division of Environmental Protection (NDEP). 2008b. Detection Limits and Data Reporting. Bureau of Corrective Actions, Special Projects Branch. December 3.

Nevada Division of Environmental Protection (NDEP). 2009a. User's Guide and Background Technical Document for Nevada Division of Environmental Protection (NDEP) Basic Comparison Levels (BCLs) for Human Health for the BMI Complex and Common Areas. June.

Nevada Division of Environmental Protection (NDEP). 2009b. Technical Guidance for the Calculation of Asbestos-Related Risk in Soils for the Basic Management Incorporated (BMI) Complex and Common Areas. April.

Nevada Division of Environmental Protection (NDEP). 2009c. Supplemental Guidance on Data Validation. March 19.

Nevada Division of Environmental Protection (NDEP). 2009d. Supplemental Guidance on Data Validation. April 13.

Nevada Division of Environmental Protection (NDEP). 2009e. Guidance for Evaluating Radionuclide Data for the BMI Plant Sites and Common Areas Projects. February 6.

Nevada Division of Environmental Protection (NDEP). 2009f~~2009e~~. Guidance for Evaluating Secular Equilibrium at the BMI Complex and Common Areas. BMI Plant Sites and Common Areas Projects, Henderson, Nevada. February 6.

~~Nevada Division of Environmental Protection (NDEP). 2009d. Technical Guidance for the Calculation of Asbestos-Related Risk in Soils for the Basic Management Incorporated (BMI) Complex and Common Areas. April.~~

Neptune and Company. 2009. Guided Interactive Statistical Decision Tools (GiSdT). www.gisdt.org.

Pacific Northwest National Laboratory (PNNL). 2009. Visual Sample Plan. http://vsp.pnl.gov.

Paustenbach, D. J. Fehling, K., Scott, P., Harris, M., and Kerger, B.D., 2006. Identifying Soil Cleanup Criteria for Dioxins in Urban Residential Soils: How Have 20 Years of Research and Risk Assessment Experience Affected the Analysis? J. Toxicol. and Environ. Health, Part B: Critical Reviews. 9:1-59. January.

Roberts *et al*. 2001. Measurement of Arsenic Bioavailability in Soil Using a Primate Model. Toxicological Sciences, 67, 2: 303-310.

Ruby, M.V., R. Schoof, W. Brattin, M. Goldale, G. Post, M. Harnios, D. E. Mosby, S. W. Casteel, W. Berti, M. Carpenter, D. Edwards, D. Cragin, and W. Chappell. 1999. Advances in evaluating the oral bioavailability of inorganics in soil for use in human health risk assessment. Environ. Sci. Technol. 33(21):3697-3705.

Ruby, M.V., K.A. Fehling, D.J. Paustenbach, B.D. Landenberger, and M.P. Holsapple. 2002. Oral bioaccessibility of dioxins/furans at low concentrations (50-350 ppt toxicity equivalent) in soil. Environ. Sci. Technol. 36:4905-4911.

South Coast Air Quality Management District (SCAQMD), 1988. Multi-Pathway Health Risk Assessment Input Parameters Guidance document. Prepared by Clement Associates, Inc. for SCAQMD. Cited in CalEPA/DTSC, 1994.

U.S. Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund: Volume I—Human Health Evaluation Manual (Part A). Interim Final. Office of Emergency and Remedial Response, Washington, D.C. USEPA/540/1-89/002. December.

U.S. Environmental Protection Agency (USEPA). 1990. National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CFR Part 300.

U.S. Environmental Protection Agency (USEPA). 1992a. Guidance for Data Usability in Risk Assessment. Part A. Office of Emergency and Remedial Response, Washington D.C. Publication 9285.7-09A. PB92-963356. April.

U.S. Environmental Protection Agency (USEPA). 1992b. Supplemental Guidance to RAGS: Calculating the Concentration Term. Office of Emergency and Remedial Response, Washington, D.C. Publication 9285.7-08I. May.

U.S. Environmental Protection Agency (USEPA). 1992c. Guidelines for Exposure Assessment. Federal Register, 57(104):22888-22938. May 29.

U.S. Environmental Protection Agency (USEPA). 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. Office of Research and Development, Washington, DC. EPA/600/R-93/089. July.

U.S. Environmental Protection Agency (USEPA). 1997. Annual Health Effects Assessment Summary Tables (HEAST) FY 1997. Office of Solid Waste and Emergency Response, Washington DC. EPA 540/R-94/036.

U.S. Environmental Protection Agency (USEPA). 1999. National Functional Guidelines for Organic Data Review. EPA 540/R-99-008. OSWER 9240.1-05A-P. October.

U.S. Environmental Protection Agency (USEPA). 2001. Inorganic Arsenic – Report of the Hazard Identification Assessment Review Committee. Memorandum, From: J. Chen, S. Malish, T. McMathon, Risk Assessment and Science Support Branch; to: N. Cook, Chief, Risk Assessment and Science Support Branch. August 21.

U.S. Environmental Protection Agency (USEPA). 2002a. National Functional Guidelines for Chlorinated Dioxin/Furan Data Review. EPA 540-R-02-003. OSWER 9240.1-37. August.

U.S. Environmental Protection Agency (USEPA). 2002b. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response, Washington, DC. OSWER 9355.4-24. December.

U.S. Environmental Protection Agency (USEPA). 2002c. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. Office of Emergency and Remedial Response, Washington, DC. OSWER9285.6-10. December.

U.S. Environmental Protection Agency (USEPA). 2003a. Contract Laboratory Program Statement of Work for Organic Analysis: Multi-media, Multi-concentration. OLM04.3. Office of Emergency and Remedial Response. March.

U.S. Environmental Protection Agency (USEPA). 2003b. Technical Support Document for a Protocol to Assess Asbestos-Related Risk. Final Draft. Office of Solid Waste and Emergency Response, Washington, DC.

U.S. Environmental Protection Agency (USEPA). 2004a. Contract Laboratory Program Statement of Work for Organic Analysis: Multi-media, Multi-concentration. SOM01.0. Office of Emergency and Remedial Response. October.

U.S. Environmental Protection Agency (USEPA). 2004b. Contract Laboratory Program Statement of Work for Inorganic Analysis: Multi-media, Multi-concentration. ILM05.3. Office of Emergency and Remedial Response. March.

U.S. Environmental Protection Agency (USEPA). 2004c. National Functional Guidelines for Inorganic Data Review. EPA 540-R-04-004. OSWER 9240.1-45. October.

U.S. Environmental Protection Agency (USEPA). 2004d. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Office of Emergency and Remedial Response, Washington, DC. EPA/540/R/99/005. July.

U.S. Environmental Protection Agency (USEPA). 2005a. National Functional Guidelines for Chlorinated Dioxin/Furan Data Review. EPA 540-R-05-001. OSWER 9240.1-51. September.

U.S. Environmental Protection Agency (USEPA). 2005b. Guidelines for Carcinogen Risk Assessment. Risk Assessment Forum, Washington, DC. March.

U.S. Environmental Protection Agency (USEPA). 2008. Persistent Bioaccumulative and Toxic (PBT) Chemical Program. USEPA on-line database: http://www.epa.gov/pbt/.

U.S. Environmental Protection Agency (USEPA). 2009a. Integrated Risk Information System. USEPA on-line database: http://www.epa.gov/iris/index.html.

U.S. Environmental Protection Agency (USEPA). 2009b. Preliminary Remediation Goals for Radionuclides. http://epa-prgs.ornl.gov/radionuclides/.~~http://www.epa.gov/iris/index.html.~~

APPENDIX B

2008/2009 SEWER ALIGNMENT EXCAVATION INVESTIGATION DATA TABLES (DATABASE ON CD)

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Metals									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium (Total)	Chromium (VI)
SAE-01	0	N	04/16/08	7640	0.13 J-	4.5	345 J+	0.46	< 6.6 U	0.1 J	20800	16.6	< 1 U
SAE-02	0	N	04/16/08	9100	0.18 J-	4.5	336 J+	0.5	< 6.6 U	0.13	16900	15.8	< 1 U
SAE-03	0	N	04/16/08	6590	< 0.126 UJ	3.4	338 J+	0.42	< 6.6 U	0.078 J	16300	16	< 1 U
SAE-04	0	N	04/16/08	7100	0.16 J-	4.1	420 J+	0.44	< 6.6 U	0.093 J	17100	16.1	< 1 U
SAE-05	0	N	04/16/08	5740	0.35 J-	3.4	433 J+	0.31	< 6.6 U	0.07 J	4700	97.2	1.4
SAE-06	0	N	04/16/08	7710	0.91 J-	9	650 J+	0.82	< 6.6 U	0.14	5500	231	7.8
SAE-07	0	N	04/16/08	5540	4.9 J-	34.5	2180 J+	0.71	< 6.6 U	0.53	9240	169	6.2
SAE-07	10	N	04/21/08	6820	0.15 J-	4.9	537	0.58	< 6.6 U	0.18	24500	17.7 J-	0.46 J
SAE-07	55[a]	N	04/21/08	17200	0.24 J-	20.6	305	0.84	23 J	0.12 J	10400	33.4 J-	< 1.4 U
SAE-07R	0	N	08/12/08	7060	< 0.315 UJ	7.1	319 J+	0.69	< 16.5 U	< 0.1 UJ	2520	171 J+	6.2
SAE-08	0	N	04/16/08	8070	< 0.126 UJ	2.2 J	310 J+	0.28	< 6.6 U	0.068 J	11700	6.6 J	< 1 U
SAE-08	0	FD	04/16/08	6020	0.27 J-	5 J	485 J+	0.42	< 6.6 U	0.097 J	11900	16.9 J	< 1 U
SAE-08C	0	N	06/13/09	11400	< 0.045 UJ	5.9	544 J+	0.62	< 9.3 U	< 0.092 U	12400	14	< 0.1 U
SAE-08C	20	N	06/13/09	9550	< 0.045 UJ	8.5	442 J+	0.61	4.5	< 0.008 U	10500	16	< 0.1 U
SAE-08N	0	N	06/13/09	9500	0.37	6.5	557 J+	0.53	< 3.5 U	< 0.059 U	27200	14.3	0.18 J
SAE-08N	10	N	06/13/09	8660	< 0.045 UJ	6.8	195 J+	0.51 J	< 4 U	< 0.071 U	27300	9.1	< 0.1 U
SAE-08S	0	N	06/13/09	8470	< 0.045 UJ	6	192 J+	1.2	< 3.6 U	< 0.047 U	4080	76.9	3.6
SAE-08S	10	N	06/13/09	7940	< 0.045 UJ	5.5	343 J+	0.56	< 2.99 U	< 0.15 U	22100	13.9	0.39 J
SAE-09	0	N	04/15/08	6060 J	2.7 J-	28.7	1030	0.52	18.9 J	0.23	52000 J	43.8	5.6
SAE-09R	0	N	08/12/08	6090	0.79 J-	12.8	426 J+	0.59	< 16.5 U	< 0.1 UJ	21000	31.5 J+	5.6
SAE-10	0	N	04/15/08	7060 J	1.7 J-	17.7	1020	0.63	10.1 J	0.27	43200 J	45.4	3.3
SAE-10	10	N	04/21/08	7120	< 0.126 UJ	3.3	444	0.44	< 6.6 U	0.15	20700	6.8 J-	0.46 J
SAE-10	60[a]	N	04/21/08	16500	< 0.126 UJ	18.5	229	0.79	30.8	0.17	21200	35.2 J-	< 2 U
SAE-11	0	N	04/15/08	9610 J	0.21 J-	5.6	435	0.57	< 6.6 U	0.095 J	19100 J	13.1	1.2
SAE-12	0	N	04/15/08	7070 J	0.24 J-	8.4	360	0.5	< 6.6 U	0.11	13800 J	22.4	2.6
SAE-13	0	N	04/15/08	9980 J	0.2 J-	4.8	480	0.89	< 6.6 U	0.1	7310 J	14.2	0.77 J
SAE-14	0	N	04/15/08	4690 J	9.5 J-	60.2	4550	1.3	6.9 J	1.1	33000 J	308	20
SAE-14R	0	N	08/12/08	--	--	25.4	--	--	--	--	--	--	--
SAE-14R-2	0	N	10/08/08	8890	< 0.315 UJ	20.9	1190 J+	1.2	< 16.5 U	0.46 J+	21100	86.9 J+	20
SAE-15	0	N	04/15/08	5140 J	1.3 J-	10.2	757	0.57	< 3.3 U	0.22	29900 J	52	9
SAE-15	10	N	04/22/08	8040	< 0.126 UJ	3.1 J+	498 J	0.42	< 6.6 U	0.095 J+	18800	10.3 J+	< 1.1 U
SAE-15	10	FD	04/22/08	12500	0.18 J-	4 J+	1100 J	0.5	< 6.6 U	0.094 J+	18600	9.8 J+	< 1.1 U
SAE-15	55[a]	N	04/22/08	11500	0.17 J-	5.9 J+	1560 J	0.55	< 6.6 U	0.076 J+	22400	11.9 J+	< 1.4 U
SAE-15R	0	N	08/12/08	--	--	32.5	--	--	--	--	--	--	--
SAE-15R-2	0	N	10/09/08	10400	< 0.315 UJ	3.7	540 J+	0.76	< 16.5 U	< 0.1 UJ	10700	28.3 J+	9
SAE-16	0	N	04/15/08	7150 J	1.8 J-	12.6	989	0.81	< 6.6 U	0.33	21100 J	61	4
SAE-16R	0	N	08/12/08	--	--	29.7	--	--	--	--	--	--	--
SAE-16R-2	0	N	10/09/08	9460	< 0.315 UJ	13.1	988 J+	0.98	< 16.5 U	0.38 J+	23000	97.3 J+	4
SAE-16R-2	0	FD	10/09/08	--	--	14.4	--	--	--	--	--	--	--

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Metals									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium (Total)	Chromium (VI)
SAE-17	0	N	04/15/08	6650 J	4.8 J-	33.5	2540	1.3	< 6.6 U	0.58	20000 J	148	11
SAE-17R	0	N	08/13/08	--	--	23.4	--	--	--	--	--	--	--
SAE-17R-2	0	N	10/09/08	9650	< 0.315 UJ	2.6	363 J+	0.65	< 16.5 U	< 0.1 UJ	18200	17 J+	11
SAE-17R-2	0	FD	08/13/08	--	--	23.3	--	--	--	--	--	--	--
SAE-18	0	N	04/15/08	7960 J	0.15 J-	3.4	243	0.53	< 6.6 U	0.11	33700 J	11	< 1 U
SAE-19	0	N	04/15/08	4800 J	< 0.126 UJ	3.3	215	0.45	< 6.6 U	0.074 J	33400 J	4.6	< 1 U
SAE-20	0	N	04/15/08	7020 J	0.15 J-	4.1	237	0.43	< 6.6 U	0.082 J	34100 J	9.5	0.72 J
SAE-21	0	N	04/15/08	9740 J	0.31 J-	5.4	481	0.53	< 6.6 U	0.11	29800 J	18.1	1.2
SAE-22	0	N	04/15/08	6990 J	0.25 J-	6	329	0.48	< 6.6 U	0.096 J	28300 J	31.5	1.5
SAE-22	10	N	04/22/08	10900	0.21 J-	5.7 J+	674 J	0.62	< 6.6 U	0.14 J+	43800 J	15.4 J	< 1.1 U
SAE-22	10	FD	04/22/08	9760	0.16 J-	3.8 J+	371 J	0.55	< 6.6 U	0.1 J+	16000 J	8 J	< 1.1 U
SAE-22	50[a]	N	04/23/08	6710 J	< 0.126 UJ	6.5	148 J-	0.47	< 6.6 U	0.08 J	17000	12.3 J-	< 1.1 U
SAE-23	0	N	04/15/08	7420 J	0.37 J-	7.3	401	0.49	< 6.6 U	0.1 J	20400 J	32.5	2.6
SAE-24	0	N	04/15/08	7850 J	0.2 J-	4.5	343	0.5	< 6.6 U	0.088 J	15400 J	14.3	< 1.1 U
SAE-25	0	N	04/15/08	8290 J	0.2 J-	4.4	332	0.53	< 6.6 U	0.11	15300 J	27.5	1.2
SAE-26	0	N	04/15/08	6930 J	0.18 J-	3.3	268	0.42	< 6.6 U	0.078 J	16100 J	20.6	0.55 J
SAE-27	0	N	04/16/08	8120	< 0.126 UJ	4.6	314 J+	0.45	< 6.6 U	0.11	22700	16.2	< 1.1 U
SAE-28	0	N	04/16/08	9360	< 0.126 UJ	6.9	404 J+	0.54	< 6.6 U	0.072 J	17000	23.6	1.5
SAE-29	0	N	04/16/08	11000	< 0.126 UJ	4	364 J+	0.58	< 6.6 U	0.098 J	24100	13.6	0.56 J
SAE-30	0	N	04/16/08	8030	< 0.126 UJ	2.1	296 J+	0.37	< 6.6 U	0.062 J	16300	10.3	1.8
SAE-31	0	N	04/16/08	7930	< 0.126 UJ	3.6	261 J+	0.44	< 6.6 U	0.063 J	16000	14.5	< 1 U
SAE-32	0	N	04/16/08	10000	< 0.126 UJ	12.3	307 J+	0.59	< 6.6 U	0.13	11400	15.6	< 1.2 U
SAE-33	0	N	04/16/08	7410	< 0.126 UJ	2.9	238 J+	0.44	< 6.6 U	0.077 J	13700	34.1	0.57 J
SAE-34	0	N	04/16/08	5140	< 0.126 UJ	4.7	211 J+	0.34	< 6.6 U	0.057 J	9600	10.4	1.7
SAE-34	10	N	04/23/08	6120 J	< 0.126 UJ	4	180 J-	0.41	< 6.6 U	0.07 J	36100	9.7 J-	< 1.1 U
SAE-34	35[a]	N	04/23/08	8090 J	< 0.126 UJ	8.4	148 J-	0.42 J	30.2	0.27	45400	< 6.37 UJ	< 1.5 U
SAE-35	0	N	04/16/08	8080	< 0.126 UJ	2.2	253 J+	0.43	< 6.6 U	0.082 J	12400	9.5	< 1 U
SAE-36	0	N	04/16/08	10700	< 0.126 UJ	1.7 J	294 J+	0.49	< 6.6 U	0.083 J	16300	8	< 1 U
SAE-37	0	N	04/16/08	9710 J	< 0.126 UJ	3.3	334 J-	0.55	< 6.6 U	0.15 J+	55700	5.8 J+	< 1.2 U
SAE-38	0	N	04/16/08	10200 J	0.18 J-	3.7	367 J-	0.53	< 6.6 U	0.17 J+	16100	9.9 J+	< 1 U
SAE-38	10	N	04/23/08	7790 J	< 0.126 UJ	7.9	154 J-	0.46	7.8 J	0.086 J	33300	11.4 J-	< 1 U
SAE-38	10	FD	04/23/08	6120 J	< 0.126 UJ	7.1	242 J-	0.45	< 6.6 U	0.084 J	27300	10.7 J-	< 1 U
SAE-38	35[a]	N	04/23/08	10500 J	< 0.126 UJ	22.6	24.6 J-	0.46 J	39.5	0.083 J	24500	< 6.37 UJ	< 1.4 U
SAE-39	0	N	04/16/08	8680 J	0.23 J-	15.7	419 J-	0.56	< 6.6 U	0.21 J+	20400	12.9 J+	< 1.2 U
SAE-40	0	N	04/16/08	11800 J	0.21 J-	8.9	348 J-	0.78	< 6.6 U	0.22 J+	5730	13 J+	< 1.1 U
SAE-41	0	N	04/16/08	11900 J	0.22 J-	7.8	363 J-	0.65	< 6.6 U	0.56 J+	21700	16 J+	< 1.2 U
SAE-41	10	N	04/23/08	7660 J	< 0.126 UJ	5.8	455 J-	0.5	< 6.6 U	0.063 J	15100	15.5 J-	< 1.1 U
SAE-41	20[a]	N	04/23/08	6360 J	< 0.126 UJ	6.4	214 J-	0.38	7.1 J	0.076 J	20200	10.1 J-	< 1.2 U
SAE-42	0	N	04/16/08	11600 J	0.31 J-	48.1	1570 J-	0.68	< 6.6 U	0.52 J+	21100	44.2 J+	4

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Metals									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium (Total)	Chromium (VI)
SAE-42R	0	N	08/14/08	--	--	11.4 J+	--	--	--	--	--	--	--
SAE-42R-2	0	N	10/08/08	12000	< 0.315 UJ	5.8	201 J+	0.81	< 16.5 U	0.69 J+	39700	12.7 J+	4
SAE-43	0	N	04/16/08	10700 J	0.15 J-	3.2	416 J-	0.57	< 6.6 U	0.11 J+	18400	9.2 J+	< 1.2 U
SAE-43	10	N	04/23/08	6690 J	< 0.126 UJ	4.3	284 J-	0.47	< 6.6 U	0.067 J	26000	10.3 J-	< 1.1 U
SAE-43	17[a]	N	04/23/08	6030 J	< 0.126 UJ	7.5	368 J-	0.39	< 6.6 U	0.069 J	21700	11.6 J-	< 1.1 U
SAE-44	0	N	04/16/08	10300 J	0.48 J-	5	503 J-	0.63	< 6.6 U	0.17 J+	26100	13.2 J+	0.51 J
SAE-44	0	FD	04/16/08	9650 J	0.47 J-	4.6	421 J-	0.61	< 6.6 U	0.14 J+	21500	12.9 J+	< 1.2 U
SAE-45	0	N	04/16/08	10500 J	0.83 J-	6.6	967 J-	0.67	< 6.6 U	0.8 J+	23600	16.9 J+	0.53 J
SAE-46	0	N	04/16/08	8360 J	< 0.126 UJ	4	175 J-	0.47	8.4 J	0.13 J+	37000	9.4 J+	< 1.2 U
SAE-47D	20	N	06/13/09	7400	< 0.045 UJ	7.6	459 J+	0.43 J	< 2.99 U	< 0.06 U	22400	15.2	0.13 J
SAE-48D	20	N	06/13/09	12200	1.3	8.9	318 J+	0.68	9.7	< 0.077 U	30400	13.4	< 0.11 U

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
(hatched) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(shaded) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Metals									
				Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel
SAE-01	0	N	04/16/08	7.5	15.3	13600	20.1	< 7.314 U	8230	415	< 0.00668 U	0.73 J	15.1
SAE-02	0	N	04/16/08	7.9	18.2	13900	30.7	< 3.657 U	9570	518	< 0.00668 U	0.76 J	16.2
SAE-03	0	N	04/16/08	7.5	13.4	11800	24	< 3.657 U	6960	455	< 0.00668 U	0.45 J	13.9
SAE-04	0	N	04/16/08	7.2	14.6	12700	23.2	< 3.657 U	7310	420	< 0.00668 U	0.61 J	13.7
SAE-05	0	N	04/16/08	5.8	20.5	13200	77.5	< 3.657 U	5360	324	< 0.00668 U	0.8 J	13.4
SAE-06	0	N	04/16/08	7.9	51.9	11100	76.1	< 3.657 U	5460	549	< 0.00668 U	1.6	14.9
SAE-07	0	N	04/16/08	9	41.4	12300	306	< 3.657 U	6100	1800	0.0761	6.2	16.9
SAE-07	10	N	04/21/08	10.7	16.9	10700 J	16.6	< 7.314 U	6400 J	766	< 0.00668 U	< 0.188 U	32.9
SAE-07	55[a]	N	04/21/08	8.8	21.1	19900 J	12.3	102	32700 J	331	< 0.00668 U	< 0.188 U	21.5
SAE-07R	0	N	08/12/08	5.5	32.7	17200 J	91.2 J+	14.8	6520	254 J	0.0761	2.3 J	13.1
SAE-08	0	N	04/16/08	5.9	9 J	7770	10 J	< 3.657 U	5600	383	< 0.00668 U	0.22 J	9.5
SAE-08	0	FD	04/16/08	7	16.4 J	10800	26 J	< 3.657 U	5640	434	< 0.00668 U	0.61 J	12.9
SAE-08C	0	N	06/13/09	8.9	17.9	18300	12.5	14.5	8310	622	0.007 J	< 0.57 U	16.7
SAE-08C	20	N	06/13/09	6.8	16.2	15600	9.8	16.8	9020	417	0.0059 J	0.7	14.3
SAE-08N	0	N	06/13/09	7	14.2	14900	11.3	14.1	8920	406	0.014 J	< 0.83 U	13.7
SAE-08N	10	N	06/13/09	7	14.7	14400	10.9	17.1	7690	495	0.0054 J	< 0.65 U	13.1
SAE-08S	0	N	06/13/09	8.6	77.3	15900	15.1	29.5	7360	320	0.0095 J	< 0.61 U	36.5
SAE-08S	10	N	06/13/09	12.4	19	13700	9.4	12.8	7860	654	0.0184 J	< 0.54 U	25.8
SAE-09	0	N	04/15/08	8.3	18.7 J+	9970 J	120 J+	< 14.628 U	10600 J	824	0.0471	2.6	14.9
SAE-09R	0	N	08/12/08	8	16	12800 J	53.2 J+	15.4	5920	996 J	0.0471	1.8 J	13
SAE-10	0	N	04/15/08	8.9	20.3 J+	10900 J	86.4 J+	< 14.628 U	9200 J	1070	0.0244 J	2.3	16.8
SAE-10	10	N	04/21/08	5.3	11.8	11000 J	11.3	< 3.657 U	5830 J	384	0.0167 J	< 0.188 U	10
SAE-10	60[a]	N	04/21/08	8.5	18.5	17700 J	10.3	161	46500 J	344	< 0.00668 U	< 0.188 U	20.1
SAE-11	0	N	04/15/08	7.8	15.3 J+	15700 J	24.1 J+	< 3.657 U	8250 J	460	0.015 J	< 0.188 U	13.6
SAE-12	0	N	04/15/08	7.5	17.4 J+	14300 J	57.3 J+	< 3.657 U	7230 J	501	0.0151 J	1.6	17
SAE-13	0	N	04/15/08	9.1	18.7 J+	12200 J	45.8 J+	< 3.657 U	6750 J	962	0.0785	< 0.188 U	13
SAE-14	0	N	04/15/08	13.3	63.8 J+	9530 J	440 J+	< 14.628 U	5850 J	4830	0.244	8.9	23.2
SAE-14R	0	N	08/12/08	--	--	--	--	--	--	--	--	--	--
SAE-14R-2	0	N	10/08/08	11.5	38.7	15200 J	135 J+	17.2	8670	1700 J	0.244	3	22.5
SAE-15	0	N	04/15/08	7.2	19.8 J+	9870 J	67.8 J+	< 3.657 U	5230 J	1040	0.0989	1.6	13
SAE-15	10	N	04/22/08	5.6	11.1 J+	10900	9.3 J	14.1 J	6360	267 J	< 0.00668 U	0.38 J+	11.6 J+
SAE-15	10	FD	04/22/08	6.8	16.3 J+	14700	17.7 J	8 J	7120	535 J	< 0.00668 U	0.7 J+	11.2 J+
SAE-15	55[a]	N	04/22/08	5.9	12.7 J+	12600	10.2 J+	14.1 J	8150	318 J	< 0.00668 U	0.75 J+	13.3 J+
SAE-15R	0	N	08/12/08	--	--	--	--	--	--	--	--	--	--
SAE-15R-2	0	N	10/09/08	9.4	19.4	20100 J	14.8 J+	15.7	8220	514 J	0.0989	0.68 J	16.8
SAE-16	0	N	04/15/08	9.7	25.5 J+	13100 J	77.2 J+	< 14.628 U	8150 J	1870	0.0329 J	2.5	17
SAE-16R	0	N	08/12/08	--	--	--	--	--	--	--	--	--	--
SAE-16R-2	0	N	10/09/08	11.5	33.3	18700 J	75.7 J+	15.4	9860	1410 J	0.0329 J	2.6	21.1
SAE-16R-2	0	FD	10/09/08	--	--	--	--	--	--	--	--	--	--

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Metals									
				Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel
SAE-17	0	N	04/15/08	12.7	41.6 J+	14000 J	215 J+	< 14.628 U	7610 J	2590	0.0682	5.5	22.8
SAE-17R	0	N	08/13/08	--	--	--	--	--	--	--	--	--	--
SAE-17R-2	0	N	10/09/08	8.9	17.1	18100 J	11.9 J+	13.3	8590	494 J	0.0682	0.62 J	17.3
SAE-17R-2	0	FD	08/13/08	--	--	--	--	--	--	--	--	--	--
SAE-18	0	N	04/15/08	7.2	14.4 J+	14300 J	9.1 J+	< 14.628 U	8050 J	430	< 0.00668 U	< 0.188 U	14.9
SAE-19	0	N	04/15/08	4.7	9.2 J+	9680 J	27.1 J+	< 3.657 U	5140 J	376	< 0.00668 U	< 0.188 U	7.9
SAE-20	0	N	04/15/08	7.3	15.7 J+	11000 J	18.2 J+	< 3.657 U	9290 J	416	< 0.00668 U	< 0.188 U	14.5
SAE-21	0	N	04/15/08	7.4	17.5 J+	14500 J	27 J+	< 14.628 U	10200 J	510	< 0.00668 U	< 0.188 U	14.5
SAE-22	0	N	04/15/08	8.7	16.3 J+	12900 J	41.1 J+	< 3.657 U	7800 J	619	< 0.00668 U	1.1	20.6
SAE-22	10	N	04/22/08	9	19.5 J+	19300	25.3 J	25.4 J	11200	1470 J	< 0.00668 U	0.67 J+	16.5 J+
SAE-22	10	FD	04/22/08	8.3	15 J+	16100	13.2 J	12.8 J	9910	740 J	< 0.00668 U	0.6 J+	12.5 J+
SAE-22	50[a]	N	04/23/08	5.5	14.7	10300	9	10.9 J	6020 J-	301	< 0.00668 U	1.5	10.3
SAE-23	0	N	04/15/08	9.6	25.2 J+	12900 J	49 J+	< 3.657 U	8310 J	671	< 0.00668 U	1.4	20.9
SAE-24	0	N	04/15/08	7.2	13.8 J+	12900 J	22.1 J+	< 3.657 U	7110 J	483	< 0.00668 U	< 0.188 U	13.9
SAE-25	0	N	04/15/08	8.4	21 J+	15000 J	21.8 J+	< 3.657 U	8170 J	550	< 0.00668 U	< 0.188 U	18.5
SAE-26	0	N	04/15/08	7.4	14.1 J+	13200 J	16.1 J+	< 3.657 U	8320 J	438	0.013 J	< 0.188 U	15.3
SAE-27	0	N	04/16/08	8.2	15.2	12900	35.8	< 7.314 U	8280	475	< 0.00668 U	0.85 J	14.2
SAE-28	0	N	04/16/08	7.4	16.7	12900	43.7	< 3.657 U	8170	436	< 0.00668 U	1.1	17.6
SAE-29	0	N	04/16/08	8.6	16.5	14600	20.3	< 7.314 U	10200	492	< 0.00668 U	0.5 J	15.6
SAE-30	0	N	04/16/08	6.4	14.6	10700	8.7	< 3.657 U	7130	327	< 0.00668 U	1.1	13.4
SAE-31	0	N	04/16/08	7.5	16.3	13800	22	< 3.657 U	8220	483	< 0.00668 U	0.52 J	12.5
SAE-32	0	N	04/16/08	8.9	29.5	13300	20.6	< 3.657 U	9220	1070	< 0.00668 U	2.3	18.4
SAE-33	0	N	04/16/08	7.9	13.8	14000	11.9	< 3.657 U	7740	536	< 0.00668 U	0.42 J	19.8
SAE-34	0	N	04/16/08	6.9	15.8	10100	35.8	< 3.657 U	6530	355	< 0.00668 U	0.55 J	10.6
SAE-34	10	N	04/23/08	4.7	10.1	10000	6.2	22.8 J	8440 J-	212	0.0147 J	0.39 J	9.8
SAE-34	35[a]	N	04/23/08	3.7	8	8240	6.5	173	46000 J-	628	< 0.00668 U	2.5	10.9
SAE-35	0	N	04/16/08	9.7	14.5	13800	11.4	< 3.657 U	7770	549	< 0.00668 U	< 0.188 U	13.1
SAE-36	0	N	04/16/08	9.2	14.2	14400	9.4	< 3.657 U	8600	516	< 0.00668 U	< 0.188 U	13.7
SAE-37	0	N	04/16/08	7.6	13.5 J+	13500 J	10.8	< 14.628 U	8790 J-	490	< 0.00668 U	0.29 J	11.9
SAE-38	0	N	04/16/08	9	16.5 J+	16400 J	32	< 3.657 U	10100 J-	715	< 0.00668 U	0.58 J	14
SAE-38	10	N	04/23/08	6.5	12.2	11600	7.5	24.1 J	10700 J	274	< 0.00668 U	0.6 J	11.6
SAE-38	10	FD	04/23/08	5.1	11.8	9940	9.2	16.7 J	5800 J	274	< 0.00668 U	0.65 J	9.9
SAE-38	35[a]	N	04/23/08	6.4	12.9	11300	7.1	92.5 J	37400 J-	307	< 0.00668 U	1.7 J	13.5
SAE-39	0	N	04/16/08	8	17.5 J+	15100 J	214	< 3.657 U	9190 J-	812	< 0.00668 U	2	14
SAE-40	0	N	04/16/08	10	112 J+	17700 J	155	< 3.657 U	10500 J-	1090	< 0.00668 U	1.4	15.7
SAE-41	0	N	04/16/08	11	22.3 J+	19700 J	86.3	< 3.657 U	12000 J-	1350	< 0.00668 U	1.2	17.8
SAE-41	10	N	04/23/08	6.1	12	12400	9.8	18.4 J	7210 J-	289	< 0.00668 U	0.58 J	13.4
SAE-41	20[a]	N	04/23/08	6.1	11.3	9640	8	27.6	8810 J-	354	0.0143 J	0.82 J	10.6
SAE-42	0	N	04/16/08	10.7	58.6 J+	18400 J	679	< 3.657 U	11100 J-	2140	< 0.00668 U	5.4	18.8

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Metals									
				Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel
SAE-42R	0	N	08/14/08	--	--	--	--	--	--	--	--	--	--
SAE-42R-2	0	N	10/08/08	10.8	22.1	18100 J	12.7 J+	14.8	12200	1310 J	< 0.00668 U	2.9	22.2
SAE-43	0	N	04/16/08	8.6	15.4 J+	16400 J	14.4	< 3.657 U	9840 J-	553	< 0.00668 U	0.44 J	13.8
SAE-43	10	N	04/23/08	5.1	11.9	10200	6.6	15.2 J	7100 J-	264	< 0.00668 U	0.95 J	9.9
SAE-43	17[a]	N	04/23/08	4.6	11.4	10400	7.4	21.2 J	6320 J-	259	< 0.00668 U	0.93 J	10.4
SAE-44	0	N	04/16/08	8.7	18.3 J+	16800 J	45.1 J	< 14.628 U	10000 J-	656	< 0.00668 U	0.66 J	15.4
SAE-44	0	FD	04/16/08	8.7	17.7 J+	17400 J	84.1 J	< 3.657 U	9610 J-	580	< 0.00668 U	0.66 J	14.8
SAE-45	0	N	04/16/08	9.1	22.7 J+	18100 J	70.1	< 3.657 U	10800 J-	751	< 0.00668 U	0.97 J	16.4
SAE-46	0	N	04/16/08	7.1	16.8 J+	14400 J	10.2	< 14.628 U	11300 J-	468	< 0.00668 U	0.78 J	15.5
SAE-47D	20	N	06/13/09	8.2	20.1	17200	11.2	13	7250	441	< 0.005 U	1.3	15.5
SAE-48D	20	N	06/13/09	8.7	19.7	18700	9.6	17.1	10600	391	0.007 J	1.2	15.9

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
(hatched) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(shaded) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 7 of 12)

				Metals									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Niobium	Palladium	Phosphorus (as P)	Platinum	Potassium	Selenium	Silicon	Silver	Sodium	Strontium
SAE-01	0	N	04/16/08	4.4 J-	0.39	906	< 0.048 U	2050	< 0.32 U	149 J+	0.11 J+	191	161 J+
SAE-02	0	N	04/16/08	< 3 UJ	0.36	1160	< 0.048 U	1780	< 0.32 U	159 J+	0.12 J+	130	141 J+
SAE-03	0	N	04/16/08	< 3 UJ	0.36	1020	< 0.048 U	1320	< 0.32 U	133 J+	0.097 J+	188	147 J+
SAE-04	0	N	04/16/08	3.3 J-	0.42	985	< 0.048 U	1800	< 0.32 U	146 J+	0.12 J+	202	164 J+
SAE-05	0	N	04/16/08	< 3 UJ	0.27	797	< 0.048 U	1190	< 0.32 U	144 J+	0.17 J+	369	98.2 J+
SAE-06	0	N	04/16/08	13 J-	0.45	1340	< 0.048 U	1190	< 0.32 U	145 J+	0.51 J+	555	141 J+
SAE-07	0	N	04/16/08	21.9 J-	0.75	975	0.1 J	1200	< 0.32 U	130 J+	2 J+	496	178 J+
SAE-07	10	N	04/21/08	< 3 UJ	0.34	1300 J	< 0.048 U	1380	< 0.32 U	805	0.3 J+	479	157 J
SAE-07	55[a]	N	04/21/08	< 3 UJ	0.5	1150 J	< 0.048 U	6330	< 0.32 U	1540	0.15 J+	867	192 J
SAE-07R	0	N	08/12/08	--	--	--	--	1160	< 0.4 U	--	0.18 J+	477	69 J
SAE-08	0	N	04/16/08	< 3 UJ	0.43	1340	< 0.048 U	849	< 0.32 U	254 J	0.05 J+	1280 J	176 J+
SAE-08	0	FD	04/16/08	4.6 J-	0.39	943	< 0.048 U	1220	< 0.32 U	119 J	0.18 J+	626 J	164 J+
SAE-08C	0	N	06/13/09	--	--	--	--	2050	< 0.045 U	--	0.075 J	834	159
SAE-08C	20	N	06/13/09	--	--	--	--	1790	< 0.045 U	--	0.075 J	705	208
SAE-08N	0	N	06/13/09	--	--	--	--	1800	< 0.045 U	--	0.16 J	745	268
SAE-08N	10	N	06/13/09	--	--	--	--	1700	< 0.045 U	--	0.096 J	568	169
SAE-08S	0	N	06/13/09	--	--	--	--	1070	< 0.045 U	--	0.26 J	373	59.7
SAE-08S	10	N	06/13/09	--	--	--	--	1250	< 0.045 U	--	0.42 J	502	131
SAE-09	0	N	04/15/08	18.8 J-	1.2	794 J	0.094 J	2770 J	< 0.32 U	397	0.74 J+	1790	497 J
SAE-09R	0	N	08/12/08	--	--	--	--	1420	< 0.4 U	--	0.46 J+	937	205 J
SAE-10	0	N	04/15/08	14.6 J-	1	1020 J	0.051 J	1910 J	< 0.32 U	449	0.58 J+	956	417 J
SAE-10	10	N	04/21/08	< 3 UJ	0.36	1020 J	< 0.048 U	1690	< 0.32 U	636	0.081 J+	792	168 J
SAE-10	60[a]	N	04/21/08	< 3 UJ	0.36	949 J	< 0.048 U	5930	< 0.32 U	1020	0.17 J+	835	148 J
SAE-11	0	N	04/15/08	< 3 UJ	0.75	1090 J	< 0.048 U	1970 J	< 0.32 U	473	0.1 J+	1060	285 J
SAE-12	0	N	04/15/08	< 3 UJ	0.37	1030 J	< 0.048 U	1180 J	< 0.32 U	447	0.1 J+	508	142 J
SAE-13	0	N	04/15/08	< 3 UJ	0.38	917 J	< 0.048 U	1570 J	< 0.32 U	487	0.13 J+	546	149 J
SAE-14	0	N	04/15/08	68 J-	1.2	640 J	0.17 J	1060 J	< 2 U	1100	3.9 J+	475	314 J
SAE-14R	0	N	08/12/08	--	--	--	--	--	--	--	--	--	--
SAE-14R-2	0	N	10/08/08	--	--	--	--	1850	< 0.4 U	--	1.2 J+	724	250 J
SAE-15	0	N	04/15/08	15.9 J-	0.51	1030 J	0.053 J	1030 J	< 0.16 U	654	0.54 J+	313	213 J
SAE-15	10	N	04/22/08	< 3 UJ	0.49 J	881 J+	< 0.048 U	2080 J+	< 0.32 U	681	0.057 J+	812	255 J
SAE-15	10	FD	04/22/08	< 3 UJ	1.1 J	1420 J+	< 0.048 U	2330 J+	< 0.32 U	966	0.081 J+	1260	557 J
SAE-15	55[a]	N	04/22/08	< 3 UJ	1	1180 J+	< 0.048 U	3370 J+	< 0.32 U	1030	0.069 J+	2880	529
SAE-15R	0	N	08/12/08	--	--	--	--	--	--	--	--	--	--
SAE-15R-2	0	N	10/09/08	--	--	--	--	2100	< 0.4 U	--	0.22 J+	365	144 J
SAE-16	0	N	04/15/08	18.4 J-	0.44	1540 J	0.067 J	1410 J	< 0.32 U	755	0.69 J+	553	188 J
SAE-16R	0	N	08/12/08	--	--	--	--	--	--	--	--	--	--
SAE-16R-2	0	N	10/09/08	--	--	--	--	1430	< 0.4 U	--	0.99 J+	549	180 J
SAE-16R-2	0	FD	10/09/08	--	--	--	--	--	--	--	--	--	--

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Metals									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Niobium	Palladium	Phosphorus (as P)	Platinum	Potassium	Selenium	Silicon	Silver	Sodium	Strontium
SAE-17	0	N	04/15/08	30.6 J-	0.91	1140 J	0.15 J	1340 J	< 0.32 U	893	1.9 J+	1040	311 J
SAE-17R	0	N	08/13/08	--	--	--	--	--	--	--	--	--	--
SAE-17R-2	0	N	10/09/08	--	--	--	--	1490	< 0.4 U	--	0.14 J+	716	284 J
SAE-17R-2	0	FD	08/13/08	--	--	--	--	--	--	--	--	--	--
SAE-18	0	N	04/15/08	< 3 UJ	0.48	1190 J	< 0.048 U	1680 J	< 0.32 U	749	0.077 J+	396	226 J
SAE-19	0	N	04/15/08	< 3 UJ	0.39	1030 J	< 0.048 U	779 J	< 0.32 U	400	0.051 J+	291	166 J
SAE-20	0	N	04/15/08	< 3 UJ	0.51	1080 J	< 0.048 U	1030 J	< 0.32 U	266	0.086 J+	516	192 J
SAE-21	0	N	04/15/08	3.8 J-	0.59	903 J	< 0.048 U	1520 J	< 0.32 U	707	0.15 J+	816	231 J
SAE-22	0	N	04/15/08	3.5 J-	0.31	1310 J	< 0.048 U	1130 J	< 0.32 U	449	0.12 J+	532	122 J
SAE-22	10	N	04/22/08	< 3 UJ	0.54	1170 J+	< 0.048 U	1630 J+	< 0.32 U	975	0.095 J+	1190	271
SAE-22	10	FD	04/22/08	< 3 UJ	0.48	1750 J+	< 0.048 U	1020 J+	< 0.32 U	1210	0.071 J+	998	237
SAE-22	50[a]	N	04/23/08	< 3 UJ	0.53	769	< 0.048 U	2250 J	< 0.32 U	182 J+	0.068 J	782 J-	278
SAE-23	0	N	04/15/08	4.5 J-	0.32	1270 J	< 0.048 U	1150 J	< 0.32 U	667	0.15 J+	419	110 J
SAE-24	0	N	04/15/08	< 3 UJ	0.37	1290 J	< 0.048 U	1300 J	< 0.32 U	380	0.098 J+	823	147 J
SAE-25	0	N	04/15/08	< 3 UJ	0.44	1190 J	< 0.048 U	1360 J	< 0.32 U	581	0.13 J+	662	182 J
SAE-26	0	N	04/15/08	< 3 UJ	0.28	1010 J	< 0.048 U	1160 J	< 0.32 U	655	0.09 J+	568	122 J
SAE-27	0	N	04/16/08	< 3 UJ	0.48	1320	< 0.048 U	1320	< 0.32 U	146 J+	0.089 J+	740	186 J+
SAE-28	0	N	04/16/08	< 3 UJ	0.46	1140	< 0.048 U	1410	< 0.32 U	143 J+	0.093 J+	837	185 J+
SAE-29	0	N	04/16/08	< 3 UJ	0.55	1220	< 0.048 U	1920	< 0.32 U	140 J+	0.1 J+	895	220 J+
SAE-30	0	N	04/16/08	< 3 UJ	0.38	1290	< 0.048 U	1830	< 0.32 U	173 J+	0.055 J+	1020	158 J+
SAE-31	0	N	04/16/08	< 3 UJ	0.32	1110	< 0.048 U	1590	< 0.32 U	164 J+	0.076 J+	430	135 J+
SAE-32	0	N	04/16/08	< 3 UJ	0.41	1440	< 0.048 U	1960	< 0.32 U	145 J+	0.092 J+	639	158 J+
SAE-33	0	N	04/16/08	< 3 UJ	0.26	1450	< 0.048 U	1270	< 0.32 U	156 J+	0.092 J+	414	110 J+
SAE-34	0	N	04/16/08	< 3 UJ	0.21	1620	< 0.048 U	927	< 0.32 U	133 J+	0.063 J+	429	79.7 J+
SAE-34	10	N	04/23/08	< 3 UJ	0.49	523	< 0.048 U	1010 J	< 0.32 U	122 J+	0.071 J	857 J-	247
SAE-34	35[a]	N	04/23/08	< 15 UJ	3.6	435	< 0.24 U	3470 J	< 0.32 U	179 J+	0.2 J	704 J-	1670
SAE-35	0	N	04/16/08	< 3 UJ	0.42	1410	< 0.048 U	1550	< 0.32 U	150 J+	0.08 J+	279	177 J+
SAE-36	0	N	04/16/08	< 3 UJ	0.64	1480	< 0.048 U	1640	< 0.32 U	181 J+	0.098 J+	289	276 J+
SAE-37	0	N	04/16/08	< 3 UJ	0.68 J+	1600 J	< 0.048 U	1750 J	< 0.32 U	161 J+	0.085 J+	200	362 J
SAE-38	0	N	04/16/08	< 3 UJ	0.47 J+	1510 J	< 0.048 U	1890 J	< 0.32 U	185 J+	0.12 J+	260	220 J
SAE-38	10	N	04/23/08	< 3.75 UJ	0.64	966	< 0.06 U	1160 J	< 0.32 U	144 J+	0.097 J	702 J-	317
SAE-38	10	FD	04/23/08	< 3 UJ	0.57	772	< 0.048 U	1150 J	< 0.32 U	139 J+	0.067 J	576 J-	289
SAE-38	35[a]	N	04/23/08	< 15 UJ	< 0.191 U	520	< 0.24 U	4200 J	< 0.32 U	391 J+	0.19 J	675 J-	68.5
SAE-39	0	N	04/16/08	< 3 UJ	0.54 J+	1920 J	< 0.048 U	1610 J	< 0.32 U	158 J+	0.14 J+	204	224 J
SAE-40	0	N	04/16/08	< 3 UJ	0.73 J+	1300 J	< 0.048 U	3020 J	< 0.32 U	130 J+	0.11 J+	1580	312 J
SAE-41	0	N	04/16/08	< 3 UJ	0.73 J+	1550 J	< 0.048 U	2320 J	< 0.32 U	152 J+	0.16 J+	292	343 J
SAE-41	10	N	04/23/08	< 3.75 UJ	0.68	540	< 0.06 U	1190 J	< 0.32 U	180 J+	0.07 J	994 J-	358
SAE-41	20[a]	N	04/23/08	< 3 UJ	0.36	700	< 0.048 U	2080 J	< 0.32 U	149 J+	0.075 J	572 J-	187
SAE-42	0	N	04/16/08	< 3 UJ	1.3 J+	1200 J	0.15 J+	2340 J	< 0.32 U	151 J+	0.3 J+	318	472 J

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Metals									
				Niobium	Palladium	Phosphorus (as P)	Platinum	Potassium	Selenium	Silicon	Silver	Sodium	Strontium
SAE-42R	0	N	08/14/08	--	--	--	--	--	--	--	--	--	--
SAE-42R-2	0	N	10/08/08	--	--	--	--	2520	< 0.4 U	--	0.3 J+	808	337 J
SAE-43	0	N	04/16/08	< 3 UJ	0.62 J+	1500 J	< 0.048 U	2490 J	< 0.32 U	149 J+	0.1 J+	637	315 J
SAE-43	10	N	04/23/08	< 3 UJ	0.63	860	< 0.048 U	996 J	< 0.32 U	167 J+	0.071 J	568 J-	341
SAE-43	17[a]	N	04/23/08	< 3 UJ	1.3	684	< 0.048 U	1540 J	< 0.32 U	204 J+	0.075 J	781 J-	685
SAE-44	0	N	04/16/08	< 3 UJ	0.55 J+	1300 J	< 0.048 U	2160 J	< 0.32 U	150 J+	0.13 J+	222	258 J
SAE-44	0	FD	04/16/08	< 3 UJ	0.53 J+	1340 J	< 0.048 U	2100 J	< 0.32 U	144 J+	0.12 J+	212	244 J
SAE-45	0	N	04/16/08	< 3 UJ	0.52 J+	1350 J	< 0.048 U	1960 J	< 0.32 U	161 J+	0.17 J+	284	248 J
SAE-46	0	N	04/16/08	< 3 UJ	0.52 J+	1440 J	< 0.048 U	1520 J	< 0.32 U	153 J+	0.096 J+	1500	262 J
SAE-47D	20	N	06/13/09	--	--	--	--	1260	< 0.045 U	--	0.1 J	729	229
SAE-48D	20	N	06/13/09	--	--	--	--	1500	< 0.045 U	--	0.11 J	812	485

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
(hatched box) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(grey box) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Metals								
				Sulfur	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
SAE-01	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.92	461	1.1 J-	0.64	35.3	38.8	18.9 J
SAE-02	0	N	04/16/08	< 1053.5 U	0.37 J	0.96	457	1.3 J-	0.72	36.3	41.2	19.6 J
SAE-03	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.61	375	0.84 J-	0.72	33.5	35.2	13.9 J
SAE-04	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.91	508	1.2 J-	0.85	40.7	37.8	17.7 J
SAE-05	0	N	04/16/08	< 1053.5 U	< 0.3 U	3.2	1260	1.1 J-	0.68	147	35.8	31.3
SAE-06	0	N	04/16/08	< 1053.5 U	1.6	3.7	848	6.4 J-	2.8	108	63.1	42.3
SAE-07	0	N	04/16/08	2410 J+	3.2	14.4	2980	26.9 J-	4.4	285	83.4	107
SAE-07	10	N	04/21/08	< 1053.5 U	0.44	0.39 J	339 J+	< 0.5 U	1.2	36.3	81.9 J-	9.7
SAE-07	55[a]	N	04/21/08	< 1053.5 U	0.54 J	0.83	623 J+	< 0.5 U	2.1	42.7	60.1 J-	27.1
SAE-07R	0	N	08/12/08	--	1.1 J+	< 0.75 U	397	< 1.25 UJ	2.9	262 J+	44.9	--
SAE-08	0	N	04/16/08	1750 J+	< 0.3 U	< 0.3 UJ	278	< 0.5 UJ	0.49 J	18.6 J	27.4	8.6 J
SAE-08	0	FD	04/16/08	2470 J+	< 0.3 U	1.3 J	454	1.9 J	0.83 J	38.5 J	34.9	28.5
SAE-08C	0	N	06/13/09	--	< 0.11 U	< 0.15 U	506	< 0.3 UJ	0.6 J-	44.5	54.6	--
SAE-08C	20	N	06/13/09	--	< 0.021 U	< 0.15 U	498	0.24	0.89 J-	45.7	36.2	--
SAE-08N	0	N	06/13/09	--	< 0.23 U	0.87 J	444	< 1.6 UJ	0.93 J-	41	43.8	--
SAE-08N	10	N	06/13/09	--	< 0.11 U	< 0.15 U	446	< 0.6 UJ	0.95 J-	40.5	49.8	--
SAE-08S	0	N	06/13/09	--	< 0.49 U	< 0.15 U	463	< 0.47 UJ	1.2 J-	60.7	158	--
SAE-08S	10	N	06/13/09	--	< 0.6 U	< 0.15 U	440	< 0.41 UJ	0.76 J-	50.4	186	--
SAE-09	0	N	04/15/08	9470 J+	0.9	4.5	1300	11.4	3.8	169 J	68.2	125 J+
SAE-09R	0	N	08/12/08	--	0.88	1.8	723	3.6 J-	2	72.3 J+	38.4	--
SAE-10	0	N	04/15/08	3690 J+	1.2	4.8	1360	11	2.6	77.2 J	40.2	73.5 J+
SAE-10	10	N	04/21/08	< 1053.5 U	< 0.3 U	0.35 J	297 J+	< 0.5 U	0.82	24.9	34.7 J-	12.6
SAE-10	60[a]	N	04/21/08	4790 J+	< 0.3 U	0.92	560 J+	< 0.5 U	3.2	48.9	60.5 J-	29.8
SAE-11	0	N	04/15/08	1310 J+	< 0.3 U	0.79	603	1.8	0.79	49.8 J	50.1	18.8 J+
SAE-12	0	N	04/15/08	< 1053.5 U	< 0.3 U	0.69	567	5	1.1	44.9 J	39.2	19.7 J+
SAE-13	0	N	04/15/08	< 1053.5 U	0.59	0.59	394	0.89 J	0.81	47.1 J	52.2	14.2 J+
SAE-14	0	N	04/15/08	2910 J+	6.3	37.7	6730	65.8	9.3	446 J	181	208 J+
SAE-14R	0	N	08/12/08	--	--	--	--	--	--	--	--	--
SAE-14R-2	0	N	10/08/08	--	2.4 J+	9.3	2020	19.3 J-	2.6	177 J+	125	--
SAE-15	0	N	04/15/08	< 1053.5 U	1.1	4.9	1300	11.5	1.8	238 J	93.2	70 J+
SAE-15	10	N	04/22/08	< 1053.5 U	< 0.3 U	0.34 J+	384 J+	< 0.5 U	0.81 J+	31.9 J+	34.2	9.7
SAE-15	10	FD	04/22/08	< 1053.5 U	< 0.3 U	0.44 J+	524 J+	< 0.5 U	1.1 J+	47.3 J+	36	13.2
SAE-15	55[a]	N	04/22/08	< 1053.5 U	< 0.3 U	0.43 J+	653 J+	< 0.5 U	1.1 J+	31.2 J+	32.1	11.4
SAE-15R	0	N	08/12/08	--	--	--	--	--	--	--	--	--
SAE-15R-2	0	N	10/09/08	--	0.79	0.81 J	609	< 1.25 UJ	0.93	78.4 J+	50.6	--
SAE-16	0	N	04/15/08	1320 J+	1.2	6.1	2030	15.2	2	169 J	70.4	84.8 J+
SAE-16R	0	N	08/12/08	--	--	--	--	--	--	--	--	--
SAE-16R-2	0	N	10/09/08	--	1.6 J+	7.4	1630	15.2 J-	2.5	188 J+	87.9	--
SAE-16R-2	0	FD	10/09/08	--	--	--	--	--	--	--	--	--

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Metals								
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Sulfur	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
SAE-17	0	N	04/15/08	2600 J+	3.2	17.9	3610	35.6	4.4	43.9 J	48.9	182 J+
SAE-17R	0	N	08/13/08	--	--	--	--	--	--	--	--	--
SAE-17R-2	0	N	10/09/08	--	< 0.75 U	< 0.75 U	758	< 1.25 UJ	0.94	52.8 J+	43.9	--
SAE-17R-2	0	FD	08/13/08	--	--	--	--	--	--	--	--	--
SAE-18	0	N	04/15/08	< 1053.5 U	< 0.3 U	0.43	507	< 0.5 U	0.64	319 J	115	13.9 J+
SAE-19	0	N	04/15/08	< 1053.5 U	< 0.3 U	0.37 J	319	0.76 J	0.66	44.9 J	42.4	9.8 J+
SAE-20	0	N	04/15/08	< 1053.5 U	< 0.3 U	0.44	424	1.1	0.94	38.7 J	37.5	15 J+
SAE-21	0	N	04/15/08	< 1053.5 U	0.46	1	833	3.2	1.1	54.4 J	37.2	29.3 J+
SAE-22	0	N	04/15/08	< 1053.5 U	< 0.3 U	1.2	783	4	1.2	90.5 J	52	24.1 J+
SAE-22	10	N	04/22/08	< 1053.5 U	< 0.3 U	0.54 J+	626 J+	< 0.5 U	1.8 J+	50.1 J+	44.9	15.5
SAE-22	10	FD	04/22/08	< 1053.5 U	< 0.3 U	0.42 J+	417 J+	< 0.5 U	1.3 J+	39.1 J+	47.1	11.8
SAE-22	50[a]	N	04/23/08	< 1053.5 U	< 0.3 U	0.44	321 J+	0.87 J	1.1	25.7	30.9	10.6
SAE-23	0	N	04/15/08	< 1053.5 U	< 0.3 U	1.3	694	5.1	1.2	103 J	47.4	30.7 J+
SAE-24	0	N	04/15/08	< 1053.5 U	< 0.3 U	0.77	690	2.2	0.81	37.7 J	40	18.6 J+
SAE-25	0	N	04/15/08	< 1053.5 U	< 0.3 U	1	888	1.7	1.2	78.6 J	42.9	25.3 J+
SAE-26	0	N	04/15/08	< 1053.5 U	< 0.3 U	0.72	546	2.1	0.91	70.6 J	34.2	18.5 J+
SAE-27	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.44	456	2.2 J-	0.81	43.5	43	16.8 J
SAE-28	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.52	521	3.4 J-	1.2	56	39.4	17.5 J
SAE-29	0	N	04/16/08	1100 J+	< 0.3 U	0.4 J	538	0.83 J-	0.79	35.3	43.6	19.6 J
SAE-30	0	N	04/16/08	1180 J+	< 0.3 U	< 0.3 U	387	< 0.5 UJ	0.58	33.4	29.3	12.3 J
SAE-31	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.33 J	463	1 J	0.69	39.2	40.6	15.1 J
SAE-32	0	N	04/16/08	< 1053.5 U	0.36 J	< 0.3 U	477	11.8 J-	0.86	38.9	115	17.9 J
SAE-33	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.42	497	< 0.5 UJ	1.3	85.2	39	20 J
SAE-34	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.5	312	2.8 J-	0.41	29.6	34	11.7 J
SAE-34	10	N	04/23/08	< 1053.5 U	< 0.3 U	0.4 J	336 J+	0.59 J	1	24.4	23.3	12.9
SAE-34	35[a]	N	04/23/08	2740 J+	< 1.5 U	0.52	144 J+	0.69 J	6.6	14.3	27.6	16.4
SAE-35	0	N	04/16/08	< 1053.5 U	< 0.3 U	< 0.3 U	464	< 0.5 UJ	0.63	36	35.9	15.5 J
SAE-36	0	N	04/16/08	< 1053.5 U	< 0.3 U	< 0.3 U	518	< 0.5 UJ	0.68	33.2	39.9	19.9 J
SAE-37	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.45	401 J+	< 0.5 U	0.79	30.1	36.3 J+	13.1
SAE-38	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.59	599 J+	0.65 J	0.66	39	45.4 J+	18.7
SAE-38	10	N	04/23/08	2160 J	< 0.375 U	0.48	439 J+	< 0.5 U	2.4	35.6	28.6	17.3
SAE-38	10	FD	04/23/08	< 1053.5 U	< 0.3 U	0.38 J	321 J+	< 0.5 U	2.1	29	24.8	12.4
SAE-38	35[a]	N	04/23/08	1950 J+	< 1.5 U	0.61 J	226 J+	< 0.5 U	16.1	32.3	38.3	20.8
SAE-39	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.89	657 J+	0.96 J	0.77	41.2	45.8 J+	20.9
SAE-40	0	N	04/16/08	< 1053.5 U	0.76	0.52	611 J+	5.4	0.77	40.7	97.6 J+	17.7
SAE-41	0	N	04/16/08	< 1053.5 U	0.37 J	0.79	689 J+	5.3	0.88	49.1	72.9 J+	21
SAE-41	10	N	04/23/08	< 1053.5 U	< 0.375 U	0.49	439 J+	1.2	1.7	35.2	31.7	12.5
SAE-41	20[a]	N	04/23/08	< 1053.5 U	< 0.3 U	0.4 J	273 J+	0.7 J	1.9	25.7	25.7	12.8
SAE-42	0	N	04/16/08	< 1053.5 U	0.52	1.8	1310 J+	2.5	1.5	55.5	143 J+	44.7

TABLE B-1
SOILS METAL DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Metals								
				Sulfur	Thallium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium
SAE-42R	0	N	08/14/08	--	--	--	--	--	--	--	--	--
SAE-42R-2	0	N	10/08/08	--	1.4 J+	0.82 J	575	< 1.25 UJ	1.3	44.3 J+	218	--
SAE-43	0	N	04/16/08	< 1053.5 U	< 0.3 U	0.45	593 J+	< 0.5 U	0.76	38.4	41 J+	15.6
SAE-43	10	N	04/23/08	1930 J+	< 0.3 U	0.37 J	352 J+	< 0.5 U	1.2	27.2	27.6	13.7
SAE-43	17[a]	N	04/23/08	< 1053.5 U	< 0.3 U	0.38 J	304 J+	< 0.5 U	1.6	26.8	25.2	11.7
SAE-44	0	N	04/16/08	< 1053.5 U	< 0.3 U	1.3	609 J+	1.4	0.75	45.2	51.1 J+	19.3
SAE-44	0	FD	04/16/08	< 1053.5 U	< 0.3 U	1	538 J+	1.1	0.72	45	46.3 J+	17.9
SAE-45	0	N	04/16/08	< 1053.5 U	0.35 J	3.8	691 J+	2.8	0.92	58.9	62.3 J+	22.4
SAE-46	0	N	04/16/08	2100 J+	< 0.3 U	0.67	465 J+	< 0.5 U	1.1	35.3	43.2 J+	15.5
SAE-47D	20	N	06/13/09	--	< 0.021 U	< 0.15 U	602	0.55	1 J-	46.4	35.2	--
SAE-48D	20	N	06/13/09	--	0.47	< 0.15 U	701	1.4	1.9 J-	53.9	46.7	--

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
(hatched box) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(gray box) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-2
SOIL ORGANOCHLORINE PESTICIDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Organochlorine Pesticides											
Sample ID	Depth (ft bgs)	Sample Type	Sample Date	2,4-DDD	2,4-DDE	4,4-DDD	4,4-DDE	4,4-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin
SAE-01	0	N	04/16/08	< 0.00011 U	0.0052	< 0.00016 U	0.0047	< 0.00043 U	< 0.000088 U	< 0.000097 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000084 U	< 0.000073 U
SAE-02	0	N	04/16/08	< 0.00011 U	0.011	< 0.00016 U	0.015	0.0038 J	< 0.000088 U	< 0.000097 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000084 U	< 0.000073 U
SAE-03	0	N	04/16/08	< 0.00011 U	0.0046 J+	< 0.00016 U	0.0042 J+	< 0.00043 U	< 0.000089 U	< 0.000097 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000084 U	< 0.000073 U
SAE-04	0	N	04/16/08	< 0.00012 U	0.01 J+	< 0.00016 U	0.011 J+	0.0028 J	< 0.00009 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-05	0	N	04/16/08	< 0.00012 U	0.036 J+	< 0.00016 U	0.021 J+	0.0036 J	< 0.00009 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-06	0	N	04/16/08	< 0.00011 U	0.019 J+	< 0.00016 U	0.023 J+	0.0058 J	< 0.000089 U	< 0.000097 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000084 U	< 0.000074 U
SAE-07	0	N	04/16/08	0.02 J	0.67	< 0.00016 U	0.47	0.16 J	0.0022 J	< 0.000099 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-07	10	N	04/21/08	< 0.00032 U	0.034 J+	< 0.000093 U	0.024 J+	0.0079 J	< 0.000099 U	< 0.0003 U	< 0.00022 U	< 0.00019 U	< 0.0024 U	< 0.00017 U	< 0.000095 U
SAE-07	55[a]	N	04/21/08	< 0.00043 U	< 0.00028 U	< 0.00013 U	< 0.00027 U	< 0.00029 U	< 0.00014 U	< 0.0004 U	< 0.0003 U	< 0.00026 U	< 0.0033 U	< 0.00024 U	< 0.00013 U
SAE-08	0	N	04/16/08	< 0.00012 U	0.0045 J	< 0.00016 U	0.0041 J	< 0.00044 UJ	< 0.00009 U	< 0.000099 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-08	0	FD	04/16/08	< 0.00012 U	0.018 J	< 0.00016 U	0.016 J	0.004 J	< 0.00009 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-08C	0	N	06/13/09	< 0.00014 U	0.0066	< 0.00011 U	0.0065	0.0026	< 0.000093 U	0.0097	< 0.00011 U	< 0.00013 U	< 0.0015 U	< 0.00011 U	< 0.000098 U
SAE-08C	20	N	06/13/09	< 0.00015 U	< 0.00013 U	< 0.00012 U	< 0.00044 U	< 0.00025 U	< 0.000094 U	< 0.000098 U	< 0.00011 U	< 0.00013 U	< 0.0015 U	< 0.00011 U	< 0.0001 U
SAE-08N	0	N	06/13/09	< 0.00014 U	< 0.00013 U	< 0.00011 U	< 0.00043 U	< 0.00025 U	< 0.000093 U	< 0.000096 U	< 0.00011 U	< 0.00013 U	< 0.0015 U	< 0.00011 U	< 0.000098 U
SAE-08N	10	N	06/13/09	< 0.00015 U	< 0.00013 U	< 0.00012 U	< 0.00044 U	< 0.00026 U	< 0.000095 U	< 0.000098 U	< 0.00011 U	0.0025	< 0.0015 U	< 0.00011 U	< 0.0001 U
SAE-08S	0	N	06/13/09	< 0.00014 U	0.008	< 0.00011 U	0.0049	< 0.00025 U	0.0028	< 0.000095 U	< 0.00011 U	< 0.00013 U	< 0.0015 U	< 0.00011 U	< 0.000098 U
SAE-08S	10	N	06/13/09	< 0.00015 U	< 0.00013 U	< 0.00012 U	< 0.00045 U	< 0.00026 U	< 0.000096 U	< 0.000099 U	< 0.00011 U	< 0.00013 U	< 0.0015 U	< 0.00011 U	< 0.0001 U
SAE-09	0	N	04/15/08	0.012 J+	0.67	< 0.00016 U	0.35	0.14	< 0.00009 U	< 0.000098 U	< 0.0001 U	0.014 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-10	0	N	04/15/08	0.0081 J+	0.24	< 0.00017 U	0.15	0.06 J+	< 0.000092 U	< 0.0001 U	< 0.0001 U	0.0063 J+	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-10	10	N	04/21/08	< 0.00032 U	< 0.00021 U	< 0.000095 U	< 0.0002 U	< 0.00022 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000097 U
SAE-10	60[a]	N	04/21/08	< 0.00044 U	< 0.00029 U	< 0.00013 U	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00041 U	< 0.0003 U	< 0.00027 U	< 0.0034 U	< 0.00024 U	< 0.00013 U
SAE-11	0	N	04/15/08	< 0.00012 U	0.0028 J	< 0.00017 U	0.0035 J+	< 0.00045 U	< 0.000092 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-12	0	N	04/15/08	< 0.00012 U	0.0057 J+	< 0.00017 U	0.0061 J+	< 0.00044 U	< 0.00009 U	< 0.000099 U	< 0.0001 U	< 0.00036 U	< 0.0023 U	< 0.000086 U	< 0.000075 U
SAE-13	0	N	04/15/08	0.0028 J	0.013 J+	< 0.00016 U	0.013 J+	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	0.0037 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-14	0	N	04/15/08	0.048 J	0.7	< 0.00017 U	0.51	0.15	0.0058 J	0.0022 J	< 0.0001 U	< 0.00036 U	< 0.0023 U	< 0.000086 U	< 0.000075 U
SAE-15	0	N	04/15/08	0.01 J+	0.18	< 0.00017 U	0.12	0.042 J	< 0.000092 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000088 U	< 0.000076 U
SAE-15	10	N	04/22/08	< 0.00032 U	< 0.00021 U	< 0.000092 U	< 0.0002 U	< 0.00021 U	< 0.000099 U	< 0.00029 U	< 0.00022 U	< 0.00019 U	< 0.0024 U	< 0.00017 U	< 0.000095 U
SAE-15	10	FD	04/22/08	< 0.00032 U	< 0.00021 U	< 0.000095 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000097 U
SAE-15	55[a]	N	04/22/08	< 0.00032 U	< 0.00021 U	< 0.000093 U	< 0.0002 U	< 0.00021 U	< 0.000099 U	< 0.00029 U	< 0.00022 U	< 0.00019 U	< 0.0024 U	< 0.00017 U	< 0.000095 U
SAE-16	0	N	04/15/08	0.025 J+	0.45	< 0.00016 U	0.3	0.1	< 0.00009 U	0.0017 J	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000086 U	< 0.000075 U
SAE-17	0	N	04/15/08	0.02 J+	0.4	< 0.00016 U	0.29	0.097	< 0.00009 U	< 0.000099 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-18	0	N	04/15/08	< 0.00011 U	< 0.000091 U	< 0.00016 U	< 0.00026 U	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-19	0	N	04/15/08	< 0.00012 U	< 0.000094 U	< 0.00017 U	< 0.00026 U	< 0.00045 U	< 0.000092 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-20	0	N	04/15/08	< 0.00012 U	0.028 J+	< 0.00017 U	0.021 J+	0.019 J+	< 0.000092 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000088 U	< 0.000076 U
SAE-21	0	N	04/15/08	< 0.00012 U	0.039 J+	< 0.00017 U	0.026 J+	0.016 J	< 0.000092 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-22	0	N	04/15/08	< 0.00012 U	0.017 J+	< 0.00016 U	0.016 J+	0.009 J+	< 0.00009 U	< 0.000099 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-22	10	N	04/22/08	< 0.00032 U	< 0.00021 U	< 0.000094 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000096 U
SAE-22	10	FD	04/22/08	< 0.00032 U	< 0.00021 U	< 0.000094 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000096 U
SAE-22	50[a]	N	04/23/08	< 0.00032 U	< 0.00021 U	< 0.000094 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000096 U
SAE-23	0	N	04/15/08	< 0.00012 U	0.074	< 0.00017 U	0.058	0.027 J+	< 0.000091 U	< 0.0001 U	< 0.0001 U	0.004 J+	< 0.0024 U	< 0.000086 U	< 0.000075 U

TABLE B-2
SOIL ORGANOCHLORINE PESTICIDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				Organochlorine Pesticides											
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	2,4-DDD	2,4-DDE	4,4-DDD	4,4-DDE	4,4-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin
SAE-24	0	N	04/15/08	< 0.00012 U	0.017 J+	< 0.00016 U	0.015 J+	0.0099 J+	< 0.00009 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-25	0	N	04/15/08	< 0.00012 U	0.019 J+	< 0.00017 U	0.016 J+	0.0071 J+	< 0.000091 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-26	0	N	04/15/08	< 0.00012 U	0.0025 J+	< 0.00017 U	0.003 J+	< 0.00044 U	< 0.000091 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-27	0	N	04/16/08	< 0.00012 U	0.004 J+	< 0.00017 U	0.0044 J+	< 0.00044 U	< 0.000091 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000086 U	< 0.000075 U
SAE-28	0	N	04/16/08	< 0.00012 U	0.0057 J+	< 0.00017 U	0.0067 J+	< 0.00044 U	< 0.000091 U	< 0.000099 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000086 U	< 0.000075 U
SAE-29	0	N	04/16/08	< 0.00012 U	0.0018 J	< 0.00017 U	0.0022 J+	< 0.00045 U	< 0.000093 U	< 0.0001 U	< 0.00011 U	< 0.00037 U	< 0.0024 U	< 0.000088 U	< 0.000077 U
SAE-30	0	N	04/16/08	< 0.00012 U	< 0.000093 U	< 0.00017 U	0.0023 J+	< 0.00044 U	< 0.000091 U	< 0.0001 U	< 0.0001 U	< 0.00036 U	< 0.0024 U	< 0.000087 U	< 0.000076 U
SAE-31	0	N	04/16/08	< 0.00011 U	0.002 J	< 0.00016 U	0.0021 J	< 0.00043 U	< 0.000089 U	< 0.000097 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000084 U	< 0.000074 U
SAE-32	0	N	04/16/08	< 0.00012 U	< 0.000092 U	< 0.00016 U	< 0.00026 U	< 0.00044 U	< 0.00009 U	< 0.000099 U	< 0.0001 U	0.0021 J+	< 0.0023 U	< 0.000086 U	< 0.000075 U
SAE-33	0	N	04/16/08	< 0.00012 U	< 0.000091 U	< 0.00016 U	< 0.00026 U	< 0.00044 U	< 0.00009 U	< 0.000098 U	< 0.0001 U	0.0023 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-34	0	N	04/16/08	< 0.00011 U	0.0031 J+	< 0.00016 U	0.0041 J+	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	0.0021 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-34	10	N	04/23/08	< 0.00032 U	< 0.00021 U	< 0.000094 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000096 U
SAE-34	35[a]	N	04/23/08	< 0.00037 U	< 0.00024 U	< 0.00011 U	< 0.00023 U	< 0.00024 U	< 0.00011 U	< 0.00034 U	< 0.00025 U	< 0.00022 U	< 0.0028 U	< 0.0002 U	< 0.00011 U
SAE-35	0	N	04/16/08	< 0.00012 U	< 0.000091 U	< 0.00016 U	< 0.00026 U	< 0.00044 U	< 0.00009 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-36	0	N	04/16/08	< 0.00011 U	< 0.000091 U	< 0.00016 U	< 0.00026 U	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-37	0	N	04/16/08	< 0.00012 U	0.0024	0.0021	0.0066	0.005	< 0.000093 U	< 0.0001 U	< 0.00011 U	0.0051	< 0.0024 U	< 0.000088 U	< 0.000077 U
SAE-38	0	N	04/16/08	< 0.00012 U	0.0037 J+	< 0.00017 U	0.011 J+	0.0048 J+	< 0.000095 U	< 0.0001 U	< 0.00011 U	0.0031 J+	< 0.0025 U	< 0.00009 U	< 0.000079 U
SAE-38	10	N	04/23/08	< 0.00032 U	< 0.00021 U	< 0.000094 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000096 U
SAE-38	10	FD	04/23/08	< 0.00032 U	< 0.00021 U	< 0.000095 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000097 U
SAE-38	35[a]	N	04/23/08	< 0.00051 U	< 0.00033 U	< 0.00015 U	< 0.00032 U	< 0.00034 U	< 0.00016 U	< 0.00047 U	< 0.00035 U	< 0.00031 U	< 0.0039 U	< 0.00028 U	< 0.00015 U
SAE-39	0	N	04/16/08	< 0.00012 U	0.0019 J+	< 0.00016 U	0.0059 J+	< 0.00044 U	< 0.00009 U	< 0.000098 U	< 0.0001 U	0.0032 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-40	0	N	04/16/08	< 0.00012 U	< 0.000092 U	< 0.00016 U	< 0.00026 U	< 0.00044 U	< 0.00009 U	< 0.000099 U	< 0.0001 U	0.0038 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-41	0	N	04/16/08	< 0.00012 U	< 0.000098 U	< 0.00018 U	< 0.00028 U	< 0.00047 U	< 0.000096 U	< 0.00011 U	< 0.00011 U	< 0.00038 U	< 0.0025 U	< 0.000091 U	< 0.00008 U
SAE-41	10	N	04/23/08	< 0.00033 U	< 0.00021 U	< 0.000095 U	< 0.0002 U	< 0.00022 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000097 U
SAE-41	20[a]	N	04/23/08	< 0.00033 U	< 0.00021 U	< 0.000096 U	< 0.00021 U	< 0.00022 U	< 0.0001 U	< 0.0003 U	< 0.00023 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000098 U
SAE-42	0	N	04/16/08	< 0.00011 U	< 0.000091 U	< 0.00016 U	0.0048 J+	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	0.0039 J+	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-43	0	N	04/16/08	< 0.00012 U	< 0.000091 U	< 0.00016 U	< 0.00026 U	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	< 0.00035 U	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-43	10	N	04/23/08	< 0.00033 U	< 0.00022 U	< 0.000096 U	< 0.00021 U	< 0.00022 U	< 0.0001 U	< 0.0003 U	< 0.00023 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000098 U
SAE-43	17[a]	N	04/23/08	< 0.00032 U	< 0.00021 U	< 0.000094 U	< 0.0002 U	< 0.00021 U	< 0.0001 U	< 0.0003 U	< 0.00022 U	< 0.0002 U	< 0.0025 U	< 0.00018 U	< 0.000096 U
SAE-44	0	N	04/16/08	< 0.00011 U	< 0.000091 U	< 0.00016 U	0.0026 J+	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	0.0034 J	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-44	0	FD	04/16/08	< 0.00012 U	< 0.000091 U	< 0.00016 U	0.0024	< 0.00043 U	< 0.000089 U	< 0.000098 U	< 0.0001 U	0.0054 J	< 0.0023 U	< 0.000085 U	< 0.000074 U
SAE-45	0	N	04/16/08	< 0.00057 U	< 0.00045 U	< 0.00081 U	< 0.0013 U	< 0.0022 U	< 0.00044 U	< 0.00049 U	< 0.0005 U	< 0.0017 U	< 0.012 U	< 0.00042 U	< 0.00037 U
SAE-46	0	N	04/16/08	< 0.0011 U	< 0.00091 U	< 0.0016 U	< 0.0026 U	< 0.0043 U	< 0.00089 U	< 0.00098 U	< 0.001 U	< 0.0035 U	< 0.023 U	< 0.00085 U	< 0.00074 U
SAE-47D	20	N	06/13/09	< 0.00015 U	< 0.00013 U	< 0.00012 U	< 0.00044 U	< 0.00025 U	< 0.000094 U	< 0.000098 U	< 0.00011 U	< 0.00013 U	< 0.0015 U	< 0.00011 U	< 0.0001 U
SAE-48D	20	N	06/13/09	< 0.00015 U	< 0.00013 U	< 0.00012 U	< 0.00046 U	< 0.00026 U	< 0.000098 U	< 0.0001 U	< 0.00011 U	< 0.00014 U	< 0.0016 U	< 0.00012 U	< 0.0001 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-2
SOIL ORGANOCHLORINE PESTICIDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 3 of 4)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Organochlorine Pesticides											
				Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-Chlordane	Heptachlor	Heptachlor epoxide	Lindane	Methoxychlor	Toxaphene
SAE-01	0	N	04/16/08	< 0.000084 U	< 0.00015 U	< 0.00012 U	< 0.000084 U	< 0.00011 U	< 0.00039 U	< 0.000086 U	< 0.00059 U	< 0.00012 U	< 0.000084 U	< 0.00071 U	< 0.0072 U
SAE-02	0	N	04/16/08	< 0.000084 U	< 0.00015 U	< 0.00012 U	< 0.000084 U	< 0.00011 U	< 0.00039 U	< 0.000086 U	< 0.00059 U	< 0.00012 U	< 0.000084 U	< 0.00071 U	< 0.0072 U
SAE-03	0	N	04/16/08	< 0.000084 U	< 0.00015 U	< 0.00012 U	< 0.000084 U	< 0.00011 U	< 0.00039 U	< 0.000086 U	< 0.0006 U	< 0.00012 U	< 0.000084 U	< 0.00071 U	< 0.0072 U
SAE-04	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-05	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-06	0	N	04/16/08	< 0.000084 U	< 0.00015 U	< 0.00012 U	< 0.000084 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000084 U	< 0.00071 U	< 0.0072 U
SAE-07	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	0.02 J	< 0.00061 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-07	10	N	04/21/08	< 0.00011 U	< 0.000097 U	< 0.00027 U	< 0.000087 U	< 0.00019 U	< 0.00017 U	< 0.000087 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-07	55[a]	N	04/21/08	< 0.00015 U	< 0.00013 U	< 0.00037 U	< 0.00012 U	< 0.00025 U	< 0.00023 U	< 0.00012 U	< 0.00024 U	< 0.00019 U	< 0.00018 U	< 0.00045 U	< 0.0083 U
SAE-08	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000088 U	< 0.00061 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-08	0	FD	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000088 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-08C	0	N	06/13/09	< 0.000097 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00013 U	< 0.000088 U	< 0.000097 U	< 0.00012 U	< 0.00011 U	< 0.00034 U	< 0.0057 U
SAE-08C	20	N	06/13/09	< 0.000099 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00014 U	< 0.00009 U	< 0.000099 U	< 0.00012 U	< 0.00011 U	< 0.00035 U	< 0.0058 U
SAE-08N	0	N	06/13/09	< 0.000097 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00014 U	< 0.000089 U	< 0.000097 U	< 0.00012 U	< 0.00011 U	< 0.00034 U	< 0.0058 U
SAE-08N	10	N	06/13/09	< 0.000099 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00014 U	< 0.000091 U	< 0.000099 U	< 0.00012 U	< 0.00011 U	< 0.00035 U	< 0.0059 U
SAE-08S	0	N	06/13/09	< 0.000096 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00013 U	< 0.000088 U	< 0.000096 U	< 0.00012 U	< 0.00011 U	< 0.00034 U	< 0.0057 U
SAE-08S	10	N	06/13/09	< 0.0001 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00014 U	< 0.000092 U	< 0.0001 U	< 0.00012 U	< 0.00011 U	< 0.00035 U	< 0.0059 U
SAE-09	0	N	04/15/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	0.011 J	< 0.00039 U	0.004 J	< 0.0006 U	0.0068 J	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-10	0	N	04/15/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	0.003 J	< 0.000089 U	< 0.00062 U	0.0041 J	< 0.000087 U	< 0.00073 U	< 0.0075 U
SAE-10	10	N	04/21/08	< 0.00011 U	< 0.000099 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00034 U	< 0.0062 U
SAE-10	60[a]	N	04/21/08	< 0.00015 U	< 0.00013 U	< 0.00038 U	< 0.00012 U	< 0.00026 U	< 0.00024 U	< 0.00012 U	< 0.00025 U	< 0.00019 U	< 0.00018 U	< 0.00045 U	< 0.0084 U
SAE-11	0	N	04/15/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	< 0.0004 U	< 0.000089 U	< 0.00062 U	< 0.00012 U	< 0.000087 U	< 0.00073 U	< 0.0075 U
SAE-12	0	N	04/15/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	< 0.00011 U	< 0.0004 U	< 0.000088 U	< 0.00061 U	< 0.00012 U	< 0.000086 U	< 0.00072 U	< 0.0073 U
SAE-13	0	N	04/15/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	0.0043 J	< 0.0073 U
SAE-14	0	N	04/15/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	0.016 J	< 0.0004 U	0.027 J	< 0.00061 U	0.013 J	< 0.000086 U	< 0.00072 U	< 0.0074 U
SAE-15	0	N	04/15/08	< 0.000088 U	< 0.00015 U	< 0.00012 U	< 0.000088 U	< 0.00011 U	< 0.0004 U	0.0052 J	< 0.00062 U	0.0031 J	< 0.000088 U	< 0.00074 U	< 0.0075 U
SAE-15	10	N	04/22/08	< 0.00011 U	< 0.000097 U	< 0.00027 U	< 0.000086 U	< 0.00019 U	< 0.00017 U	< 0.000086 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.006 U
SAE-15	10	FD	04/22/08	< 0.00011 U	< 0.000099 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0062 U
SAE-15	55[a]	N	04/22/08	< 0.00011 U	< 0.000097 U	< 0.00027 U	< 0.000087 U	< 0.00019 U	< 0.00017 U	< 0.000087 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-16	0	N	04/15/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	0.011 J	< 0.0004 U	0.02 J+	< 0.00061 U	0.002 J	< 0.000086 U	< 0.00072 U	< 0.0073 U
SAE-17	0	N	04/15/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	0.0089 J	< 0.00039 U	0.017 J+	< 0.00061 U	0.0022 J	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-18	0	N	04/15/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00071 U	< 0.0073 U
SAE-19	0	N	04/15/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	< 0.0004 U	< 0.00009 U	< 0.00062 U	< 0.00012 U	< 0.000087 U	< 0.00074 U	< 0.0075 U
SAE-20	0	N	04/15/08	< 0.000088 U	< 0.00015 U	< 0.00012 U	< 0.000088 U	< 0.00011 U	< 0.0004 U	< 0.00009 U	< 0.00062 U	< 0.00012 U	< 0.000088 U	< 0.00074 U	< 0.0075 U
SAE-21	0	N	04/15/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	< 0.0004 U	< 0.00009 U	< 0.00062 U	< 0.00012 U	< 0.000087 U	< 0.00074 U	< 0.0075 U
SAE-22	0	N	04/15/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000088 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-22	10	N	04/22/08	< 0.00011 U	< 0.000098 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-22	10	FD	04/22/08	< 0.00011 U	< 0.000098 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-22	50[a]	N	04/23/08	< 0.00011 U	< 0.000098 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-23	0	N	04/15/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	0.0019 J	< 0.0004 U	< 0.000089 U	< 0.00061 U	< 0.00012 U	< 0.000086 U	< 0.00073 U	< 0.0074 U

TABLE B-2
SOIL ORGANOCHLORINE PESTICIDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Organochlorine Pesticides											
				Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-Chlordane	Heptachlor	Heptachlor epoxide	Lindane	Methoxychlor	Toxaphene
SAE-24	0	N	04/15/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-25	0	N	04/15/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	< 0.0004 U	< 0.000089 U	< 0.00061 U	< 0.00012 U	< 0.000087 U	< 0.00073 U	< 0.0074 U
SAE-26	0	N	04/15/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	< 0.0004 U	< 0.000089 U	< 0.00061 U	< 0.00012 U	< 0.000087 U	< 0.00073 U	< 0.0074 U
SAE-27	0	N	04/16/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	< 0.00011 U	< 0.0004 U	< 0.000089 U	< 0.00061 U	< 0.00012 U	< 0.000086 U	< 0.00073 U	< 0.0074 U
SAE-28	0	N	04/16/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	< 0.00011 U	< 0.0004 U	< 0.000088 U	< 0.00061 U	< 0.00012 U	< 0.000086 U	< 0.00072 U	< 0.0074 U
SAE-29	0	N	04/16/08	< 0.000088 U	< 0.00016 U	< 0.00012 U	< 0.000088 U	< 0.00011 U	< 0.00041 U	< 0.000091 U	< 0.00063 U	< 0.00012 U	< 0.000088 U	< 0.00074 U	< 0.0076 U
SAE-30	0	N	04/16/08	< 0.000087 U	< 0.00015 U	< 0.00012 U	< 0.000087 U	< 0.00011 U	< 0.0004 U	< 0.000089 U	< 0.00061 U	< 0.00012 U	< 0.000087 U	< 0.00073 U	< 0.0074 U
SAE-31	0	N	04/16/08	< 0.000084 U	< 0.00015 U	< 0.00012 U	< 0.000084 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000084 U	< 0.00071 U	< 0.0072 U
SAE-32	0	N	04/16/08	< 0.000086 U	< 0.00015 U	< 0.00012 U	< 0.000086 U	< 0.00011 U	< 0.0004 U	< 0.000088 U	< 0.00061 U	< 0.00012 U	< 0.000086 U	< 0.00072 U	< 0.0073 U
SAE-33	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000088 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-34	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00071 U	< 0.0073 U
SAE-34	10	N	04/23/08	< 0.00011 U	< 0.000099 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-34	35[a]	N	04/23/08	< 0.00013 U	< 0.00011 U	< 0.00031 U	< 0.0001 U	< 0.00022 U	< 0.0002 U	< 0.0001 U	< 0.00021 U	< 0.00016 U	< 0.00015 U	< 0.00038 U	< 0.007 U
SAE-35	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-36	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00071 U	< 0.0072 U
SAE-37	0	N	04/16/08	< 0.000088 U	< 0.00016 U	< 0.00012 U	< 0.000088 U	< 0.00011 U	< 0.00041 U	< 0.000091 U	< 0.00063 U	< 0.00012 U	< 0.000088 U	< 0.00075 U	< 0.0076 U
SAE-38	0	N	04/16/08	< 0.00009 U	< 0.00016 U	< 0.00013 U	< 0.00009 U	< 0.00012 U	< 0.00042 U	< 0.000092 U	< 0.00064 U	< 0.00012 U	< 0.00009 U	< 0.00076 U	< 0.0077 U
SAE-38	10	N	04/23/08	< 0.00011 U	< 0.000099 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-38	10	FD	04/23/08	< 0.00011 U	< 0.000099 U	< 0.00028 U	< 0.000088 U	< 0.00019 U	< 0.00017 U	< 0.000088 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0062 U
SAE-38	35[a]	N	04/23/08	< 0.00017 U	< 0.00015 U	< 0.00044 U	< 0.00014 U	< 0.0003 U	< 0.00027 U	< 0.00014 U	< 0.00029 U	< 0.00022 U	< 0.0002 U	< 0.00052 U	< 0.0096 U
SAE-39	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-40	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000088 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-41	0	N	04/16/08	< 0.000091 U	< 0.00016 U	< 0.00013 U	< 0.000091 U	< 0.00012 U	< 0.00042 U	< 0.000094 U	< 0.00065 U	< 0.00013 U	< 0.000091 U	< 0.00077 U	< 0.0078 U
SAE-41	10	N	04/23/08	< 0.00011 U	< 0.000099 U	< 0.00028 U	< 0.000089 U	< 0.00019 U	< 0.00017 U	< 0.000089 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00034 U	< 0.0062 U
SAE-41	20[a]	N	04/23/08	< 0.00011 U	< 0.0001 U	< 0.00028 U	< 0.000089 U	< 0.00019 U	< 0.00018 U	< 0.000089 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00034 U	< 0.0062 U
SAE-42	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00071 U	< 0.0073 U
SAE-43	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-43	10	N	04/23/08	< 0.00011 U	< 0.0001 U	< 0.00028 U	< 0.000089 U	< 0.00019 U	< 0.00018 U	< 0.000089 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00034 U	< 0.0062 U
SAE-43	17[a]	N	04/23/08	< 0.00011 U	< 0.000098 U	< 0.00028 U	< 0.000087 U	< 0.00019 U	< 0.00017 U	< 0.000087 U	< 0.00018 U	< 0.00014 U	< 0.00013 U	< 0.00033 U	< 0.0061 U
SAE-44	0	N	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00071 U	< 0.0072 U
SAE-44	0	FD	04/16/08	< 0.000085 U	< 0.00015 U	< 0.00012 U	< 0.000085 U	< 0.00011 U	< 0.00039 U	< 0.000087 U	< 0.0006 U	< 0.00012 U	< 0.000085 U	< 0.00072 U	< 0.0073 U
SAE-45	0	N	04/16/08	< 0.00042 U	< 0.00074 U	< 0.00059 U	< 0.00042 U	< 0.00054 U	< 0.0019 U	< 0.00043 U	< 0.003 U	< 0.00058 U	< 0.00042 U	< 0.0036 U	< 0.036 U
SAE-46	0	N	04/16/08	< 0.00085 U	< 0.0015 U	< 0.0012 U	< 0.00085 U	< 0.0011 U	< 0.0039 U	< 0.00087 U	< 0.006 U	< 0.0012 U	< 0.00085 U	< 0.0071 U	< 0.073 U
SAE-47D	20	N	06/13/09	< 0.000099 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00014 U	< 0.00009 U	< 0.000099 U	< 0.00012 U	< 0.00011 U	< 0.00035 U	< 0.0058 U
SAE-48D	20	N	06/13/09	< 0.0001 U	< 0.00012 U	< 0.00014 U	< 0.00011 U	< 0.00016 U	< 0.00014 U	< 0.000094 U	< 0.0001 U	< 0.00012 U	< 0.00011 U	< 0.00036 U	< 0.006 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethylene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane (DBCP)
SAE-01	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00096 U	< 0.00055 U	< 0.00029 U	0.0022 J	< 0.00056 U	0.0013 J	0.00096 J	0.0024 J
SAE-02	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00096 U	< 0.00055 U	< 0.00029 U	< 0.00078 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-03	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00096 U	< 0.00055 U	< 0.00029 U	< 0.00079 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-04	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-05	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-06	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00096 U	< 0.00056 U	< 0.00029 U	< 0.00079 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-07	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	0.0012 J	< 0.00022 U	< 0.00091 U
SAE-07	10	N	04/21/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00057 U	< 0.0003 U	< 0.00082 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00093 U
SAE-07	55[a]	N	04/21/08	< 0.00032 U	< 0.00021 U	< 0.0002 U	< 0.0004 U	< 0.0014 U	< 0.00078 U	< 0.00041 U	< 0.0011 U	< 0.00079 U	< 0.001 U	< 0.00031 U	< 0.0013 U
SAE-08	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-08	0	FD	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-08C	0	N	06/13/09	< 0.00038 U	< 0.00024 U	< 0.00045 U	< 0.00036 U	< 0.00037 U	< 0.00024 U	< 0.00022 U	< 0.00046 U	< 0.00049 U	< 0.00031 U	< 0.00065 U	< 0.0006 U
SAE-08C	20	N	06/13/09	< 0.00039 U	< 0.00024 U	< 0.00046 U	< 0.00037 U	< 0.00038 U	< 0.00024 U	< 0.00023 U	< 0.00047 U	< 0.0005 U	< 0.00032 U	0.00043	< 0.00061 U
SAE-08N	0	N	06/13/09	< 0.00039 U	< 0.00024 U	< 0.00045 U	< 0.00037 U	< 0.00038 U	< 0.00024 U	< 0.00022 U	< 0.00046 U	< 0.00049 U	< 0.00031 U	< 0.00052 U	< 0.00061 U
SAE-08N	10	N	06/13/09	< 0.00039 U	< 0.00025 U	< 0.00046 U	< 0.00037 U	< 0.00038 U	< 0.00025 U	< 0.00023 U	< 0.00047 U	< 0.0005 U	< 0.00032 U	< 0.00053 U	< 0.00062 U
SAE-08S	0	N	06/13/09	< 0.00038 U	< 0.00024 U	< 0.00045 U	< 0.00036 U	< 0.00037 U	< 0.00024 U	< 0.00022 U	< 0.00046 U	< 0.00049 U	< 0.00031 U	< 0.00051 U	< 0.0006 U
SAE-08S	10	N	06/13/09	< 0.0004 U	< 0.00025 U	< 0.00046 U	< 0.00038 U	< 0.00039 U	< 0.00025 U	< 0.00023 U	< 0.00047 U	< 0.00051 U	< 0.00032 U	< 0.0006 U	< 0.00062 U
SAE-09	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-10	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00093 U
SAE-10	10	N	04/21/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00095 U
SAE-10	60[a]	N	04/21/08	< 0.00032 U	< 0.00021 U	< 0.0002 U	< 0.00041 U	< 0.0014 U	< 0.00079 U	< 0.00042 U	0.0019 J	< 0.0008 U	< 0.0011 U	< 0.00031 U	< 0.0013 U
SAE-11	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00093 U
SAE-12	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00098 U	< 0.00057 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00092 U
SAE-13	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-14	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00098 U	< 0.00057 U	< 0.0003 U	0.0023 J	< 0.00057 U	0.0018 J	0.00099 J	0.0035 J
SAE-15	0	N	04/15/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00082 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00094 U
SAE-15	10	N	04/22/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00076 U	< 0.00023 U	< 0.00092 U
SAE-15	10	FD	04/22/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00095 U
SAE-15	55[a]	N	04/22/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00093 U
SAE-16	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00092 U
SAE-17	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-18	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.0009 U
SAE-19	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.0003 U	< 0.00082 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00093 U
SAE-20	0	N	04/15/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00082 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00094 U
SAE-21	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00082 U	< 0.00058 U	< 0.00077 U	< 0.00023 U	< 0.00093 U
SAE-22	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-22	10	N	04/22/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00094 U
SAE-22	10	FD	04/22/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00082 U	< 0.00059 U	< 0.00077 U	< 0.00023 U	< 0.00094 U
SAE-22	50[a]	N	04/23/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00082 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00094 U
SAE-23	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00076 U	< 0.00023 U	< 0.00092 U

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethylene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane (DBCP)
SAE-24	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-25	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00076 U	< 0.00023 U	< 0.00093 U
SAE-26	0	N	04/15/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00076 U	< 0.00023 U	< 0.00093 U
SAE-27	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00076 U	< 0.00023 U	< 0.00092 U
SAE-28	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00098 U	< 0.00057 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00076 U	< 0.00022 U	< 0.00092 U
SAE-29	0	N	04/16/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00094 U
SAE-30	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00015 U	< 0.00029 U	< 0.00099 U	< 0.00057 U	< 0.0003 U	< 0.00081 U	< 0.00058 U	< 0.00076 U	< 0.00023 U	< 0.00093 U
SAE-31	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00096 U	< 0.00056 U	< 0.00029 U	< 0.00079 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-32	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00092 U
SAE-33	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-34	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-34	10	N	04/23/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00094 U
SAE-34	35[a]	N	04/23/08	< 0.00027 U	< 0.00018 U	< 0.00017 U	< 0.00034 U	< 0.0011 U	< 0.00066 U	< 0.00035 U	< 0.00094 U	< 0.00067 U	< 0.00088 U	< 0.00026 U	< 0.0011 U
SAE-35	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-36	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-37	0	N	04/16/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00094 U
SAE-38	0	N	04/16/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.00031 U	< 0.001 U	< 0.00059 U	< 0.00031 U	< 0.00084 U	< 0.0006 U	< 0.00079 U	< 0.00024 U	< 0.00096 U
SAE-38	10	N	04/23/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00094 U
SAE-38	10	FD	04/23/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00095 U
SAE-38	35[a]	N	04/23/08	< 0.00037 U	< 0.00024 U	< 0.00023 U	< 0.00047 U	< 0.0016 U	< 0.00091 U	< 0.00048 U	< 0.0013 U	< 0.00092 U	< 0.0012 U	< 0.00036 U	< 0.0015 U
SAE-39	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-40	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00098 U	< 0.00056 U	< 0.0003 U	< 0.0008 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-41	0	N	04/16/08	< 0.00025 U	< 0.00016 U	< 0.00015 U	< 0.00031 U	< 0.001 U	< 0.0006 U	< 0.00032 U	< 0.00085 U	< 0.00061 U	< 0.0008 U	< 0.00024 U	< 0.00097 U
SAE-41	10	N	04/23/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00059 U	< 0.00031 U	< 0.00083 U	< 0.00059 U	< 0.00078 U	< 0.00023 U	< 0.00095 U
SAE-41	20[a]	N	04/23/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00059 U	< 0.00031 U	< 0.00084 U	< 0.0006 U	< 0.00079 U	< 0.00023 U	< 0.00096 U
SAE-42	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.0009 U
SAE-43	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-43	10	N	04/23/08	< 0.00024 U	< 0.00016 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00059 U	< 0.00031 U	< 0.00084 U	< 0.0006 U	< 0.00079 U	< 0.00023 U	< 0.00096 U
SAE-43	17[a]	N	04/23/08	< 0.00024 U	< 0.00015 U	< 0.00015 U	< 0.0003 U	< 0.001 U	< 0.00058 U	< 0.00031 U	< 0.00082 U	< 0.00059 U	< 0.00077 U	< 0.00023 U	< 0.00094 U
SAE-44	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-44	0	FD	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-45	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00096 U	< 0.00055 U	< 0.00029 U	< 0.00079 U	< 0.00056 U	< 0.00074 U	< 0.00022 U	< 0.0009 U
SAE-46	0	N	04/16/08	< 0.00023 U	< 0.00015 U	< 0.00014 U	< 0.00029 U	< 0.00097 U	< 0.00056 U	< 0.0003 U	< 0.00079 U	< 0.00057 U	< 0.00075 U	< 0.00022 U	< 0.00091 U
SAE-47D	20	N	06/13/09	< 0.00039 U	< 0.00024 U	< 0.00046 U	< 0.00037 U	< 0.00038 U	< 0.00024 U	< 0.00023 U	< 0.00047 U	< 0.0005 U	< 0.00032 U	< 0.00052 U	< 0.00061 U
SAE-48D	20	N	06/13/09	< 0.00041 U	< 0.00025 U	< 0.00047 U	< 0.00039 U	< 0.0004 U	< 0.00025 U	< 0.00024 U	< 0.00048 U	< 0.00052 U	< 0.00033 U	< 0.0006 U	< 0.00064 U

All units in mg/kg.
[a]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene	1,2-Dichloropropane	1,3,5-Trichlorobenzene	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	1-Nonanal	2,2,3-Trimethylbutane	2,2-Dichloropropane
SAE-01	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00068 U	0.0006 J	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 UJ	< 0.00021 U	< 0.00017 U
SAE-02	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00068 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00017 U
SAE-03	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00068 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00017 U
SAE-04	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00021 U	< 0.00018 U
SAE-05	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00021 U	< 0.00018 U
SAE-06	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00068 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00018 U
SAE-07	0	N	04/16/08	0.0011 J	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	0.00032 J	< 0.00018 U	0.0016 J	< 0.0009 U	< 0.00022 U	< 0.00018 U
SAE-07	10	N	04/21/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 U	< 0.00022 U	< 0.00018 U
SAE-07	55[a]	N	04/21/08	< 0.00021 U	< 0.00062 U	< 0.00077 U	< 0.00053 U	< 0.00096 U	< 0.0003 U	< 0.00019 U	< 0.00025 U	< 0.00015 U	< 0.0013 U	< 0.0003 U	< 0.00025 U
SAE-08	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00022 U	< 0.00018 U
SAE-08	0	FD	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00022 U	< 0.00018 U
SAE-08C	0	N	06/13/09	< 0.00036 U	< 0.00033 U	< 0.00063 U	< 0.00038 U	< 0.00052 U	< 0.00025 U	< 0.00044 U	< 0.00042 U	< 0.00031 U	< 0.00037 U	< 0.00053 U	< 0.00031 U
SAE-08C	20	N	06/13/09	< 0.00037 U	< 0.00033 U	< 0.00065 U	< 0.00038 U	< 0.00053 U	< 0.00026 U	< 0.00045 U	< 0.00043 U	< 0.00032 U	< 0.00037 U	< 0.00054 U	< 0.00032 U
SAE-08N	0	N	06/13/09	< 0.00036 U	< 0.00033 U	< 0.00064 U	< 0.00038 U	< 0.00052 U	< 0.00026 U	< 0.00045 U	< 0.00042 U	< 0.00031 U	< 0.00037 U	< 0.00054 U	< 0.00031 U
SAE-08N	10	N	06/13/09	< 0.00037 U	< 0.00034 U	< 0.00065 U	< 0.00039 U	< 0.00053 U	< 0.00026 U	< 0.00046 U	< 0.00043 U	< 0.00032 U	< 0.00038 U	< 0.00055 U	< 0.00032 U
SAE-08S	0	N	06/13/09	< 0.00036 U	< 0.00033 U	< 0.00063 U	< 0.00037 U	< 0.00051 U	< 0.00025 U	< 0.00044 U	< 0.00042 U	< 0.00031 U	< 0.00037 U	< 0.00053 U	< 0.00031 U
SAE-08S	10	N	06/13/09	< 0.00038 U	< 0.00034 U	< 0.00066 U	< 0.00039 U	< 0.00053 U	< 0.00026 U	< 0.00046 U	< 0.00043 U	< 0.00032 U	< 0.00038 U	< 0.00055 U	< 0.00032 U
SAE-09	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00021 U	< 0.00018 U
SAE-10	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 UJ	< 0.00022 U	< 0.00018 U
SAE-10	10	N	04/21/08	< 0.00016 U	< 0.00047 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00012 U	< 0.00094 U	< 0.00022 U	< 0.00018 U
SAE-10	60[a]	N	04/21/08	< 0.00022 U	< 0.00063 U	< 0.00078 U	< 0.00054 U	< 0.00097 U	< 0.0003 U	< 0.00019 U	< 0.00026 U	< 0.00016 U	< 0.0013 U	< 0.0003 U	< 0.00025 U
SAE-11	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 UJ	< 0.00022 U	< 0.00018 U
SAE-12	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.0007 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00091 UJ	< 0.00022 U	< 0.00018 U
SAE-13	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00021 U	< 0.00018 U
SAE-14	0	N	04/15/08	0.0011 J	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.0007 U	0.00064 J	0.0005 J	< 0.00018 U	0.0014 J	< 0.00091 U	< 0.00022 U	< 0.00018 U
SAE-15	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-15	10	N	04/22/08	< 0.00016 U	< 0.00045 U	< 0.00056 U	< 0.00039 U	< 0.0007 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00091 U	< 0.00022 U	< 0.00018 U
SAE-15	10	FD	04/22/08	< 0.00016 U	< 0.00047 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-15	55[a]	N	04/22/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 U	< 0.00022 U	< 0.00018 U
SAE-16	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.0007 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00022 U	< 0.00018 U
SAE-17	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00022 U	< 0.00018 U
SAE-18	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 UJ	< 0.00021 U	< 0.00018 U
SAE-19	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 UJ	< 0.00022 U	< 0.00018 U
SAE-20	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 U	< 0.00022 U	< 0.00018 U
SAE-21	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 U	< 0.00022 U	< 0.00018 U
SAE-22	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00022 U	< 0.00018 U
SAE-22	10	N	04/22/08	< 0.00016 U	< 0.00046 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-22	10	FD	04/22/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 UJ	< 0.00022 U	< 0.00018 U
SAE-22	50[a]	N	04/23/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-23	0	N	04/15/08	< 0.00016 U	< 0.00045 U	< 0.00056 U	< 0.00039 U	< 0.0007 U	< 0.00022 U	< 0.00013 U	< 0.00019 U	< 0.00011 U	< 0.00091 U	< 0.00022 U	< 0.00018 U

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloroethylene	1,2-Dichloropropane	1,3,5-Trichlorobenzene	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	1-Nonanal	2,2,3-Trimethylbutane	2,2-Dichloropropane
SAE-24	0	N	04/15/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00021 U	< 0.00018 U
SAE-25	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00056 U	< 0.00039 U	< 0.0007 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 UJ	< 0.00022 U	< 0.00018 U
SAE-26	0	N	04/15/08	< 0.00016 U	< 0.00046 U	< 0.00056 U	< 0.00039 U	< 0.0007 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 UJ	< 0.00022 U	< 0.00018 U
SAE-27	0	N	04/16/08	< 0.00016 U	< 0.00045 U	< 0.00056 U	< 0.00039 U	< 0.0007 U	< 0.00022 U	< 0.00013 U	< 0.00019 U	< 0.00011 U	< 0.00091 U	< 0.00022 U	< 0.00018 U
SAE-28	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.0007 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00091 U	< 0.00022 U	< 0.00018 U
SAE-29	0	N	04/16/08	< 0.00016 U	< 0.00046 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-30	0	N	04/16/08	< 0.00016 U	< 0.00046 U	< 0.00056 U	< 0.00039 U	< 0.0007 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00092 UJ	< 0.00022 U	< 0.00018 U
SAE-31	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00068 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	0.0067 J+	< 0.00021 U	< 0.00018 U
SAE-32	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.0007 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00022 U	< 0.00018 U
SAE-33	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	0.0053 J+	< 0.00022 U	< 0.00018 U
SAE-34	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00021 U	< 0.00018 U
SAE-34	10	N	04/23/08	< 0.00016 U	< 0.00046 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-34	35[a]	N	04/23/08	< 0.00018 U	< 0.00053 U	< 0.00065 U	< 0.00045 U	< 0.00081 U	< 0.00025 U	< 0.00016 U	< 0.00022 U	< 0.00013 U	< 0.0011 U	< 0.00025 U	< 0.00021 U
SAE-35	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00021 U	< 0.00018 U
SAE-36	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00018 U
SAE-37	0	N	04/16/08	< 0.00016 U	< 0.00046 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 UJ	< 0.00022 U	< 0.00018 U
SAE-38	0	N	04/16/08	< 0.00016 U	< 0.00047 U	< 0.00059 U	< 0.0004 U	< 0.00073 U	< 0.00023 U	< 0.00014 U	< 0.00019 U	< 0.00012 U	< 0.00095 UJ	< 0.00023 U	< 0.00019 U
SAE-38	10	N	04/23/08	< 0.00016 U	< 0.00046 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-38	10	FD	04/23/08	< 0.00016 U	< 0.00047 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00094 UJ	< 0.00022 U	< 0.00018 U
SAE-38	35[a]	N	04/23/08	< 0.00025 U	< 0.00073 U	< 0.0009 U	< 0.00062 U	< 0.0011 U	< 0.00035 U	< 0.00022 U	< 0.0003 U	< 0.00018 U	< 0.0015 U	< 0.00035 U	< 0.00029 U
SAE-39	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 UJ	< 0.00021 U	< 0.00018 U
SAE-40	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00056 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00022 U	< 0.00018 U
SAE-41	0	N	04/16/08	< 0.00016 U	< 0.00048 U	< 0.00059 U	< 0.00041 U	< 0.00074 U	< 0.00023 U	< 0.00014 U	< 0.0002 U	< 0.00012 U	< 0.00096 UJ	< 0.00023 U	< 0.00019 U
SAE-41	10	N	04/23/08	< 0.00016 U	< 0.00047 U	< 0.00058 U	< 0.0004 U	< 0.00072 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00012 U	< 0.00094 U	< 0.00022 U	< 0.00018 U
SAE-41	20[a]	N	04/23/08	< 0.00016 U	< 0.00047 U	< 0.00058 U	< 0.0004 U	< 0.00073 U	< 0.00023 U	< 0.00014 U	< 0.00019 U	< 0.00012 U	< 0.00095 U	< 0.00023 U	< 0.00019 U
SAE-42	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00018 U
SAE-43	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00021 U	< 0.00018 U
SAE-43	10	N	04/23/08	< 0.00016 U	< 0.00047 U	< 0.00058 U	< 0.0004 U	< 0.00073 U	< 0.00023 U	< 0.00014 U	< 0.00019 U	< 0.00012 U	< 0.00095 U	< 0.00023 U	< 0.00019 U
SAE-43	17[a]	N	04/23/08	< 0.00016 U	< 0.00046 U	< 0.00057 U	< 0.00039 U	< 0.00071 U	< 0.00022 U	< 0.00014 U	< 0.00019 U	< 0.00011 U	< 0.00093 U	< 0.00022 U	< 0.00018 U
SAE-44	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00018 U
SAE-44	0	FD	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00022 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.0009 U	< 0.00021 U	< 0.00018 U
SAE-45	0	N	04/16/08	< 0.00015 U	< 0.00044 U	< 0.00055 U	< 0.00038 U	< 0.00068 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00017 U
SAE-46	0	N	04/16/08	< 0.00015 U	< 0.00045 U	< 0.00055 U	< 0.00038 U	< 0.00069 U	< 0.00021 U	< 0.00013 U	< 0.00018 U	< 0.00011 U	< 0.00089 U	< 0.00021 U	< 0.00018 U
SAE-47D	20	N	06/13/09	< 0.00037 U	< 0.00033 U	< 0.00065 U	< 0.00038 U	< 0.00053 U	< 0.00026 U	< 0.00045 U	< 0.00043 U	< 0.00032 U	< 0.00037 U	< 0.00055 U	< 0.00032 U
SAE-48D	20	N	06/13/09	< 0.00038 U	< 0.00035 U	< 0.00067 U	< 0.0004 U	< 0.00055 U	< 0.00027 U	< 0.00047 U	< 0.00044 U	< 0.00033 U	< 0.00039 U	< 0.00057 U	< 0.00033 U

All units in mg/kg.
[a]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 5 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				2,2-Dimethylpentane	2,3-Dimethylpentane	2,4-Dimethylpentane	2-Chlorotoluene	2-Nitropropane	2-Phenylbutane	3,3-Dimethylpentane	3-Ethylpentane	3-Methylhexane	4-Chlorotoluene	Acetone	Acetonitrile
SAE-01	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.00019 U	< 0.00046 U	< 0.0018 U	0.0005 J	< 0.0002 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	< 0.0038 U	< 0.002 UJ
SAE-02	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.00019 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.0002 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	0.16	< 0.002 UJ
SAE-03	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.00019 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	< 0.0038 U	< 0.002 UJ
SAE-04	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	0.054	< 0.002 UJ
SAE-05	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-06	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	< 0.0039 U	< 0.002 UJ
SAE-07	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	0.11	< 0.002 UJ
SAE-07	10	N	04/21/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-07	55[a]	N	04/21/08	< 0.00039 U	< 0.00032 U	< 0.00027 U	< 0.00065 U	< 0.0025 U	< 0.00035 U	< 0.00029 U	< 0.0003 U	< 0.0002 U	< 0.0013 U	< 0.0054 U	< 0.0028 UJ
SAE-08	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-08	0	FD	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-08C	0	N	06/13/09	< 0.00053 U	< 0.00044 U	< 0.00049 U	< 0.00034 U	< 0.00032 U	< 0.00033 U	< 0.00048 U	< 0.00045 U	< 0.00047 U	< 0.00025 U	< 0.0066 U	< 0.0035 UJ
SAE-08C	20	N	06/13/09	< 0.00054 U	< 0.00045 U	< 0.0005 U	< 0.00035 U	< 0.00033 U	< 0.00033 U	< 0.00049 U	< 0.00046 U	< 0.00048 U	< 0.00026 U	< 0.0067 U	< 0.0036 UJ
SAE-08N	0	N	06/13/09	< 0.00054 U	< 0.00044 U	< 0.0005 U	< 0.00034 U	< 0.00033 U	< 0.00033 U	< 0.00049 U	< 0.00046 U	< 0.00048 U	< 0.00026 U	< 0.0066 U	< 0.0036 UJ
SAE-08N	10	N	06/13/09	< 0.00055 U	< 0.00045 U	< 0.0005 U	< 0.00035 U	< 0.00033 U	< 0.00034 U	< 0.0005 U	< 0.00046 U	< 0.00049 U	< 0.00026 U	< 0.0068 U	< 0.0036 UJ
SAE-08S	0	N	06/13/09	< 0.00053 U	< 0.00044 U	< 0.00049 U	< 0.00034 U	< 0.00032 U	< 0.00033 U	< 0.00048 U	< 0.00045 U	< 0.00047 U	< 0.00025 U	< 0.0066 U	< 0.0035 UJ
SAE-08S	10	N	06/13/09	< 0.00055 U	< 0.00046 U	< 0.00051 U	< 0.00035 U	< 0.00034 U	< 0.00034 U	< 0.0005 U	< 0.00047 U	< 0.00049 U	< 0.00026 U	< 0.0068 U	< 0.0037 UJ
SAE-09	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-10	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	0.13	< 0.0021 UJ
SAE-10	10	N	04/21/08	< 0.00029 U	< 0.00024 U	< 0.00021 U	< 0.00049 U	< 0.0019 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00094 U	< 0.0041 U	< 0.0021 UJ
SAE-10	60[a]	N	04/21/08	< 0.0004 U	< 0.00032 U	< 0.00028 U	< 0.00066 U	< 0.0025 U	< 0.00035 U	< 0.00029 U	< 0.0003 U	< 0.0002 U	< 0.0013 U	0.015 J	< 0.0029 UJ
SAE-11	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-12	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.00091 U	0.2	< 0.002 UJ
SAE-13	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-14	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	0.0005 J	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.00091 U	< 0.0039 U	< 0.002 UJ
SAE-15	0	N	04/15/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-15	10	N	04/22/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-15	10	FD	04/22/08	< 0.00029 U	< 0.00024 U	< 0.00021 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00094 U	< 0.004 U	< 0.0021 UJ
SAE-15	55[a]	N	04/22/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-16	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.00091 U	< 0.0039 U	< 0.002 UJ
SAE-17	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	0.033	< 0.002 UJ
SAE-18	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	0.04	< 0.002 UJ
SAE-19	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-20	0	N	04/15/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-21	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-22	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	0.053	< 0.002 UJ
SAE-22	10	N	04/22/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	0.01 J	< 0.0021 UJ
SAE-22	10	FD	04/22/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-22	50[a]	N	04/23/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-23	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00091 U	< 0.004 U	< 0.0021 UJ

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 6 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs: 2,2-Dimethylpentane	2,3-Dimethylpentane	2,4-Dimethylpentane	2-Chlorotoluene	2-Nitropropane	2-Phenylbutane	3,3-Dimethylpentane	3-Ethylpentane	3-Methylhexane	4-Chlorotoluene	Acetone	Acetonitrile
SAE-24	0	N	04/15/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-25	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	< 0.004 U	< 0.0021 UJ
SAE-26	0	N	04/15/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	0.2	< 0.0021 UJ
SAE-27	0	N	04/16/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00091 U	< 0.004 U	< 0.0021 UJ
SAE-28	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.00091 U	< 0.0039 U	< 0.002 UJ
SAE-29	0	N	04/16/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-30	0	N	04/16/08	< 0.00029 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00092 U	0.34 J	< 0.0021 UJ
SAE-31	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	0.096	< 0.002 UJ
SAE-32	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.00091 U	< 0.0039 U	< 0.002 UJ
SAE-33	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-34	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-34	10	N	04/23/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-34	35[a]	N	04/23/08	< 0.00033 U	< 0.00027 U	< 0.00023 U	< 0.00055 U	< 0.0021 U	< 0.0003 U	< 0.00024 U	< 0.00025 U	< 0.00017 U	< 0.0011 U	< 0.0046 U	< 0.0024 UJ
SAE-35	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-36	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	< 0.0039 U	< 0.002 UJ
SAE-37	0	N	04/16/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00094 U	< 0.004 U	< 0.0021 UJ
SAE-38	0	N	04/16/08	< 0.0003 U	< 0.00024 U	< 0.00021 U	< 0.00049 U	< 0.0019 U	< 0.00027 U	< 0.00022 U	< 0.00023 U	< 0.00015 U	< 0.00095 U	< 0.0041 U	< 0.0021 UJ
SAE-38	10	N	04/23/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-38	10	FD	04/23/08	< 0.00029 U	< 0.00024 U	< 0.00021 U	< 0.00048 U	< 0.0019 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00094 U	< 0.0041 U	< 0.0021 UJ
SAE-38	35[a]	N	04/23/08	< 0.00046 U	< 0.00037 U	< 0.00032 U	< 0.00076 U	< 0.0029 U	< 0.00041 U	< 0.00034 U	< 0.00035 U	< 0.00023 U	< 0.0015 U	< 0.0063 U	< 0.0033 UJ
SAE-39	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-40	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00047 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00022 U	< 0.00014 U	< 0.0009 U	0.18	< 0.002 UJ
SAE-41	0	N	04/16/08	< 0.0003 U	< 0.00025 U	< 0.00021 U	< 0.0005 U	< 0.0019 U	< 0.00027 U	< 0.00022 U	< 0.00023 U	< 0.00015 U	< 0.00096 U	< 0.0042 U	< 0.0022 UJ
SAE-41	10	N	04/23/08	< 0.00029 U	< 0.00024 U	< 0.00021 U	< 0.00049 U	< 0.0019 U	< 0.00026 U	< 0.00022 U	< 0.00022 U	< 0.00015 U	< 0.00094 U	< 0.0041 U	< 0.0021 UJ
SAE-41	20[a]	N	04/23/08	< 0.0003 U	< 0.00024 U	< 0.00021 U	< 0.00049 U	< 0.0019 U	< 0.00026 U	< 0.00022 U	< 0.00023 U	< 0.00015 U	< 0.00095 U	< 0.0041 U	< 0.0021 UJ
SAE-42	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	< 0.0039 U	< 0.002 UJ
SAE-43	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	0.098	< 0.002 UJ
SAE-43	10	N	04/23/08	< 0.0003 U	< 0.00024 U	< 0.00021 U	< 0.00049 U	< 0.0019 U	< 0.00026 U	< 0.00022 U	< 0.00023 U	< 0.00015 U	< 0.00095 U	< 0.0041 U	< 0.0021 UJ
SAE-43	17[a]	N	04/23/08	< 0.00029 U	< 0.00024 U	< 0.0002 U	< 0.00048 U	< 0.0018 U	< 0.00026 U	< 0.00021 U	< 0.00022 U	< 0.00015 U	< 0.00093 U	< 0.004 U	< 0.0021 UJ
SAE-44	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	0.9 J	< 0.002 UJ
SAE-44	0	FD	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	0.14 J	< 0.002 UJ
SAE-45	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.00089 U	0.064	< 0.002 UJ
SAE-46	0	N	04/16/08	< 0.00028 U	< 0.00023 U	< 0.0002 U	< 0.00046 U	< 0.0018 U	< 0.00025 U	< 0.00021 U	< 0.00021 U	< 0.00014 U	< 0.0009 U	1.3	< 0.002 UJ
SAE-47D	20	N	06/13/09	< 0.00055 U	< 0.00045 U	< 0.0005 U	< 0.00035 U	< 0.00033 U	< 0.00033 U	< 0.00049 U	< 0.00046 U	< 0.00048 U	< 0.00026 U	< 0.0067 U	< 0.0036 UJ
SAE-48D	20	N	06/13/09	< 0.00057 U	< 0.00047 U	< 0.00052 U	< 0.00036 U	< 0.00034 U	< 0.00035 U	< 0.00051 U	< 0.00048 U	< 0.0005 U	< 0.00027 U	< 0.007 U	< 0.0037 UJ

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				VOCs											
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Benzene	Bromobenzene	Bromodichloromethane	Bromomethane	Carbon disulfide	Carbon tetrachloride	CFC-11	CFC-12	Chlorinated fluorocarbon (Freon 113)	Chlorobenzene	Chlorobromomethane	Chlorodibromomethane
SAE-01	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00031 U	< 0.00055 U	< 0.00091 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00012 U	< 0.00041 U	< 0.00029 U
SAE-02	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00031 U	< 0.00055 U	< 0.00091 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00012 U	< 0.00041 U	< 0.00029 U
SAE-03	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00091 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-04	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-05	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-06	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-07	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-07	10	N	04/21/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-07	55[a]	N	04/21/08	< 0.00024 U	< 0.00032 U	< 0.00048 U	< 0.00044 U	< 0.00078 U	< 0.0013 U	< 0.00072 U	< 0.00053 U	< 0.00076 U	< 0.00018 U	< 0.00058 U	< 0.00041 U
SAE-08	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-08	0	FD	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-08C	0	N	06/13/09	< 0.00033 U	< 0.00038 U	< 0.00032 U	< 0.0004 U	< 0.00028 U	< 0.00031 U	< 0.00031 U	< 0.00025 U	< 0.00025 U	< 0.0003 U	< 0.00044 U	< 0.00029 U
SAE-08C	20	N	06/13/09	< 0.00034 U	< 0.00039 U	< 0.00033 U	< 0.00041 U	< 0.00028 U	< 0.00031 U	< 0.00031 U	< 0.00026 U	< 0.00026 U	< 0.00031 U	< 0.00045 U	< 0.0003 U
SAE-08N	0	N	06/13/09	< 0.00033 U	< 0.00038 U	< 0.00033 U	< 0.00041 U	< 0.00028 U	< 0.00031 U	< 0.00031 U	< 0.00025 U	< 0.00025 U	< 0.00031 U	< 0.00044 U	< 0.0003 U
SAE-08N	10	N	06/13/09	< 0.00034 U	< 0.00039 U	< 0.00033 U	< 0.00041 U	< 0.00029 U	< 0.00032 U	< 0.00032 U	< 0.00026 U	< 0.00026 U	< 0.00031 U	< 0.00045 U	< 0.0003 U
SAE-08S	0	N	06/13/09	< 0.00033 U	< 0.00038 U	< 0.00032 U	< 0.0004 U	< 0.00028 U	< 0.00031 U	< 0.00031 U	< 0.00025 U	< 0.00025 U	< 0.0003 U	< 0.00044 U	< 0.00029 U
SAE-08S	10	N	06/13/09	< 0.00034 U	< 0.00039 U	< 0.00034 U	< 0.00042 U	< 0.00029 U	< 0.00032 U	< 0.00032 U	< 0.00026 U	< 0.00026 U	< 0.00032 U	< 0.00046 U	< 0.0003 U
SAE-09	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-10	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00057 U	< 0.00094 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-10	10	N	04/21/08	< 0.00018 U	< 0.00024 U	< 0.00036 U	< 0.00033 U	< 0.00059 U	< 0.00096 U	< 0.00054 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-10	60[a]	N	04/21/08	< 0.00024 U	< 0.00033 U	< 0.00048 U	< 0.00045 U	< 0.00079 U	< 0.0013 U	< 0.00073 U	< 0.00054 U	< 0.00077 U	< 0.00018 U	< 0.00059 U	< 0.00042 U
SAE-11	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-12	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00057 U	< 0.00093 U	< 0.00052 U	< 0.00039 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-13	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-14	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00057 U	< 0.00093 U	< 0.00052 U	< 0.00039 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-15	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-15	10	N	04/22/08	< 0.00018 U	< 0.00023 U	< 0.00035 U	< 0.00032 U	< 0.00057 U	< 0.00094 U	< 0.00052 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-15	10	FD	04/22/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-15	55[a]	N	04/22/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00057 U	< 0.00094 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-16	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00057 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-17	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-18	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-19	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-20	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-21	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-22	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-22	10	N	04/22/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-22	10	FD	04/22/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-22	50[a]	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-23	0	N	04/15/08	< 0.00018 U	< 0.00023 U	< 0.00035 U	< 0.00032 U	< 0.00057 U	< 0.00094 U	< 0.00052 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 8 of 14)

				VOCs											
Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Benzene	Bromobenzene	Bromodichloromethane	Bromomethane	Carbon disulfide	Carbon tetrachloride	CFC-11	CFC-12	Chlorinated fluorocarbon (Freon 113)	Chlorobenzene	Chlorobromomethane	Chlorodibromomethane
SAE-24	0	N	04/15/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-25	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00032 U	< 0.00057 U	< 0.00094 U	< 0.00052 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-26	0	N	04/15/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00032 U	< 0.00057 U	< 0.00094 U	< 0.00052 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-27	0	N	04/16/08	< 0.00018 U	< 0.00023 U	< 0.00035 U	< 0.00032 U	< 0.00057 U	< 0.00094 U	< 0.00052 U	< 0.00039 U	< 0.00055 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-28	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00057 U	< 0.00093 U	< 0.00052 U	< 0.00039 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-29	0	N	04/16/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-30	0	N	04/16/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00032 U	< 0.00057 U	< 0.00094 U	< 0.00052 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-31	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-32	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00057 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-33	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-34	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-34	10	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-34	35[a]	N	04/23/08	< 0.0002 U	< 0.00027 U	< 0.0004 U	< 0.00038 U	< 0.00066 U	< 0.0011 U	< 0.0006 U	< 0.00045 U	< 0.00064 U	< 0.00015 U	< 0.00049 U	< 0.00035 U
SAE-35	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-36	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-37	0	N	04/16/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-38	0	N	04/16/08	< 0.00018 U	< 0.00024 U	< 0.00036 U	< 0.00034 U	< 0.00059 U	< 0.00098 U	< 0.00054 U	< 0.0004 U	< 0.00058 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-38	10	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-38	10	FD	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00036 U	< 0.00033 U	< 0.00058 U	< 0.00096 U	< 0.00053 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-38	35[a]	N	04/23/08	< 0.00028 U	< 0.00038 U	< 0.00055 U	< 0.00052 U	< 0.00091 U	< 0.0015 U	< 0.00084 U	< 0.00062 U	< 0.00089 U	< 0.00021 U	< 0.00068 U	< 0.00048 U
SAE-39	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-40	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00093 U	< 0.00052 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.0003 U
SAE-41	0	N	04/16/08	< 0.00019 U	< 0.00025 U	< 0.00037 U	< 0.00034 U	< 0.0006 U	< 0.00099 U	< 0.00055 U	< 0.00041 U	< 0.00059 U	< 0.00014 U	< 0.00045 U	< 0.00032 U
SAE-41	10	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00036 U	< 0.00033 U	< 0.00059 U	< 0.00096 U	< 0.00054 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-41	20[a]	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00036 U	< 0.00034 U	< 0.00059 U	< 0.00097 U	< 0.00054 U	< 0.0004 U	< 0.00057 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-42	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-43	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-43	10	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00036 U	< 0.00034 U	< 0.00059 U	< 0.00097 U	< 0.00054 U	< 0.0004 U	< 0.00058 U	< 0.00013 U	< 0.00044 U	< 0.00031 U
SAE-43	17[a]	N	04/23/08	< 0.00018 U	< 0.00024 U	< 0.00035 U	< 0.00033 U	< 0.00058 U	< 0.00095 U	< 0.00053 U	< 0.00039 U	< 0.00056 U	< 0.00013 U	< 0.00043 U	< 0.0003 U
SAE-44	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-44	0	FD	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00055 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-45	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00091 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-46	0	N	04/16/08	< 0.00017 U	< 0.00023 U	< 0.00034 U	< 0.00032 U	< 0.00056 U	< 0.00092 U	< 0.00051 U	< 0.00038 U	< 0.00054 U	< 0.00013 U	< 0.00042 U	< 0.00029 U
SAE-47D	20	N	06/13/09	< 0.00034 U	< 0.00039 U	< 0.00033 U	< 0.00041 U	< 0.00028 U	< 0.00031 U	< 0.00031 U	< 0.00026 U	< 0.00026 U	< 0.00031 U	< 0.00045 U	< 0.0003 U
SAE-48D	20	N	06/13/09	< 0.00035 U	< 0.0004 U	< 0.00034 U	< 0.00043 U	< 0.0003 U	< 0.00033 U	< 0.00033 U	< 0.00026 U	< 0.00026 U	< 0.00032 U	< 0.00047 U	< 0.00031 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				VOCs											
Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethylene	cis-1,3-Dichloropropylene	Cymene	Dibromomethane	Dichloromethane	Ethanol	Ethylbenzene	Hexane, 2-methyl-	Isopropylbenzene
SAE-01	0	N	04/16/08	< 0.00035 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00073 U	< 0.00024 U	< 0.00035 U	0.0051	< 0.2 UJ	< 0.00019 U	< 0.0002 U	< 0.00018 U
SAE-02	0	N	04/16/08	< 0.00035 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00073 U	< 0.00024 U	< 0.00035 U	0.0064	< 0.2 UJ	< 0.00019 U	< 0.0002 U	< 0.00018 U
SAE-03	0	N	04/16/08	< 0.00035 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00074 U	< 0.00024 U	< 0.00035 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-04	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-05	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-06	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-07	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	0.004 J	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-07	10	N	04/21/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00019 U
SAE-07	55[a]	N	04/21/08	< 0.0005 U	0.026	< 0.00063 U	< 0.00061 U	< 0.001 U	< 0.00034 U	< 0.0005 U	< 0.0036 U	< 0.28 UJ	< 0.00026 U	< 0.00029 U	< 0.00025 U
SAE-08	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-08	0	FD	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00045 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-08C	0	N	06/13/09	< 0.00031 U	< 0.00036 U	< 0.00028 U	< 0.00034 U	< 0.00024 U	< 0.00026 U	< 0.00035 U	< 0.0024 U	< 0.062 UJ	< 0.00029 U	< 0.00051 U	< 0.00029 U
SAE-08C	20	N	06/13/09	< 0.00032 U	< 0.00037 U	< 0.00028 U	< 0.00034 U	< 0.00024 U	< 0.00027 U	< 0.00036 U	< 0.0024 U	< 0.064 UJ	< 0.0003 U	< 0.00052 U	< 0.00029 U
SAE-08N	0	N	06/13/09	< 0.00031 U	< 0.00036 U	< 0.00028 U	< 0.00034 U	< 0.00024 U	< 0.00026 U	< 0.00035 U	< 0.0024 U	< 0.063 UJ	< 0.0003 U	< 0.00051 U	< 0.00029 U
SAE-08N	10	N	06/13/09	< 0.00032 U	< 0.00037 U	< 0.00028 U	< 0.00034 U	< 0.00024 U	< 0.00027 U	< 0.00036 U	< 0.0024 U	< 0.064 UJ	< 0.0003 U	< 0.00052 U	< 0.00029 U
SAE-08S	0	N	06/13/09	< 0.00031 U	< 0.00036 U	< 0.00028 U	< 0.00034 U	< 0.00024 U	< 0.00026 U	< 0.00035 U	< 0.0024 U	< 0.062 UJ	< 0.00029 U	< 0.00051 U	< 0.00029 U
SAE-08S	10	N	06/13/09	< 0.00032 U	< 0.00037 U	< 0.00029 U	< 0.00035 U	< 0.00025 U	< 0.00027 U	< 0.00036 U	< 0.0024 U	< 0.065 UJ	< 0.0003 U	< 0.00053 U	< 0.0003 U
SAE-09	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	0.0026 J	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-10	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-10	10	N	04/21/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00046 U	< 0.00078 U	< 0.00025 U	< 0.00037 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-10	60[a]	N	04/21/08	< 0.00051 U	0.015	< 0.00064 U	< 0.00062 U	< 0.001 U	< 0.00034 U	< 0.00051 U	< 0.0036 U	< 0.28 UJ	< 0.00027 U	< 0.00029 U	< 0.00026 U
SAE-11	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00019 U
SAE-12	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00025 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-13	0	N	04/15/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-14	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00025 U	< 0.00036 U	0.018	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-15	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	0.01	< 0.2 UJ	< 0.0002 U	< 0.00021 U	< 0.00019 U
SAE-15	10	N	04/22/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00076 U	< 0.00025 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-15	10	FD	04/22/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-15	55[a]	N	04/22/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-16	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-17	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-18	0	N	04/15/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	0.0042 J	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-19	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	0.0036 J	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00019 U
SAE-20	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	0.0033 J	< 0.2 UJ	< 0.0002 U	< 0.00021 U	< 0.00019 U
SAE-21	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00019 U
SAE-22	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-22	10	N	04/22/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	0.0031 J	< 0.21 UJ	< 0.0002 U	< 0.00021 U	< 0.00019 U
SAE-22	10	FD	04/22/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.0002 U	< 0.00021 U	< 0.00019 U
SAE-22	50[a]	N	04/23/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.21 UJ	< 0.0002 U	< 0.00021 U	< 0.00019 U
SAE-23	0	N	04/15/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00076 U	< 0.00025 U	< 0.00036 U	0.0035 J	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 10 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethylene	cis-1,3-Dichloropropylene	Cymene	Dibromomethane	Dichloromethane	Ethanol	Ethylbenzene	Hexane, 2-methyl-	Isopropylbenzene
SAE-24	0	N	04/15/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	0.0039 J	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-25	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	0.013	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-26	0	N	04/15/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	0.0054	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-27	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00025 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-28	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00025 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-29	0	N	04/16/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-30	0	N	04/16/08	< 0.00037 U	< 0.00015 U	< 0.00046 U	< 0.00045 U	< 0.00076 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-31	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-32	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00046 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-33	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00045 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-34	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-34	10	N	04/23/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-34	35[a]	N	04/23/08	< 0.00042 U	< 0.00017 U	< 0.00053 U	< 0.00051 U	< 0.00088 U	< 0.00029 U	< 0.00042 U	< 0.003 U	< 0.23 UJ	< 0.00022 U	< 0.00024 U	< 0.00021 U
SAE-35	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-36	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-37	0	N	04/16/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-38	0	N	04/16/08	< 0.00038 U	< 0.00015 U	< 0.00048 U	< 0.00046 U	< 0.00079 U	< 0.00026 U	< 0.00038 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-38	10	N	04/23/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-38	10	FD	04/23/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00046 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-38	35[a]	N	04/23/08	< 0.00058 U	0.0078 J	< 0.00074 U	< 0.00071 U	< 0.0012 U	< 0.0004 U	< 0.00058 U	< 0.0042 U	< 0.32 UJ	< 0.00031 U	< 0.00034 U	< 0.00029 U
SAE-39	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-40	0	N	04/16/08	< 0.00036 U	< 0.00015 U	< 0.00045 U	< 0.00044 U	< 0.00075 U	< 0.00024 U	< 0.00036 U	< 0.0026 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-41	0	N	04/16/08	< 0.00038 U	< 0.00016 U	< 0.00049 U	< 0.00047 U	< 0.0008 U	< 0.00026 U	< 0.00038 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-41	10	N	04/23/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00046 U	< 0.00078 U	< 0.00025 U	< 0.00037 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-41	20[a]	N	04/23/08	< 0.00038 U	< 0.00015 U	< 0.00048 U	< 0.00046 U	< 0.00078 U	< 0.00026 U	< 0.00038 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-42	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-43	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-43	10	N	04/23/08	< 0.00038 U	< 0.00015 U	< 0.00048 U	< 0.00046 U	< 0.00078 U	< 0.00026 U	< 0.00038 U	< 0.0027 U	< 0.21 UJ	< 0.0002 U	< 0.00022 U	< 0.00019 U
SAE-43	17[a]	N	04/23/08	< 0.00037 U	< 0.00015 U	< 0.00047 U	< 0.00045 U	< 0.00077 U	< 0.00025 U	< 0.00037 U	< 0.0026 U	< 0.2 UJ	< 0.0002 U	< 0.00021 U	< 0.00019 U
SAE-44	0	N	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	0.0028 J	< 0.00021 U	< 0.00018 U
SAE-44	0	FD	04/16/08	< 0.00036 U	< 0.00014 U	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-45	0	N	04/16/08	< 0.00035 U	< 0.00014 U	< 0.00045 U	< 0.00043 U	< 0.00074 U	< 0.00024 U	< 0.00035 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-46	0	N	04/16/08	< 0.00036 U	0.00083 J	< 0.00045 U	< 0.00044 U	< 0.00074 U	< 0.00024 U	< 0.00036 U	< 0.0025 U	< 0.2 UJ	< 0.00019 U	< 0.00021 U	< 0.00018 U
SAE-47D	20	N	06/13/09	< 0.00032 U	< 0.00037 U	< 0.00028 U	< 0.00034 U	< 0.00024 U	< 0.00027 U	< 0.00036 U	< 0.0024 U	< 0.064 UJ	< 0.0003 U	< 0.00052 U	< 0.00029 U
SAE-48D	20	N	06/13/09	< 0.00033 U	< 0.00038 U	< 0.00029 U	< 0.00036 U	< 0.00025 U	< 0.00028 U	< 0.00037 U	< 0.0025 U	< 0.066 UJ	< 0.00031 U	< 0.00054 U	< 0.0003 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

(hatched box) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

(gray box) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs m,p-Xylene	Methyl disulfide	Methyl ethyl ketone	Methyl iodide	Methyl isobutyl ketone	Methyl n-butyl ketone	MTBE (Methyl tert-butyl ether)	n-Butyl benzene	n-Heptane	n-Propyl benzene	o-Xylene	Styrene (monomer)
SAE-01	0	N	04/16/08	< 0.00057 U	< 0.00021 U	0.0078 J	< 0.00026 U	0.0059 J	0.0074 J	< 0.00046 U	0.0008 J	< 0.00016 U	< 0.00095 U	< 0.00031 U	< 0.0012 U
SAE-02	0	N	04/16/08	0.0018 J	< 0.00021 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00028 U	< 0.00046 U	< 0.00053 U	< 0.00016 U	< 0.00095 U	< 0.00031 U	< 0.0012 U
SAE-03	0	N	04/16/08	< 0.00057 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00028 U	< 0.00046 U	< 0.00054 U	< 0.00016 U	< 0.00095 U	< 0.00031 U	< 0.0012 U
SAE-04	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-05	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-06	0	N	04/16/08	< 0.00057 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00028 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-07	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-07	10	N	04/21/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-07	55[a]	N	04/21/08	< 0.00081 U	< 0.0003 U	< 0.0019 U	< 0.00037 U	< 0.0023 U	< 0.0004 U	< 0.00065 U	< 0.00076 U	< 0.00023 U	< 0.0013 U	< 0.00044 U	< 0.0017 U
SAE-08	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-08	0	FD	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-08C	0	N	06/13/09	< 0.00046 U	< 0.00048 U	< 0.00058 U	< 0.00039 U	< 0.00031 U	< 0.00028 U	< 0.00047 U	< 0.0003 U	< 0.00038 U	< 0.00028 U	< 0.00024 U	< 0.00021 U
SAE-08C	20	N	06/13/09	< 0.00047 U	< 0.00049 U	< 0.00059 U	< 0.0004 U	< 0.00032 U	< 0.00029 U	< 0.00048 U	< 0.0003 U	< 0.00038 U	< 0.00028 U	< 0.00024 U	< 0.00021 U
SAE-08N	0	N	06/13/09	< 0.00046 U	< 0.00049 U	< 0.00058 U	< 0.00039 U	< 0.00031 U	< 0.00029 U	< 0.00047 U	< 0.0003 U	< 0.00038 U	< 0.00028 U	< 0.00024 U	< 0.00021 U
SAE-08N	10	N	06/13/09	< 0.00047 U	< 0.0005 U	< 0.00059 U	< 0.0004 U	< 0.00032 U	< 0.00029 U	< 0.00048 U	< 0.0003 U	< 0.00039 U	< 0.00028 U	< 0.00024 U	< 0.00022 U
SAE-08S	0	N	06/13/09	< 0.00046 U	< 0.00048 U	< 0.00058 U	< 0.00039 U	< 0.00031 U	< 0.00028 U	< 0.00047 U	< 0.0003 U	< 0.00038 U	< 0.00028 U	< 0.00024 U	< 0.00021 U
SAE-08S	10	N	06/13/09	< 0.00047 U	< 0.0005 U	< 0.0006 U	< 0.0004 U	< 0.00032 U	< 0.00029 U	< 0.00049 U	< 0.00031 U	< 0.00039 U	< 0.00029 U	< 0.00025 U	< 0.00022 U
SAE-09	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-10	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-10	10	N	04/21/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00057 U	< 0.00017 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-10	60[a]	N	04/21/08	< 0.00082 U	< 0.00031 U	0.0048 J	< 0.00037 U	< 0.0023 U	< 0.00041 U	< 0.00066 U	< 0.00077 U	< 0.00024 U	< 0.0014 U	< 0.00044 U	< 0.0017 U
SAE-11	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-12	0	N	04/15/08	< 0.00058 U	< 0.00022 U	0.0059 J	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00055 U	< 0.00017 U	< 0.00097 U	< 0.00032 U	< 0.0012 U
SAE-13	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-14	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	0.0072 J	0.013 J	< 0.00047 U	0.00085 J	< 0.00017 U	< 0.00097 U	< 0.00032 U	< 0.0012 U
SAE-15	0	N	04/15/08	< 0.0006 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-15	10	N	04/22/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U
SAE-15	10	FD	04/22/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-15	55[a]	N	04/22/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-16	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00055 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-17	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-18	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-19	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-20	0	N	04/15/08	< 0.0006 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-21	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.00099 U	< 0.00032 U	< 0.0013 U
SAE-22	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-22	10	N	04/22/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-22	10	FD	04/22/08	< 0.0006 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-22	50[a]	N	04/23/08	< 0.0006 U	< 0.00023 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-23	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 12 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs											
				m,p-Xylene	Methyl disulfide	Methyl ethyl ketone	Methyl iodide	Methyl isobutyl ketone	Methyl n-butyl ketone	MTBE (Methyl tert-butyl ether)	n-Butyl benzene	n-Heptane	n-Propyl benzene	o-Xylene	Styrene (monomer)
SAE-24	0	N	04/15/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-25	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U
SAE-26	0	N	04/15/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U
SAE-27	0	N	04/16/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U
SAE-28	0	N	04/16/08	< 0.00059 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U
SAE-29	0	N	04/16/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-30	0	N	04/16/08	< 0.00059 U	< 0.00022 U	0.0093 J	< 0.00027 U	< 0.0017 U	< 0.00029 U	< 0.00048 U	< 0.00055 U	< 0.00017 U	< 0.00098 U	< 0.00032 U	< 0.0012 U
SAE-31	0	N	04/16/08	< 0.00057 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00028 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-32	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0017 U	< 0.00029 U	< 0.00047 U	< 0.00055 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-33	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-34	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-34	10	N	04/23/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-34	35[a]	N	04/23/08	< 0.00068 U	< 0.00026 U	< 0.0016 U	< 0.00031 U	< 0.0019 U	< 0.00034 U	< 0.00055 U	< 0.00064 U	< 0.0002 U	< 0.0011 U	< 0.00037 U	< 0.0014 U
SAE-35	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-36	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-37	0	N	04/16/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-38	0	N	04/16/08	< 0.00061 U	< 0.00023 U	< 0.0015 U	< 0.00028 U	< 0.0017 U	< 0.0003 U	< 0.0005 U	< 0.00057 U	< 0.00018 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-38	10	N	04/23/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-38	10	FD	04/23/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-38	35[a]	N	04/23/08	< 0.00094 U	< 0.00035 U	< 0.0023 U	< 0.00043 U	< 0.0027 U	< 0.00047 U	< 0.00076 U	< 0.00088 U	< 0.00027 U	< 0.0016 U	< 0.00051 U	< 0.002 U
SAE-39	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-40	0	N	04/16/08	< 0.00058 U	< 0.00022 U	0.0062 J	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00097 U	< 0.00031 U	< 0.0012 U
SAE-41	0	N	04/16/08	< 0.00062 U	< 0.00023 U	< 0.0015 U	< 0.00028 U	< 0.0018 U	< 0.00031 U	< 0.0005 U	< 0.00058 U	< 0.00018 U	< 0.001 U	< 0.00034 U	< 0.0013 U
SAE-41	10	N	04/23/08	< 0.0006 U	< 0.00023 U	< 0.0015 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00057 U	< 0.00017 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-41	20[a]	N	04/23/08	< 0.00061 U	< 0.00023 U	< 0.0015 U	< 0.00028 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00057 U	< 0.00018 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-42	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-43	0	N	04/16/08	< 0.00058 U	< 0.00022 U	0.0032 J	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-43	10	N	04/23/08	< 0.00061 U	< 0.00023 U	< 0.0015 U	< 0.00028 U	< 0.0017 U	< 0.0003 U	< 0.00049 U	< 0.00057 U	< 0.00018 U	< 0.001 U	< 0.00033 U	< 0.0013 U
SAE-43	17[a]	N	04/23/08	< 0.0006 U	< 0.00022 U	< 0.0014 U	< 0.00027 U	< 0.0017 U	< 0.0003 U	< 0.00048 U	< 0.00056 U	< 0.00017 U	< 0.001 U	< 0.00032 U	< 0.0013 U
SAE-44	0	N	04/16/08	0.01	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	0.0038 J	< 0.0012 U
SAE-44	0	FD	04/16/08	0.0066	< 0.00022 U	0.007 J	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-45	0	N	04/16/08	< 0.00057 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00028 U	< 0.00046 U	< 0.00054 U	< 0.00016 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-46	0	N	04/16/08	< 0.00058 U	< 0.00022 U	< 0.0014 U	< 0.00026 U	< 0.0016 U	< 0.00029 U	< 0.00047 U	< 0.00054 U	< 0.00017 U	< 0.00096 U	< 0.00031 U	< 0.0012 U
SAE-47D	20	N	06/13/09	< 0.00047 U	< 0.00049 U	< 0.00059 U	< 0.0004 U	< 0.00032 U	< 0.00029 U	< 0.00048 U	< 0.0003 U	< 0.00039 U	< 0.00028 U	< 0.00024 U	< 0.00021 U
SAE-48D	20	N	06/13/09	< 0.00048 U	< 0.00051 U	< 0.00061 U	< 0.00041 U	< 0.00033 U	< 0.0003 U	< 0.0005 U	< 0.00031 U	< 0.0004 U	< 0.00029 U	< 0.00025 U	< 0.00022 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 13 of 14)

				VOCs									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	tert-Butyl benzene	Tetrachloroethylene	Toluene	trans-1,2-Dichloroethylene	trans-1,3-Dichloropropylene	Tribromomethane	Trichloroethylene	Vinyl acetate	Vinyl chloride	Xylenes (total)
SAE-01	0	N	04/16/08	0.00041 J	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00086 U
SAE-02	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	0.0018 J
SAE-03	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-04	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-05	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-06	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-07	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-07	10	N	04/21/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00037 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-07	55[a]	N	04/21/08	< 0.00038 U	< 0.00039 U	< 0.00019 U	< 0.00031 U	< 0.00029 U	< 0.00035 U	< 0.00051 U	< 0.00025 U	< 0.00034 U	< 0.0012 U
SAE-08	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-08	0	FD	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-08C	0	N	06/13/09	< 0.00023 U	< 0.00047 U	< 0.00024 U	< 0.00034 U	< 0.00018 U	< 0.00042 U	< 0.00027 U	< 0.00039 U	< 0.00033 U	< 0.00065 U
SAE-08C	20	N	06/13/09	< 0.00023 U	< 0.00048 U	< 0.00025 U	< 0.00035 U	< 0.00018 U	< 0.00043 U	< 0.00027 U	< 0.00039 U	< 0.00033 U	< 0.00066 U
SAE-08N	0	N	06/13/09	< 0.00023 U	< 0.00047 U	< 0.00024 U	< 0.00035 U	< 0.00018 U	< 0.00042 U	< 0.00027 U	< 0.00039 U	< 0.00033 U	< 0.00065 U
SAE-08N	10	N	06/13/09	< 0.00023 U	< 0.00048 U	< 0.00028 U	< 0.00035 U	< 0.00018 U	< 0.00043 U	< 0.00027 U	< 0.0004 U	< 0.00034 U	< 0.00066 U
SAE-08S	0	N	06/13/09	< 0.00023 U	< 0.00047 U	< 0.00024 U	< 0.00034 U	< 0.00018 U	< 0.00042 U	< 0.00027 U	< 0.00038 U	< 0.00033 U	< 0.00065 U
SAE-08S	10	N	06/13/09	< 0.00024 U	< 0.00049 U	< 0.00025 U	< 0.00036 U	< 0.00019 U	< 0.00043 U	< 0.00028 U	< 0.0004 U	< 0.00034 U	< 0.00067 U
SAE-09	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-10	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.0009 U
SAE-10	10	N	04/21/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00024 U	< 0.00022 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-10	60[a]	N	04/21/08	< 0.00038 U	0.00063 J	< 0.00019 U	< 0.00032 U	< 0.00029 U	< 0.00035 U	< 0.00052 U	< 0.00026 U	< 0.00034 U	< 0.0012 U
SAE-11	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00037 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-12	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-13	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-14	0	N	04/15/08	0.00045 J	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-15	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-15	10	N	04/22/08	< 0.00028 U	< 0.00028 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.00089 U
SAE-15	10	FD	04/22/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-15	55[a]	N	04/22/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.0009 U
SAE-16	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-17	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-18	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-19	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-20	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-21	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-22	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-22	10	N	04/22/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-22	10	FD	04/22/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-22	50[a]	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-23	0	N	04/15/08	< 0.00028 U	< 0.00028 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.00089 U

TABLE B-3
SOIL VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	VOCs									
				tert-Butyl benzene	Tetrachloroethylene	Toluene	trans-1,2-Dichloroethylene	trans-1,3-Dichloropropylene	Tribromomethane	Trichloroethylene	Vinyl acetate	Vinyl chloride	Xylenes (total)
SAE-24	0	N	04/15/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-25	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.00089 U
SAE-26	0	N	04/15/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.00089 U
SAE-27	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.00089 U
SAE-28	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-29	0	N	04/16/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-30	0	N	04/16/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00025 U	< 0.00089 U
SAE-31	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-32	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-33	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-34	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-34	10	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-34	35[a]	N	04/23/08	< 0.00032 U	< 0.00033 U	< 0.00016 U	< 0.00027 U	< 0.00024 U	< 0.00029 U	< 0.00043 U	< 0.00021 U	< 0.00028 U	< 0.001 U
SAE-35	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-36	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-37	0	N	04/16/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-38	0	N	04/16/08	< 0.00029 U	< 0.0003 U	< 0.00014 U	< 0.00024 U	< 0.00022 U	< 0.00026 U	< 0.00039 U	< 0.00019 U	< 0.00026 U	< 0.00093 U
SAE-38	10	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-38	10	FD	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00024 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-38	35[a]	N	04/23/08	< 0.00044 U	0.0012 J	< 0.00022 U	< 0.00037 U	< 0.00034 U	< 0.00041 U	< 0.00059 U	< 0.00029 U	< 0.00039 U	< 0.0014 U
SAE-39	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-40	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00037 U	< 0.00018 U	< 0.00024 U	< 0.00088 U
SAE-41	0	N	04/16/08	< 0.00029 U	< 0.0003 U	< 0.00014 U	< 0.00024 U	< 0.00022 U	< 0.00027 U	< 0.00039 U	< 0.00019 U	< 0.00026 U	< 0.00094 U
SAE-41	10	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00024 U	< 0.00022 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00091 U
SAE-41	20[a]	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00024 U	< 0.00022 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00092 U
SAE-42	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-43	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-43	10	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00024 U	< 0.00022 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.00092 U
SAE-43	17[a]	N	04/23/08	< 0.00028 U	< 0.00029 U	< 0.00014 U	< 0.00023 U	< 0.00021 U	< 0.00026 U	< 0.00038 U	< 0.00019 U	< 0.00025 U	< 0.0009 U
SAE-44	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	0.014
SAE-44	0	FD	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00023 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	0.0066 J
SAE-45	0	N	04/16/08	< 0.00027 U	< 0.00028 U	< 0.00013 U	< 0.00022 U	< 0.0002 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-46	0	N	04/16/08	< 0.00027 U	< 0.00028 U	0.00083 J	< 0.00022 U	< 0.00021 U	< 0.00025 U	< 0.00036 U	< 0.00018 U	< 0.00024 U	< 0.00087 U
SAE-47D	20	N	06/13/09	< 0.00023 U	< 0.00048 U	< 0.00025 U	< 0.00035 U	< 0.00018 U	< 0.00043 U	< 0.00027 U	< 0.00039 U	< 0.00033 U	< 0.00066 U
SAE-48D	20	N	06/13/09	< 0.00024 U	< 0.0005 U	< 0.00026 U	< 0.00036 U	< 0.00019 U	< 0.00044 U	< 0.00028 U	< 0.00041 U	< 0.00035 U	< 0.00068 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs									
				1,2,4,5-Tetrachloro-benzene	1,2-Diphenylhydrazine	1,4-Dioxane	2,2'-/4,4'-Dichlorobenzil	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene
SAE-01	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-02	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-03	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-04	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-05	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-06	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-07	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-07	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.37 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-07	55[a]	N	04/21/08	< 0.047 U	< 0.047 U	< 0.047 U	< 0.45 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.47 U	< 0.047 U
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	--	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-08	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-08	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-08C	0	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08C	20	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08N	0	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08N	10	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08S	0	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08S	10	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-09	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	0.87	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-10	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-10	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-10	60[a]	N	04/21/08	< 0.048 U	< 0.048 U	< 0.048 U	< 0.67 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.48 U	< 0.048 U
SAE-11	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-12	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-13	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-14	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	0.33 J	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	--	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-15	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	0.18 J	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-15	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-15	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-15	55[a]	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.47 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-16	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	0.28 J	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-17	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	0.44	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-18	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.35 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-19	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-20	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-21	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-22	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-22	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.36 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-22	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-22	50[a]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs									
				1,2,4,5-Tetrachloro-benzene	1,2-Diphenylhydrazine	1,4-Dioxane	2,2'-/4,4'-Dichlorobenzil	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene
SAE-23	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-24	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.35 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-25	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.37 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-26	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-27	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-28	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-29	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.39 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-30	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.39 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-31	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-32	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.38 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-33	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-34	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-34	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-34	35[a]	N	04/23/08	< 0.04 U	< 0.04 U	< 0.04 U	< 0.49 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.4 U	< 0.04 U
SAE-35	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-36	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-37	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.4 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-38	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.34 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.36 U	< 0.036 U
SAE-38	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-38	10	FD	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-38	35[a]	N	04/23/08	< 0.055 U	< 0.055 U	< 0.055 U	< 0.46 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.55 U	< 0.055 U
SAE-39	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.39 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-40	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.37 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-41	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.39 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.36 U	< 0.036 U
SAE-41	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U
SAE-41	20[a]	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.38 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U
SAE-42	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.4 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-43	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.39 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-43	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U
SAE-43	17[a]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-44	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.36 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-44	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.38 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-45	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.41 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-46	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.77 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-47D	20	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-48D	20	N	06/13/09	--	--	--	--	--	--	--	--	--	--

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				SVOCs									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3-Methylphenol & 4-Methylphenol	3-Nitroaniline	4-Bromophenyl phenyl ether
SAE-01	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-02	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-03	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-04	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-05	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-06	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-07	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-07	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-07	55[d]	N	04/21/08	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.095 U	< 0.047 U	< 0.047 U
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-08	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-08	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-08C	0	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08C	20	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08N	0	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08N	10	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08S	0	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-08S	10	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-09	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-10	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-10	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-10	60[d]	N	04/21/08	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.096 U	< 0.048 U	< 0.048 U
SAE-11	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-12	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.069 U	< 0.034 U	< 0.034 U
SAE-13	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-14	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.069 U	< 0.034 U	< 0.034 U
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-15	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-15	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.069 U	< 0.035 U	< 0.035 U
SAE-15	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-15	55[d]	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-16	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-17	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-18	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-19	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-20	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-21	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-22	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-22	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-22	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-22	50[d]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 4 of 14)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs									
				2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	2-Methylnaphthalene	2-Nitroaniline	2-Nitrophenol	3,3'-Dichlorobenzidine	3-Methylphenol & 4-Methylphenol	3-Nitroaniline	4-Bromophenyl phenyl ether
SAE-23	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.069 U	< 0.035 U	< 0.035 U
SAE-24	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-25	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.069 U	< 0.035 U	< 0.035 U
SAE-26	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.069 U	< 0.035 U	< 0.035 U
SAE-27	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.069 U	< 0.035 U	< 0.035 U
SAE-28	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.069 U	< 0.034 U	< 0.034 U
SAE-29	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-30	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.069 U	< 0.035 U	< 0.035 U
SAE-31	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-32	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-33	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-34	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-34	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-34	35[d]	N	04/23/08	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.08 U	< 0.04 U	< 0.04 U
SAE-35	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-36	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-37	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-38	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.072 U	< 0.036 U	< 0.036 U
SAE-38	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-38	10	FD	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.071 U	< 0.035 U	< 0.035 U
SAE-38	35[d]	N	04/23/08	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.11 U	< 0.055 U	< 0.055 U
SAE-39	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-40	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-41	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.073 U	< 0.036 U	< 0.036 U
SAE-41	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.071 U	< 0.036 U	< 0.036 U
SAE-41	20[d]	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.072 U	< 0.036 U	< 0.036 U
SAE-42	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-43	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-43	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.072 U	< 0.036 U	< 0.036 U
SAE-43	17[d]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.07 U	< 0.035 U	< 0.035 U
SAE-44	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-44	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-45	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.067 U	< 0.034 U	< 0.034 U
SAE-46	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.068 U	< 0.034 U	< 0.034 U
SAE-47D	20	N	06/13/09	--	--	--	--	--	--	--	--	--	--
SAE-48D	20	N	06/13/09	--	--	--	--	--	--	--	--	--	--

All units in mg/kg.
-- = no sample data.
[d]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				SVOCs									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	4-Chloro-3-Methylphenol	4-Chlorophenyl phenyl ether	4-Chlorothioanisole	4-Nitrophenol	Acetophenone	Aniline	Azobenzene	Benzenethiol	Benzoic acid	Benzyl alcohol
SAE-01	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-02	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-03	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-04	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-05	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-06	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-07	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-07	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-07	55[a]	N	04/21/08	< 0.047 U	< 0.047 U	< 0.011 U	< 0.47 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.18 U	< 0.047 U	< 0.047 U
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.33 U	< 0.034 U
SAE-08	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-08	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-08C	0	N	06/13/09	--	--	--	--	< 0.0346 U	< 0.121 U	--	< 0.114 U	< 0.173 UJ	< 0.104 U
SAE-08C	20	N	06/13/09	--	--	--	--	< 0.0363 U	< 0.127 U	--	< 0.12 U	< 0.182 UJ	< 0.109 U
SAE-08N	0	N	06/13/09	--	--	--	--	< 0.0343 U	< 0.12 U	--	< 0.113 U	< 0.172 UJ	< 0.103 U
SAE-08N	10	N	06/13/09	--	--	--	--	< 0.0347 U	< 0.121 U	--	< 0.114 U	< 0.173 UJ	< 0.104 U
SAE-08S	0	N	06/13/09	--	--	--	--	< 0.0343 U	< 0.12 U	--	< 0.113 U	< 0.171 UJ	< 0.103 U
SAE-08S	10	N	06/13/09	--	--	--	--	< 0.0353 U	< 0.124 U	--	< 0.116 U	< 0.176 UJ	< 0.106 U
SAE-09	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-10	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-10	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-10	60[a]	N	04/21/08	< 0.048 U	< 0.048 U	< 0.011 U	< 0.48 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.18 U	< 0.048 U	< 0.048 U
SAE-11	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-12	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-13	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-14	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	0.081 J
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.34 U	< 0.034 U
SAE-15	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	0.076 J
SAE-15	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-15	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-15	55[a]	N	04/22/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-16	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	0.06 J
SAE-17	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	0.069 J
SAE-18	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	0.078 J
SAE-19	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-20	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-21	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-22	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-22	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-22	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-22	50[a]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				SVOCs									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	4-Chloro-3-Methylphenol	4-Chlorophenyl phenyl ether	4-Chlorothioanisole	4-Nitrophenol	Acetophenone	Aniline	Azobenzene	Benzenethiol	Benzoic acid	Benzyl alcohol
SAE-23	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-24	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-25	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-26	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	0.086 J
SAE-27	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-28	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0079 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-29	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-30	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.0079 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-31	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-32	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-33	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-34	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-34	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-34	35[d]	N	04/23/08	< 0.04 U	< 0.04 U	< 0.0091 U	< 0.4 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.15 U	< 0.04 U	< 0.04 U
SAE-35	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-36	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-37	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-38	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.0082 U	< 0.36 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U
SAE-38	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-38	10	FD	04/23/08	< 0.035 U	< 0.035 U	< 0.0081 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-38	35[d]	N	04/23/08	< 0.055 U	< 0.055 U	< 0.013 U	< 0.55 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.2 U	< 0.055 U	< 0.055 U
SAE-39	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-40	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-41	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.0083 U	< 0.36 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U
SAE-41	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.0081 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U
SAE-41	20[d]	N	04/23/08	< 0.036 U	< 0.036 U	< 0.0082 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U
SAE-42	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-43	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-43	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.0082 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U
SAE-43	17[d]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.008 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U
SAE-44	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-44	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.0078 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-45	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U
SAE-46	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.0077 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.13 U	< 0.034 U	< 0.034 U
SAE-47D	20	N	06/13/09	--	--	--	--	< 0.035 U	< 0.123 U	--	< 0.116 U	< 0.175 UJ	< 0.105 U
SAE-48D	20	N	06/13/09	--	--	--	--	< 0.0356 U	< 0.124 U	--	< 0.117 U	< 0.178 U	< 0.107 U

All units in mg/kg.
-- = no sample data.
[d]Indicates sample collected from the capillary fringe.
(hatched box) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(gray box) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs: Benzyl butyl phthalate	bis(2-Chloroethoxy) methane	bis(2-Chloroethyl) ether	bis(2-Chloroisopropyl) ether	bis(2-Ethylhexyl) phthalate	bis(p-Chlorophenyl) disulfide	bis(p-Chlorophenyl) sulfone	Carbazole	Dibenzofuran	Dibutyl phthalate
SAE-01	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.2 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-02	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.2 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-03	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.2 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-04	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-05	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-06	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-07	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-07	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-07	55[d]	N	04/21/08	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.29 U	< 0.47 U	< 0.047 U	< 0.047 U	< 0.047 U
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.044 U	< 0.034 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-08	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	0.036 J	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-08	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-08C	0	N	06/13/09	< 0.0693 U	< 0.0693 U	< 0.0693 U	< 0.0693 U	< 0.0693 U	< 0.114 U	< 0.114 U	< 0.0104 UJ	< 0.0693 U	< 0.0346 U
SAE-08C	20	N	06/13/09	< 0.0727 U	< 0.0727 U	< 0.0727 U	< 0.0727 U	< 0.0727 U	< 0.12 U	< 0.12 U	< 0.0109 UJ	< 0.0727 U	< 0.0363 U
SAE-08N	0	N	06/13/09	< 0.0687 U	< 0.0687 U	< 0.0687 U	< 0.0687 U	< 0.0687 U	< 0.113 U	< 0.113 U	< 0.0103 UJ	< 0.0687 U	< 0.0343 U
SAE-08N	10	N	06/13/09	< 0.0694 U	< 0.0694 U	< 0.0694 U	< 0.0694 U	< 0.0694 U	< 0.114 U	< 0.114 U	< 0.0104 UJ	< 0.0694 U	< 0.0347 U
SAE-08S	0	N	06/13/09	< 0.0686 U	< 0.0686 U	< 0.0686 U	< 0.0686 U	< 0.0686 U	< 0.113 U	< 0.113 U	< 0.0103 UJ	< 0.0686 U	< 0.0343 U
SAE-08S	10	N	06/13/09	< 0.0706 U	< 0.0706 U	< 0.0706 U	< 0.0706 U	< 0.0706 U	< 0.116 U	< 0.116 U	< 0.0106 UJ	< 0.0706 U	< 0.0353 U
SAE-09	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-10	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-10	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.22 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-10	60[d]	N	04/21/08	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.29 U	< 0.48 U	< 0.048 U	< 0.048 U	< 0.048 U
SAE-11	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-12	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-13	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-14	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.044 U	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-15	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-15	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-15	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.22 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-15	55[d]	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-16	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-17	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-18	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-19	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-20	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-21	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-22	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-22	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-22	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-22	50[d]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				SVOCs									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Benzyl butyl phthalate	bis(2-Chloroethoxy) methane	bis(2-Chloroethyl) ether	bis(2-Chloroisopropyl) ether	bis(2-Ethylhexyl) phthalate	bis(p-Chlorophenyl) disulfide	bis(p-Chlorophenyl) sulfone	Carbazole	Dibenzofuran	Dibutyl phthalate
SAE-23	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-24	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-25	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-26	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-27	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-28	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-29	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.22 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-30	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.34 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-31	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-32	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-33	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-34	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-34	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-34	35[a]	N	04/23/08	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.24 U	< 0.4 U	< 0.04 U	< 0.04 U	< 0.04 U
SAE-35	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-36	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-37	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.22 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-38	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.22 U	< 0.36 U	< 0.036 U	< 0.036 U	< 0.036 U
SAE-38	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-38	10	FD	04/23/08	0.065 J	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.22 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-38	35[a]	N	04/23/08	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.34 U	< 0.55 U	< 0.055 U	< 0.055 U	< 0.055 U
SAE-39	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-40	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-41	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.22 U	< 0.36 U	< 0.036 U	< 0.036 U	< 0.036 U
SAE-41	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.22 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U
SAE-41	20[a]	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.22 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U
SAE-42	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-43	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-43	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.22 U	< 0.35 U	< 0.036 U	< 0.036 U	< 0.036 U
SAE-43	17[a]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.21 U	< 0.35 U	< 0.035 U	< 0.035 U	< 0.035 U
SAE-44	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-44	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-45	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.21 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-46	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	0.15 J	< 0.21 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-47D	20	N	06/13/09	< 0.07 U	< 0.07 U	< 0.07 U	< 0.07 U	< 0.07 U	< 0.116 U	< 0.116 U	< 0.0105 UJ	< 0.07 U	< 0.035 U
SAE-48D	20	N	06/13/09	< 0.0711 U	< 0.0711 U	< 0.0711 U	< 0.0711 U	< 0.0711 U	< 0.117 U	< 0.117 U	< 0.0107 U	< 0.0711 U	< 0.0356 U

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 9 of 14)

				SVOCs									
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Diethyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate	Diphenyl sulfone	Fluoranthene	Fluorene	Hexachloro-1,3-butadiene	Hexachlorobenzene	Hexachlorocyclo-pentadiene	Hexachloroethane
SAE-01	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-02	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-03	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-04	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-05	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-06	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	0.043 J	< 0.33 U	< 0.034 U
SAE-07	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	2	< 0.34 U	< 0.034 U
SAE-07	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	0.11 J	< 0.35 U	< 0.035 U
SAE-07	55[a]	N	04/21/08	< 0.047 U	< 0.047 U	< 0.021 U	< 0.0095 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.47 U	< 0.047 U
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	0.36	< 0.33 U	< 0.034 U
SAE-08	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-08	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-08C	0	N	06/13/09	< 0.0693 U	< 0.0693 U	< 0.0693 U	< 0.114 U	< 0.0104 U	< 0.0104 U	< 0.0693 U	< 0.0693 U	< 0.0693 U	< 0.0693 U
SAE-08C	20	N	06/13/09	< 0.0727 U	< 0.0727 U	< 0.0727 U	< 0.12 U	< 0.0109 U	< 0.0109 U	< 0.0727 U	< 0.0727 U	< 0.0727 U	< 0.0727 U
SAE-08N	0	N	06/13/09	< 0.0687 U	< 0.0687 U	< 0.0687 U	< 0.113 U	< 0.0103 U	< 0.0103 U	< 0.0687 U	< 0.0687 U	< 0.0687 U	< 0.0687 U
SAE-08N	10	N	06/13/09	< 0.0694 U	< 0.0694 U	< 0.0694 U	< 0.114 U	< 0.0104 U	< 0.0104 U	< 0.0694 U	< 0.0694 U	< 0.0694 U	< 0.0694 U
SAE-08S	0	N	06/13/09	< 0.0686 U	< 0.0686 U	< 0.0686 U	< 0.113 U	< 0.0103 U	< 0.0103 U	< 0.0686 U	0.645	< 0.0686 U	< 0.0686 U
SAE-08S	10	N	06/13/09	< 0.0706 U	< 0.0706 U	< 0.0706 U	< 0.116 U	< 0.0106 U	< 0.0106 U	< 0.0706 U	0.432	< 0.0706 U	< 0.0706 U
SAE-09	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	0.051 J	< 0.34 U	< 0.034 U
SAE-10	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	0.056 J	< 0.34 U	< 0.035 U
SAE-10	10	N	04/21/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.0071 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-10	60[a]	N	04/21/08	< 0.048 U	< 0.048 U	< 0.021 U	< 0.0096 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.48 U	< 0.048 U
SAE-11	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-12	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-13	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	0.1 J	< 0.34 U	< 0.034 U
SAE-14	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0069 U	< 0.034 U	< 0.034 U	< 0.034 U	1.4	< 0.34 U	< 0.034 U
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	0.53	< 0.34 U	< 0.034 U
SAE-15	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	0.27 J	< 0.35 U	< 0.035 U
SAE-15	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-15	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.0071 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-15	55[a]	N	04/22/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-16	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	0.49	< 0.34 U	< 0.034 U
SAE-17	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	0.91	< 0.34 U	< 0.034 U
SAE-18	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-19	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-20	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-21	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-22	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-22	10	N	04/22/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-22	10	FD	04/22/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-22	50[a]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs									
				Diethyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate	Diphenyl sulfone	Fluoranthene	Fluorene	Hexachloro-1,3-butadiene	Hexachlorobenzene	Hexachlorocyclo-pentadiene	Hexachloroethane
SAE-23	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-24	0	N	04/15/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-25	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-26	0	N	04/15/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	0.036 J	< 0.34 U	< 0.035 U
SAE-27	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-28	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0069 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-29	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-30	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.015 U	< 0.0069 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.34 U	< 0.035 U
SAE-31	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-32	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-33	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-34	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-34	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-34	35[a]	N	04/23/08	< 0.04 U	< 0.04 U	< 0.018 U	< 0.008 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.4 U	< 0.04 U
SAE-35	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-36	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-37	0	N	04/16/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.0071 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-38	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.016 U	< 0.0072 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.36 U	< 0.036 U
SAE-38	10	N	04/23/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-38	10	FD	04/23/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.0071 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-38	35[a]	N	04/23/08	< 0.055 U	< 0.055 U	< 0.025 U	< 0.011 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.55 U	< 0.055 U
SAE-39	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-40	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-41	0	N	04/16/08	< 0.036 U	< 0.036 U	< 0.016 U	< 0.0073 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.36 U	< 0.036 U
SAE-41	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.016 U	< 0.0071 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U
SAE-41	20[a]	N	04/23/08	< 0.036 U	< 0.036 U	< 0.016 U	< 0.0071 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U
SAE-42	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-43	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-43	10	N	04/23/08	< 0.036 U	< 0.036 U	< 0.016 U	< 0.0072 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.35 U	< 0.036 U
SAE-43	17[a]	N	04/23/08	< 0.035 U	< 0.035 U	< 0.016 U	< 0.007 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.35 U	< 0.035 U
SAE-44	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-44	0	FD	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-45	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0067 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.33 U	< 0.034 U
SAE-46	0	N	04/16/08	< 0.034 U	< 0.034 U	< 0.015 U	< 0.0068 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.34 U	< 0.034 U
SAE-47D	20	N	06/13/09	< 0.07 U	< 0.07 U	< 0.07 U	< 0.116 U	< 0.0105 U	< 0.0105 U	< 0.07 U	< 0.07 U	< 0.07 U	< 0.07 U
SAE-48D	20	N	06/13/09	< 0.0711 U	< 0.0711 U	< 0.0711 U	< 0.117 U	< 0.0107 U	< 0.0107 U	< 0.0711 U	< 0.0711 U	< 0.0711 U	< 0.0711 U

All units in mg/kg.
-- = no sample data.
[a]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs									
				Hydroxymethyl phthalimide	Isophorone	Naphthalene	Nitrobenzene	N-nitrosodi-n-propyl-amine	N-nitrosodiphenylamine	o-Cresol	Octachlorostyrene	p-Chloroaniline	p-Chlorothiophenol
SAE-01	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-02	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-03	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-04	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-05	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-06	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-07	0	N	04/16/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	0.42	< 0.034 U	< 0.19 U
SAE-07	10	N	04/21/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-07	55[d]	N	04/21/08	< 0.062 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.047 U	< 0.17 U	< 0.047 U	< 0.047 U	< 0.26 U
SAE-07R	0	N	08/12/08	< 0.082 UJ	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	0.062 J	< 0.034 U	< 0.33 U
SAE-08	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-08	0	FD	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-08C	0	N	06/13/09	< 0.114 U	< 0.0693 U	< 0.0104 U	< 0.0693 U	< 0.0693 U	--	< 0.0693 U	< 0.114 U	< 0.0693 U	< 0.114 U
SAE-08C	20	N	06/13/09	< 0.12 U	< 0.0727 U	< 0.0109 U	< 0.0727 U	< 0.0727 U	--	< 0.0727 U	< 0.12 U	< 0.0727 U	< 0.12 U
SAE-08N	0	N	06/13/09	< 0.113 U	< 0.0687 U	< 0.0103 U	< 0.0687 U	< 0.0687 U	--	< 0.0687 U	< 0.113 U	< 0.0687 U	< 0.113 U
SAE-08N	10	N	06/13/09	< 0.114 U	< 0.0694 U	< 0.0104 U	< 0.0694 U	< 0.0694 U	--	< 0.0694 U	< 0.114 U	< 0.0694 U	< 0.114 U
SAE-08S	0	N	06/13/09	< 0.113 U	< 0.0686 U	< 0.0103 U	< 0.0686 U	< 0.0686 U	--	< 0.0686 U	0.15 J	< 0.0686 U	< 0.113 U
SAE-08S	10	N	06/13/09	< 0.116 U	< 0.0706 U	< 0.0106 U	< 0.0706 U	< 0.0706 U	--	< 0.0706 U	< 0.116 U	< 0.0706 U	< 0.116 U
SAE-09	0	N	04/15/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-10	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-10	10	N	04/21/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-10	60[d]	N	04/21/08	< 0.063 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.048 U	< 0.17 U	< 0.048 U	< 0.048 U	< 0.27 U
SAE-11	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-12	0	N	04/15/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-13	0	N	04/15/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-14	0	N	04/15/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	0.29 J	< 0.034 U	< 0.19 U
SAE-14R	0	N	08/12/08	< 0.083 UJ	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	0.15 J	< 0.034 U	< 0.34 U
SAE-15	0	N	04/15/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	0.073 J	< 0.035 U	< 0.19 U
SAE-15	10	N	04/22/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-15	10	FD	04/22/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-15	55[d]	N	04/22/08	< 0.045 UJ	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-16	0	N	04/15/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	0.13 J	< 0.034 U	< 0.19 U
SAE-17	0	N	04/15/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	0.19 J	< 0.034 U	< 0.19 U
SAE-18	0	N	04/15/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-19	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-20	0	N	04/15/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-21	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-22	0	N	04/15/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-22	10	N	04/22/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-22	10	FD	04/22/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-22	50[d]	N	04/23/08	< 0.046 UJ	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs									
				Hydroxymethyl phthalimide	Isophorone	Naphthalene	Nitrobenzene	N-nitrosodi-n-propyl-amine	N-nitrosodiphenylamine	o-Cresol	Octachlorostyrene	p-Chloroaniline	p-Chlorothiophenol
SAE-23	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-24	0	N	04/15/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-25	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-26	0	N	04/15/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-27	0	N	04/16/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-28	0	N	04/16/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-29	0	N	04/16/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-30	0	N	04/16/08	< 0.045 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-31	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-32	0	N	04/16/08	< 0.045 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-33	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-34	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-34	10	N	04/23/08	< 0.046 UJ	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-34	35[d]	N	04/23/08	< 0.052 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.14 U	< 0.04 U	< 0.04 U	< 0.22 U
SAE-35	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-36	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-37	0	N	04/16/08	< 0.046 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-38	0	N	04/16/08	< 0.047 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U	< 0.2 U
SAE-38	10	N	04/23/08	< 0.046 UJ	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-38	10	FD	04/23/08	< 0.046 UJ	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.13 U	< 0.035 U	< 0.035 U	< 0.2 U
SAE-38	35[d]	N	04/23/08	< 0.072 UJ	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.055 U	< 0.2 U	< 0.055 U	< 0.055 U	< 0.31 U
SAE-39	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-40	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-41	0	N	04/16/08	< 0.048 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U	< 0.2 U
SAE-41	10	N	04/23/08	< 0.046 UJ	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U	< 0.2 U
SAE-41	20[d]	N	04/23/08	< 0.047 UJ	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U	< 0.2 U
SAE-42	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-43	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-43	10	N	04/23/08	< 0.047 UJ	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.036 U	< 0.13 U	< 0.036 U	< 0.036 U	< 0.2 U
SAE-43	17[d]	N	04/23/08	< 0.046 UJ	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.035 U	< 0.12 U	< 0.035 U	< 0.035 U	< 0.19 U
SAE-44	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-44	0	FD	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-45	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-46	0	N	04/16/08	< 0.044 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.12 U	< 0.034 U	< 0.034 U	< 0.19 U
SAE-47D	20	N	06/13/09	< 0.116 U	< 0.07 U	< 0.0105 U	< 0.07 U	< 0.07 U	--	< 0.07 U	< 0.116 U	< 0.07 U	< 0.116 U
SAE-48D	20	N	06/13/09	< 0.117 U	< 0.0711 U	< 0.0107 U	< 0.0711 U	< 0.0711 U	--	< 0.0711 U	< 0.117 U	< 0.0711 U	< 0.117 U

All units in mg/kg.
-- = no sample data.
[d]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs							
				Pentachlorobenzene	Pentachlorophenol	Phenol	Phenyl Disulfide	Phenyl Sulfide	Phthalic acid	p-Nitroaniline	Pyridine
SAE-01	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-02	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-03	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-04	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-05	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-06	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-07	0	N	04/16/08	0.1 J	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-07	10	N	04/21/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-07	55[d]	N	04/21/08	< 0.047 U	< 0.47 U	< 0.047 U	< 0.041 U	< 0.005 U	< 0.36 U	< 0.47 U	< 0.047 U
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.034 U	< 0.0036 U	< 0.25 UJ	< 0.33 U	< 0.33 U
SAE-08	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-08	0	FD	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-08C	0	N	06/13/09	< 0.0693 U	< 0.0693 U	< 0.0693 U	< 0.114 U	< 0.114 U	< 0.114 UJ	--	< 0.0693 U
SAE-08C	20	N	06/13/09	< 0.0727 U	< 0.0727 U	< 0.0727 U	< 0.12 U	< 0.12 U	< 0.12 UJ	--	< 0.0727 U
SAE-08N	0	N	06/13/09	< 0.0687 U	< 0.0687 U	< 0.0687 U	< 0.113 U	< 0.113 U	< 0.113 UJ	--	< 0.0687 U
SAE-08N	10	N	06/13/09	< 0.0694 U	< 0.0694 U	< 0.0694 U	< 0.114 U	< 0.114 U	< 0.114 UJ	--	< 0.0694 U
SAE-08S	0	N	06/13/09	< 0.0686 U	< 0.0686 U	< 0.0686 U	< 0.113 U	< 0.113 U	< 0.113 UJ	--	< 0.0686 U
SAE-08S	10	N	06/13/09	< 0.0706 U	< 0.0706 U	< 0.0706 U	< 0.116 U	< 0.116 U	< 0.116 UJ	--	< 0.0706 U
SAE-09	0	N	04/15/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-10	0	N	04/15/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-10	10	N	04/21/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.35 U	< 0.035 U
SAE-10	60[d]	N	04/21/08	< 0.048 U	< 0.48 U	< 0.048 U	< 0.041 U	< 0.0051 U	< 0.36 U	< 0.48 U	< 0.048 U
SAE-11	0	N	04/15/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-12	0	N	04/15/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.03 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-13	0	N	04/15/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-14	0	N	04/15/08	0.1 J	< 0.34 U	< 0.034 U	< 0.03 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.034 U	< 0.0036 U	< 0.25 UJ	< 0.34 U	< 0.34 U
SAE-15	0	N	04/15/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-15	10	N	04/22/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-15	10	FD	04/22/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.35 U	< 0.035 U
SAE-15	55[d]	N	04/22/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-16	0	N	04/15/08	0.047 J	< 0.34 U	< 0.034 U	< 0.03 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-17	0	N	04/15/08	0.084 J	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-18	0	N	04/15/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-19	0	N	04/15/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-20	0	N	04/15/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-21	0	N	04/15/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-22	0	N	04/15/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-22	10	N	04/22/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-22	10	FD	04/22/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-22	50[d]	N	04/23/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U

TABLE B-4
SOIL SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	SVOCs							
				Pentachlorobenzene	Pentachlorophenol	Phenol	Phenyl Disulfide	Phenyl Sulfide	Phthalic acid	p-Nitroaniline	Pyridine
SAE-23	0	N	04/15/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-24	0	N	04/15/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-25	0	N	04/15/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-26	0	N	04/15/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-27	0	N	04/16/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-28	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.03 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-29	0	N	04/16/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-30	0	N	04/16/08	< 0.035 U	< 0.34 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.34 U	< 0.035 U
SAE-31	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-32	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.03 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-33	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-34	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-34	10	N	04/23/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-34	35[d]	N	04/23/08	< 0.04 U	< 0.4 U	< 0.04 U	< 0.035 U	< 0.0042 U	< 0.3 U	< 0.4 U	< 0.04 U
SAE-35	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-36	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-37	0	N	04/16/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.27 U	< 0.35 U	< 0.035 U
SAE-38	0	N	04/16/08	< 0.036 U	< 0.36 U	< 0.036 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.36 U	< 0.036 U
SAE-38	10	N	04/23/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-38	10	FD	04/23/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.35 U	< 0.035 U
SAE-38	35[d]	N	04/23/08	< 0.055 U	< 0.55 U	< 0.055 U	< 0.048 U	< 0.0059 U	< 0.41 U	< 0.55 U	< 0.055 U
SAE-39	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-40	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.26 U	< 0.34 U	< 0.034 U
SAE-41	0	N	04/16/08	< 0.036 U	< 0.36 U	< 0.036 U	< 0.031 U	< 0.0039 U	< 0.27 U	< 0.36 U	< 0.036 U
SAE-41	10	N	04/23/08	< 0.036 U	< 0.35 U	< 0.036 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.35 U	< 0.036 U
SAE-41	20[d]	N	04/23/08	< 0.036 U	< 0.35 U	< 0.036 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.35 U	< 0.036 U
SAE-42	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-43	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-43	10	N	04/23/08	< 0.036 U	< 0.35 U	< 0.036 U	< 0.031 U	< 0.0038 U	< 0.27 U	< 0.35 U	< 0.036 U
SAE-43	17[d]	N	04/23/08	< 0.035 U	< 0.35 U	< 0.035 U	< 0.03 U	< 0.0037 U	< 0.26 U	< 0.35 U	< 0.035 U
SAE-44	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-44	0	FD	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-45	0	N	04/16/08	< 0.034 U	< 0.33 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.33 U	< 0.034 U
SAE-46	0	N	04/16/08	< 0.034 U	< 0.34 U	< 0.034 U	< 0.029 U	< 0.0036 U	< 0.25 U	< 0.34 U	< 0.034 U
SAE-47D	20	N	06/13/09	< 0.07 U	< 0.07 U	< 0.07 U	< 0.116 U	< 0.116 U	< 0.116 UJ	--	< 0.07 U
SAE-48D	20	N	06/13/09	< 0.0711 U	< 0.0711 U	< 0.0711 U	< 0.117 U	< 0.117 U	< 0.117 UJ	--	< 0.0711 U

All units in mg/kg.
-- = no sample data.
[d]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-5
SOIL DIOXINS/FURANS DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Dioxins/Furans																	
				1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-HpCDD	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8-PeCDF	1,2,3,7,8-PeCDD	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF	2,3,7,8-TCDF	2,3,7,8-TCDD	OCDD	OCDF	TCDD TEQ
SAE-01	0	N	04/16/08	43 J	10 J	19 J	26 J	< 1.8 UJ	15 J	< 2.4 UJ	< 2.4 UJ	< 2.1 UJ	13 J	< 2.1 UJ	4.5 J	7.5 J	8.5	< 0.82 UJ	17 J	190 J	12.9
SAE-02	0	N	04/16/08	140	18	46	52	< 2.1 U	38	5.5	4.6 J	3.9 J	27	< 2.3 U	8.3	14	14	0.7 J	31	470	25.8
SAE-03	0	N	04/16/08	400	36	140	150	5.4	110	11	18	11	79	7.4	26	43	37	2	45	1300	78.4
SAE-04	0	N	04/16/08	450	43	160	150	6.2	120	13	19	11	85	7.8	29	46	42	2.5	60	1400	84.3
SAE-05	0	N	04/16/08	300	30	110	110	4.3 J	82	8.9	15	8.4	67	6.6	21	43	64	2.5	46	900	72.3
SAE-06	0	N	04/16/08	1200	120	430	450	16	350	34	57	33	280	27	84	150	200	8	150	3600	268
SAE-07	0	N	04/16/08	18000	1800	7100	8800	230	5000	430	830	440	3500	320	1100	1900	1800 J	80	2200	51000	3704
SAE-07	10	N	04/21/08	2.6	< 0.35 U	< 1.1 U	< 1.2 U	< 0.092 U	< 0.65 U	< 0.15 U	< 0.17 U	< 0.17 U	< 0.46 U	< 0.052 U	< 0.17 U	< 0.26 U	< 0.42 U	< 0.054 U	< 1.2 U	7.6	0.43
SAE-07	55[a]	N	04/21/08	< 0.16 U	< 0.12 U	< 0.075 U	< 0.1 U	< 0.054 U	< 0.09 U	< 0.18 U	< 0.14 U	< 0.18 U	< 0.093 U	< 0.057 U	< 0.07 U	< 0.068 U	< 0.12 U	< 0.058 U	< 0.74 U	< 0.21 U	0.28
SAE-07R	0	N	08/12/08	1500 J	150 J	640	620	24	380	46	97	40	330	31	100	180	210	8	< U	4600 J	321
SAE-08	0	N	04/16/08	620	59	230	190	8.8	170	19	28	17	120	12	40	67	58	2.9	72	1900	118
SAE-08	0	FD	04/16/08	620	59	250	200	9.9	180	21	30	19	140	13	41	73	64	3.7	69	1700	129
SAE-08C	0	N	06/13/09	48	5.2 J	20 J	20	< 5.9 U	11	< 5.9 U	< 5.9 U	< 5.9 U	8.8	< 5.9 U	3.3 J	4.4 J	4.2	< 1.2 U	8.8 J	130	12.1
SAE-08N	0	N	06/13/09	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 5.3 U	< 1.1 U	< 1.1 U	< 11 U	< 11 U	6.8
SAE-08S	0	N	06/13/09	9500	950	4400	4500	200	2800	320	550	310	2400	220	750	1200	1100 J	63	1100	26000	2233
SAE-08S-C	0	N	07/07/09	53 J	5.5	24 J	26 J	0.84 J	17 J	1.9 J	2.8 J	1.8 J	13 J	1 J	4.1 J	7.8 J	5.9 J	0.4 J	< 8.2 U	120 J	12.8
SAE-08S-C	0	FD	07/07/09	2.6 J	< 1 U	1.1 J	1.3 J	0.063 J	0.86 J	< 0.19 U	< 0.12 U	< 0.16 U	0.64 J	< 5 U	< 0.25 U	0.39 J	0.39	< 1 U	< 3.9 U	5.9 J	3.6
SAE-08S-S	0	N	07/07/09	2400 J	230	1100	1100	33	660	72	120	64	510	49	150	300	230	14	220 J	6000 J	519
SAE-09	0	N	04/15/08	2700 J	280	1300	1600	40	940	97	180	77	970	78	270	490	600 J	24	310	8000 J	846
SAE-10	0	N	04/15/08	700	76	330	430	11	240	24	43	22	240	19	66	120	160	5.6	93 J	2500 J	216
SAE-10	10	N	04/21/08	< 0.31 U	< 0.15 U	< 0.11 U	< 0.099 U	< 0.052 U	< 0.11 U	< 0.11 U	< 0.093 U	< 0.12 U	< 0.065 U	< 0.052 U	< 0.11 U	< 0.065 U	< 0.18 U	< 0.044 U	< 0.67 U	< 0.93 U	0.23
SAE-10	60[a]	N	04/21/08	< 0.12 U	< 0.23 U	< 0.12 U	< 0.098 U	< 0.089 U	< 0.099 U	< 0.17 U	< 0.23 U	< 0.19 U	< 0.12 U	< 0.089 U	< 0.079 U	< 0.075 U	< 0.11 U	< 0.043 U	< 2.1 U	< 0.23 U	0.31
SAE-11	0	N	04/15/08	580	64	240	290	7.6	160	18	27	16	130	11	44	73	85	2.9	87	2200 J	135
SAE-12	0	N	04/15/08	280	32	120	140	3.7	77	8.4	14	7.4	64	5	19	32	45	1.5	62	1500	63.4
SAE-13	0	N	04/15/08	330	25	150	260	4.1	150	11	38	12	510	26	57	370	1200 J	41	22	750	462
SAE-14	0	N	04/15/08	< 0.25 U	< 0.12 U	< 0.29 U	< 0.18 U	< 0.077 U	< 0.1 U	< 0.12 U	< 0.21 U	< 0.088 U	< 0.12 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.2 U	< 0.036 U	< 0.45 U	< 0.46 U	0.28
SAE-15	0	N	04/15/08	< 2.4 U	< 0.34 U	< 0.38 U	< 1.3 U	< 0.18 U	< 0.83 U	< 0.18 U	< 0.18 U	< 0.16 U	< 0.66 U	< 0.16 U	< 0.18 U	< 0.35 U	0.83	< 0.058 U	< 0.6 U	7.8	0.58
SAE-15	10	N	04/22/08	< 0.35 U	< 0.39 U	< 0.14 U	< 0.2 U	< 0.17 U	< 0.1 U	< 0.22 U	< 0.14 U	< 0.2 U	< 0.14 U	< 0.26 U	< 0.1 U	< 0.14 U	< 0.095 U	< 0.12 U	< 2.2 U	< 0.5 U	0.41
SAE-15	10	FD	04/22/08	< 0.19 U	< 0.24 U	< 0.16 U	< 0.097 U	< 0.16 U	< 0.11 U	< 0.16 U	< 0.1 U	< 0.17 U	< 0.15 U	< 0.24 U	< 0.096 U	< 0.15 U	< 0.096 U	< 0.12 U	< 2.1 U	< 0.29 U	0.39
SAE-15	55[a]	N	04/22/08	< 0.21 U	< 0.21 U	< 0.13 U	< 0.1 U	< 0.15 U	< 0.097 U	< 0.18 U	< 0.13 U	< 0.37 U	< 0.13 U	< 0.24 U	< 0.1 U	< 0.13 U	< 0.1 U	< 0.1 U	< 1.8 U	< 0.32 U	0.39
SAE-16	0	N	04/15/08	6700 J	690	3300 J	3700 J	96	2000	230	390	190	1900	170	470	1000	1100 J	45	820	33000	1760
SAE-16R	0	N	08/12/08	4600 J	510 J	2500 J	2400 J	110 J	1400 J	180 J	380 J	170 J	1600	150 J	410 J	810	1100 J	45	510 J	24000 J	1374
SAE-16R-2	0	N	10/09/08	1400	150	730	900	24	500 J	49	77	53	530 J	42	160	270	230	14	140	9600	441
SAE-16R-2	0	FD	10/09/08	1700	180	830	960	29	550 J	53	81	55	560 J	45	190	310	230	14	190	12000	485
SAE-17	0	N	04/15/08	4200 J	450	1700	2200 J	62	1200	130	180	120	1000	94	300	510	620 J	23	780	27000	984
SAE-18	0	N	04/15/08	< 0.78 U	< 0.22 U	< 0.3 U	< 0.27 U	< 0.097 U	< 0.2 U	< 0.1 U	< 0.12 U	< 0.058 U	< 0.18 U	< 0.13 U	< 0.11 U	< 0.17 U	< 0.16 U	< 0.037 U	< 1.3 U	< 1.9 U	0.31
SAE-19	0	N	04/15/08	2100	200	810	1000	25	620	60	96	54	470	39	130	240	230	8.9	200	5200 J	448
SAE-20	0	N	04/15/08	290	28	120	160	3.7	90	8.6	14	7.5	79	6.9	23	42	76	2.3	29	1000	77.9
SAE-21	0	N	04/15/08	650	66	240	320	8.8	180	19	25	17	150	13	48	80	100	3.9	77	2500	148
SAE-22	0	N	04/15/08	980	88	370	510	12	280	36	44	31	350	33	72	180	320	10	88	3300	296
SAE-22	10	N	04/22/08	< 0.29 U	< 0.39 U	< 0.14 U	< 0.11 U	< 0.15 U	< 0.13 U	< 2.5 U	< 0.18 U	7.2 J	< 0.13 U	< 0.26 U	< 0.11 U	< 0.13 U	< 0.095 U	< 0.12 U	< 2 U	< 0.32 U	1.2

TABLE B-5
SOIL DIOXINS/FURANS DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

				Dioxins/Furans																	
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-HpCDD	1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-HxCDD	1,2,3,7,8-PeCDF	1,2,3,7,8-PeCDD	2,3,4,6,7,8-HxCDF	2,3,4,7,8-PeCDF	2,3,7,8-TCDF	2,3,7,8-TCDD	OCDD	OCDF	TCDD TEQ
SAE-22	10	FD	04/22/08	< 0.55 U	< 0.46 U	< 0.68 U	< 0.25 U	< 0.42 U	< 0.22 U	< 0.36 U	< 0.3 U	< 0.38 UJ	< 0.34 U	< 0.59 U	< 0.26 U	< 0.36 U	< 0.23 U	< 0.32 U	< 1.9 U	< 0.78 U	0.8
SAE-22	50[a]	N	04/23/08	< 0.69 U	< 0.77 U	< 0.81 U	< 0.58 U	< 0.81 U	< 0.55 U	< 0.77 U	< 0.6 U	< 0.74 U	< 0.63 U	< 0.96 U	< 0.56 U	< 0.63 U	< 0.38 U	< 0.66 U	< 1 U	< 1.1 U	1.4
SAE-23	0	N	04/15/08	3300 J	280	1200	1600	35	920	88	140	81	810	59	220	390	770 J	16	390	15000	752
SAE-24	0	N	04/15/08	< 0.14 U	< 0.1 U	< 0.055 U	< 0.09 U	< 0.53 U	< 0.06 U	< 0.55 U	< 0.073 U	< 1.2 U	< 0.079 U	< 0.066 U	< 0.049 U	< 0.075 U	< 0.074 U	< 0.025 U	< 0.36 U	< 0.5 U	0.31
SAE-25	0	N	04/15/08	< 1.8 U	< 0.29 U	< 0.6 U	< 0.82 U	< 0.14 U	< 0.45 U	< 0.15 U	< 0.15 U	< 0.14 U	< 0.38 U	< 0.099 U	< 0.15 U	< 0.2 U	0.72	< 0.036 U	< 0.56 U	< 5 U	0.43
SAE-26	0	N	04/15/08	430	33	150	200	4	110	9.5	17	8.6	98	7.1	28	49	83	2.3	39	1800	91.4
SAE-27	0	N	04/16/08	230	18	98	81	3.5 J	73	7.4	15	6.7	68	5.4	16	39	66	2.2	19	1100	61.6
SAE-28	0	N	04/16/08	310 J	25	130 J	110	4.8 J	100	9.9	19	8.9	96	8.1	23	57	110	3	23	1700	88.8
SAE-29	0	N	04/16/08	180	15	80	59	< 2.5 U	54	5.4	10	4.7 J	53	4.7 J	13	31	53	1.7	13	1100	47.9
SAE-30	0	N	04/16/08	1100	120	570	450	23	410	45	93	45	380	35	100	220	270	12	130	4000	352
SAE-31	0	N	04/16/08	170	13	67	64	< 1.9 U	50	4.8 J	9.4	4.5 J	45	3.9 J	11	25	42	1.6	16	840	41.9
SAE-32	0	N	04/16/08	130	9.3	48	55	< 1.1 U	32	< 2.2 U	6.1	< 2.3 U	25	< 1.6 U	8.6	14	27	0.69 J	13	620	25.5
SAE-33	0	N	04/16/08	73	5.6	26	26	< 0.83 U	21	< 1.8 U	3.4 J	< 1.9 U	16	< 1.5 U	4.7 J	8.4	18	< 0.48 U	8.1 J	270	14.9
SAE-34	0	N	04/16/08	1200	97	430	390	14	330	29	52	29	290	22	77	150	290	7.8	120	8700 J	261
SAE-34	10	N	04/23/08	< 0.53 U	< 0.5 U	< 0.57 U	< 0.37 U	< 0.64 U	< 0.35 U	< 0.6 U	< 0.39 U	< 0.58 U	< 0.41 U	< 0.65 U	< 0.36 U	< 0.41 U	< 0.24 U	< 0.37 U	< 0.65 U	< 1.9 U	0.93
SAE-34	35[a]	N	04/23/08	< 0.53 U	< 0.65 U	< 0.63 U	< 0.57 U	< 0.66 U	< 0.54 U	< 0.63 U	< 0.6 U	< 0.6 U	< 0.65 U	< 0.88 U	< 0.55 U	< 0.65 U	< 0.34 U	< 0.6 U	< 1 U	< 0.77 U	1.3
SAE-35	0	N	04/16/08	35	3.1 J	12	10	< 0.45 U	10	< 0.97 U	< 1.5 U	< 0.88 U	7.3	< 0.89 U	< 2.4 U	3.3 J	3.9	< 0.47 U	< 4.6 U	120	6
SAE-36	0	N	04/16/08	< 1.5 U	< 0.54 U	< 0.57 U	< 0.74 U	< 0.65 U	< 0.49 U	< 0.61 U	< 0.55 U	< 0.59 U	< 0.61 U	< 0.86 U	< 0.5 U	< 0.61 U	< 0.2 U	< 0.59 U	< 0.65 U	< 4.8 U	1.2
SAE-37	0	N	04/16/08	56	4.7 J	19	25	< 0.56 U	13	< 1.3 U	< 1.9 U	< 1.1 U	10	< 0.84 U	3.4 J	5.8	4	< 0.17 U	5.6 J	140	9.6
SAE-38	0	N	04/16/08	420 J	36 J	150 J	180 J	4.3 J	95 J	8.8 J	13 J	9.9 J	83 J	7.9 J	30 J	45 J	41 J	2.6 J	60 J	1900 J	82.9
SAE-38	10	N	04/23/08	< 0.76 U	< 0.76 U	< 0.9 U	< 0.6 U	< 0.82 U	< 0.57 U	< 0.77 U	< 0.64 U	< 0.74 U	< 0.75 U	< 1.1 U	< 0.58 U	< 0.75 U	< 0.42 U	< 0.74 U	< 0.99 U	< 3.4 U	1.5
SAE-38	10	FD	04/23/08	< 0.52 U	< 0.63 U	< 0.62 U	< 0.55 U	< 0.68 U	< 0.52 U	< 0.64 U	< 0.57 U	< 0.62 U	< 0.62 U	< 0.85 U	< 0.53 U	< 0.62 U	< 0.34 U	< 0.57 U	< 0.87 U	< 2 U	1.2
SAE-38	35[a]	N	04/23/08	< 0.58 U	< 0.85 U	< 0.68 U	< 0.61 U	< 0.91 U	< 0.58 U	< 0.86 U	< 0.65 U	< 0.83 U	< 0.73 U	< 1.2 U	< 0.6 U	< 0.73 U	< 0.45 U	< 0.76 U	< 1.2 U	< 0.93 U	1.7
SAE-39	0	N	04/16/08	370	29	140	170	3.3 J	87	7.3	12	7.6	85	6.6	27	43	48 J	1.8 J	47	2600	77.3
SAE-40	0	N	04/16/08	9.6	< 0.52 U	6.9	5.2	< 0.3 U	< 2 U	< 0.22 U	< 1.6 U	< 0.23 U	5.3	< 0.35 U	< 1.3 U	2.7 J	37	< 0.15 U	< 0.85 UJ	150 J	6.7
SAE-41	0	N	04/16/08	37	< 1.5 U	15	11	< 0.21 U	4.4 J	< 0.41 U	< 0.91 U	< 0.3 U	6.1	< 0.49 U	< 2.3 U	< 2.6 U	7.1	< 0.18 U	< 5.1 U	760	4.5
SAE-41	10	N	04/23/08	< 0.34 U	< 0.36 U	< 0.41 U	< 0.28 U	< 0.45 U	< 0.27 U	< 0.43 U	< 0.3 U	< 0.42 U	< 0.36 U	< 0.49 U	< 0.28 U	< 0.36 U	< 0.21 U	< 0.35 U	< 0.52 UJ	< 0.46 UJ	0.77
SAE-41	20[a]	N	04/23/08	< 0.5 U	< 0.66 U	< 0.6 U	< 0.59 U	< 0.58 U	< 0.56 U	< 0.55 U	< 0.62 U	< 0.53 U	< 0.57 U	< 0.81 U	< 0.57 U	< 0.57 U	< 0.26 U	< 0.58 U	< 0.92 U	< 0.93 U	1.2
SAE-42	0	N	04/16/08	150 J	4 J	57 J	33 J	< 0.41 UJ	14 J	< 1.7 UJ	3.9 J	< 0.98 UJ	21 J	< 1.9 UJ	4.7 J	8 J	45 J	0.83 J	7.7 J	3500 J	19.6
SAE-43	0	N	04/16/08	16	< 1.1 U	4.4 J	5.6	< 0.21 U	2.8 J	< 0.52 U	< 1.4 U	< 0.36 U	2.9 J	< 0.4 U	< 1.8 U	< 1.5 U	2.1	< 0.19 U	< 2.3 U	100	2.4
SAE-43	10	N	04/23/08	< 0.32 U	< 0.32 U	< 0.38 U	< 0.28 U	< 0.37 U	< 0.26 U	< 0.34 U	< 0.29 U	< 0.33 U	< 0.32 U	< 0.53 U	< 0.27 U	< 0.32 U	< 0.18 U	< 0.33 U	< 0.51 U	< 0.38 U	0.76
SAE-43	17[a]	N	04/23/08	< 0.39 U	< 0.59 U	< 0.46 U	< 0.48 U	< 0.73 U	< 0.46 U	< 0.69 U	< 0.52 U	< 0.66 U	< 0.57 U	< 0.93 U	< 0.47 U	< 0.57 U	< 0.34 U	< 0.59 U	< 0.7 U	< 0.59 U	1.3
SAE-44	0	N	04/16/08	160	25 J	51 J	71 J	< 2.1 U	37 J	3.7 J	4.4 J	3.7 J	34 J	3.1 J	11 J	18 J	23	0.67 J	83 J	1000 J	34.9
SAE-44	0	FD	04/16/08	64	8.9 J	26 J	32 J	< 0.79 U	17 J	< 2 U	2.7 J	< 1.7 U	19 J	< 1.7 U	4.5 J	11 J	14	0.58 J	22 J	330 J	17.4
SAE-45	0	N	04/16/08	48	8.2	19	23	< 0.26 U	12	< 1.7 U	< 1.8 U	< 1.3 U	12	< 1.4 U	3.2 J	6.4	9.8	< 0.5 U	28	230	10.9
SAE-46	0	N	04/16/08	18	11	5.7	6.6	< 0.43 U	3.3 J	< 1 U	< 0.32 U	< 0.97 U	3.2 J	< 0.63 U	< 2.4 U	< 1.7 U	2.1	< 0.21 U	82	77	3

All units in pg/g.
[a]Indicates sample collected from the capillary fringe.
(hatched box) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(grey box) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-6
SOIL GENERAL CHEMISTRY/IONS AND ALDEHYDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

				General Chemistry / Ions															Aldehydes		
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Ammonia	Bromide	Chlorate	Chloride	Chlorite	Cyanide (Total)	Fluoride	Nitrate (as N)	Nitrite (as N)	Orthophosphate as P	Perchlorate	pH (Hydrogen Ion)	Sulfate	Sulfide	Total Kjeldahl Nitrogen (TKN)	Acetaldehyde	Chloroacetaldehyde	Formaldehyde
SAE-01	0	N	04/16/08	< 0.5 U	< 0.063 U	< 1 U	19	99	< 0.08 UJ	0.94 J	2.1	0.077 J	< 1.6 U	0.448 J	8.9	68.1	< 1.8 U	113 J+	0.077 J	< 0.61 U	0.87
SAE-02	0	N	04/16/08	< 0.5 U	< 0.063 U	< 1 U	3	99	< 0.08 UJ	0.63 J	1.7	0.1 J	< 1.6 U	0.0405	8.8	26.1	< 1.8 U	115 J+	< 0.3 U	< 0.6 U	0.38 J
SAE-03	0	N	04/16/08	< 0.5 U	< 0.063 U	< 1 U	19.3	99	< 0.08 UJ	1.4	3.1	< 0.05 U	< 1.6 U	0.0804	8.8	105	30.3	116 J+	0.051 J	< 0.6 U	0.38 J
SAE-04	0	N	04/16/08	< 0.51 U	< 0.064 U	< 1 U	60.4	98	< 0.081 UJ	1.2	5.3	< 0.51 U	< 1.7 U	0.157	8.8	202	194	83.2 J+	0.049 J	< 0.61 U	0.56 J
SAE-05	0	N	04/16/08	1.7 J	< 0.064 U	< 1 U	38.2	98	< 0.081 UJ	5.3	9.3	< 0.051 U	8.8	0.135	8	194	184	76.5 J+	< 0.3 U	< 0.61 U	0.36 J
SAE-06	0	N	04/16/08	0.58 J	< 0.063 U	< 1 U	72.1	98	0.17 J-	8.5	66.6	< 0.51 U	11.5	0.129	7.5	349	< 1.8 U	77.4 J+	0.065 J	< 0.61 U	0.57 J
SAE-07	0	N	04/16/08	0.79 J	< 0.064 U	< 1 U	206	97	< 0.081 UJ	8.4	36.5	< 0.51 U	9.9	0.605 J	8.4	1940	< 1.9 U	167 J+	0.075 J	< 0.62 U	0.52 J
SAE-07	10	N	04/21/08	1.2 J	< 0.26 U	< 0.55 U	36.3	89	< 0.083 U	2.9	30.5	< 0.021 U	1.5 J	< 0.0019 U	9.1	59.3	< 1.9 U	62.3 J+	0.052 J	< 0.67 U	< 0.67 U
SAE-07	55[a]	N	04/21/08	< 1.1 U	< 0.36 U	5.8 J	374	73	< 0.11 U	5.4	11.4	< 0.28 U	< 0.71 U	2.89	8	616	< 2.5 U	83.1 J+	0.068 J	< 0.82 U	< 0.82 U
SAE-08	0	N	04/16/08	< 0.51 U	1.3 J	7.3	507	97	< 0.081 U	1.5	44.1	< 2.6 U	2 J	6.53 J	8.1	5450	< 1.9 U	84.1 J+	0.16 J	< 0.61 U	0.57 J
SAE-08	0	FD	04/16/08	< 0.51 U	< 0.064 U	6.2	498	98	< 0.081 U	1.5	39.6	< 0.51 U	< 1.7 U	6.08 J	8.1	5160	< 1.9 U	70.1 J+	0.17 J	< 0.62 U	0.76
SAE-08C	0	N	06/13/09	1.2 J-	< 1.8 U	3.4 J	497	--	< 0.11 UJ	0.85 J	29.7	< 0.034 U	< 2.5 U	2.15	--	351	< 0.84 U	--	< 0.304 U	--	< 0.203 U
SAE-08C	20	N	06/13/09	1.1 J-	< 0.27 U	< 0.49 U	53.8	--	< 0.12 UJ	3.2	2.8	< 0.034 U	< 0.96 U	0.0278 J	--	56.6	< 0.86 U	--	--	--	--
SAE-08N	0	N	06/13/09	1.2 J-	< 0.27 U	2.7 J	324	--	< 0.11 UJ	1.7	9.6	< 0.034 U	< 0.51 U	9.93	--	134	< 0.85 U	--	< 0.313 U	--	< 0.209 U
SAE-08N	10	N	06/13/09	1.2 J-	< 0.27 U	0.8 J	200	--	< 0.12 UJ	2.6	13.1	< 0.034 U	< 0.94 U	0.781	--	81.1	< 0.87 U	--	--	--	--
SAE-08S	0	N	06/13/09	3.5 J-	< 0.26 U	< 0.48 U	26.6	--	0.23 J-	21.4	10.5	< 0.034 U	12.7	0.159	--	117	< 0.84 U	--	< 0.308 U	--	1.44
SAE-08S	10	N	06/13/09	1.3 J-	< 0.27 U	< 0.5 U	17.3	--	< 0.12 UJ	2.9	17.8	0.052 J	< 1.2 U	0.0956	--	54.1	< 0.87 U	--	--	--	--
SAE-10	10	N	04/21/08	< 0.83 U	< 0.27 U	< 0.56 U	15.5	94	< 0.084 U	3.6	3.2	< 0.021 U	< 0.53 U	0.0305	9.4	64.6	< 1.9 U	70 J+	0.052 J	< 0.64 U	< 0.64 U
SAE-10	60[a]	N	04/21/08	< 1.1 U	< 0.36 U	2.9 J	551	50	< 0.11 U	4.6	58.6	< 0.29 U	< 0.72 U	2.89	8	813	< 2.6 U	95.2 J+	< 0.6 U	< 1.2 U	< 1.2 U
SAE-11	0	N	04/15/08	0.7 J	< 0.065 U	< 1 U	208	97	< 0.083 U	2.9	43.4	< 0.52 U	< 1.7 U	0.6	8.2	1070	< 1.9 U	< 12.5 UJ	< 0.33 U	< 0.67 U	< 0.67 U
SAE-12	0	N	04/15/08	< 0.51 U	< 0.064 U	< 1 U	62.1	98	< 0.081 U	2.1	10.1	< 0.51 U	2.4 J	0.112	8.3	538	< 1.9 U	< 12.4 UJ	0.064 J	< 0.73 U	< 0.73 U
SAE-13	0	N	04/15/08	< 0.51 U	< 0.064 U	< 1 U	26.8	98	0.11 J	4.8	8	< 0.051 U	8.6	0.0648	8.7	67.7	< 1.8 U	< 12.2 UJ	< 0.34 U	< 0.68 U	< 0.68 U
SAE-14	0	N	04/15/08	0.98 J	< 0.064 U	< 1 U	577	95	0.14 J	5.5	63.1	< 10.3 U	3.9 J	3.82 J+	8.2	2300	< 1.9 U	364	< 0.35 U	< 0.7 U	< 0.7 U
SAE-15	0	N	04/15/08	< 0.53 U	< 0.066 U	< 1.1 U	224	95	< 0.083 U	4.6	27.7	< 0.53 U	3.1 J	1.11	8.4	1370	73.6	189	< 0.36 U	< 0.73 U	< 0.73 U
SAE-15	10	N	04/22/08	< 0.81 U	< 0.26 U	< 0.55 U	7.4	95	< 0.082 U	2.8	2.1	< 0.021 U	< 0.52 U	0.0064 J	9.3	55.6	< 1.8 U	< 12.5 UJ	0.056 J	< 0.63 U	< 0.63 U
SAE-15	10	FD	04/22/08	< 0.83 U	< 0.27 U	< 0.56 U	7.1	94	< 0.084 U	2.4	1.8	< 0.021 U	< 0.53 U	< 0.002 U	9	58.1	< 1.9 U	< 12.7 UJ	0.046 J	< 0.63 U	< 0.63 U
SAE-15	55[a]	N	04/22/08	< 0.81 U	< 0.26 U	< 0.55 U	7.7	71	< 0.083 U	2.2	2.4	< 0.021 U	< 0.52 U	< 0.0019 U	9.1	64.4	< 1.8 U	< 12.5 UJ	0.075 J	< 0.85 U	< 0.85 U
SAE-16	0	N	04/15/08	0.66 J	< 0.064 U	< 1 U	194	97	0.11 J	2.8	14.3	< 0.51 U	2.8 J	0.568	8.5	1190	< 1.9 U	80.3	< 0.41 U	< 0.82 U	< 0.82 U
SAE-17	0	N	04/15/08	0.66 J	< 0.064 U	< 1 U	430	98	< 0.081 U	3.1	39	< 0.51 U	2.2 J	1.4	8.2	1120	< 1.9 U	215	< 0.35 U	< 0.7 U	< 0.7 U
SAE-18	0	N	04/15/08	< 0.51 U	< 0.064 U	< 1 U	50.5	95	0.12 J	0.68 J	10.1	< 0.051 U	< 1.6 U	0.0885	8.8	147	< 1.8 U	97.4	< 0.42 U	< 0.84 U	< 0.84 U
SAE-19	0	N	04/15/08	< 0.52 U	< 0.065 U	< 1 U	15.5	98	0.28 J	1.1	1.6	< 0.052 U	< 1.7 U	0.202	8.9	88.9	< 1.9 U	126	< 0.33 U	< 0.66 U	< 0.66 U
SAE-20	0	N	04/15/08	< 0.53 U	0.58 J	7.4	554	96	< 0.083 U	3	35.5	< 10.5 U	< 1.7 U	13.8	8.2	251	105	< 12.6 UJ	0.053 J	< 0.62 U	0.36 J
SAE-21	0	N	04/15/08	< 0.52 U	< 0.066 U	2.8 J	3820	96	< 0.083 U	1.8	184	< 10.5 U	< 1.7 U	0.134	8.1	822	< 1.9 U	< 12.6 UJ	0.057 J	< 0.68 U	< 0.68 U
SAE-22	0	N	04/15/08	0.89 J	< 0.064 U	4.6 J	1640	97	0.084 J	1.2	123	< 10.3 U	< 1.7 U	0.183	8.1	782	92.3	< 12.3 UJ	0.05 J	< 0.6 U	< 0.6 U
SAE-22	10	N	04/22/08	< 0.83 U	< 0.26 U	12.9	1920	92	< 0.084 U	1.1	115	< 4.2 U	< 0.53 U	0.0571	8	122 J	< 1.9 U	< 12.7 UJ	0.057 J	< 0.64 U	< 0.64 U
SAE-22	10	FD	04/22/08	< 0.82 U	< 0.26 U	12.3	2370	94	< 0.083 U	0.62 J	76.5	< 4.2 U	< 0.53 U	0.0519	7.4	56.1 J	< 1.9 U	< 12.7 UJ	< 0.33 U	< 0.65 U	< 0.65 U
SAE-22	50[a]	N	04/23/08	6.4	< 0.26 U	< 0.56 U	106	95	0.24 J	1.4	3.8	< 0.21 U	< 0.53 U	0.0217	8.6	129	< 1.9 U	< 12.7 U	< 0.38 U	< 0.13 U	< 0.76 U
SAE-23	0	N	04/15/08	< 0.52 U	< 0.065 U	3.7 J	965	96	0.12 J	0.95 J	121	< 10.4 U	< 1.7 U	0.142	8.1	1050	< 1.9 U	171	< 0.3 U	< 0.6 U	< 0.6 U
SAE-24	0	N	04/15/08	< 0.51 U	< 0.064 U	2.7 J	436	95	0.13 J	2	140	< 0.51 U	< 1.6 U	0.0613	8.1	736	< 1.8 U	90.2	0.054 J	< 0.65 U	< 0.65 U

TABLE B-6
SOIL GENERAL CHEMISTRY/IONS AND ALDEHYDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA

				General Chemistry / Ions															Aldehydes		
Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Ammonia	Bromide	Chlorate	Chloride	Chlorite	Cyanide (Total)	Fluoride	Nitrate (as N)	Nitrite (as N)	Orthophosphate as P	Perchlorate	pH (Hydrogen Ion)	Sulfate	Sulfide	Total Kjeldahl Nitrogen (TKN)	Acetaldehyde	Chloroacetaldehyde	Formaldehyde
SAE-25	0	N	04/15/08	< 0.52 U	< 0.065 U	6	1690	89	0.14 J	1.2	74.8	< 10.4 U	< 1.7 U	0.0965	8.1	586	< 1.9 U	106	< 0.3 U	< 0.6 U	< 0.6 U
SAE-26	0	N	04/15/08	< 0.52 U	2.2 J	2 J	671	94	0.18 J	1.2	59.8	< 10.4 U	< 1.7 U	0.227	8.2	547	< 1.9 U	129	< 0.3 U	< 0.6 U	< 0.6 U
SAE-27	0	N	04/16/08	0.89 J	< 0.065 U	5.7	1500	95	< 0.082 U	0.91 J	99.4	< 2.6 U	< 1.7 U	0.226	8	517	41.5	44.1 J+	0.15 J	< 0.63 U	0.66
SAE-28	0	N	04/16/08	0.94 J	< 0.064 U	4.7 J	889	97	< 0.082 U	1.8	117	< 2.6 U	< 1.7 U	0.0886	8.2	640	< 1.9 U	26 J+	0.17 J	< 0.62 U	0.89
SAE-29	0	N	04/16/08	1.2 J	< 0.066 U	10.7	1340	85	< 0.084 U	1.9	441	< 2.6 U	< 1.7 U	0.065	8.2	1210	< 1.9 U	58.5 J+	0.1 J	< 0.71 U	< 0.71 U
SAE-30	0	N	04/16/08	0.83 J	< 0.065 U	2.5 J	505	84	< 0.082 U	1	108	< 0.52 U	< 1.7 U	0.326	8.2	1640	< 1.9 U	205 J+	0.064 J	< 0.71 U	0.47 J
SAE-31	0	N	04/16/08	0.83 J	< 0.063 U	2.4 J	379	98	< 0.08 U	1	58.8	< 0.51 U	< 1.6 U	0.0523	8.4	380	< 1.8 U	113 J+	< 0.31 U	< 0.61 U	0.35 J
SAE-32	0	N	04/16/08	0.81 J	< 0.064 U	7	1400	86	< 0.081 U	1.1	95	< 2.6 U	< 1.7 U	0.0421	7.9	545	< 1.9 U	47.7 J+	< 0.35 U	< 0.7 U	< 0.7 U
SAE-33	0	N	04/16/08	2.1 J	< 0.064 U	1.3 J	356	98	< 0.081 U	1.9	74	< 0.51 U	< 1.7 U	0.0459	8.3	797	< 1.9 U	95.8 J+	< 0.31 U	< 0.61 U	0.97
SAE-34	0	N	04/16/08	0.66 J	< 0.064 U	8.3	1160	98	< 0.08 U	1.2	132	< 2.5 U	< 1.6 U	0.0741	8.1	510	< 1.8 U	51.9 J+	0.17 J	< 0.61 U	0.61 J
SAE-34	10	N	04/23/08	< 0.83 U	< 0.26 U	14.3	2930	95	< 0.084 U	0.55 J	92.8	< 4.2 U	< 0.53 U	0.226	8	46.1	< 1.9 U	< 12.7 U	< 0.38 U	< 0.13 U	< 0.76 U
SAE-34	35[a]	N	04/23/08	< 0.94 U	< 0.3 U	< 0.63 U	599	68	< 0.095 U	4	14.4	< 4.8 U	< 0.6 U	0.237	7.8	18600	< 2.1 U	88.9	< 0.53 U	< 0.18 U	< 1.1 U
SAE-35	0	N	04/16/08	0.51 J	< 0.064 U	< 1 U	116	98	< 0.081 U	0.92 J	10.8	< 0.51 U	< 1.6 U	0.204	8.6	120	< 1.8 U	63.9 J+	0.08 J	< 0.61 U	< 0.61 U
SAE-36	0	N	04/16/08	< 0.51 U	< 0.063 U	< 1 U	4.4	99	< 0.08 U	0.6 J	0.64	< 0.051 U	< 1.6 U	0.0212	9	27.6	< 1.8 U	51.6 J+	0.1 J	< 0.6 U	< 0.6 U
SAE-37	0	N	04/16/08	< 0.83 U	< 0.27 U	< 0.56 U	2.5	83	< 0.084 U	0.99 J	0.93	< 0.021 U	< 0.53 U	0.301	8.5	19.1	< 1.9 U	96.4 J+	0.075 J	< 0.88 U	< 0.88 U
SAE-38	0	N	04/16/08	< 0.84 U	< 0.27 U	< 0.57 U	2 J	98	< 0.085 U	0.92 J	1.6	< 0.022 U	< 0.54 U	0.206	8.8	8.3	< 1.9 U	116 J+	< 0.31 U	< 0.61 U	< 0.61 U
SAE-38	10	N	04/23/08	< 0.83 U	< 0.26 U	3.5 J	299 J	96	< 0.084 U	3.7	5.5 J	< 0.21 U	< 0.53 U	3.57 J	8.4	3040	< 1.9 U	85.6	0.22 J	< 0.13 U	1.4
SAE-38	10	FD	04/23/08	< 0.83 U	< 0.27 U	1.3 J	98.2 J	95	< 0.084 U	3.2	2.5 J	< 0.21 U	< 0.53 U	1.65 J	8.5	3260	< 1.9 U	< 12.8 U	< 0.37 U	< 0.12 U	< 0.75 U
SAE-38	35[a]	N	04/23/08	< 1.3 U	< 0.42 U	14.9	450	72	< 0.13 U	5	14.8	< 0.33 U	< 0.83 U	1.24	7.8	1420	< 2.9 U	146	< 0.5 U	< 0.17 U	< 1 U
SAE-39	0	N	04/16/08	< 0.79 U	< 0.25 U	< 0.54 U	3.5	85		< 0.1 U	3.7	0.27	< 0.51 U	0.0281	9.1	10.3	< 1.8 U	228 J+	0.051 J	< 0.7 U	0.43 J
SAE-40	0	N	04/16/08	< 0.8 U	< 0.26 U	< 0.54 U	74.6	89	< 0.081 U	2.6	6.7	< 0.2 U	22.1	0.578	9.7	187	< 1.8 U	56.3 J+	< 0.34 U	< 0.67 U	< 0.67 U
SAE-41	0	N	04/16/08	< 0.85 U	< 0.27 U	< 0.58 U	1.9 J	84	< 0.087 U	0.62 J	1.4	< 0.022 U	< 0.55 U	0.0389	9.2	7.2	< 1.9 U	89.4 J+	< 0.36 U	< 0.71 U	< 0.71 U
SAE-41	10	N	04/23/08	< 0.83 U	< 0.27 U	< 0.56 U	1.4 J	94	< 0.084 U	2.8	0.77	< 0.021 U	< 0.53 U	0.0336	9.4	95.3	< 1.9 U	< 12.8 U	< 0.38 U	< 0.13 U	< 0.76 U
SAE-41	20[a]	N	04/23/08	< 0.84 U	< 0.27 U	< 0.57 U	7.2	86	< 0.085 U	2.1	1.8	< 0.021 U	< 0.54 U	0.842	9.1	145	< 1.9 U	86.9	< 0.42 U	< 0.14 U	0.59 J
SAE-42	0	N	04/16/08	< 0.79 U	< 0.25 U	< 0.54 U	65.9	82	< 0.08 U	1.8	18.9	0.98 J	< 0.51 U	0.238	8.9	152	< 1.8 U	114 J+	0.079 J	< 0.73 U	0.96
SAE-43	0	N	04/16/08	< 0.79 U	< 0.25 U	< 0.54 U	3.3	85	< 0.08 U	2.1	2.7	< 0.02 U	< 0.51 U	0.528	9.5	19.1	< 1.8 U	88.1 J+	0.054 J	< 0.7 U	0.43 J
SAE-43	10	N	04/23/08	< 0.84 U	< 0.27 U	5.9	143	93	< 0.085 U	3.2	1.6	< 0.22 U	< 0.54 U	1.24	8.8	247	< 1.9 U	< 12.9 U	< 0.39 U	< 0.13 U	< 0.77 U
SAE-43	17[a]	N	04/23/08	< 0.82 U	< 0.26 U	3.3 J	60.7	94	< 0.083 U	1.1	0.82	< 0.21 U	< 0.53 U	0.651	8.8	206	< 1.9 U	< 12.6 U	< 0.38 U	< 0.13 U	< 0.77 U
SAE-44	0	N	04/16/08	< 0.79 U	< 0.25 U	< 0.54 U	6.4	92	< 0.08 U	< 0.1 UJ	3.3	0.43 J	< 0.51 U	0.4	9.1	30.5	< 1.8 U	5100 J	< 0.35 U	< 0.7 U	< 0.7 U
SAE-44	0	FD	04/16/08	< 0.79 U	< 0.25 U	< 0.54 U	5.4	86	< 0.081 U	1.3 J	3.6	0.18 J	< 0.51 U	0.482	9.2	37.9	< 1.8 U	121 J	< 0.32 U	< 0.65 U	< 0.65 U
SAE-45	0	N	04/16/08	< 0.79 U	< 0.25 U	< 0.53 U	3.8	81	< 0.08 U	< 0.1 U	1.6	0.13 J	< 0.51 U	0.059	8.9	39.4	< 1.8 U	171 J+	< 0.37 U	< 0.74 U	< 0.74 U
SAE-46	0	N	04/16/08	< 0.79 U	< 0.25 U	16.2	2560	86	< 0.08 U	1.4	70.6	< 2 U	< 0.51 U	8.33	8.1	2550	< 1.8 U	153 J+	0.051 J	< 0.7 U	< 0.7 U
SAE-47D	20	N	06/13/09	0.98 J-	< 0.27 U	1.6 J	56.5	--	< 0.12 UJ	2	3.4	< 0.034 U	< 3.2 U	3.63	--	71.4	< 0.86 U	--	--	--	--
SAE-48D	20	N	06/13/09	1.1 J-	< 0.28 U	1.6 J	233	--	< 0.12 UJ	5.8	5	< 0.036 U	< 1.7 U	1.72	--	803	< 0.89 U	--	--	--	--

All units in mg/kg (except chlorite are in units of % and pH are unitless).

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-7
SOIL POLYCHLORINATED BIPHENYLS (PCBs) DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	PCBs												
				PCB 105 (BZ)	PCB 114 (BZ)	PCB 118 (BZ)	PCB 123 (BZ)	PCB 126 (BZ)	PCB 156 (BZ)	PCB 157 (BZ)	PCB 167 (BZ)	PCB 169 (BZ)	PCB 189 (BZ)	PCB 209 (BZ)	PCB 77 (BZ)	PCB 81 (BZ)
SAE-01	0	N	04/16/08	130	70	300	7.6	3	37	7.6	12	< 2 U	4.2	720	< 2 U	< 2 U
SAE-02	0	N	04/16/08	170	78	370	4.4	6.1	48	9.4	20	< 2 U	7.6	1800	< 2 U	< 2 U
SAE-03	0	N	04/16/08	180	39	410	11	7.1	51	11	25	2.1	20	4700 J	< 2 U	< 2 U
SAE-04	0	N	04/16/08	180	65	390	10	8.7	60	12	19	2.7	22	4900 J	< 2 U	< 2 U
SAE-05	0	N	04/16/08	650	97	1100	31	21	130	35	58	3.6	30	5000 J	< 2 U	< 2 U
SAE-06	0	N	04/16/08	500	170	1100	30	31	170	40	73	9.1	75	14000 J	< 2 U	< 2 U
SAE-07	0	N	04/16/08	7700	2400	16000 J	< 2.1 U	350	2300	510	990	100	970	160000 J	< 2.1 U	< 2.1 U
SAE-07	10	N	04/21/08	< 2.1 U	< 2.1 U	3.8	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	110	< 2.1 U	< 2.1 U
SAE-07	55[a]	N	04/21/08	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U	< 2.8 U
SAE-08	0	N	04/16/08	260 J	74 J	560 J	< 2.1 U	12 J	83 J	18	28 J	3.8 J	33 J	6600 J	< 2.1 U	< 2.1 U
SAE-08	0	FD	04/16/08	440 J	160 J	970 J	< 2 UJ	21 J	140 J	29	69 J	6.9 J	69 J	15000 J	< 2 UJ	< 2 UJ
SAE-08C	0	N	06/13/09	15	5.1	35	< 2.4 U	< 2.4 U	5.8	< 2.4 U	2.9	< 2.4 U	< 2.4 U	520	< 2.4 U	< 2.4 U
SAE-08N	0	N	06/13/09	2.5	< 2.1 U	4.4	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	120	< 2.1 U	< 2.1 U
SAE-08S	0	N	06/13/09	2300	1200	5500	< 2.2 U	230	1000	260	370	94	610	120000 J	< 2.2 U	< 2.2 U
SAE-09	0	N	04/15/08	7600 J	2400	17000 J	300	210	2200 J	430	750	43	400	72000 J	1000 J	960
SAE-10	0	N	04/15/08	2400 J	860	5600 J	65	66	710	150	250	11	110	23000 J	290	390
SAE-10	10	N	04/21/08	< 2.1 U	< 2.1 U	8.8	2.2	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	27	< 2.1 U	< 2.1 U
SAE-10	60[a]	N	04/21/08	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U	< 2.9 U
SAE-11	0	N	04/15/08	1200 J	440	2300 J	29	28	310	66	110	6.8	50	10000 J	120	220
SAE-12	0	N	04/15/08	680	210	1400 J	20	13	190	39	85	2.3	23	6800 J	65	120
SAE-13	0	N	04/15/08	190	< 2 U	380	24	59	140	57	97	39	180	17000 J	84	41
SAE-14	0	N	04/15/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-15	0	N	04/15/08	5.5	< 2.1 U	12	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	130	< 2.1 U	< 2.1 U
SAE-15	10	N	04/22/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-15	10	FD	04/22/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-15	55[a]	N	04/22/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-16	0	N	04/15/08	4900 J	970	10000 J	92	180	1600 J	330	650	68	530	110000 J	530	510
SAE-17	0	N	04/15/08	5200	740	11000 J	< 2.1 U	110	1400 J	300	610	34	290	80000 J	450	350
SAE-18	0	N	04/15/08	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
SAE-19	0	N	04/15/08	220	89	490	31	32	130	37	77	18	130	23000 J	44	48
SAE-20	0	N	04/15/08	170	50	340	6.9	8.5	55	12	23	2.4	22	6300 J	23	29
SAE-21	0	N	04/15/08	460	150	1000	13	17	150	33	60	5.3	40	12000 J	52	69
SAE-22	0	N	04/15/08	330	110	720	13	< 2.1 U	110	26	43	7.3	46	15000 J	44	50
SAE-22	10	N	04/22/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-22	10	FD	04/22/08	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ	< 2.1 UJ
SAE-22	50[a]	N	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-23	0	N	04/15/08	1300 J	300	2800 J	37	< 2.1 UJ	430	100	300	10	140	38000 J	140	140
SAE-24	0	N	04/15/08	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
SAE-25	0	N	04/15/08	< 2.1 U	< 2.1 U	3.7	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	110	< 2.1 U	< 2.1 U

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	PCBs												
				PCB 105 (BZ)	PCB 114 (BZ)	PCB 118 (BZ)	PCB 123 (BZ)	PCB 126 (BZ)	PCB 156 (BZ)	PCB 157 (BZ)	PCB 167 (BZ)	PCB 169 (BZ)	PCB 189 (BZ)	PCB 209 (BZ)	PCB 77 (BZ)	PCB 81 (BZ)
SAE-26	0	N	04/15/08	150	21	300	14	< 2.1 U	53	14	23	4.2	26	9400 J	28	18
SAE-27	0	N	04/16/08	170	14	360	< 2.1 U	6	46	9.8	13	< 2.1 U	15	7000 J	< 2.1 U	< 2.1 U
SAE-28	0	N	04/16/08	250	20	520	< 2.1 U	8.4	65	15	26	2.8	20	13000 J	< 2.1 U	< 2.1 U
SAE-29	0	N	04/16/08	120	8.8	230	6	4	30	7	9.5	< 2.1 U	12	6200 J	< 2.1 U	< 2.1 U
SAE-30	0	N	04/16/08	4300	1900	8900	200	110	1100	240	390	17	160	39000 J	< 2.1 U	< 2.1 U
SAE-31	0	N	04/16/08	71	7.2	150	3.8	3.1	20	4.4	6.8	< 2 U	7.7	3800 J	< 2 U	< 2 U
SAE-32	0	N	04/16/08	130	28	230	7	5.6	41	9.7	13	< 2.1 U	19	4200 J	< 2.1 U	< 2.1 U
SAE-33	0	N	04/16/08	40	4.4	82	3.2	2.4	9.7	2.6	4.9	< 2 U	4.2	1200	< 2 U	< 2 U
SAE-34	0	N	04/16/08	750	51	1600	< 2 U	23	200	43	81	6.6	57	33000 J	< 2 U	< 2 U
SAE-34	10	N	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-34	35[a]	N	04/23/08	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U	< 2.4 U
SAE-35	0	N	04/16/08	10	< 2 U	21	< 2 U	< 2 U	2.9	< 2 U	< 2 U	< 2 U	< 2 U	550	< 2 U	< 2 U
SAE-36	0	N	04/16/08	< 2 U	< 2 U	2.4	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
SAE-37	0	N	04/16/08	7.3	< 2.1 U	13	< 2.1 U	< 2.1 U	2.6	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	590	< 2.1 U	< 2.1 U
SAE-38	0	N	04/16/08	93	13	200	7.3	12	41	8.5	16 J	< 2.2 U	20	7200 J	< 2.2 U	< 2.2 UJ
SAE-38	10	N	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-38	10	FD	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-38	35[a]	N	04/23/08	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U	< 3.3 U
SAE-39	0	N	04/16/08	160	16	350	< 2 U	12	55	13	25	< 2 U	20	9800 J	< 2 U	< 2 U
SAE-40	0	N	04/16/08	76	< 2 U	140	< 2 U	< 2 U	25	5.3	8.8	< 2 U	4.6	4900 J	< 2 U	< 2 U
SAE-41	0	N	04/16/08	140	< 2.2 U	230	< 2.2 U	< 2.2 U	28	8.4	13	< 2.2 U	< 2.2 U	3700 J	< 2.2 U	< 2.2 U
SAE-41	10	N	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-41	20[a]	N	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-42	0	N	04/16/08	62	< 2 U	130	< 2 U	< 2 U	19	4.6	7.3	< 2 U	< 2 U	19000 J	< 2 U	< 2 U
SAE-43	0	N	04/16/08	9.2	< 2 U	20	< 2 U	< 2 U	3	< 2 U	< 2 U	< 2 U	< 2 U	680	< 2 U	< 2 U
SAE-43	10	N	04/23/08	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U	< 2.2 U
SAE-43	17[a]	N	04/23/08	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U	< 2.1 U
SAE-44	0	N	04/16/08	1300 J	66 J	2600 J	< 2 U	18 J	340 J	71 J	130 J	< 2 U	29 J	11000 J	< 2 U	< 2 U
SAE-44	0	FD	04/16/08	450 J	21 J	980 J	< 2 U	10 J	110 J	25 J	44 J	< 2 U	8.4 J	2500 J	< 2 U	< 2 U
SAE-45	0	N	04/16/08	310	17	660	11	< 2 U	87	19	35	< 2 U	9.8	2600 J	< 2 U	< 2 U
SAE-46	0	N	04/16/08	75	< 2 U	140	< 2 U	< 2 U	31	9.5	19	< 2 U	< 2 U	470	< 2 U	< 2 U

All units in mg/kg.
[a]Indicates sample collected from the capillary fringe.
(hatched box) = Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
(grey box) = Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-8
SOIL RADIONUCLIDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

				Radionuclides							
Sample ID	**Depth (ft bgs)**	**Sample Type**	**Sample Date**	Radium-226	Radium-228	Thorium-228	Thorium-230	Thorium-232	Uranium-233/234	Uranium-235/236	Uranium-238
SAE-01	0	N	04/16/08	1.17	1.9	6.4	1.5	4.21 J	2.47	0.137 U	1.44
SAE-01R	0	N	08/14/08	1.16	1.39	1.75 J	1 U	1.22	1.11	0.0592 U	1.06
SAE-01R	0	FD	08/14/08	2.12	1.74	2.79 J	1.19	1.51	1.19	-0.0165 U	0.888
SAE-02	0	N	04/16/08	1.17	2.95	3.38	1.26	2.2 J	1.34	0.135 U	1.09
SAE-03	0	N	04/16/08	1.02	1.65	1.96	1.17	1.25	0.611	-0.0195 U	0.745
SAE-04	0	N	04/16/08	0.808	1.34	1.55	0.7	0.883	0.557 U	-0.0576 U	0.795
SAE-05	0	N	04/16/08	1.16	2.64	1.69	1.35	1.09	1.16	0.0544 U	0.913
SAE-06	0	N	04/16/08	1.85	2.41	1.98	1.57	1.48	1.85	0.0573 U	1.47
SAE-07	0	N	04/16/08	3.1	1.43	2.14	3.71	1.75	2.91	-0.0184 U	2.28
SAE-07	10	N	04/21/08	1.27	1.77	2.06	1.07	1.88	1.66	0.206	1.03
SAE-07	55[a]	N	04/21/08	1 U	0.992	1.34	1.55	1.26	1.2	0.0739 U	1.45
SAE-08	0	N	04/16/08	1.13	1.93	1.65	1.68	1.88	1.09	0.138 U	0.716
SAE-08	0	FD	04/16/08	1.46	1.09	1.65	1.09	1.31	1	-0.0389 U	0.838
SAE-08C	0	N	06/13/09	0.788 U	1.48	1.27	0.933 U	1.66	0.59	0.0876 U	0.995
SAE-08C	20	N	06/13/09	0.91 U	1.19	1.55	0.956 U	1.14	1.38	0.254 U	0.875
SAE-08N	0	N	06/13/09	1	1.72	1.43	1.24	1.9	0.975	0 U	0.459
SAE-08N	10	N	06/13/09	1.01	1.53	1.38	0.832 U	1.54	0.669	0 U	1.19
SAE-08S	0	N	06/13/09	2.29	1.54	1.93	1.48	1.67	2.32	0.0752 U	2.06
SAE-08S	10	N	06/13/09	0.527 U	1.71	0.62 U	0.819 U	1.45	0.992	0 U	0.879
SAE-09	0	N	04/15/08	1.47	1.61	2.07	2.52	1.08 J	4.07	0.131 U	2.28
SAE-10	0	N	04/15/08	1.86	1.45	1.23	1.19	0.791 J	2.32	0.0573 U	1.8
SAE-10	10	N	04/21/08	1.1	1.14	1.43	1.22	1.09	1.14	0.0689 U	1.07
SAE-10	60[a]	N	04/21/08	1.51	1.26	1.06	1.22	1.57	1.52	0.121 U	1.32
SAE-11	0	N	04/15/08	2.18	2.02	2.91	1.94	1.26 J	2.36	0.0566 U	1.96
SAE-12	0	N	04/15/08	1.17	2.35	3.35	1.07	2.18 J	1.27	0.0214 U	1.61
SAE-13	0	N	04/15/08	0.773	2.72	3	2.05	1.79 J	0.895	0.167 U	1.13
SAE-14	0	N	04/15/08	2.22	1.71	1.94	4.57	1.43 J	4.55	0.317 U	4.67
SAE-14R	0	N	08/12/08	3.1	0.794	2.39	2.43	1.41	2.78	0.023 U	2.01
SAE-15	0	N	04/15/08	2.51	2.28	2.61	3.41	3.07 J	3.08	0.176 U	3.04
SAE-15	10	N	04/22/08	0.728 J	0.286 UJ	1.48	1.17	1.31	1.47	0.306	0.57
SAE-15	10	FD	04/22/08	1.82 J	1.45 J	1.55	1.24	1.78	1.89	0.151 U	0.75
SAE-15	55[a]	N	04/22/08	0.624	1.43	1.08	1.36	0.998	1.35	0.306 U	1.13
SAE-16	0	N	04/15/08	1.22	1.5	1.69	1.46	1.92 J	1.28	-0.0345 U	1.18
SAE-17	0	N	04/15/08	2.64	1.75	1.89	2.64	1.3 J	2.45	0.128 U	2.03
SAE-18	0	N	04/15/08	1.6	1.89	2.11	0.991	2.23 J	0.91	0.0395 U	0.647
SAE-19	0	N	04/15/08	0.904	2.79	1.98	0.855	1.15 J	0.889	0.122 U	1.47
SAE-20	0	N	04/15/08	0.917	3.24	2.79	0.681	2.32 J	2.04	0.0481 U	1.08
SAE-21	0	N	04/15/08	0.789	2.63	3.28	1.04	1.34 J	1.41	0.0496 U	1.08
SAE-22	0	N	04/15/08	0.891	3.25	2.44	1.19	1.58 J	1.02	0.123 U	0.85
SAE-22	10	N	04/22/08	2.2	2.35	2.15	0.754	1.44	2.97 J	0.13 U	2.58 J
SAE-22	10	FD	04/22/08	1.43	1.35	1.99	1.01	1.42	1.51 J	0.126 U	0.881 J

TABLE B-8
SOIL RADIONUCLIDES DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	Radionuclides							
				Radium-226	Radium-228	Thorium-228	Thorium-230	Thorium-232	Uranium-233/234	Uranium-235/236	Uranium-238
SAE-22	50[a]	N	04/23/08	1.05	1.08	1.8	0.856	2.08	0.798	0.00308 U	0.78
SAE-23	0	N	04/15/08	1.09	2.72	1.87	1.18	1.87 J	1.65	0.241 U	1.7
SAE-24	0	N	04/15/08	0.8	2.17	3.26	1.4	1.38 J	1.38	0.138 U	0.968
SAE-25	0	N	04/15/08	0.659	5.59	2.97	1.23	1.09 J	2.06	0.336 U	1.33
SAE-26	0	N	04/15/08	1.5	1.77	3.23	1.72	2.73 J	1.13	0.188 U	1.05
SAE-27	0	N	04/16/08	1.14	1.85	2.16	1.23	1.31	1.37	0.0732 U	0.957
SAE-28	0	N	04/16/08	1.67	1.43	2.08	1.07	1.07	0.643	0.147 U	0.776
SAE-29	0	N	04/16/08	0.893	1.84	1.29	1.44	1.67	1.11	0.121 U	0.615
SAE-30	0	N	04/16/08	1.03	2.6	2.4	1.52	1.54	1.64	0.237 U	0.981
SAE-31	0	N	04/16/08	1.37	1.36	2.18	1.44	1.42	0.795	0.205 U	0.793
SAE-32	0	N	04/16/08	1.36	2.36	1.36	0.687	1.54	1.36	0.109 U	1.04
SAE-33	0	N	04/16/08	0.726	1.5	0.976	0.964	2.13	1.27	0.103 U	0.927
SAE-34	0	N	04/16/08	1.31	1.86	1.43	0.937	1.11	1 U	0.0323 U	0.941
SAE-34	10	N	04/23/08	1.45	2.3	1.57	1.05	2.13	1.08	0.194 U	1.84
SAE-34	35[a]	N	04/23/08	1.06	1.24	1.09	1.67	0.926	1.52	0.34	1.13
SAE-35	0	N	04/16/08	1 U	1.84	1.8	0.857	1.09	1 U	0.077 U	0.974
SAE-36	0	N	04/16/08	1 U	1.83	2.1	0.964	1.25	1 U	0.0567 U	0.925
SAE-37	0	N	04/16/08	1.3	1.59	1.63	1.17	1.42	1 U	0.126	0.655
SAE-38	0	N	04/16/08	1 U	2.38	1.29	0.644	1.22	1 U	0.0659 U	1.09
SAE-38	10	N	04/23/08	1.67	0.935	1.22	2.57	1.31	2.67	0.0701 U	1.52
SAE-38	10	FD	04/23/08	1.34	1.7	1.88	2.29	1.95	1.74	0.0678 U	1.78
SAE-38	35[a]	N	04/23/08	1.03	2.87	0.812 U	1.35	1	2.38	0.518	2.09
SAE-39	0	N	04/16/08	1.16	1.23	1.5	1.07	1.35	1 U	0.0664 U	1.11
SAE-40	0	N	04/16/08	1 U	1.47	1.74	1.12	1.5	1.01	0.13	1.1
SAE-41	0	N	04/16/08	1.04	2.04	1.71	1.23	1.37	1 U	0.136 U	0.877
SAE-41	10	N	04/23/08	2.08	1.44	0.856 U	1.52	0.898	1.42	0.142 U	0.818
SAE-41	20[a]	N	04/23/08	1.91	1.32	2.19	2.42	1.52	2.16	0.415	1.37
SAE-42	0	N	04/16/08	1.16	3.32	1.83	1.37	1.3	1 U	0.0926 U	1.05
SAE-43	0	N	04/16/08	1 U	1.47	1.47	0.869	1.3	1 U	0.265	0.657
SAE-43	10	N	04/23/08	1.88	1.83	0.764 U	1.89	1.07	2.33	0.126 U	1.05
SAE-43	17[a]	N	04/23/08	1.47	2.63	1.67	1.62	1.65	1.61	0.478	1
SAE-44	0	N	04/16/08	1 U	2.56	1.81	0.919	1.21	1 U	0.0623 U	0.761
SAE-44	0	FD	04/16/08	1	2.24	1.96	1.25	1.64	1 U	0.149	0.626
SAE-45	0	N	04/16/08	1.35	1.61	1.14	0.93	1.02	1 U	0.0919 U	0.802
SAE-46	0	N	04/16/08	1.05	0.327 U	1.79	1.23	1.21	1.02	0.0898 U	0.889
SAE-47D	20	N	06/13/09	0.595 U	1.69	1.5	0.623 U	1.28	1.08	0.0682 U	1.43
SAE-48D	20	N	06/13/09	0.912 U	1.36	1.76	2.31	1.49	1.78	0.0923 U	0.97

All units in pCi/g.
[a]Indicates sample collected from the capillary fringe.
= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

TABLE B-9
SOIL POLYAROMATIC HYDROCARBON DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 1 of 2)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	PAHs: Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
SAE-01	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00067 U	< 0.0011 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0037 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-02	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00067 U	< 0.0011 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0037 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-03	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0037 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-04	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-05	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-06	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-07	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	0.054 J	0.016 J	0.14 J	< 0.0023 UJ	0.089 J	0.056 J	0.053 J	< 0.0018 UJ	0.073 J
SAE-07	10	N	04/21/08	< 0.019 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-07	55[d]	N	04/21/08	< 0.025 U	< 0.022 UJ	< 0.00095 U	< 0.0016 UJ	< 0.0028 UJ	< 0.0028 UJ	< 0.0087 UJ	< 0.0032 UJ	< 0.0015 UJ	< 0.0053 UJ	< 0.0027 UJ	< 0.0024 UJ	< 0.0042 UJ
SAE-07R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-08	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-08	0	FD	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-08C	0	N	06/13/09	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U
SAE-08C	20	N	06/13/09	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U	< 0.00182 U
SAE-08N	0	N	06/13/09	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U	< 0.00172 U
SAE-08N	10	N	06/13/09	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U	< 0.00173 U
SAE-08S	0	N	06/13/09	< 0.00171 U	< 0.00171 U	< 0.00171 U	< 0.00171 U	0.00265 J	0.00603 J	< 0.00171 U	< 0.00171 U	0.00388 J	< 0.00171 U	< 0.00171 U	0.00409 J	0.00392 J
SAE-08S	10	N	06/13/09	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U	< 0.00176 U
SAE-09	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-10	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-10	10	N	04/21/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.004 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-10	60[d]	N	04/21/08	< 0.026 U	< 0.022 UJ	< 0.00097 U	< 0.0016 UJ	< 0.0028 UJ	< 0.0028 UJ	< 0.0088 UJ	< 0.0033 UJ	< 0.0015 UJ	< 0.0053 UJ	< 0.0028 UJ	< 0.0025 UJ	< 0.0043 UJ
SAE-11	0	N	04/15/08	< 0.019 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-12	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-13	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-14	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	0.041 J-	< 0.0023 UJ	0.1 J-	0.061 J-	0.046 J-	< 0.0018 UJ	0.057 J-
SAE-14R	0	N	08/12/08	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U	< 0.034 U
SAE-15	0	N	04/15/08	< 0.019 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0064 UJ	< 0.0024 UJ	0.03 J-	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-15	10	N	04/22/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-15	10	FD	04/22/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-15	55[d]	N	04/22/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-16	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	0.036 J-	0.04 J-	0.018 J-	< 0.0018 UJ	< 0.0031 UJ
SAE-17	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	0.033 J-	0.046 J-	0.018 J-	< 0.0018 UJ	< 0.0031 UJ
SAE-18	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-19	0	N	04/15/08	< 0.019 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-20	0	N	04/15/08	< 0.019 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-21	0	N	04/15/08	< 0.019 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-22	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-22	10	N	04/22/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-22	10	FD	04/22/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-22	50[d]	N	04/23/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ

TABLE B-9
SOIL POLYAROMATIC HYDROCARBON DATA
TECHNICAL MEMORANDUM – UTILITY CORRIDOR SUB-AREA DATA REVIEW/HRA
BMI COMMON AREAS (EASTSIDE) SITE, CLARK COUNTY, NEVADA
(Page 2 of 2)

Sample ID	Depth (ft bgs)	Sample Type	Sample Date	PAHs												
				Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
SAE-23	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-24	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-25	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-26	0	N	04/15/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-27	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-28	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-29	0	N	04/16/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-30	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.0007 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-31	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-32	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-33	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-34	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-34	10	N	04/23/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-34	35[a]	N	04/23/08	< 0.021 U	< 0.019 UJ	< 0.00081 U	< 0.0014 UJ	< 0.0024 UJ	< 0.0024 UJ	< 0.0074 UJ	< 0.0027 UJ	< 0.0013 UJ	< 0.0045 UJ	< 0.0023 UJ	< 0.0021 UJ	< 0.0036 UJ
SAE-35	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-36	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-37	0	N	04/16/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-38	0	N	04/16/08	< 0.019 U	< 0.017 UJ	< 0.00072 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0066 UJ	< 0.0025 UJ	< 0.0011 UJ	< 0.004 UJ	< 0.0021 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-38	10	N	04/23/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-38	10	FD	04/23/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-38	35a	N	04/23/08	< 0.029 U	< 0.026 UJ	< 0.0011 U	< 0.0019 UJ	< 0.0033 UJ	< 0.0033 UJ	< 0.01 UJ	< 0.0038 UJ	< 0.0017 UJ	< 0.0062 UJ	< 0.0032 UJ	< 0.0028 UJ	< 0.0049 UJ
SAE-39	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-40	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00069 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0063 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-41	0	N	04/16/08	< 0.019 U	< 0.017 UJ	< 0.00073 U	< 0.0012 UJ	< 0.0022 UJ	< 0.0021 UJ	< 0.0067 UJ	< 0.0025 UJ	< 0.0011 UJ	< 0.0041 UJ	< 0.0021 UJ	< 0.0019 UJ	< 0.0033 UJ
SAE-41	10	N	04/23/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0065 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.004 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-41	20[a]	N	04/23/08	< 0.019 U	< 0.017 UJ	< 0.00072 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0066 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.004 UJ	< 0.0021 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-42	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-43	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-43	10	N	04/23/08	< 0.019 U	< 0.017 UJ	< 0.00072 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0066 UJ	< 0.0025 UJ	< 0.0011 UJ	< 0.004 UJ	< 0.0021 UJ	< 0.0018 UJ	< 0.0032 UJ
SAE-43	17[a]	N	04/23/08	< 0.019 U	< 0.016 UJ	< 0.00071 U	< 0.0012 UJ	< 0.0021 UJ	< 0.0021 UJ	< 0.0064 UJ	< 0.0024 UJ	< 0.0011 UJ	< 0.0039 UJ	< 0.002 UJ	< 0.0018 UJ	< 0.0031 UJ
SAE-44	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-44	0	FD	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-45	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0037 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-46	0	N	04/16/08	< 0.018 U	< 0.016 UJ	< 0.00068 U	< 0.0012 UJ	< 0.002 UJ	< 0.002 UJ	< 0.0062 UJ	< 0.0023 UJ	< 0.0011 UJ	< 0.0038 UJ	< 0.0019 UJ	< 0.0017 UJ	< 0.003 UJ
SAE-47D	20	N	06/13/09	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U	< 0.00175 U
SAE-48D	20	N	06/13/09	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U	< 0.00178 U

All units in mg/kg.

[a]Indicates sample collected from the capillary fringe.

= Data not included in risk assessment. Sample location excavated and data replaced with post-excavation data.

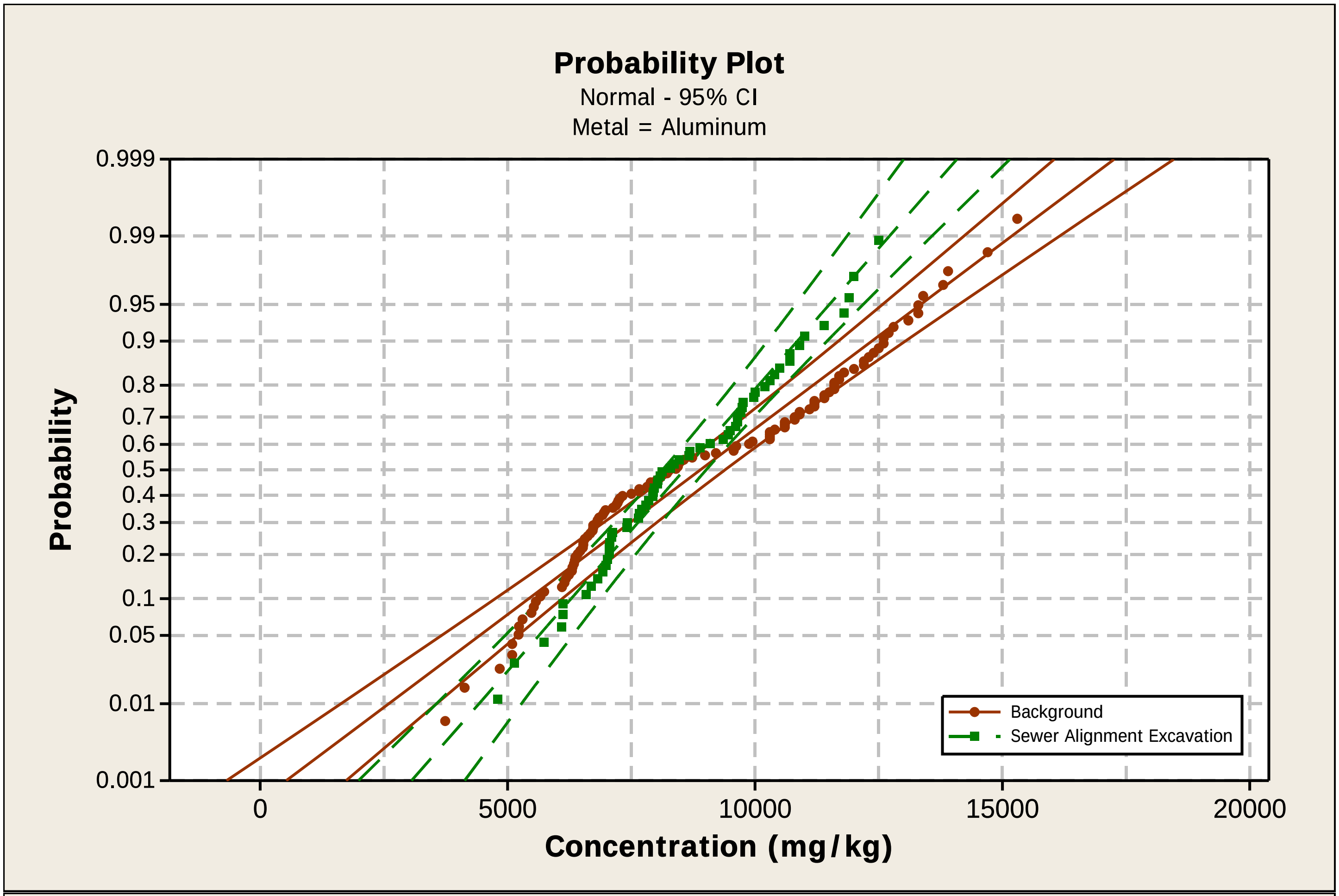
= Data not included in risk assessment. Sample depth greater than 10 feet bgs.

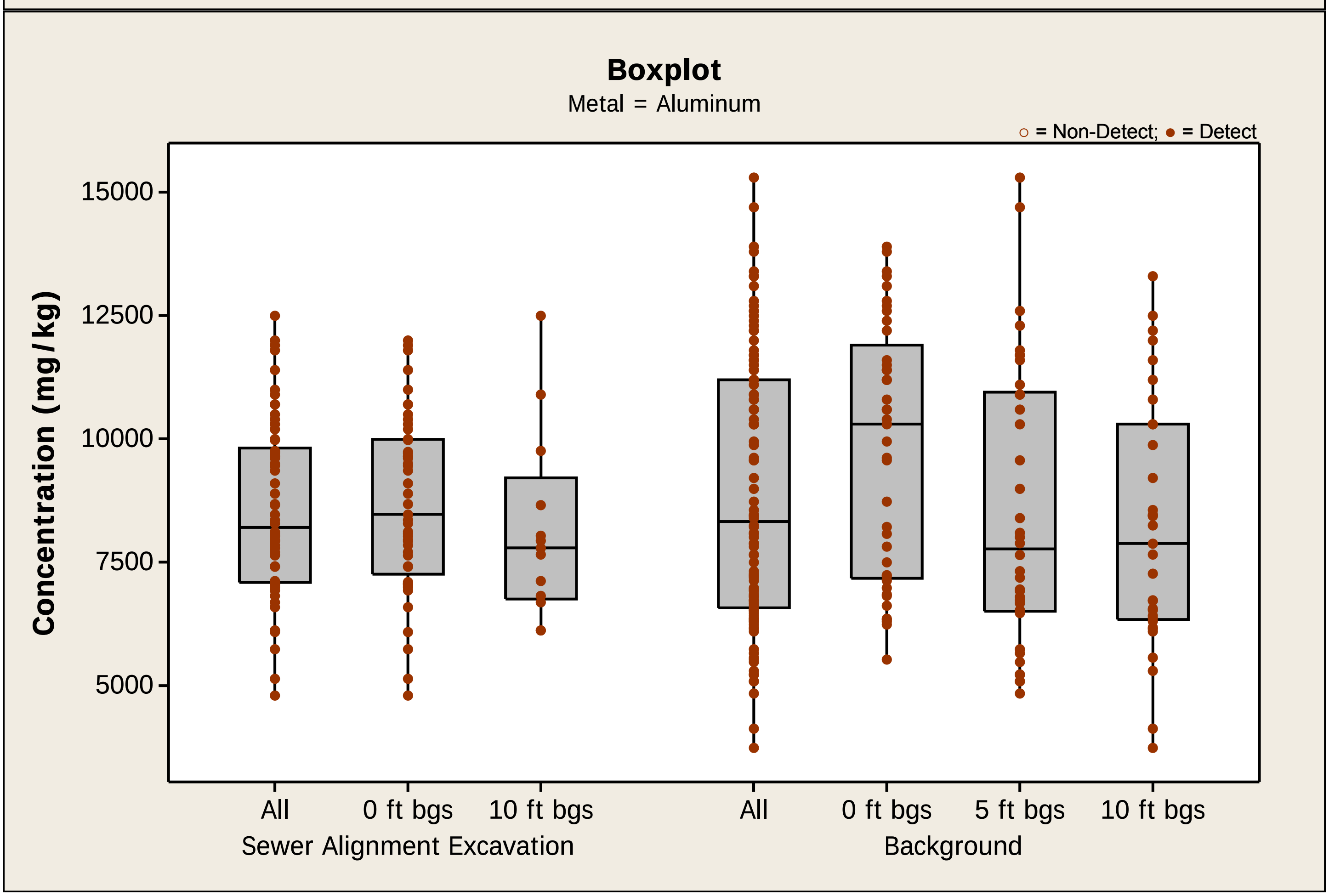
APPENDIX C

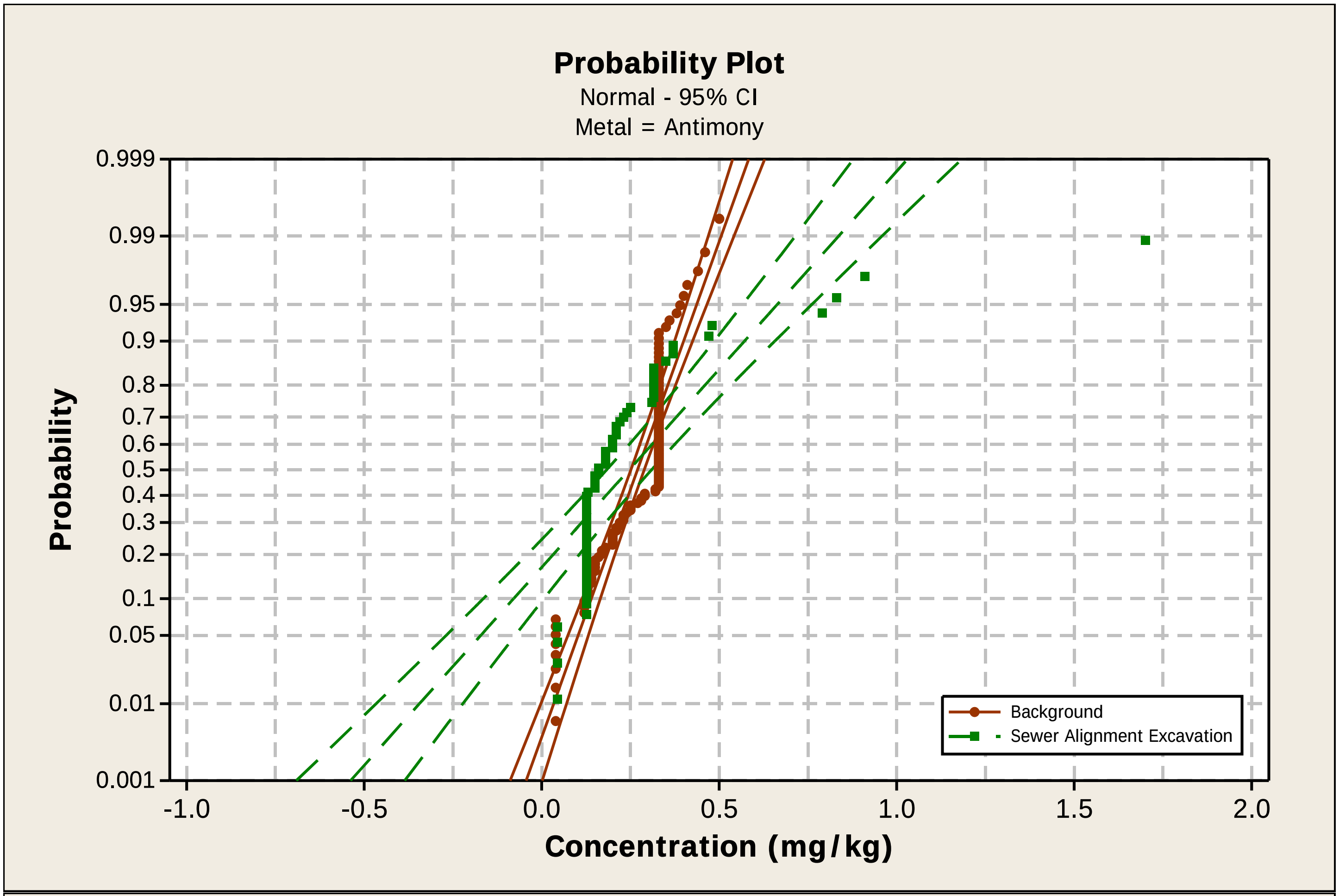
DATA USABILITY TABLES
(ON CD)

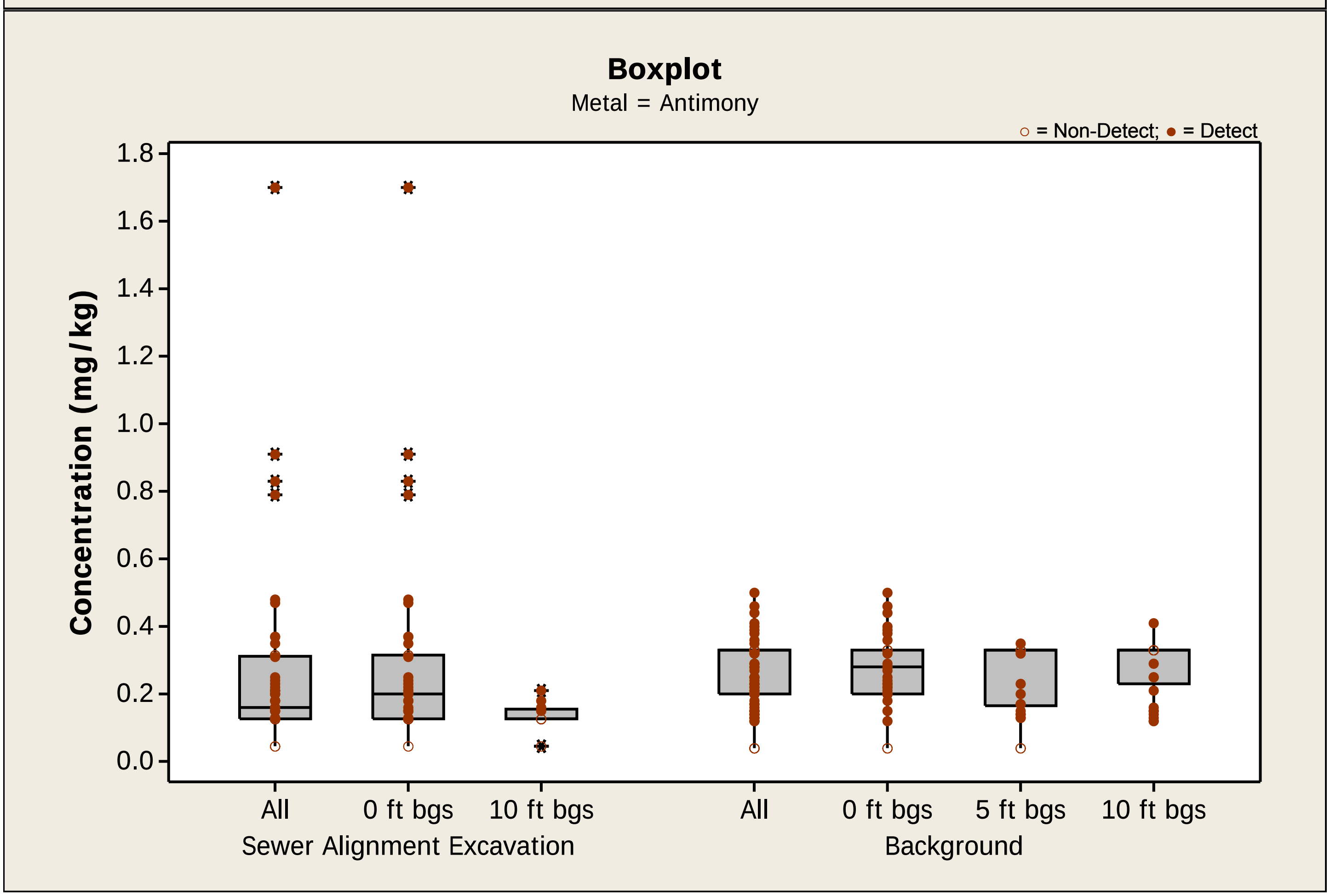
APPENDIX D

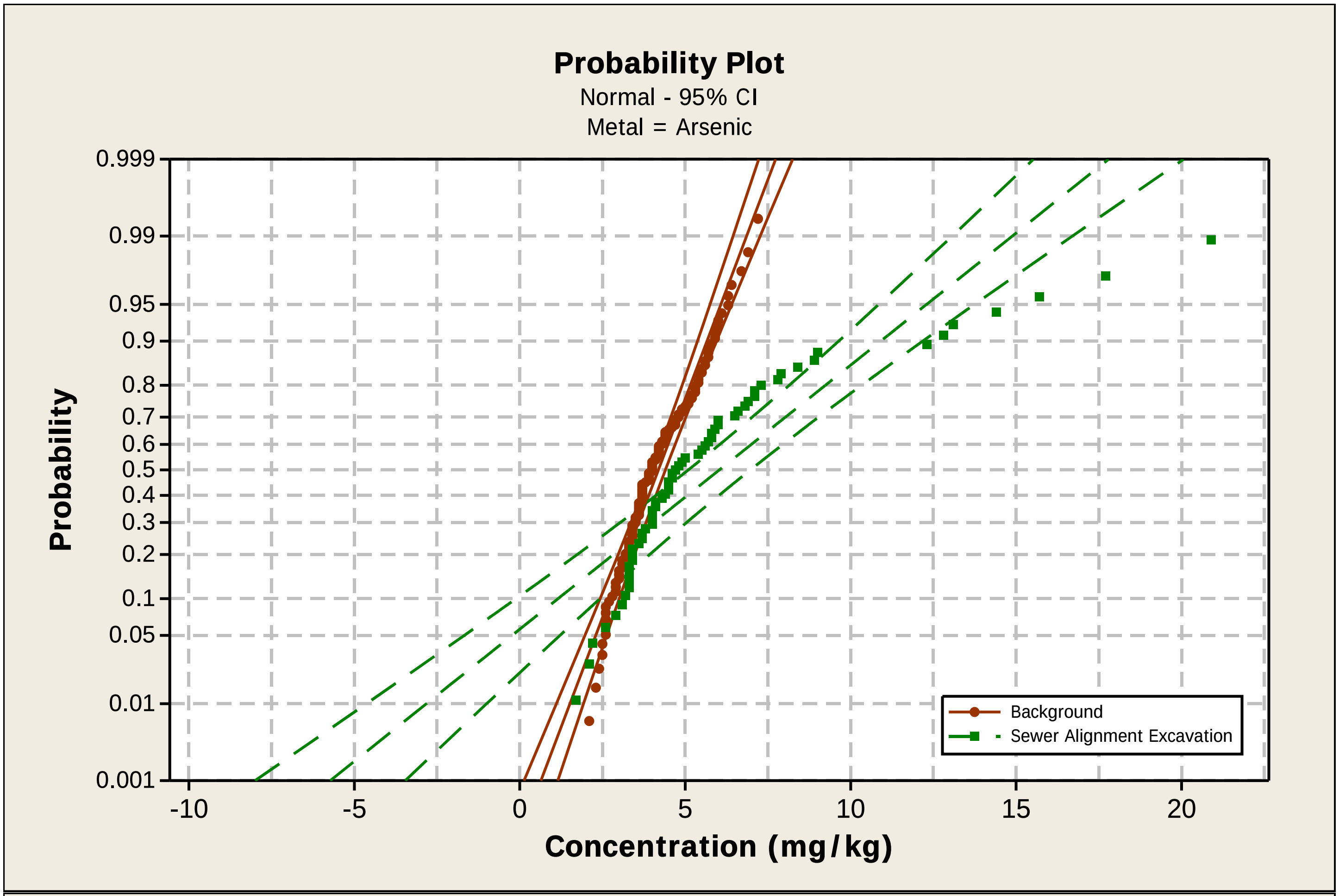
CUMULATIVE PROBABILITY PLOTS AND BOXPLOTS


Probability Plot
Normal - 95% CI
Metal = Aluminum
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5000
10000
15000
20000
Concentration (mg/kg)
Background
Sewer Alignment Excavation

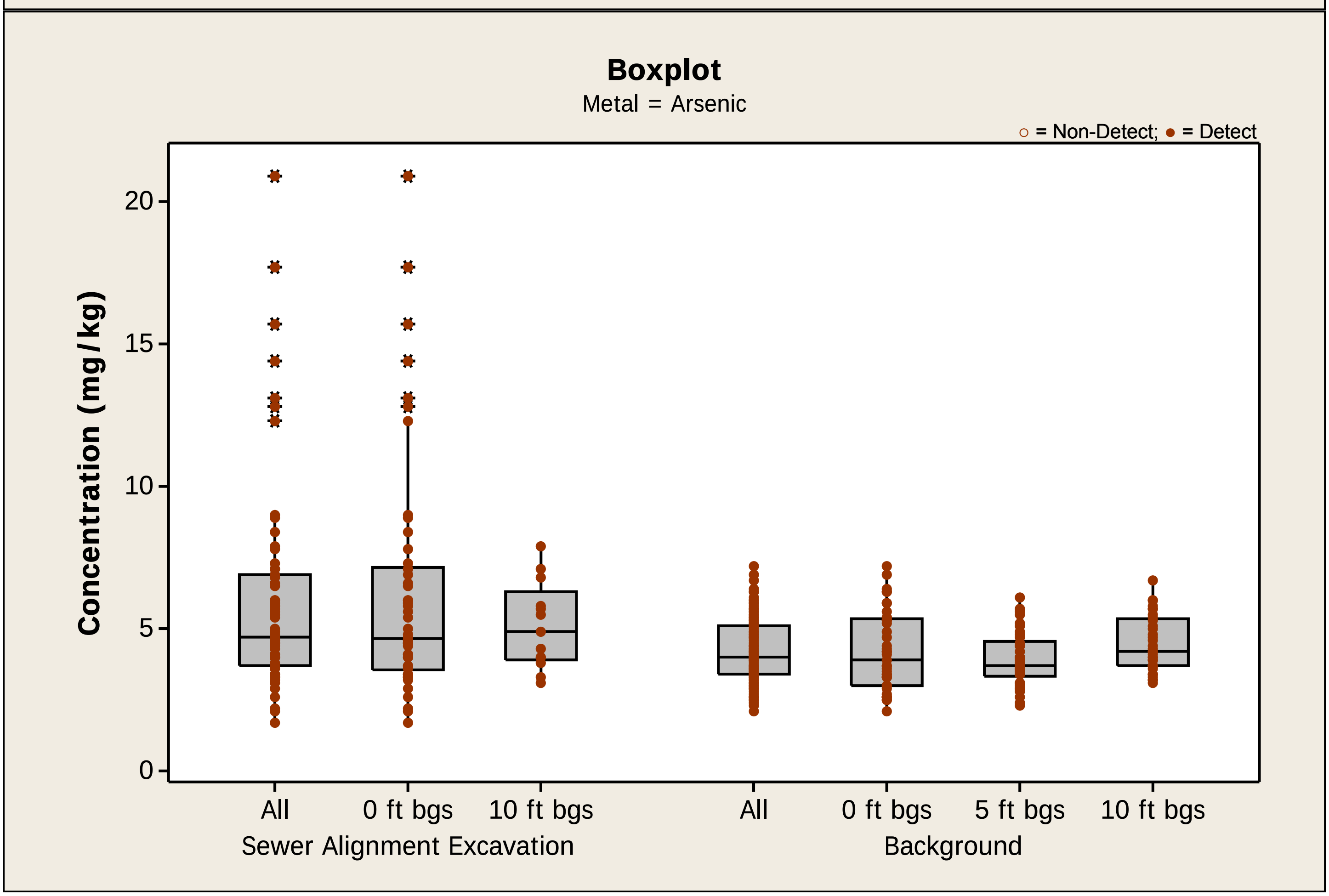

Boxplot
Metal = Aluminum
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
15000
12500
10000
7500
5000
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background


Probability Plot
Normal - 95% CI
Metal = Antimony
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
Concentration (mg/kg)
Background
Sewer Alignment Excavation

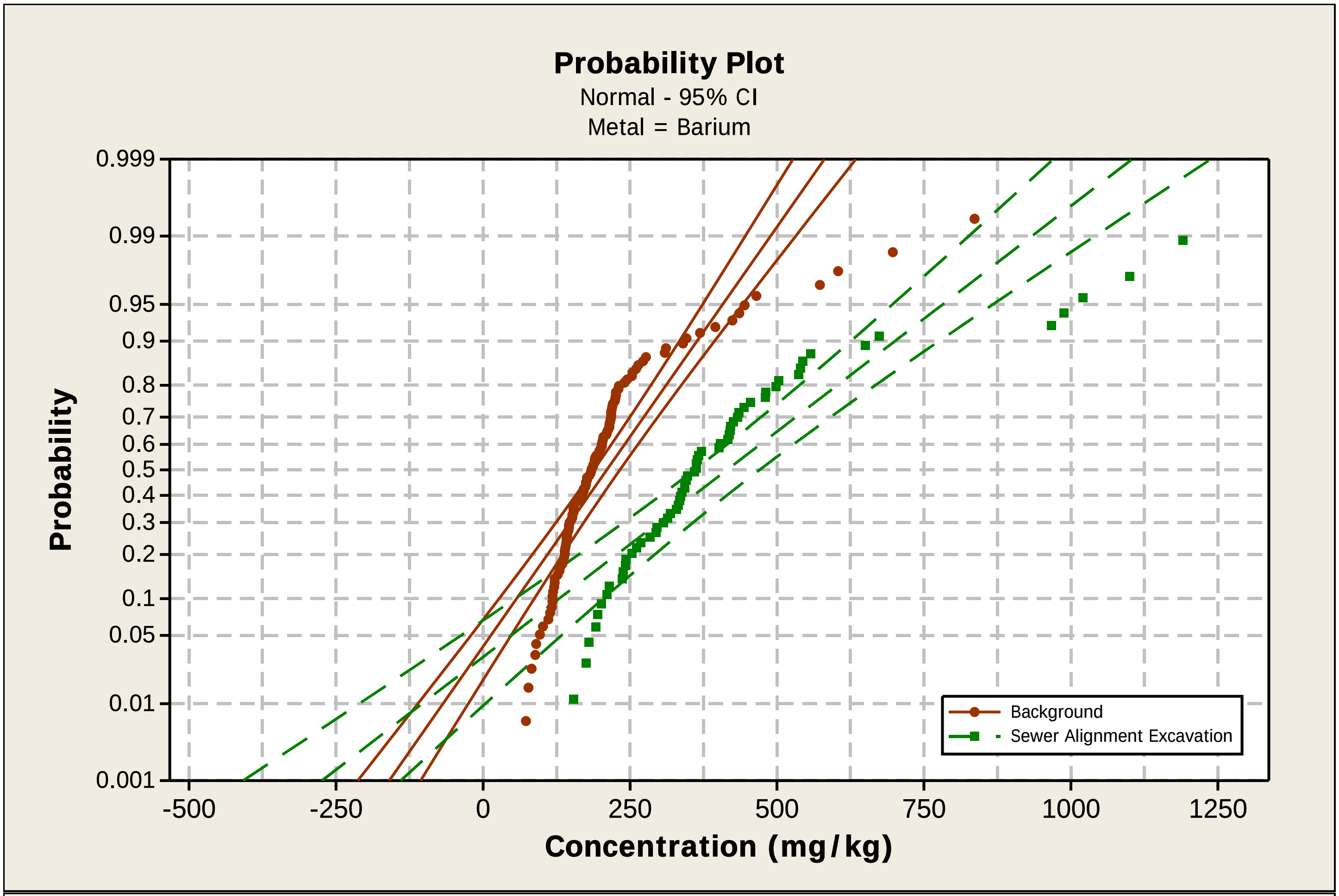

Boxplot
Metal = Antimony
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



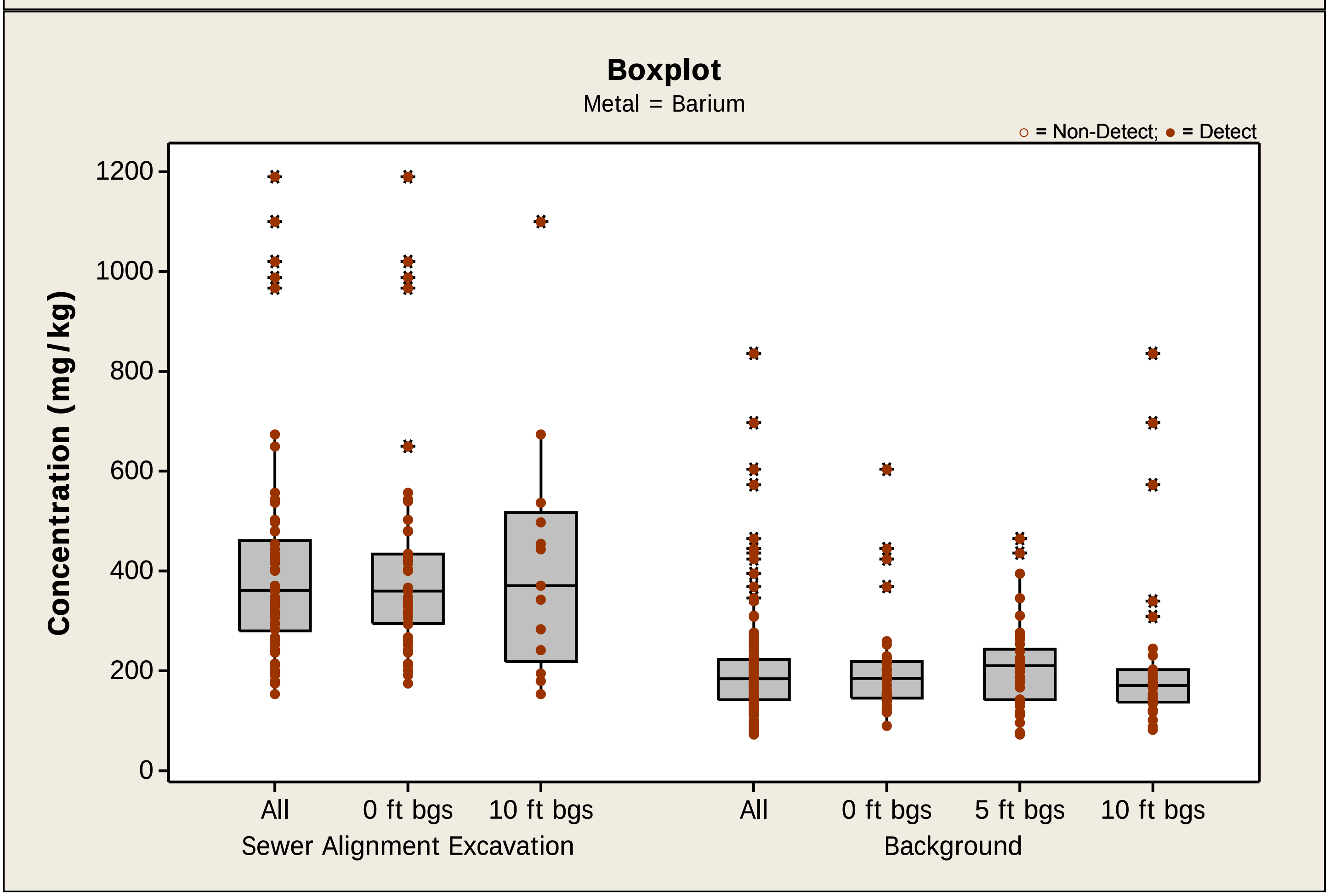
Probability Plot
Normal - 95% CI
Metal = Arsenic
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-10
-5
0
5
10
15
20
Concentration (mg/kg)
Background
Sewer Alignment Excavation



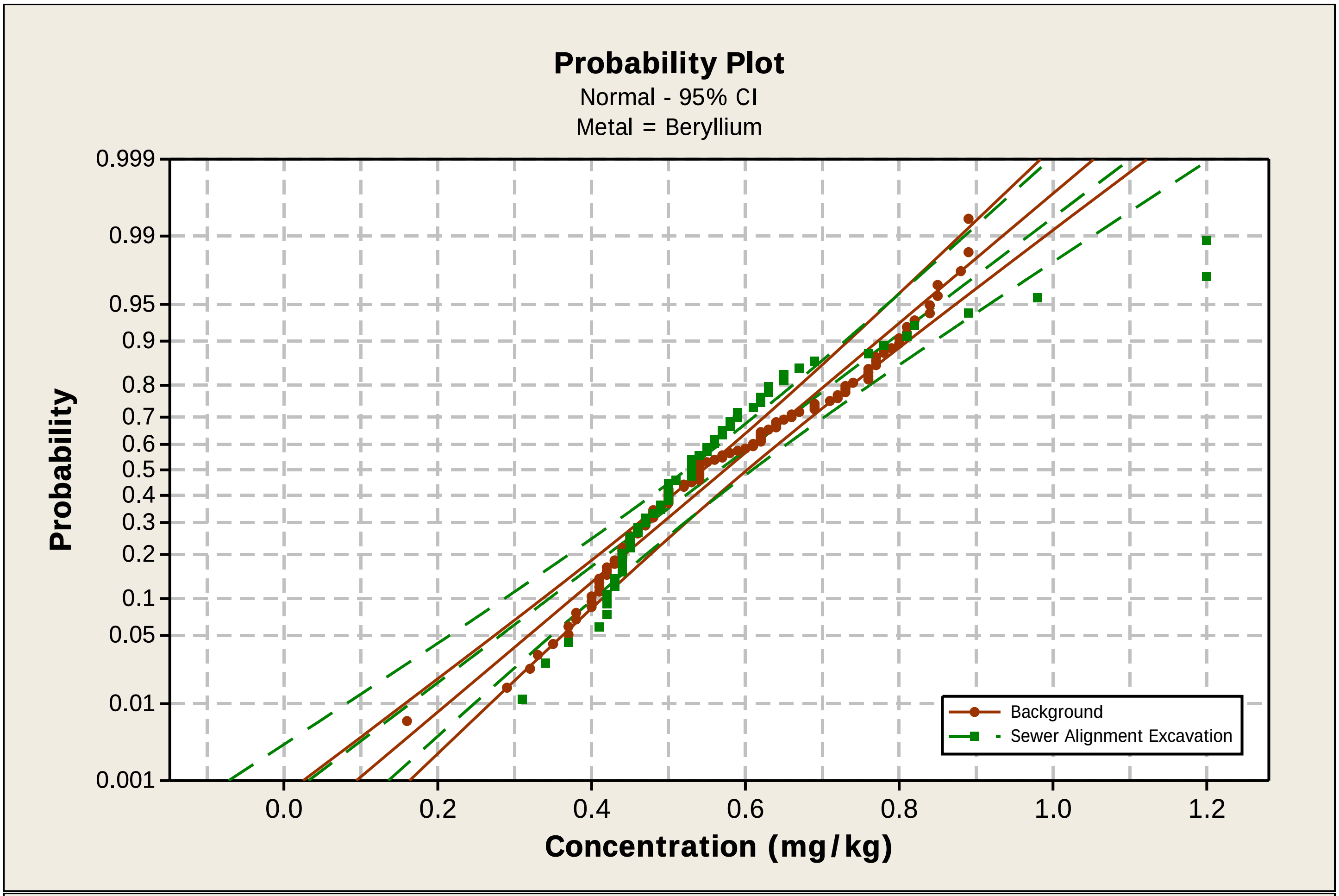
Boxplot
Metal = Arsenic
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
20
15
10
5
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background

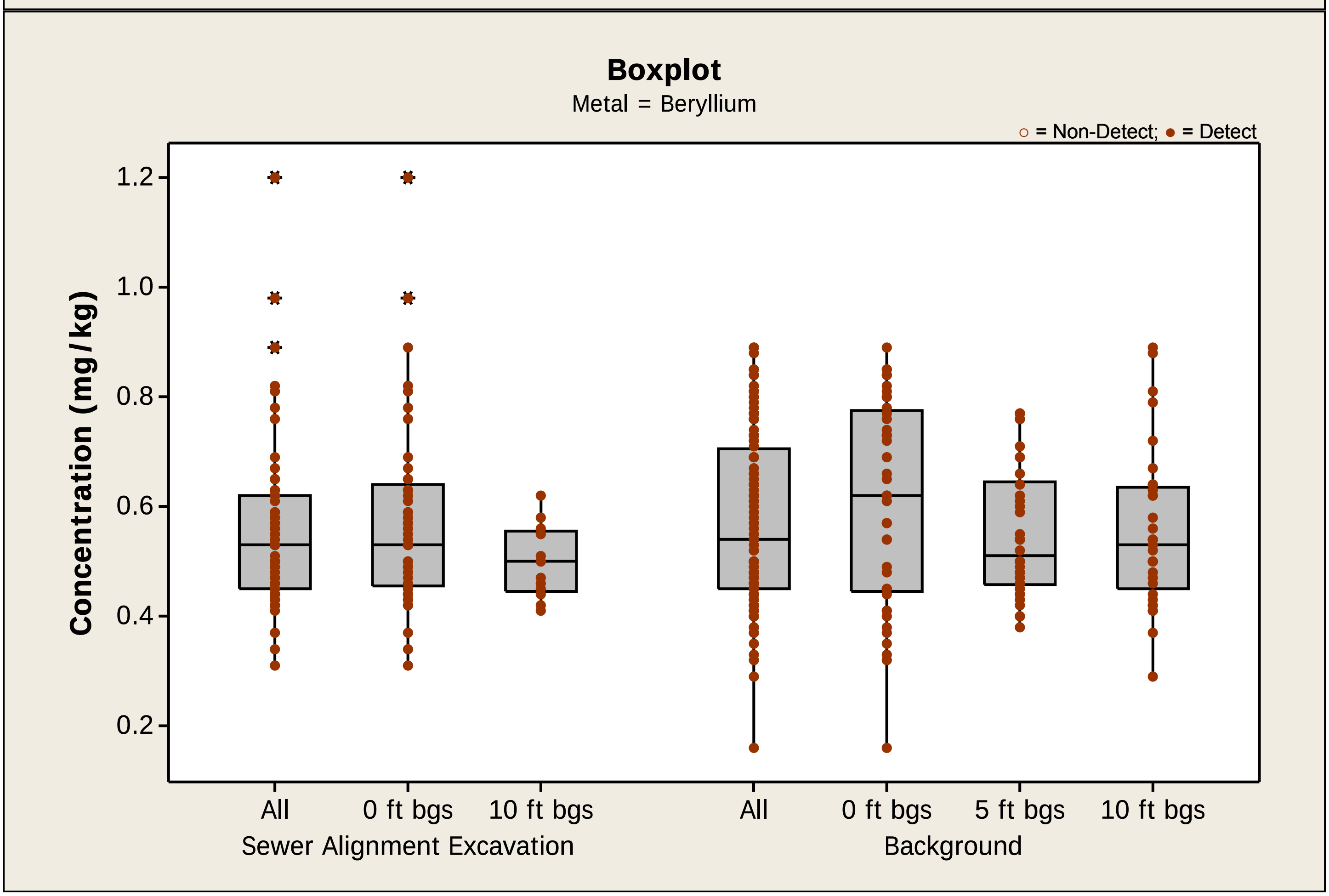


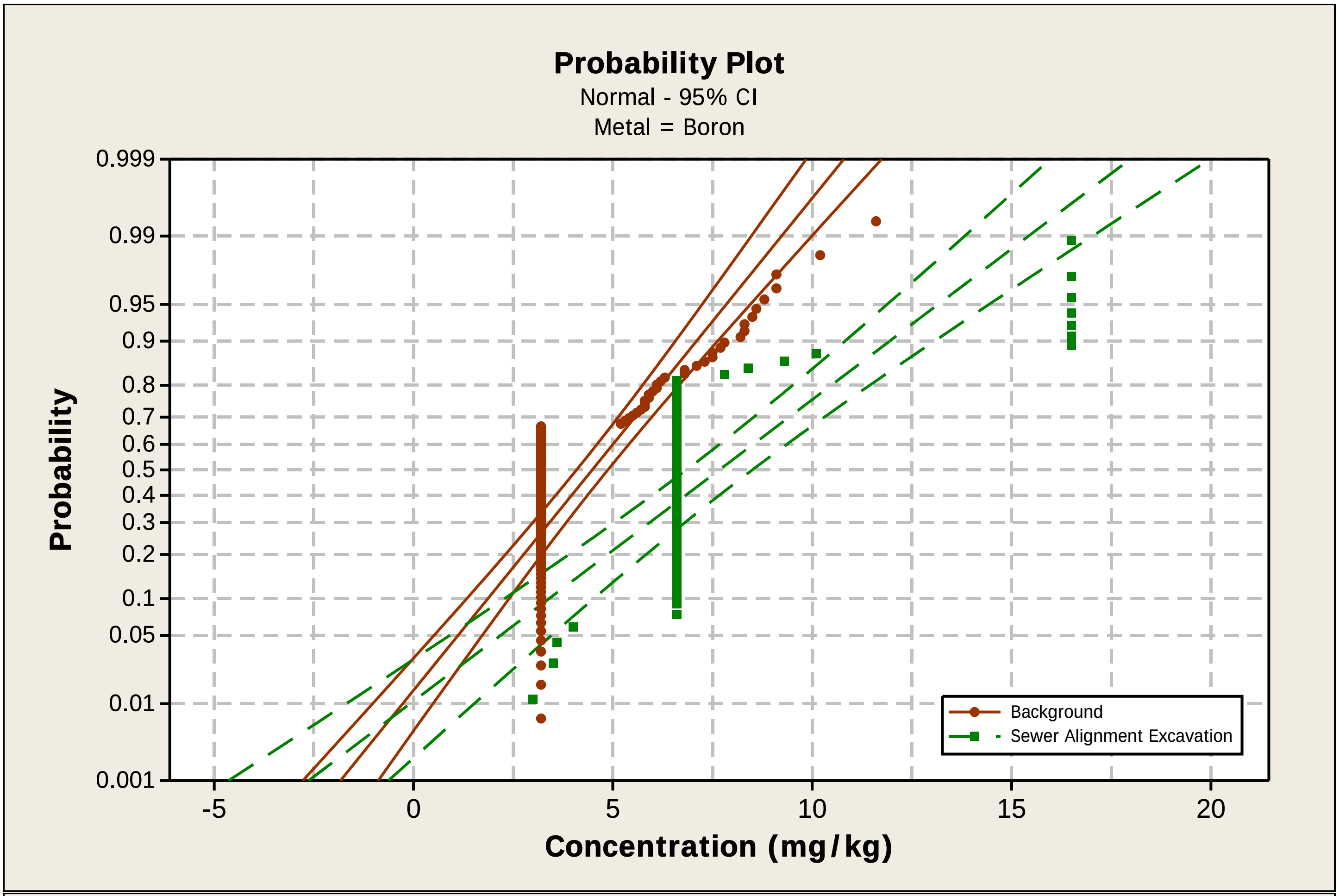
Probability Plot
Normal - 95% CI
Metal = Barium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-500
-250
0
250
500
750
1000
1250
Concentration (mg/kg)
Background
Sewer Alignment Excavation



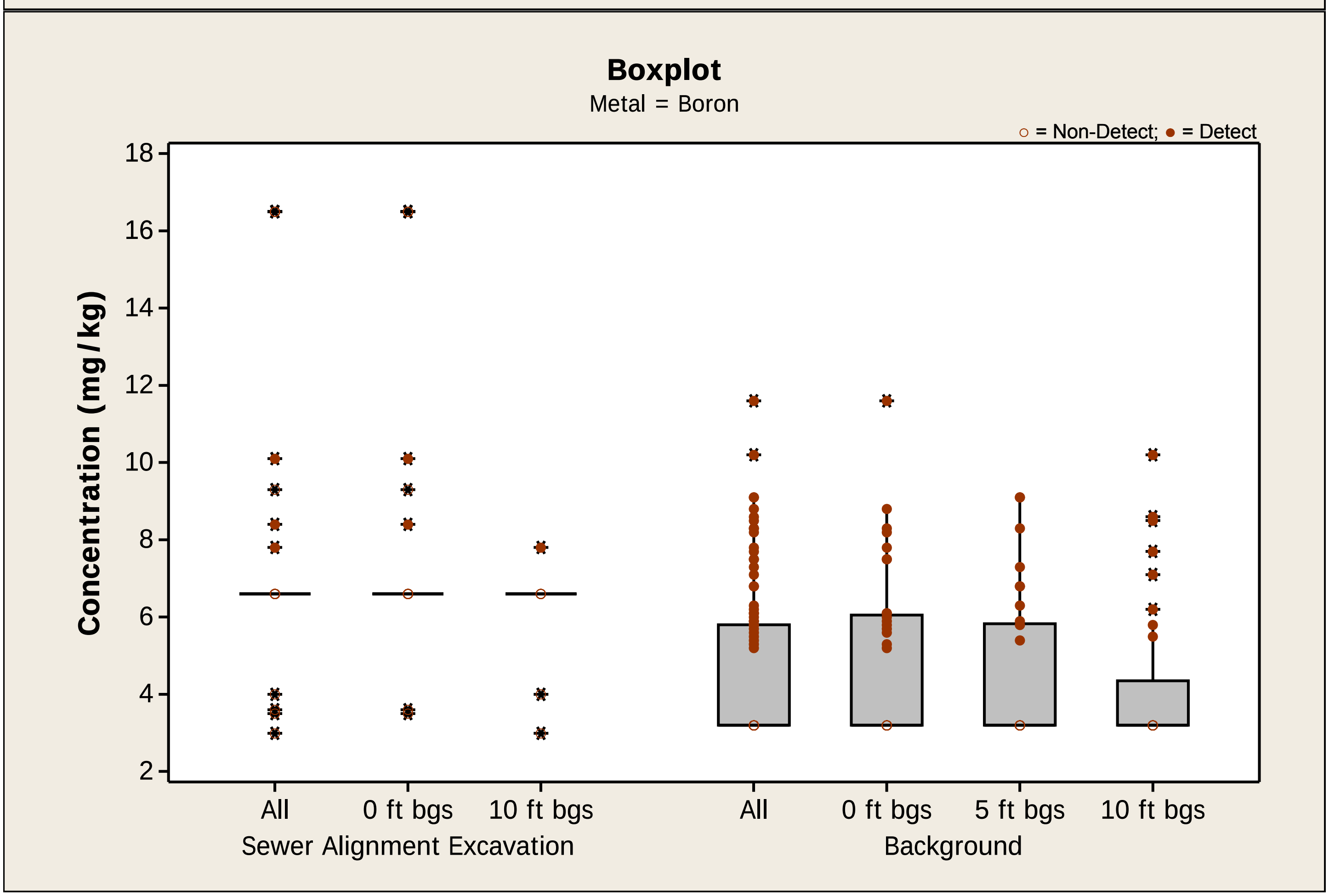
Boxplot
Metal = Barium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1200
1000
800
600
400
200
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Beryllium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Concentration (mg/kg)
Background
Sewer Alignment Excavation

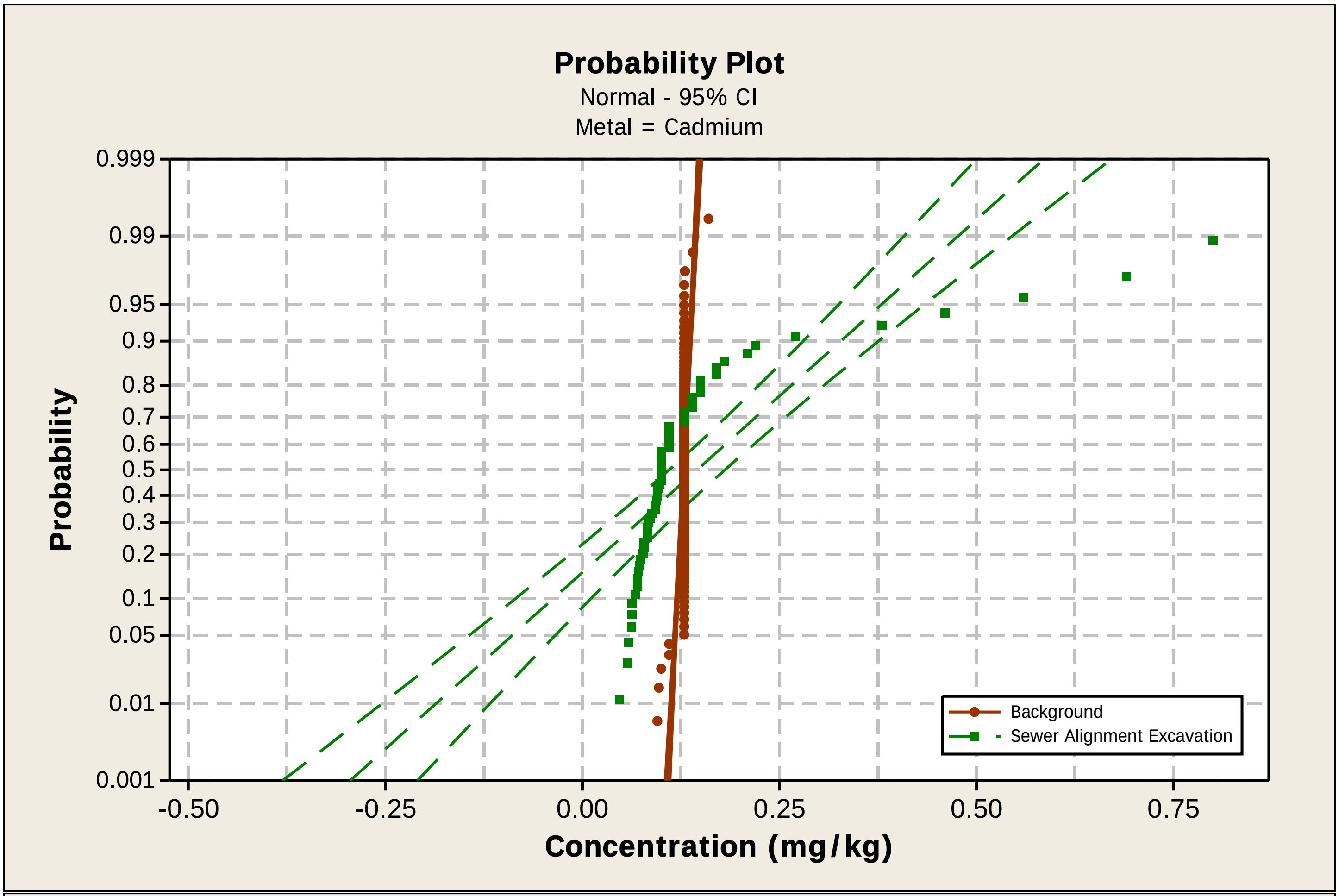

Boxplot
Metal = Beryllium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1.2
1.0
0.8
0.6
0.4
0.2
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background

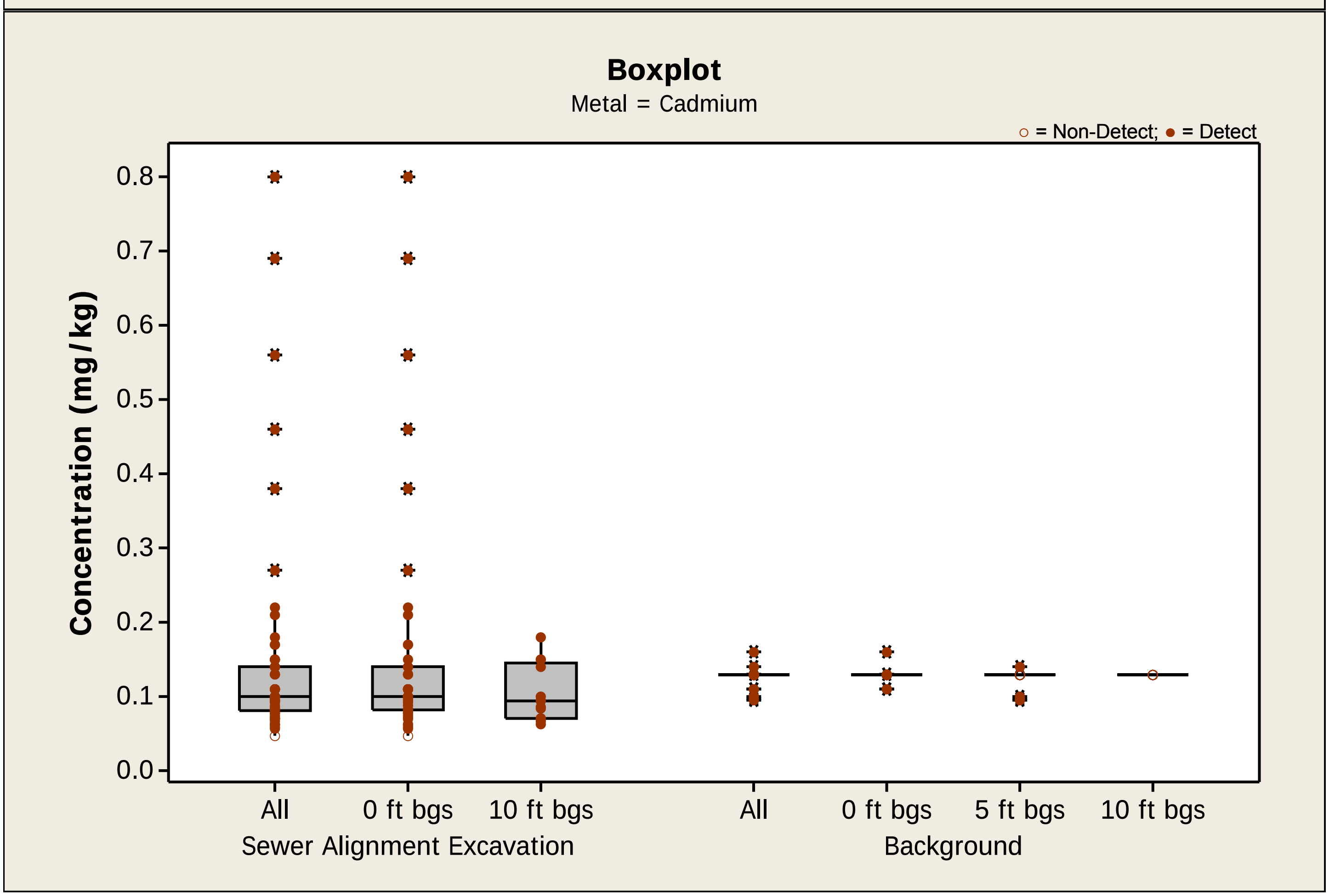


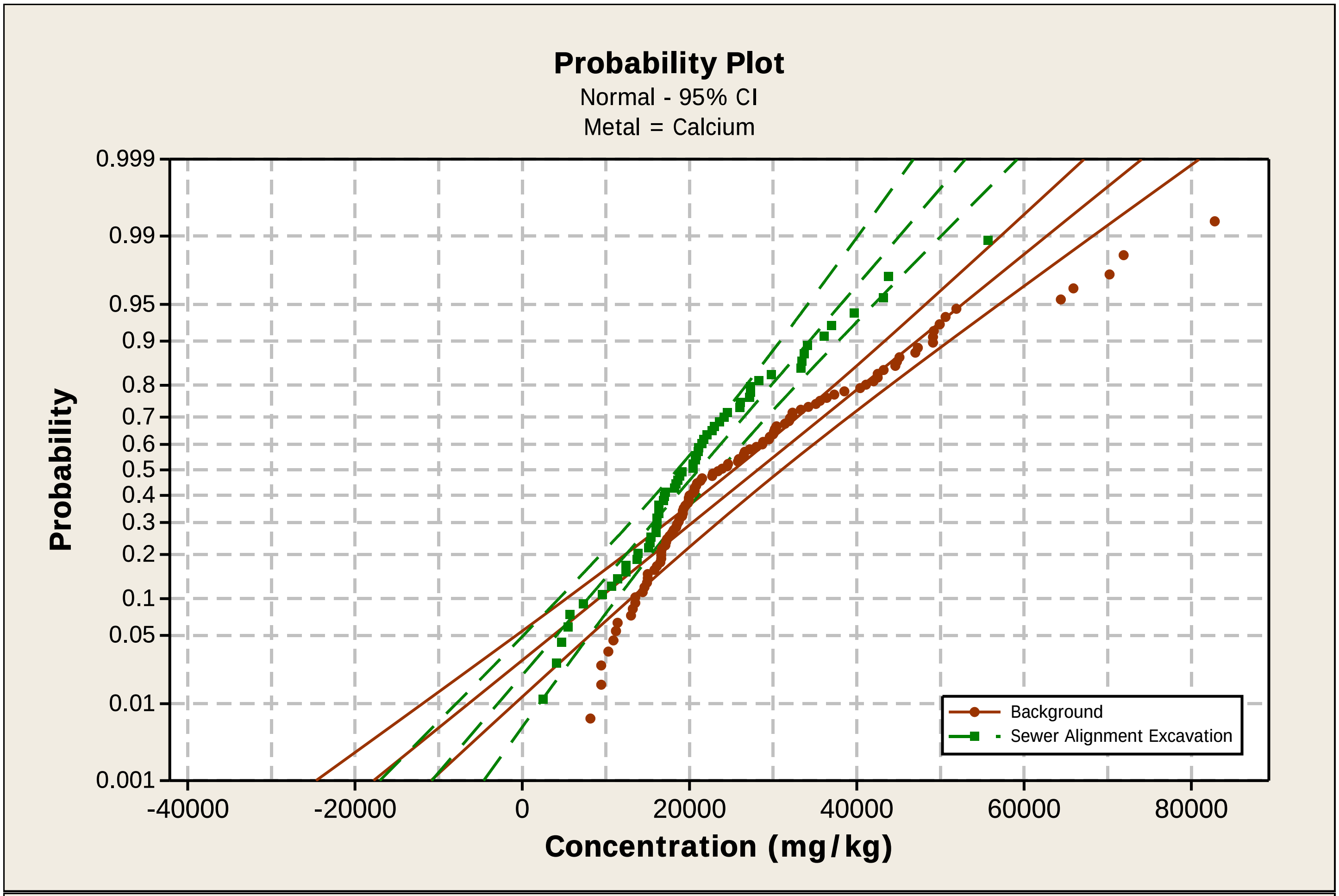
Probability Plot
Normal - 95% CI
Metal = Boron
Probability
Concentration (mg/kg)
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-5
0
5
10
15
20
Background
Sewer Alignment Excavation



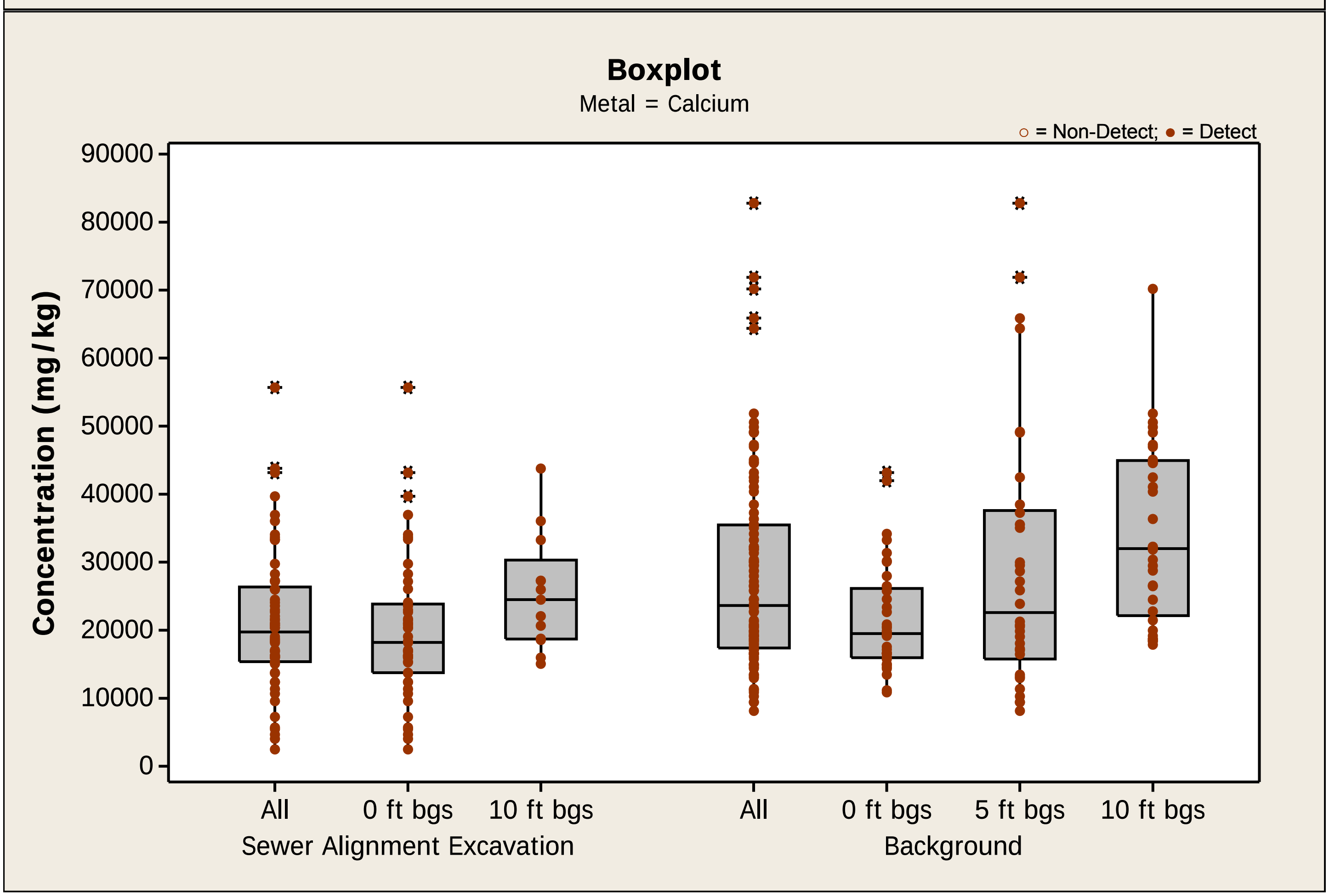
Boxplot
Metal = Boron
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
18
16
14
12
10
8
6
4
2
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background


Probability Plot
Normal - 95% CI
Metal = Cadmium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.50
-0.25
0.00
0.25
0.50
0.75
Concentration (mg/kg)
Background
Sewer Alignment Excavation

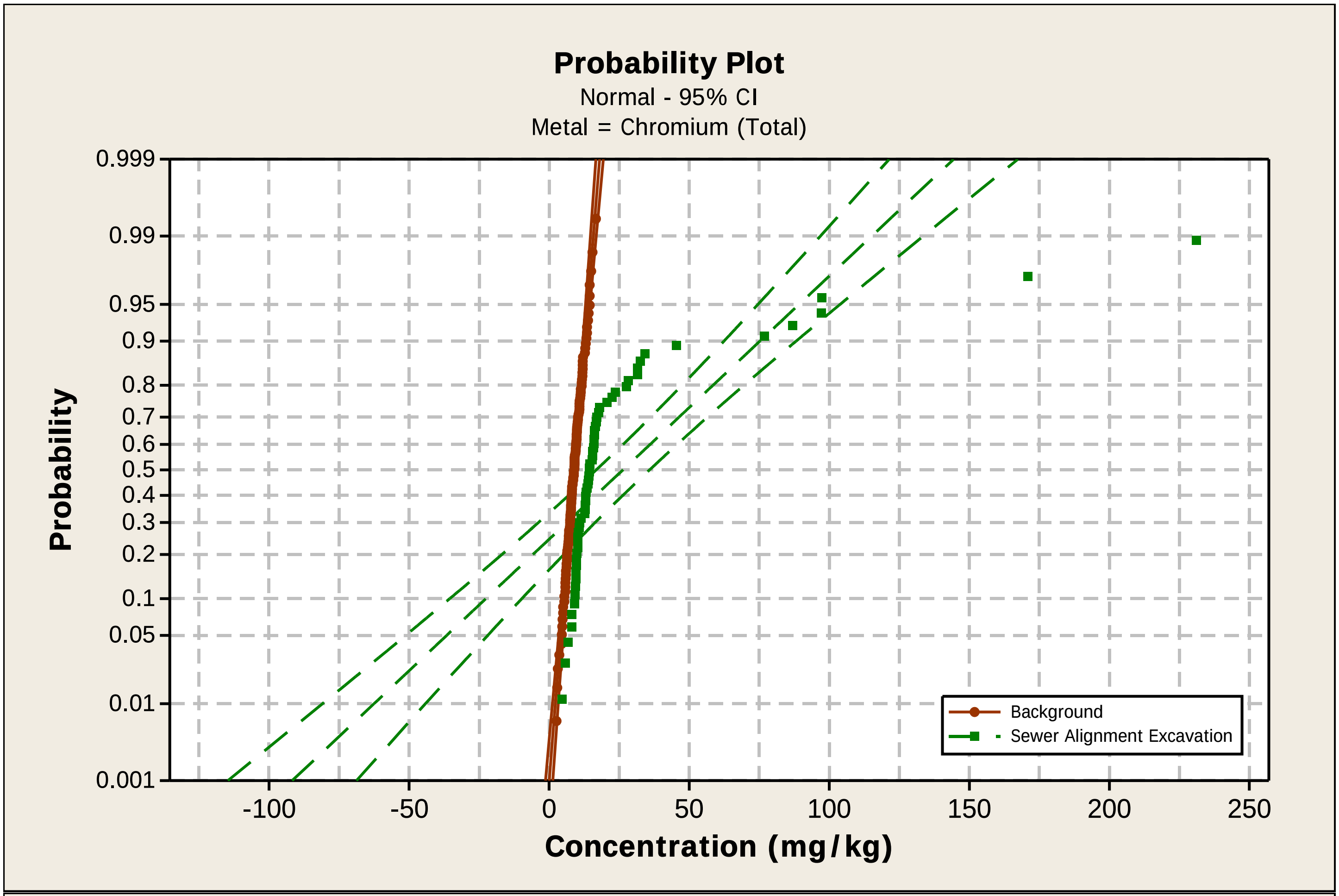

Boxplot
Metal = Cadmium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background

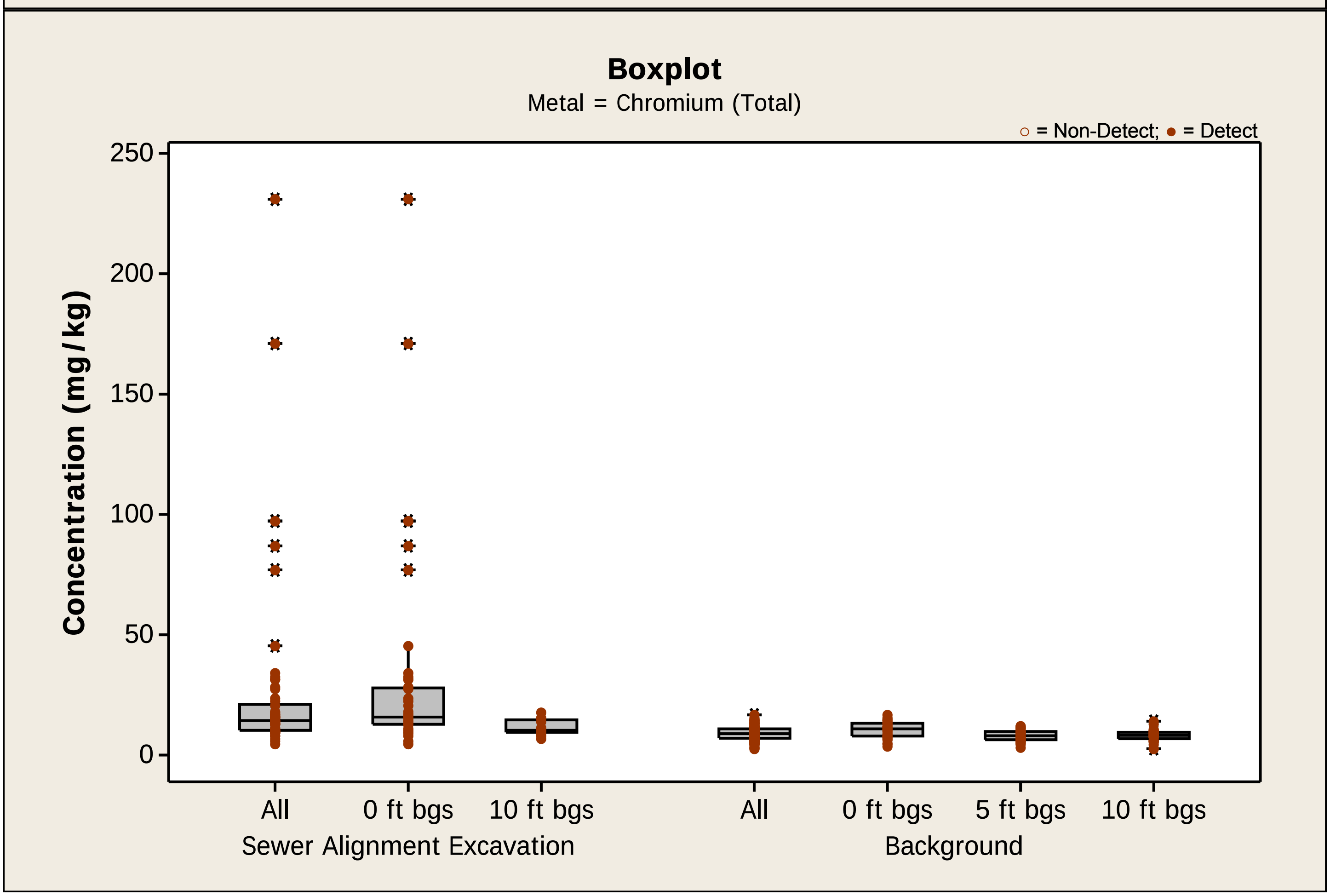


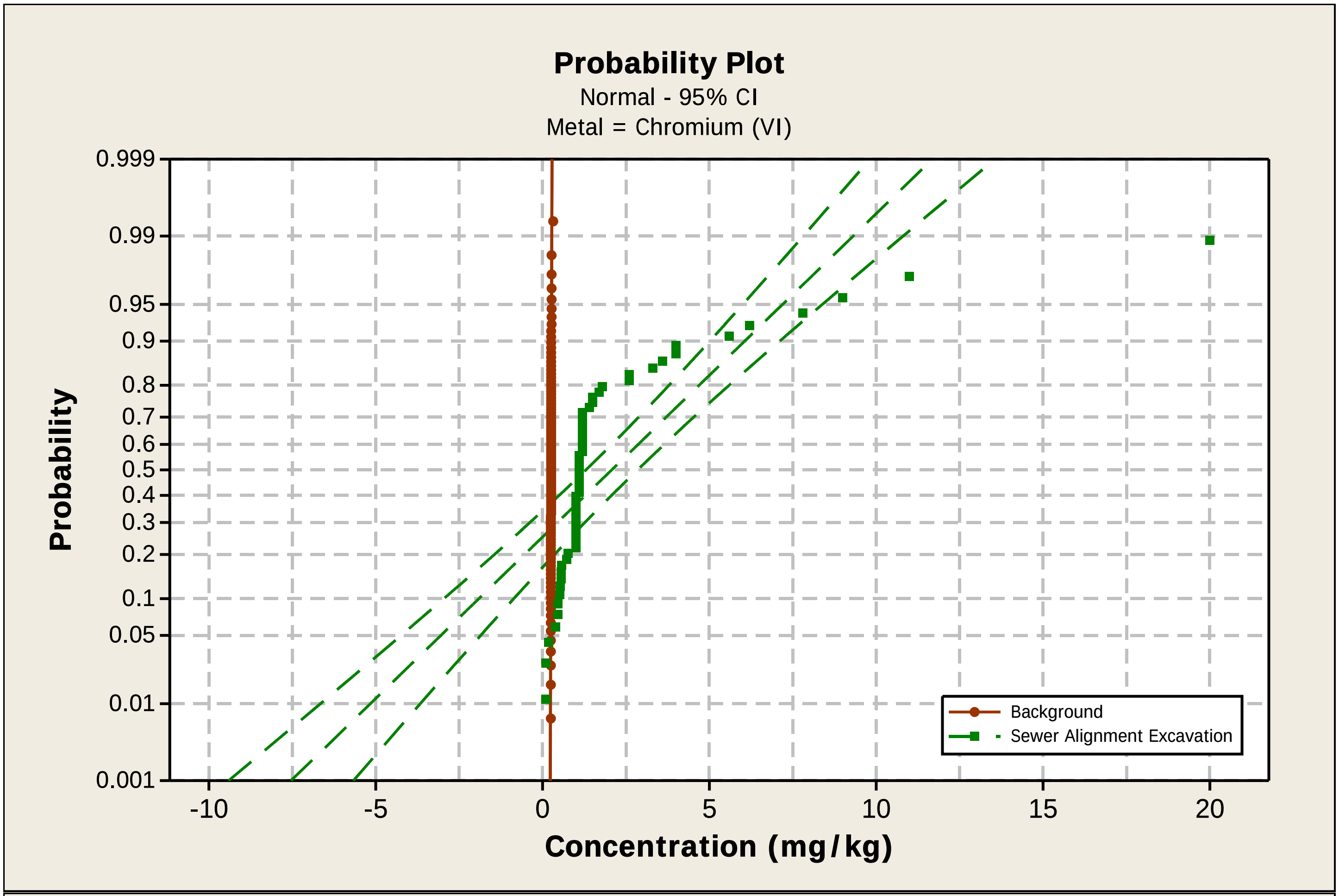
Probability Plot
Normal - 95% CI
Metal = Calcium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-40000
-20000
0
20000
40000
60000
80000
Concentration (mg/kg)
Background
Sewer Alignment Excavation



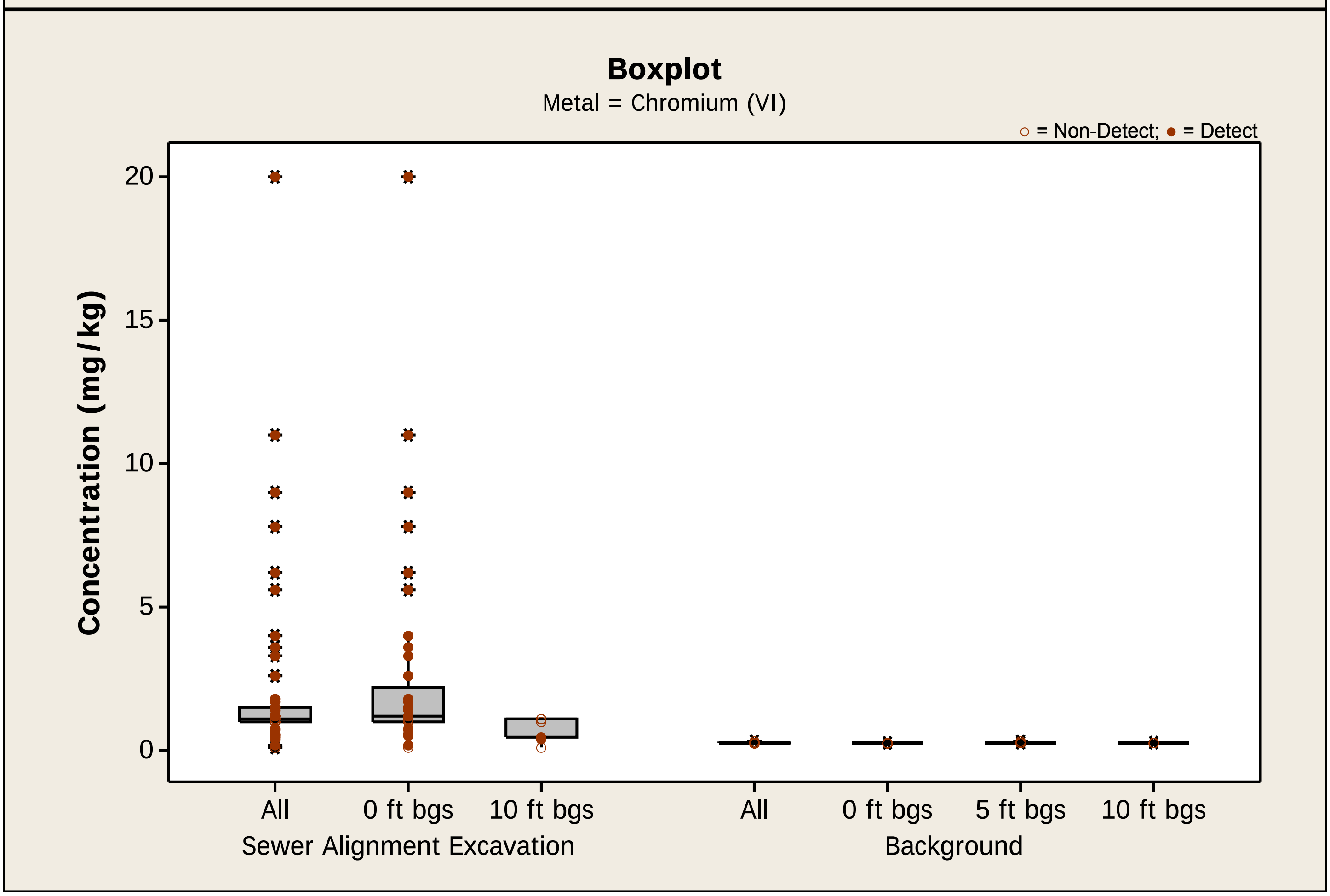
Boxplot
Metal = Calcium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Chromium (Total)
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-100
-50
0
50
100
150
200
250
Concentration (mg/kg)
Background
Sewer Alignment Excavation

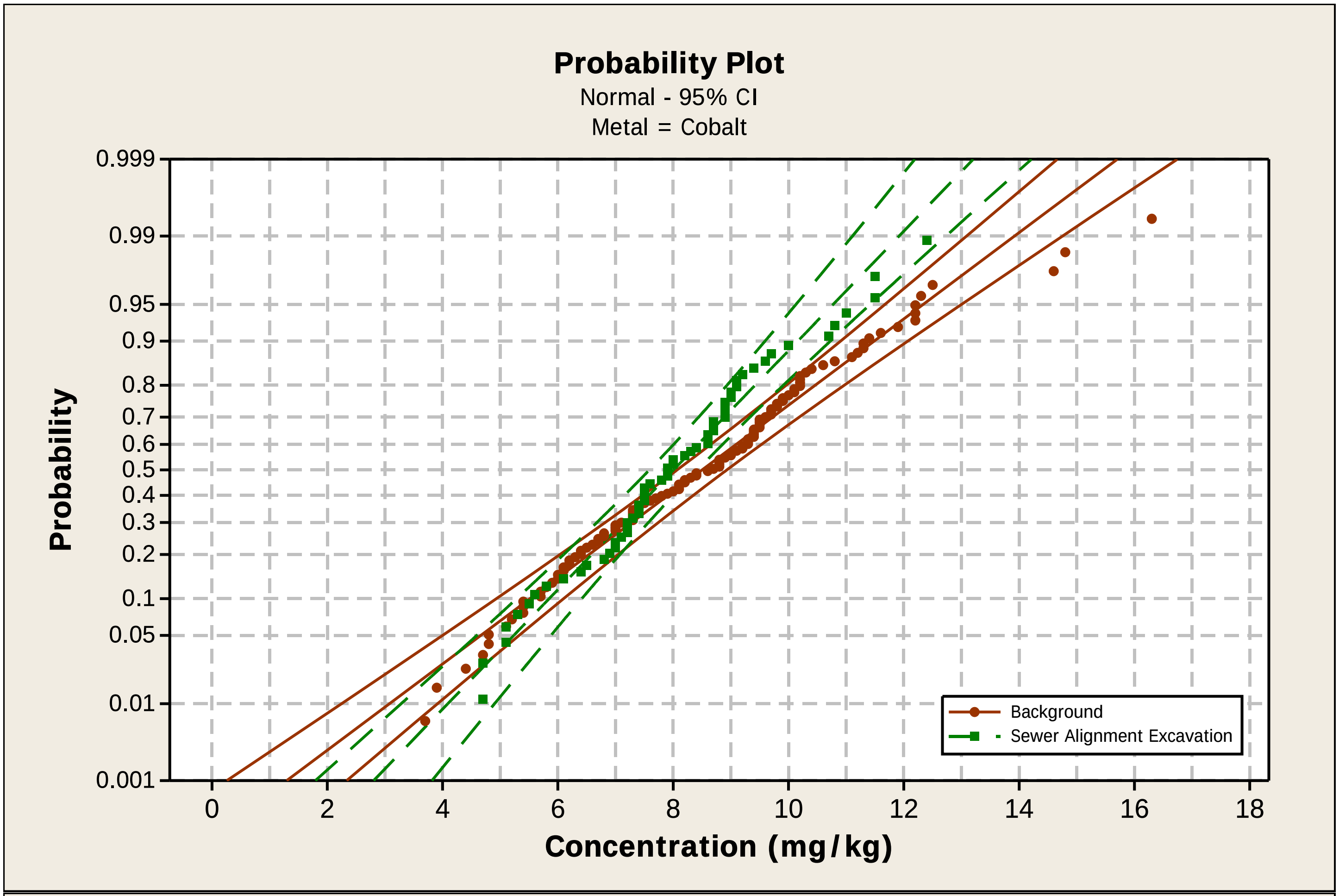

Boxplot
Metal = Chromium (Total)
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
250
200
150
100
50
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background

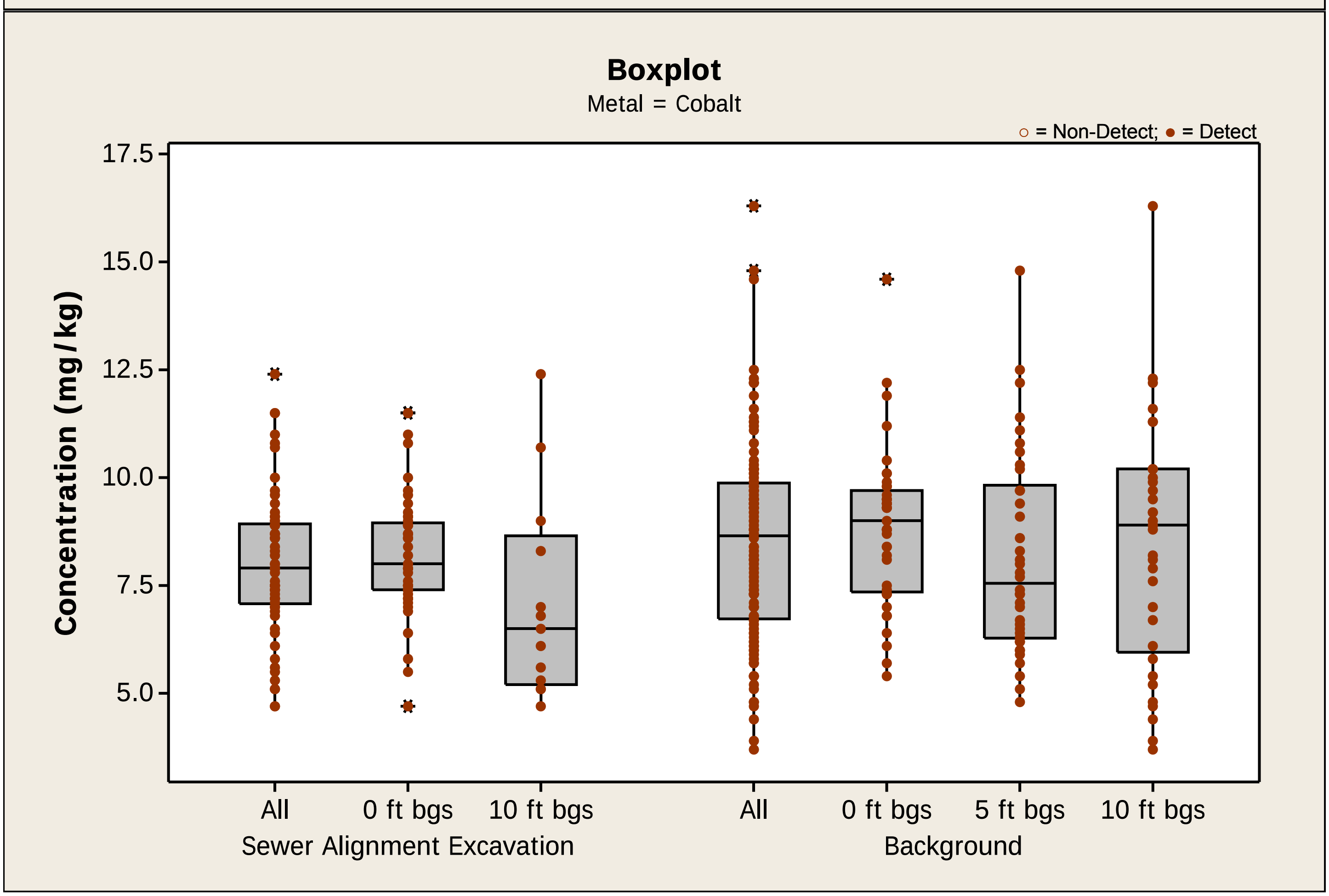


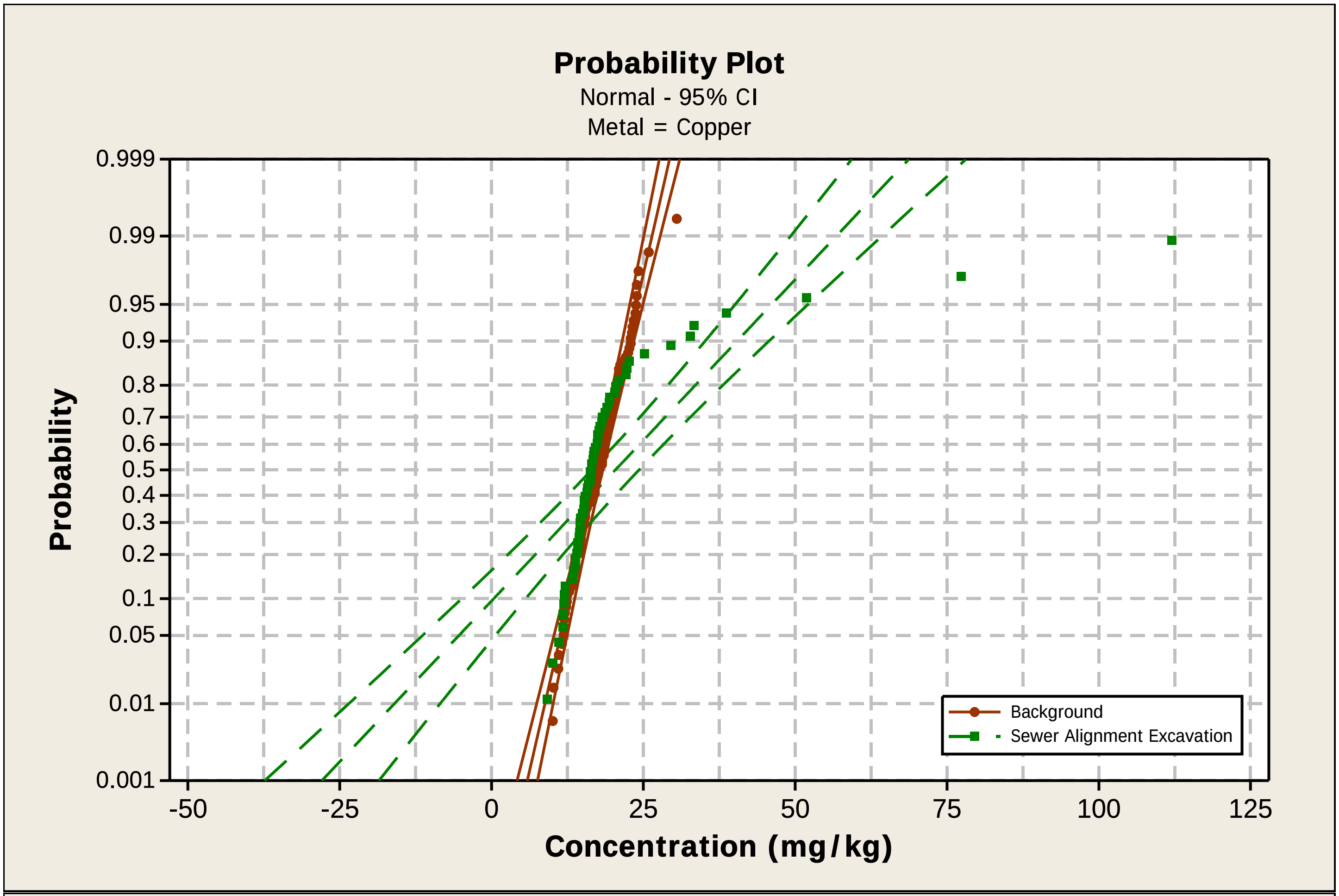
Probability Plot
Normal - 95% CI
Metal = Chromium (VI)
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-10
-5
0
5
10
15
20
Concentration (mg/kg)
Background
Sewer Alignment Excavation



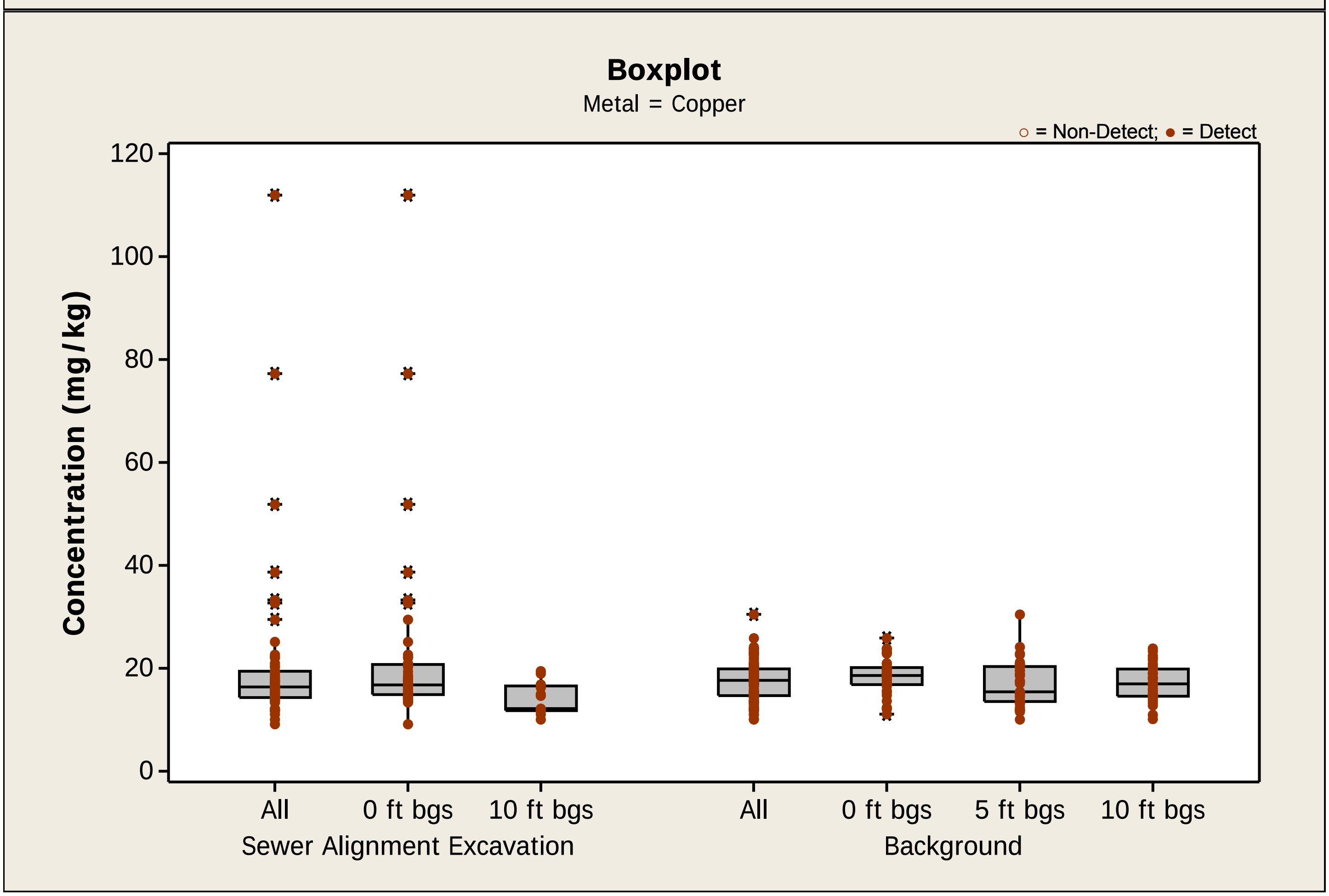
Boxplot
Metal = Chromium (VI)
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
20
15
10
5
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Cobalt
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
2
4
6
8
10
12
14
16
18
Concentration (mg/kg)
Background
Sewer Alignment Excavation

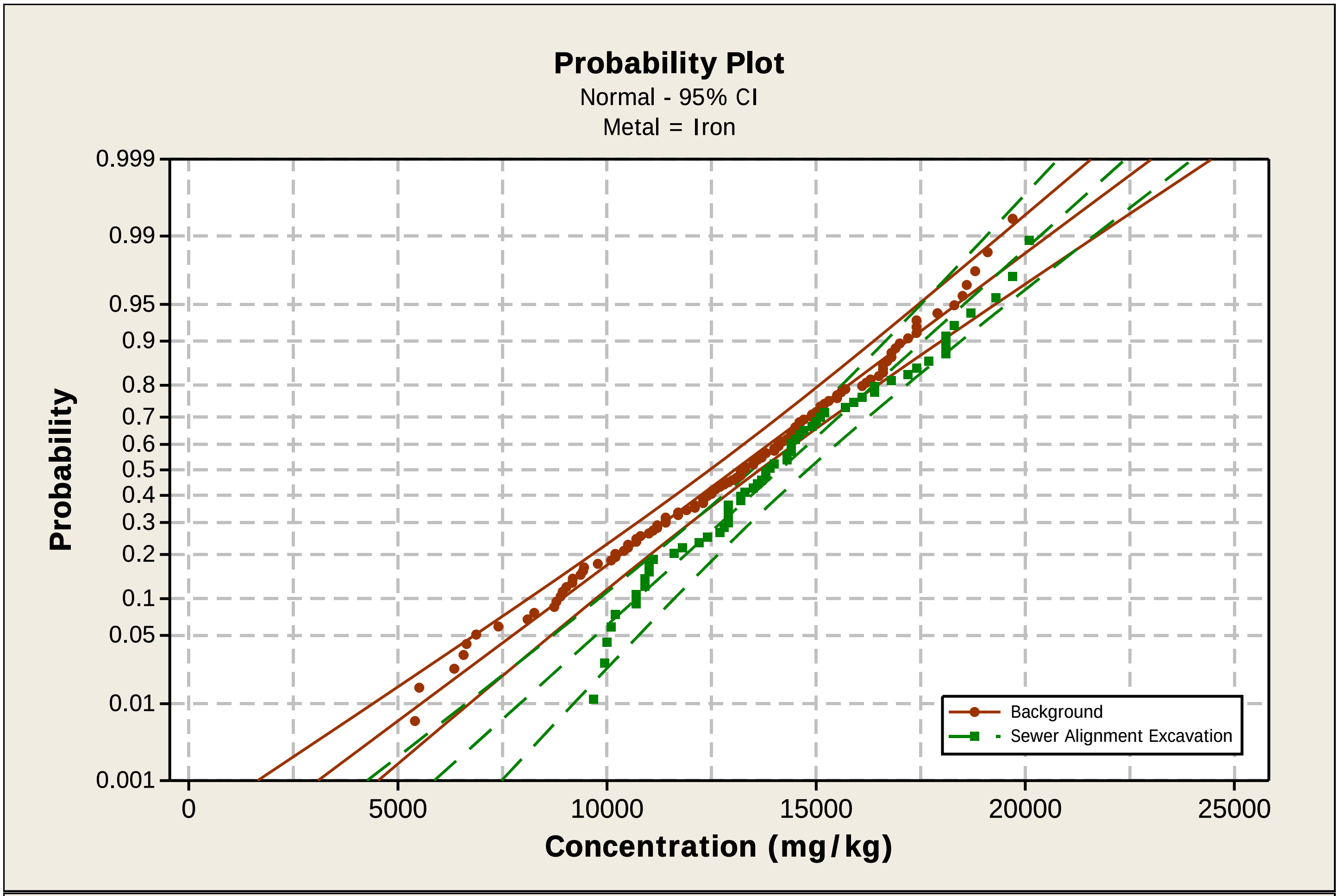

Boxplot
Metal = Cobalt
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
17.5
15.0
12.5
10.0
7.5
5.0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



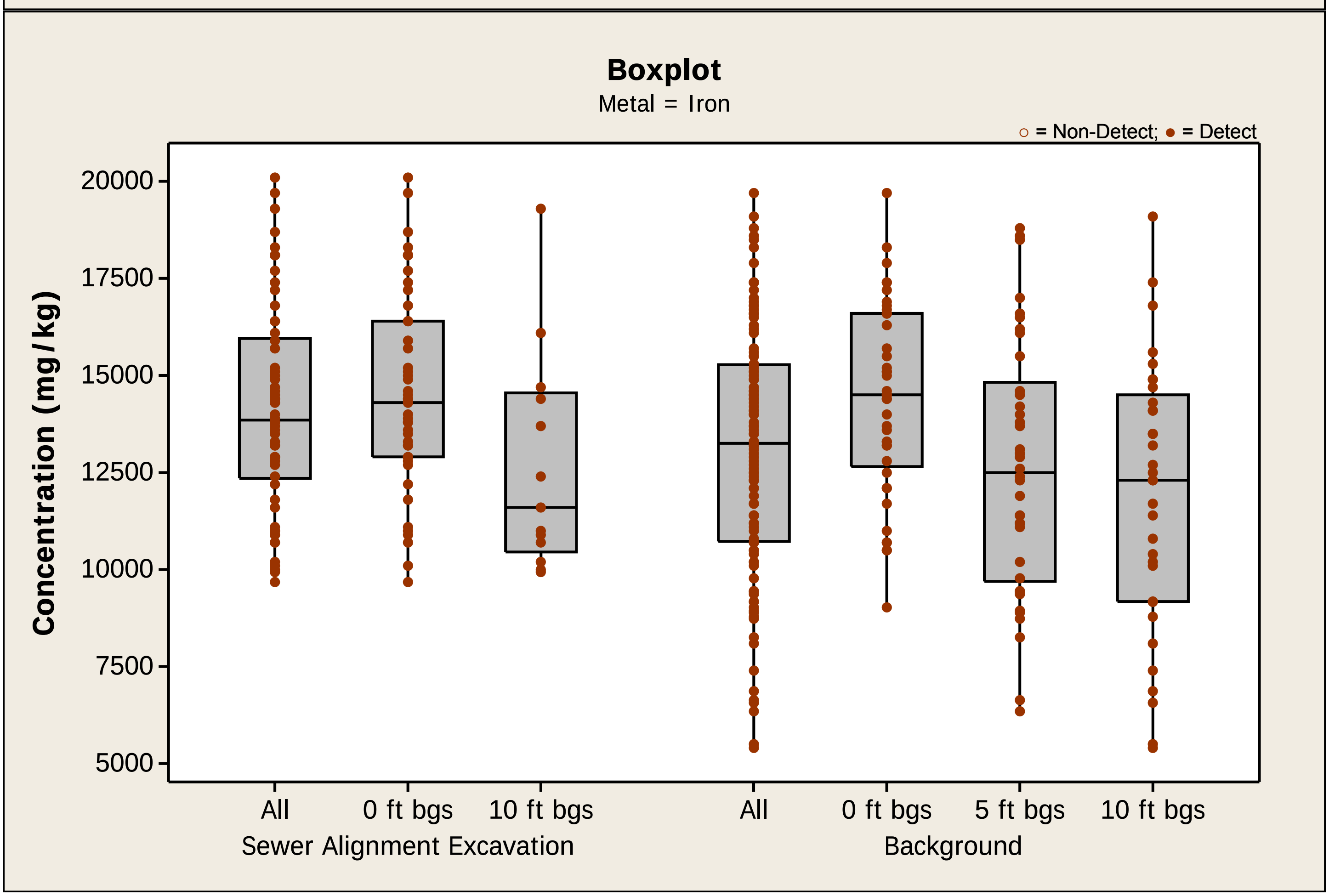
Probability Plot
Normal - 95% CI
Metal = Copper
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-50
-25
0
25
50
75
100
125
Concentration (mg/kg)
Background
Sewer Alignment Excavation



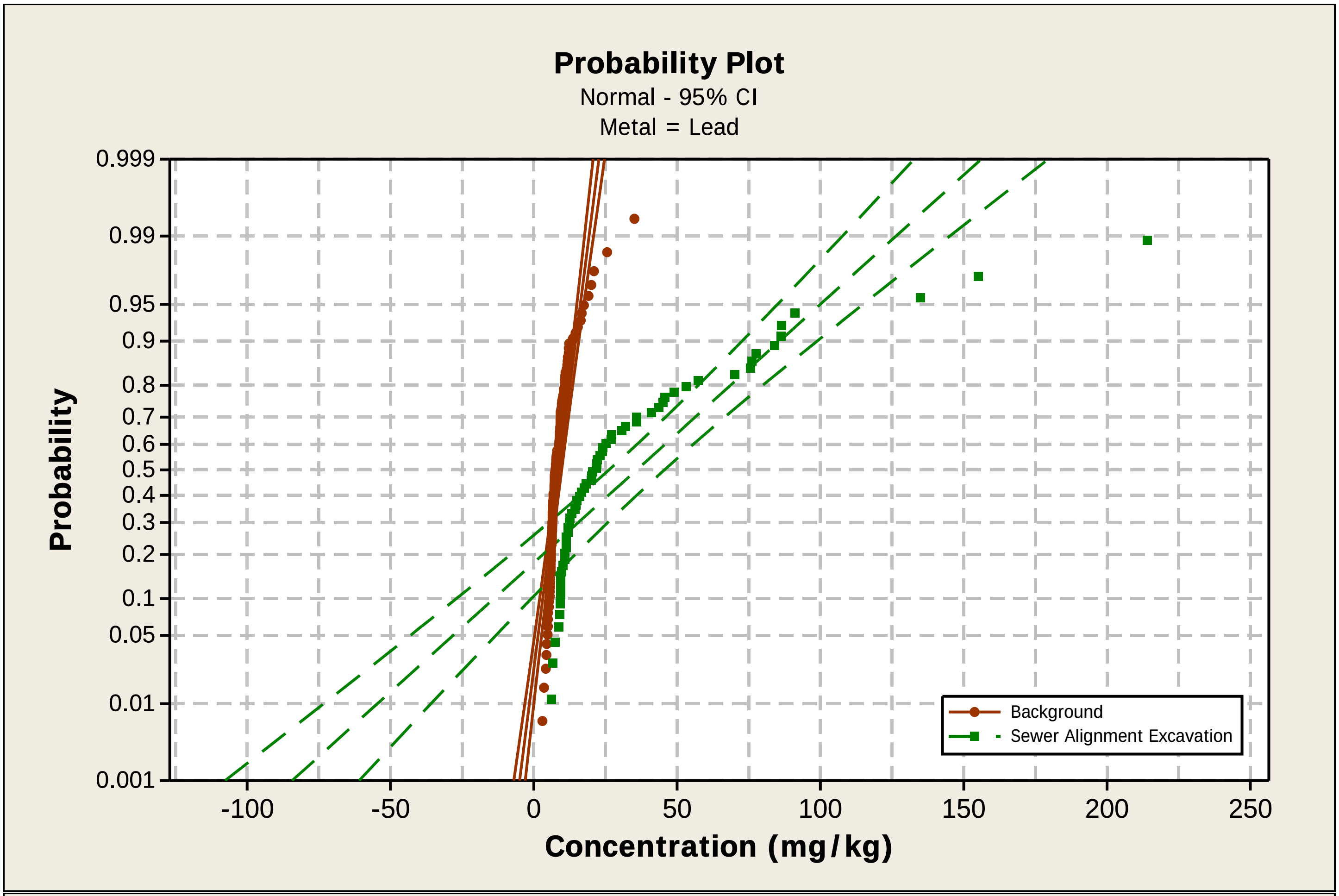
Boxplot
Metal = Copper
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
120
100
80
60
40
20
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background

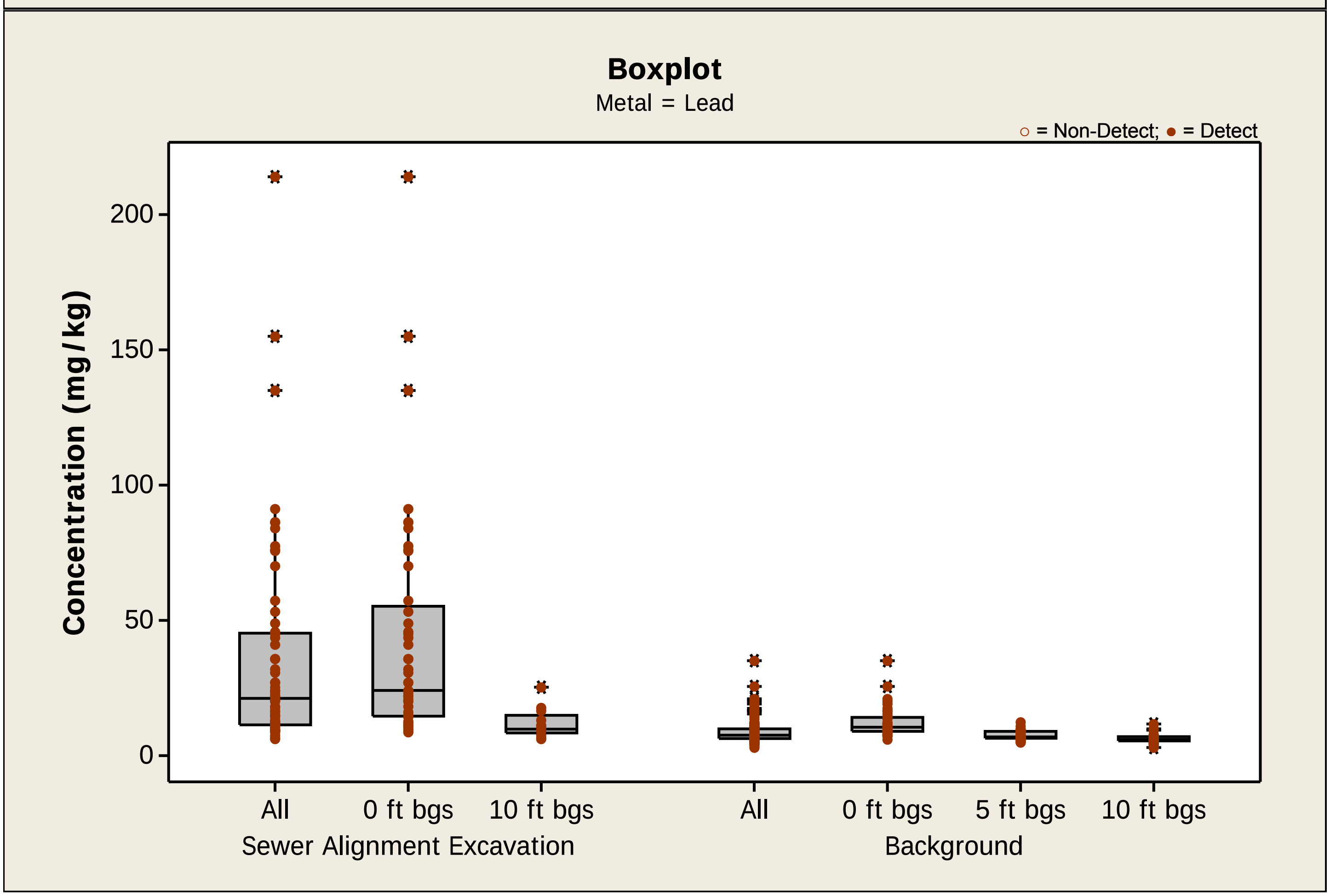


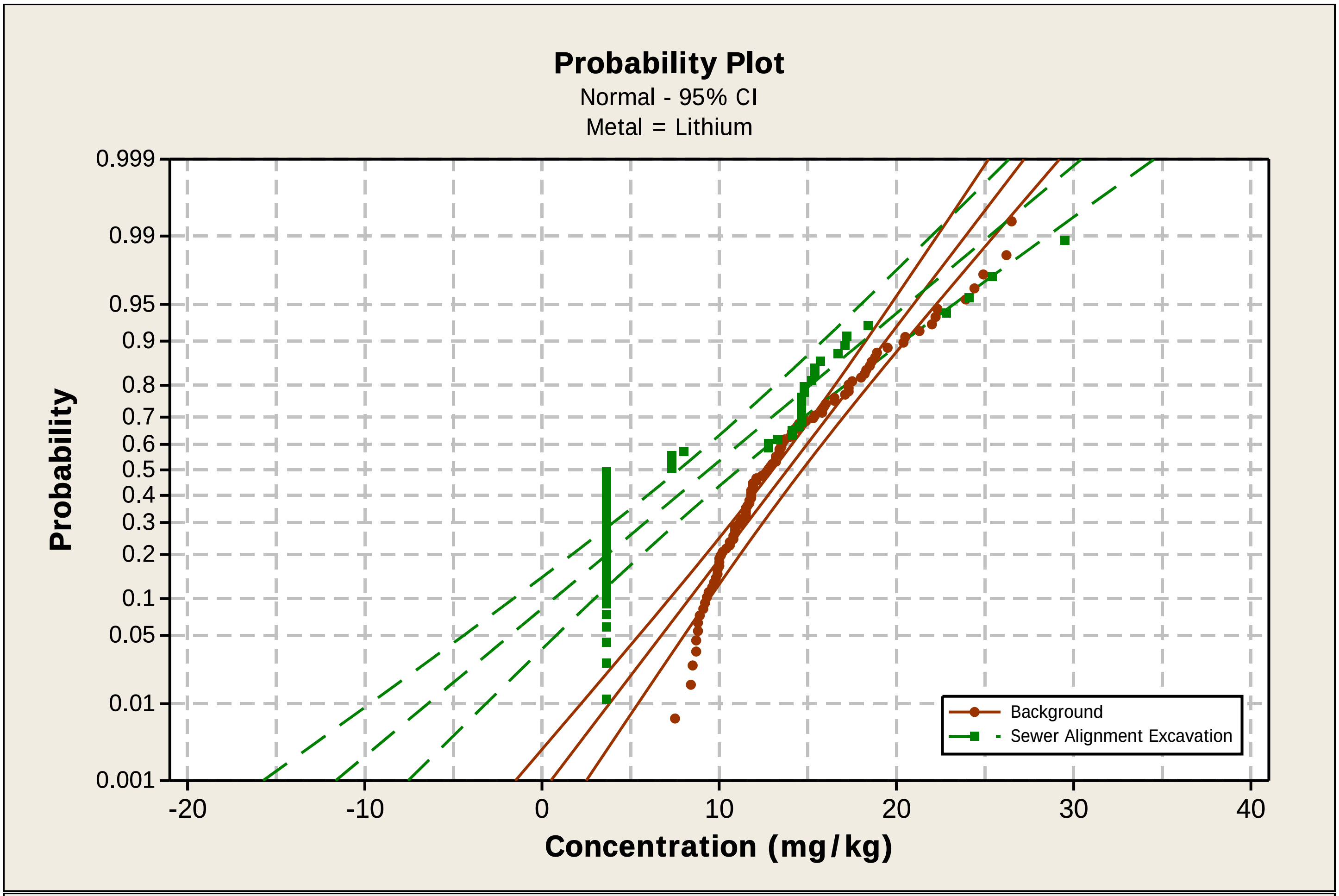
Probability Plot
Normal - 95% CI
Metal = Iron
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5000
10000
15000
20000
25000
Concentration (mg/kg)
Background
Sewer Alignment Excavation

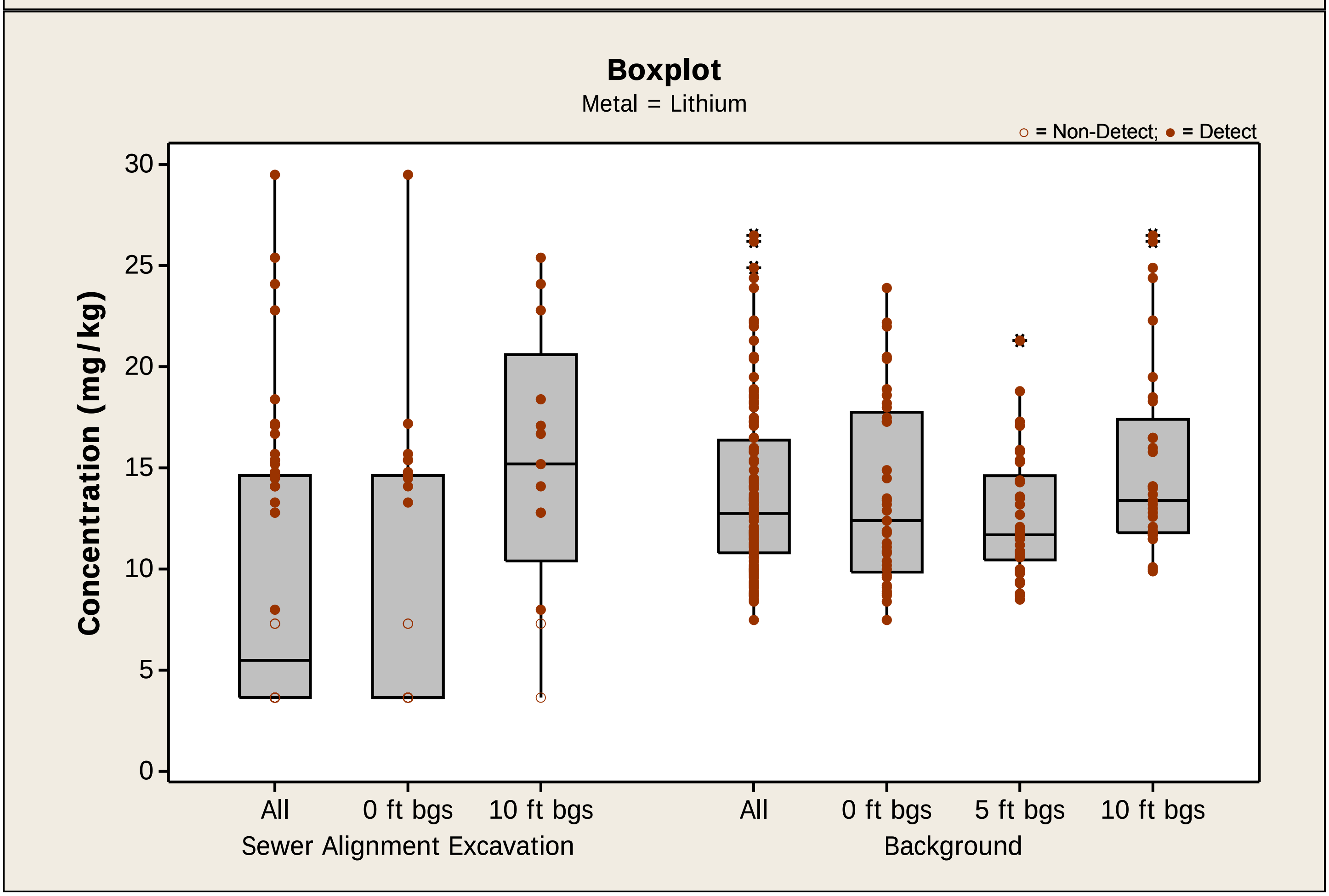


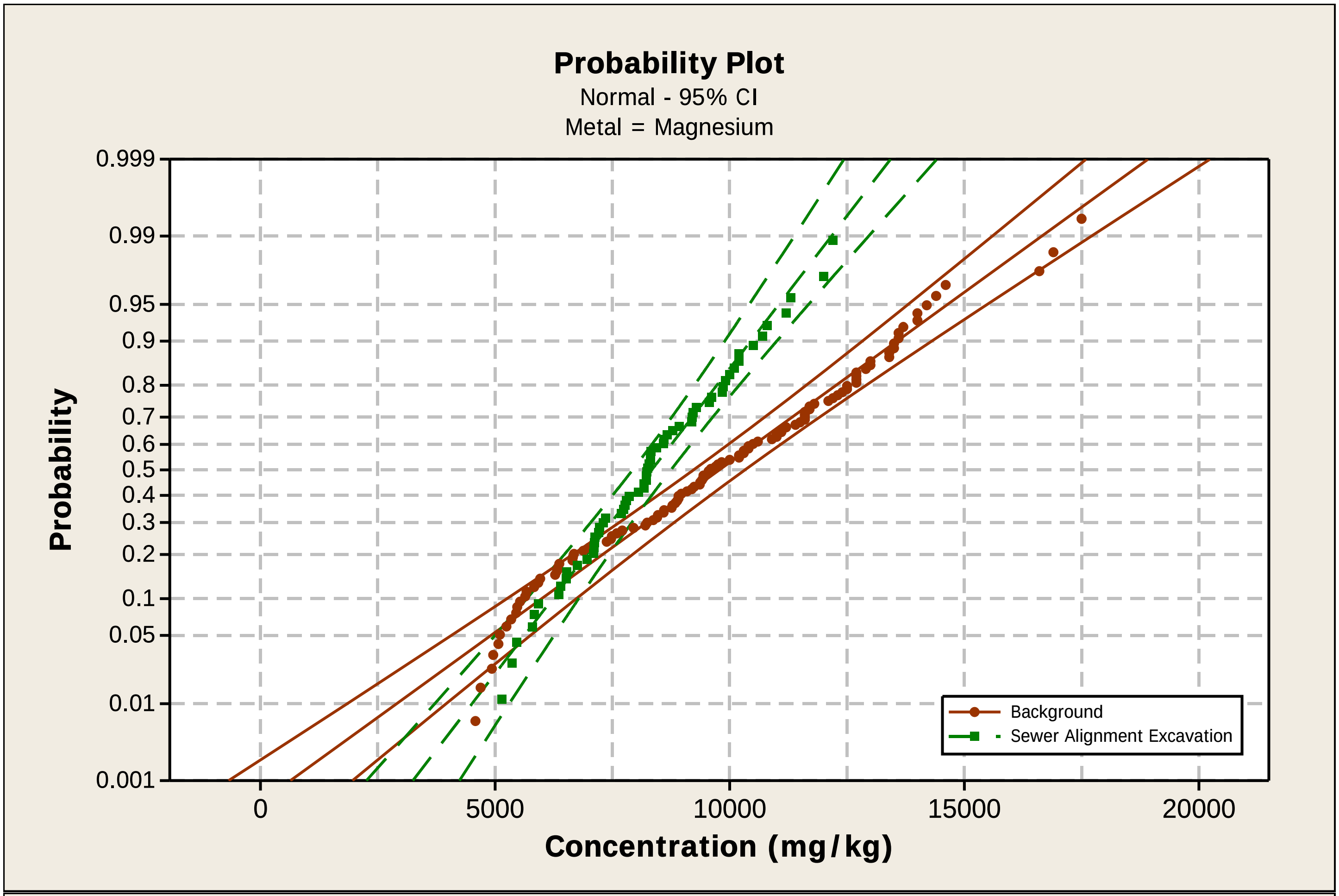
Boxplot
Metal = Iron
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
20000
17500
15000
12500
10000
7500
5000
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Lead
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-100
-50
0
50
100
150
200
250
Concentration (mg/kg)
Background
Sewer Alignment Excavation

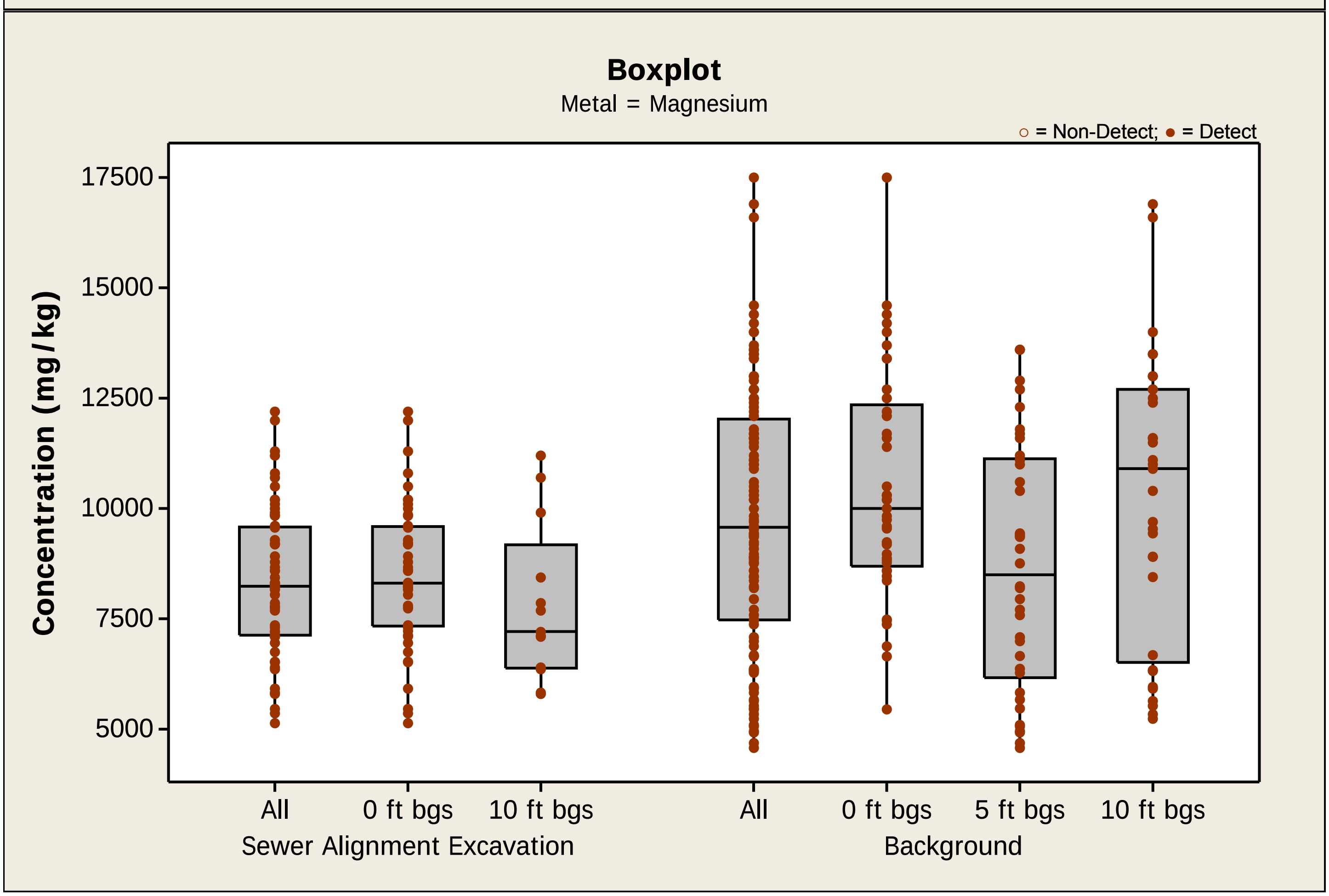

Boxplot
Metal = Lead
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
200
150
100
50
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Lithium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-20
-10
0
10
20
30
40
Concentration (mg/kg)
Background
Sewer Alignment Excavation

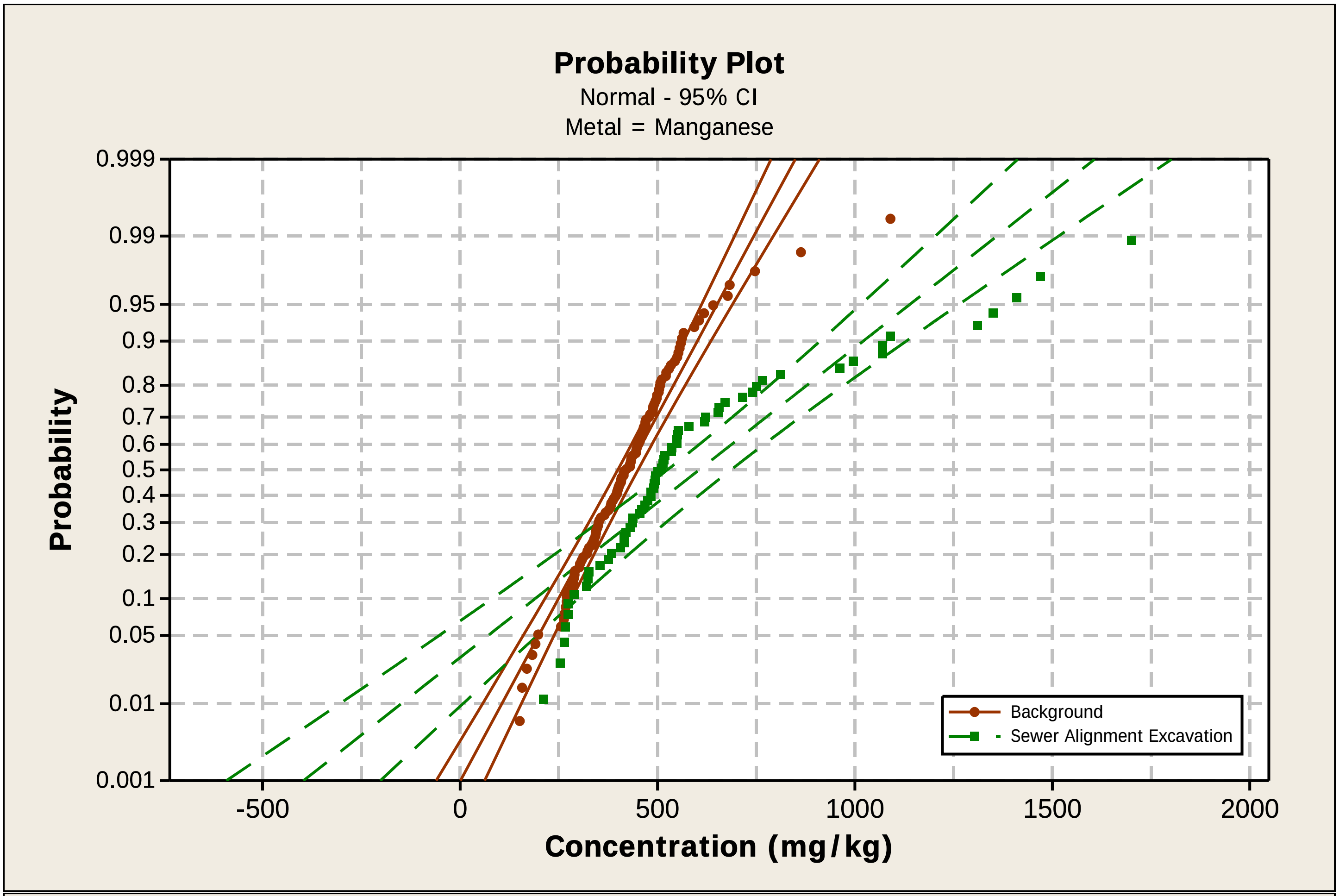

Boxplot
Metal = Lithium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
30
25
20
15
10
5
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



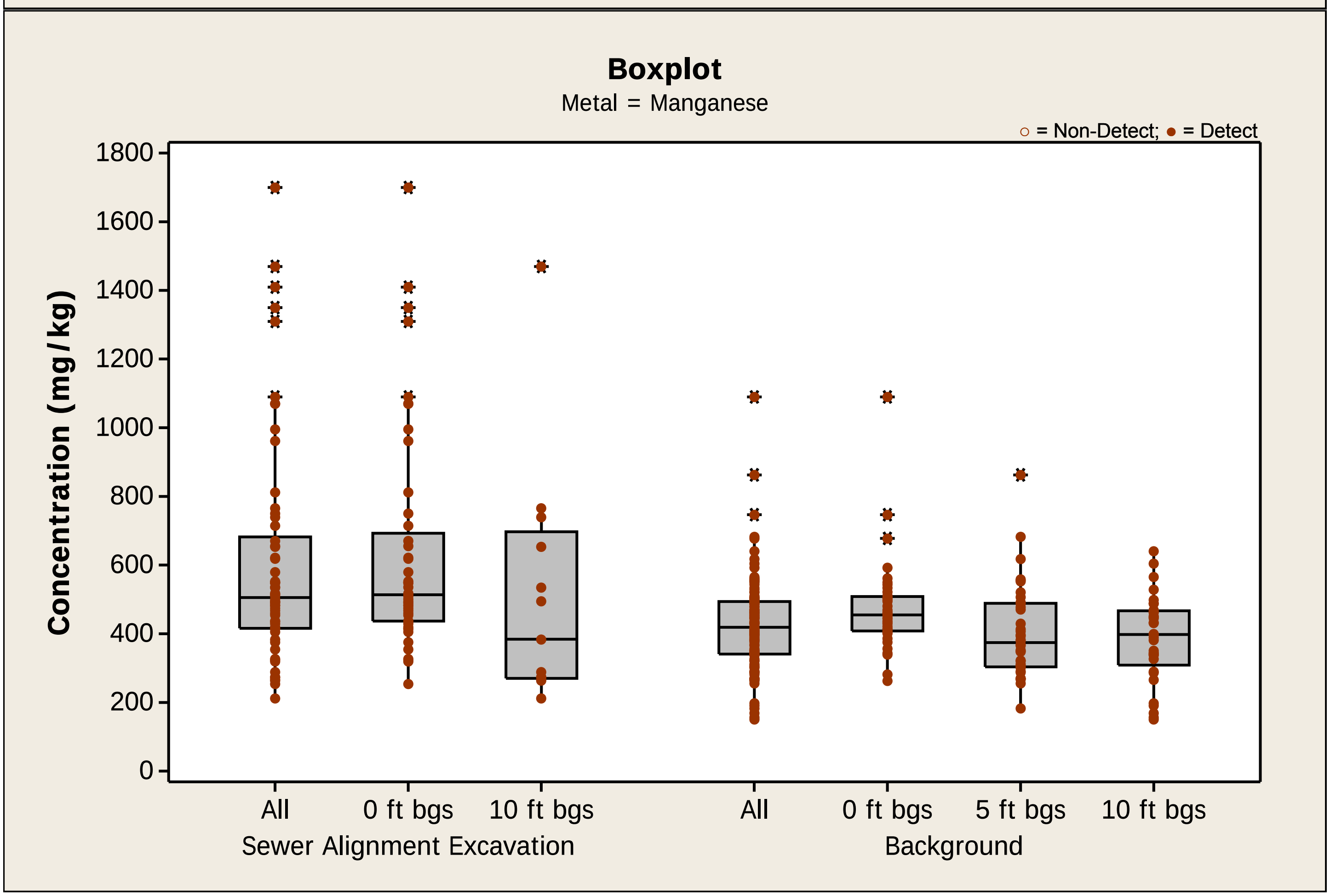
Probability Plot
Normal - 95% CI
Metal = Magnesium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
5000
10000
15000
20000
Concentration (mg/kg)
Background
Sewer Alignment Excavation



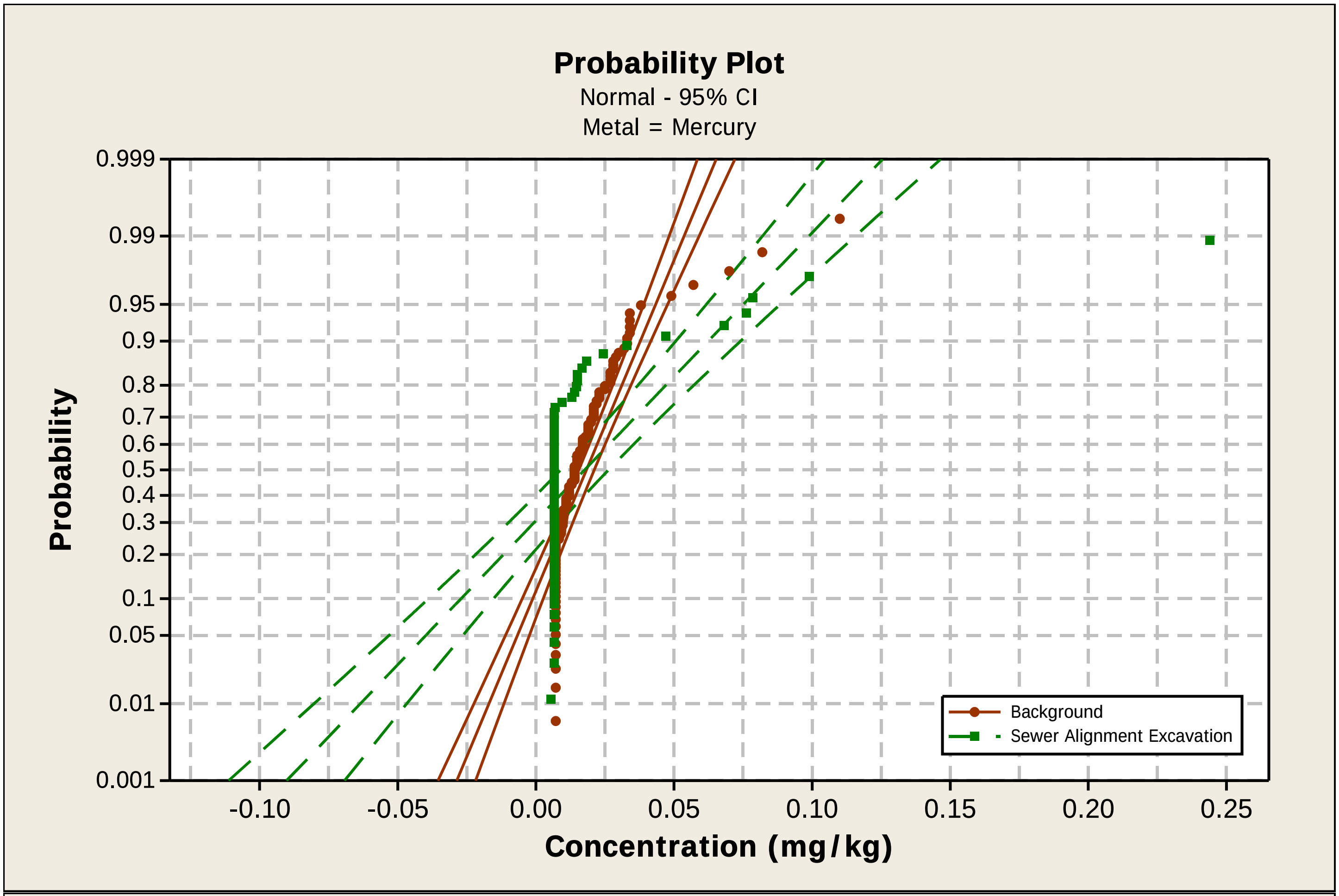
Boxplot
Metal = Magnesium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
17500
15000
12500
10000
7500
5000
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background

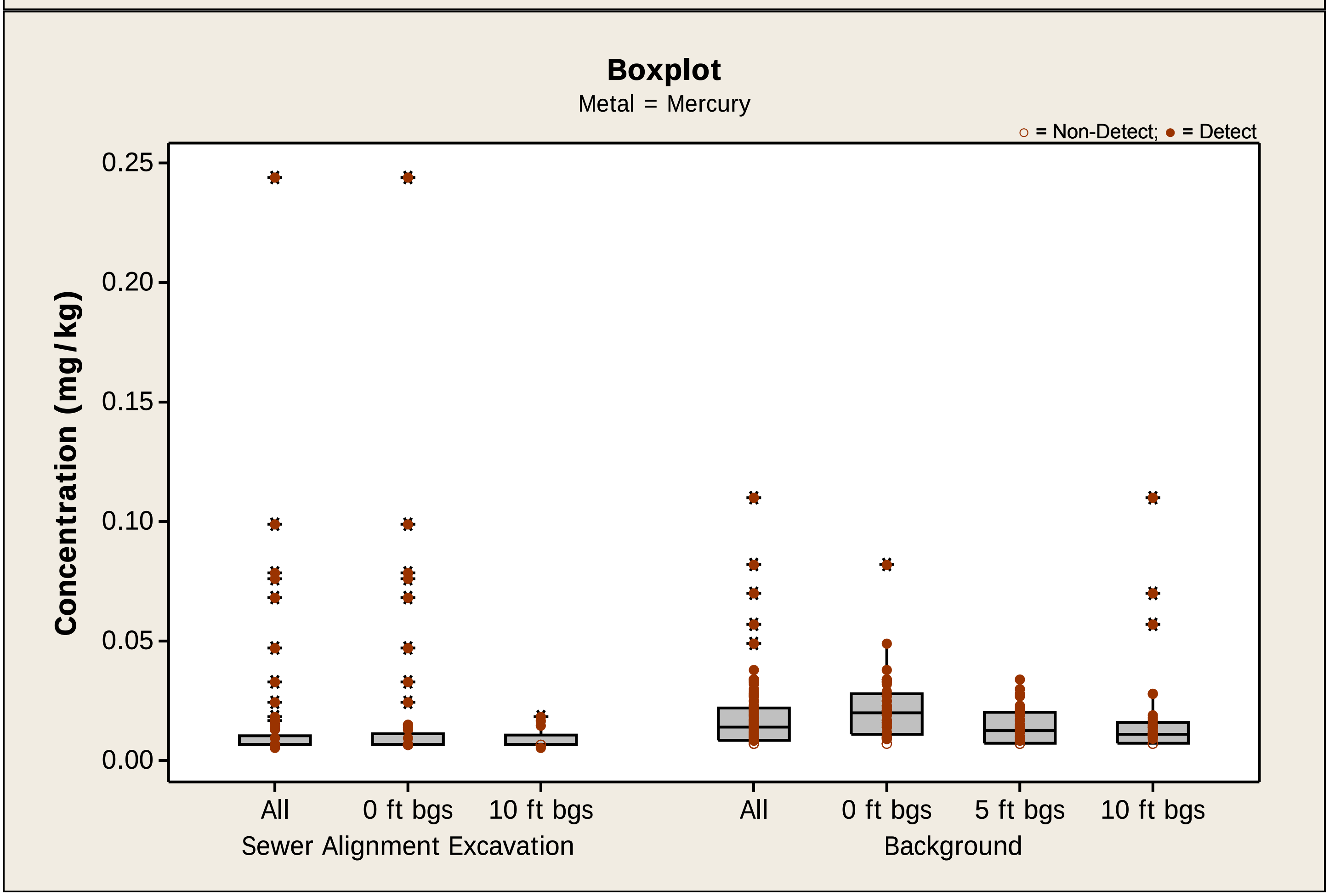


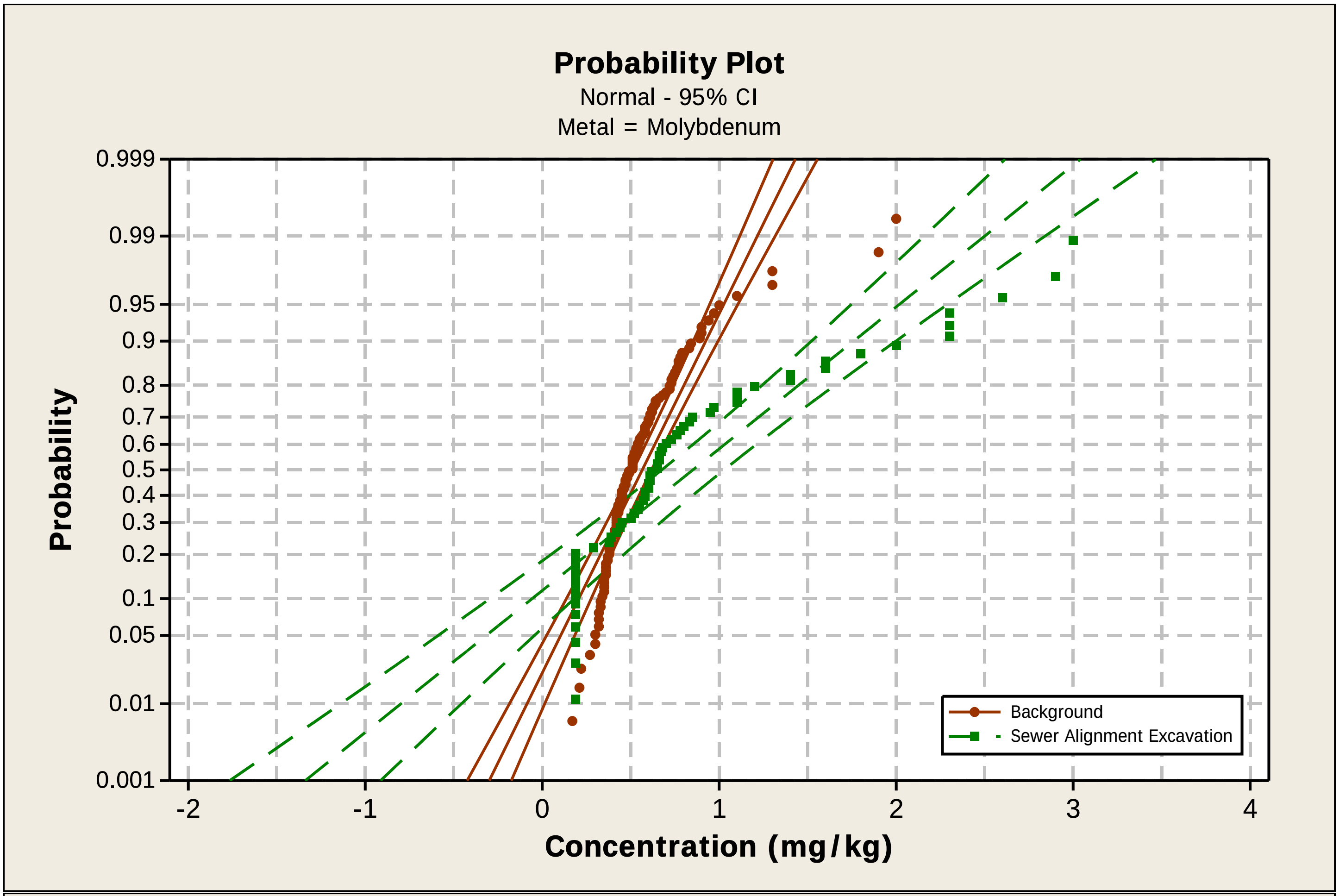
Probability Plot
Normal - 95% CI
Metal = Manganese
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-500
0
500
1000
1500
2000
Concentration (mg/kg)
Background
Sewer Alignment Excavation

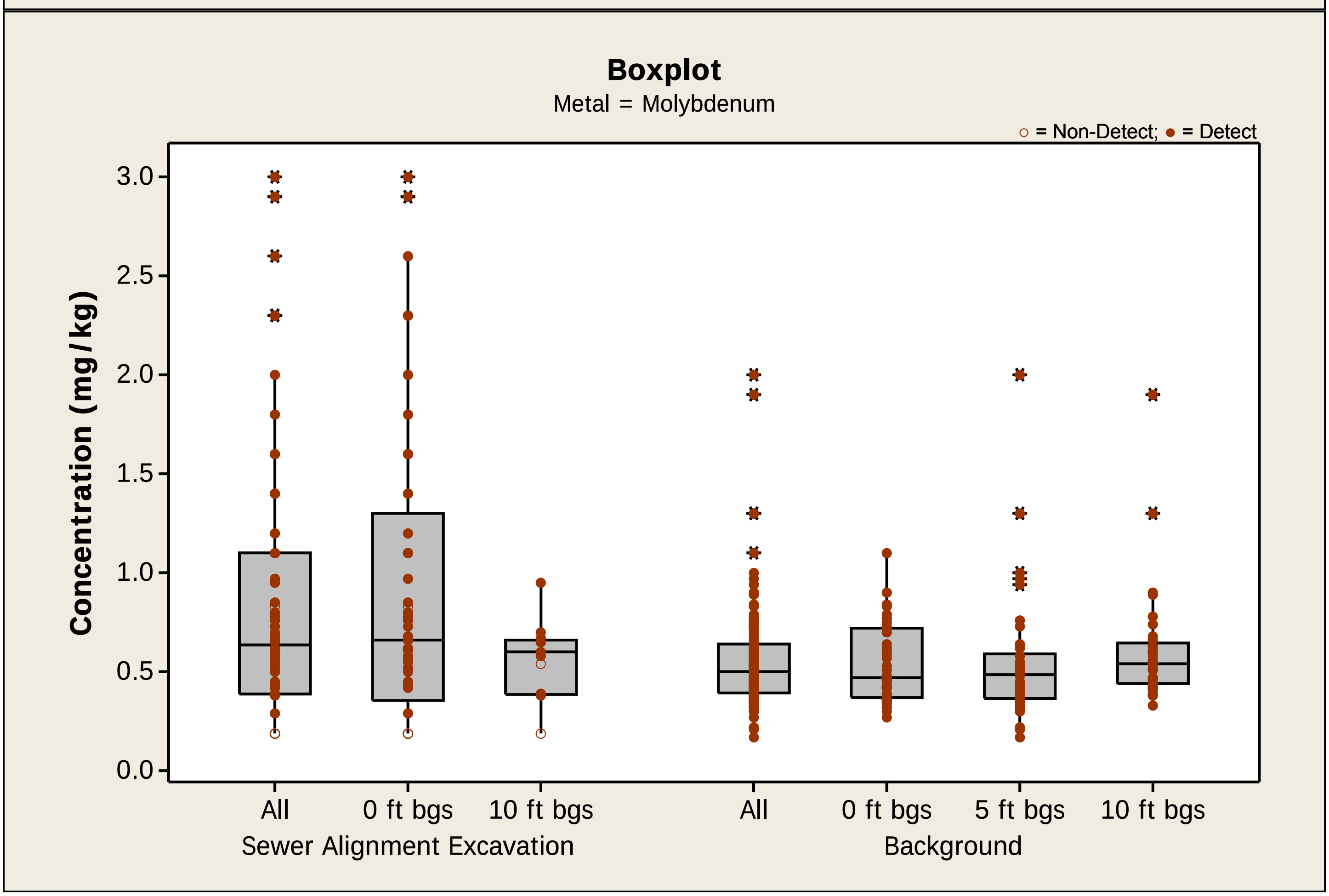


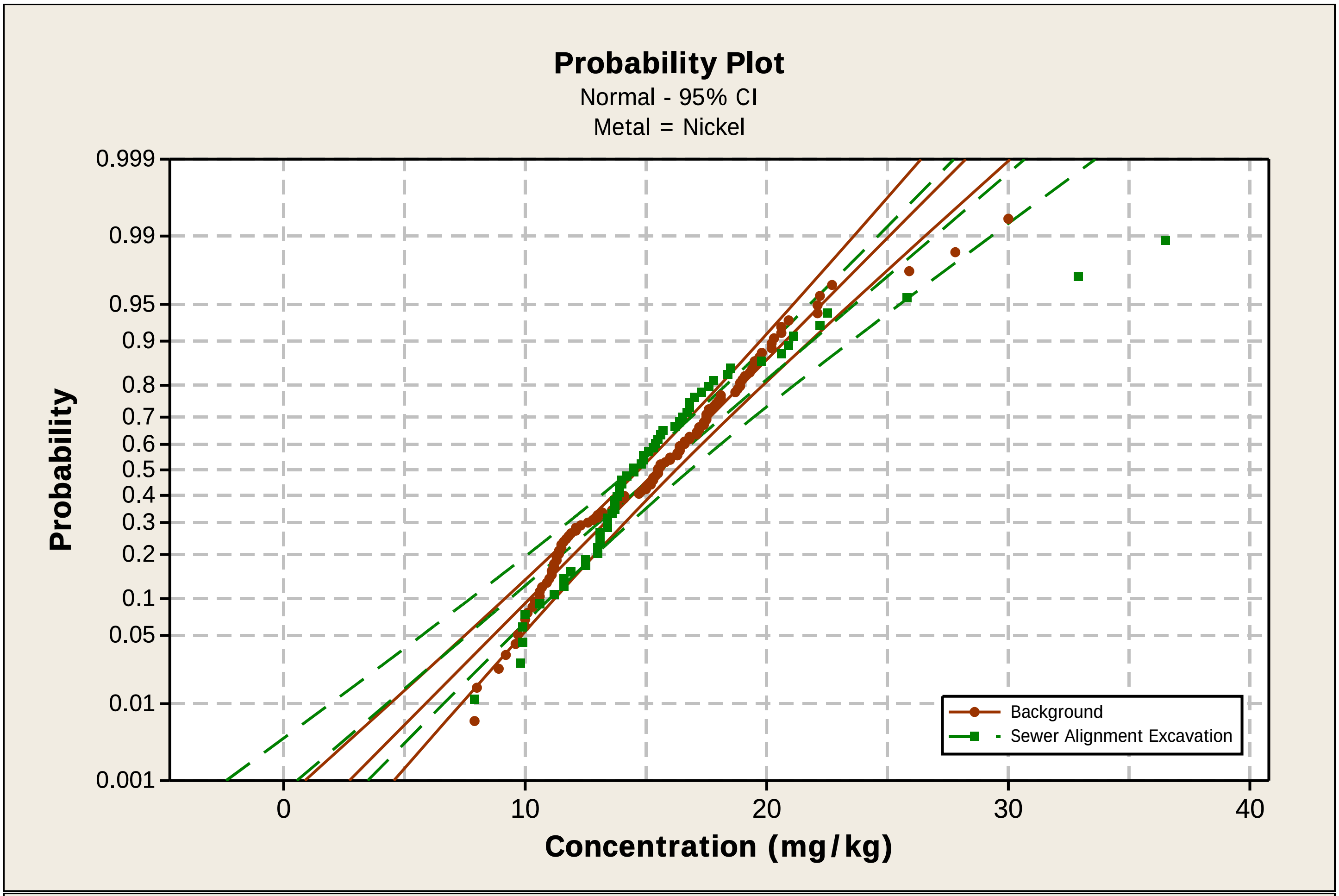
Boxplot
Metal = Manganese
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1800
1600
1400
1200
1000
800
600
400
200
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background


Probability Plot
Normal - 95% CI
Metal = Mercury
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.10
-0.05
0.00
0.05
0.10
0.15
0.20
0.25
Concentration (mg/kg)
Background
Sewer Alignment Excavation

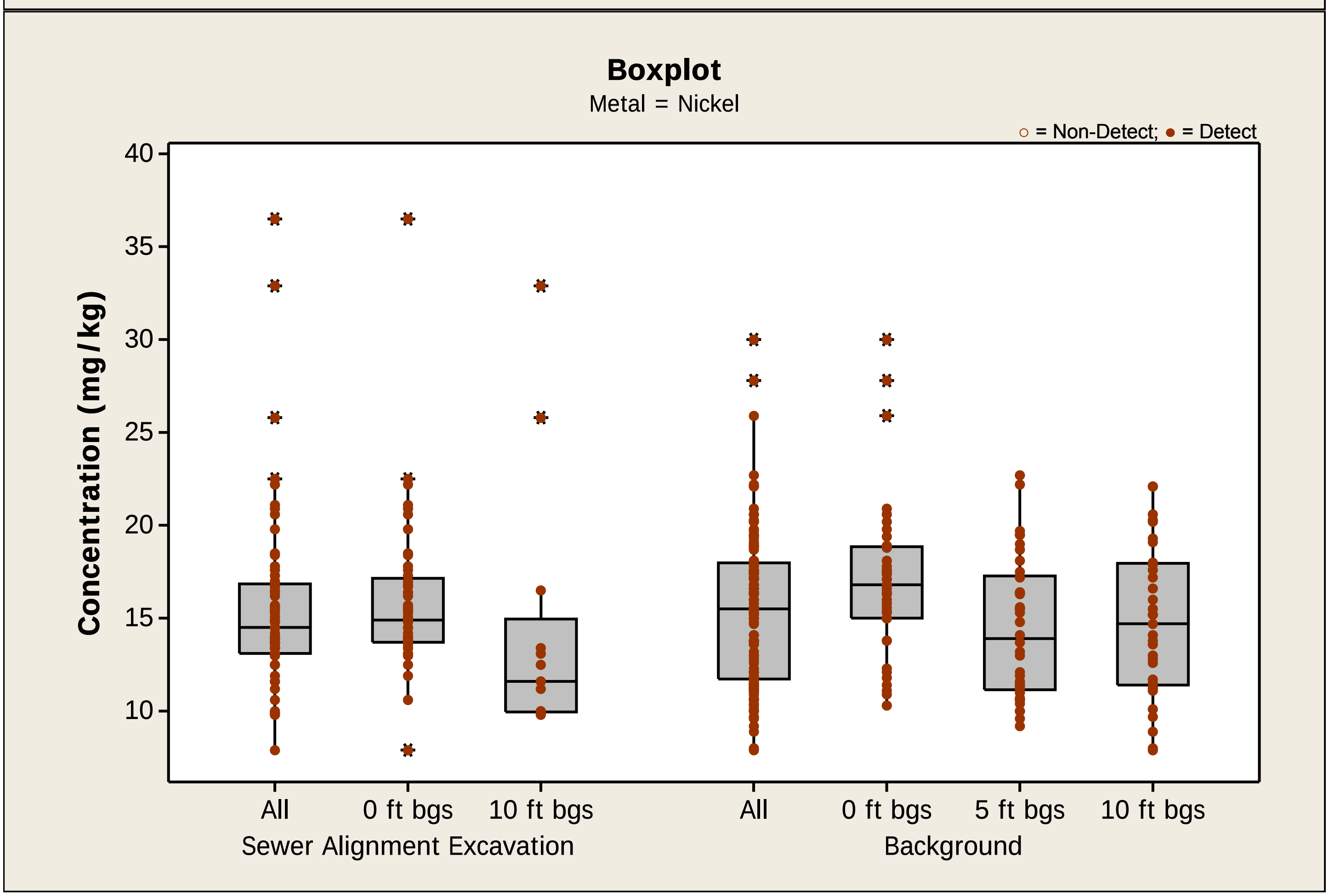

Boxplot
Metal = Mercury
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.25
0.20
0.15
0.10
0.05
0.00
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Molybdenum
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-2
-1
0
1
2
3
4
Concentration (mg/kg)
Background
Sewer Alignment Excavation

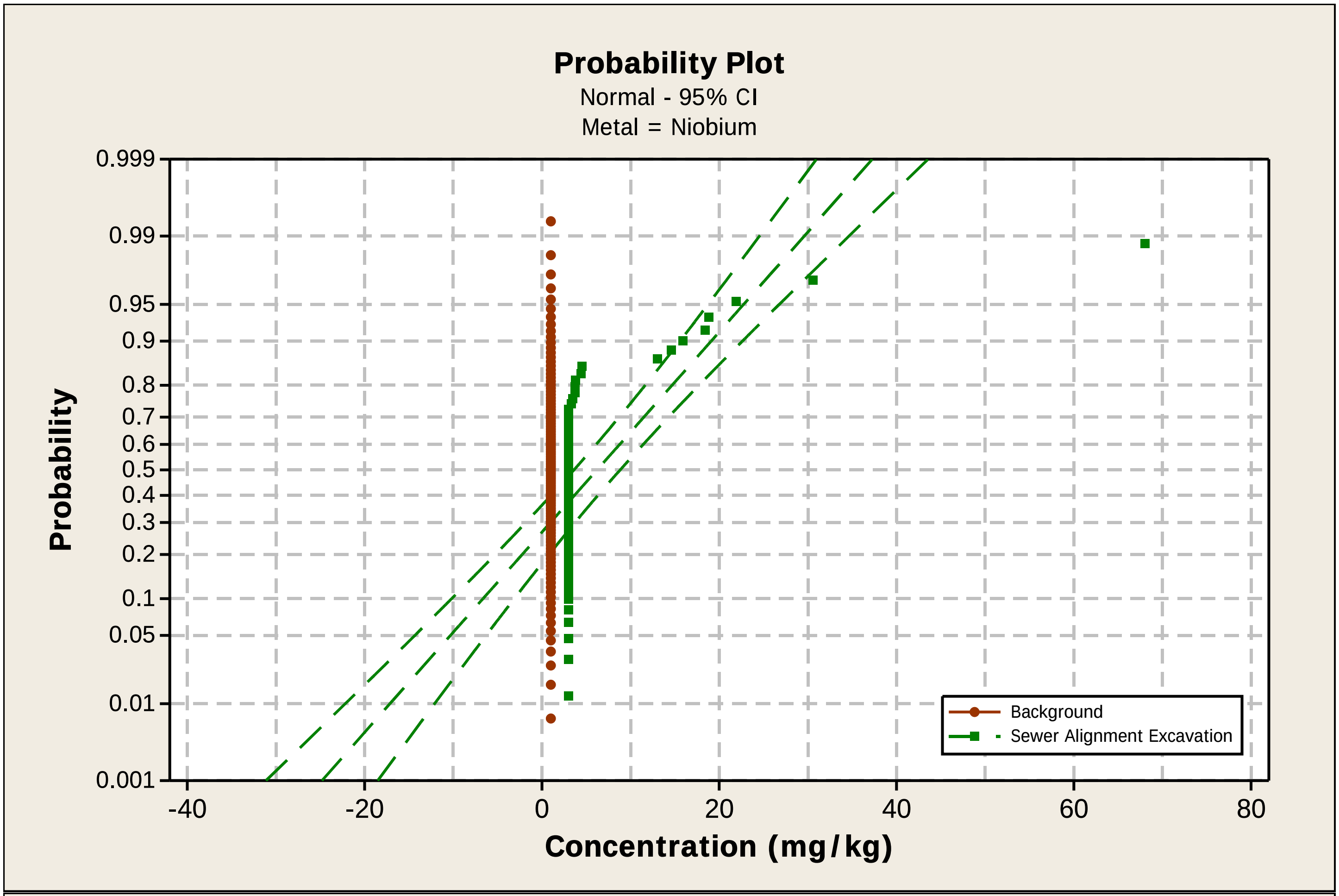

Boxplot
Metal = Molybdenum
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



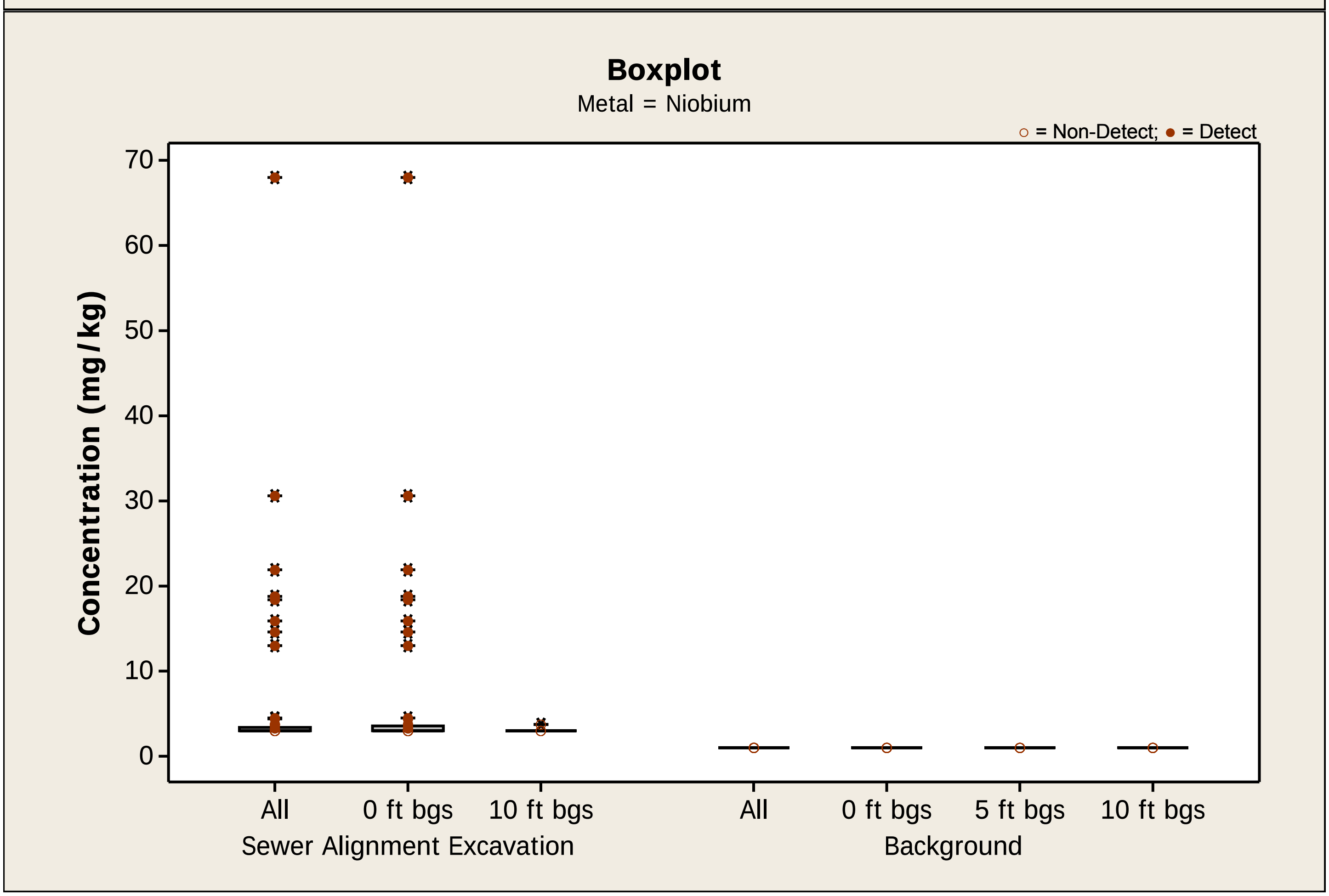
Probability Plot
Normal - 95% CI
Metal = Nickel
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
10
20
30
40
Concentration (mg/kg)
Background
Sewer Alignment Excavation



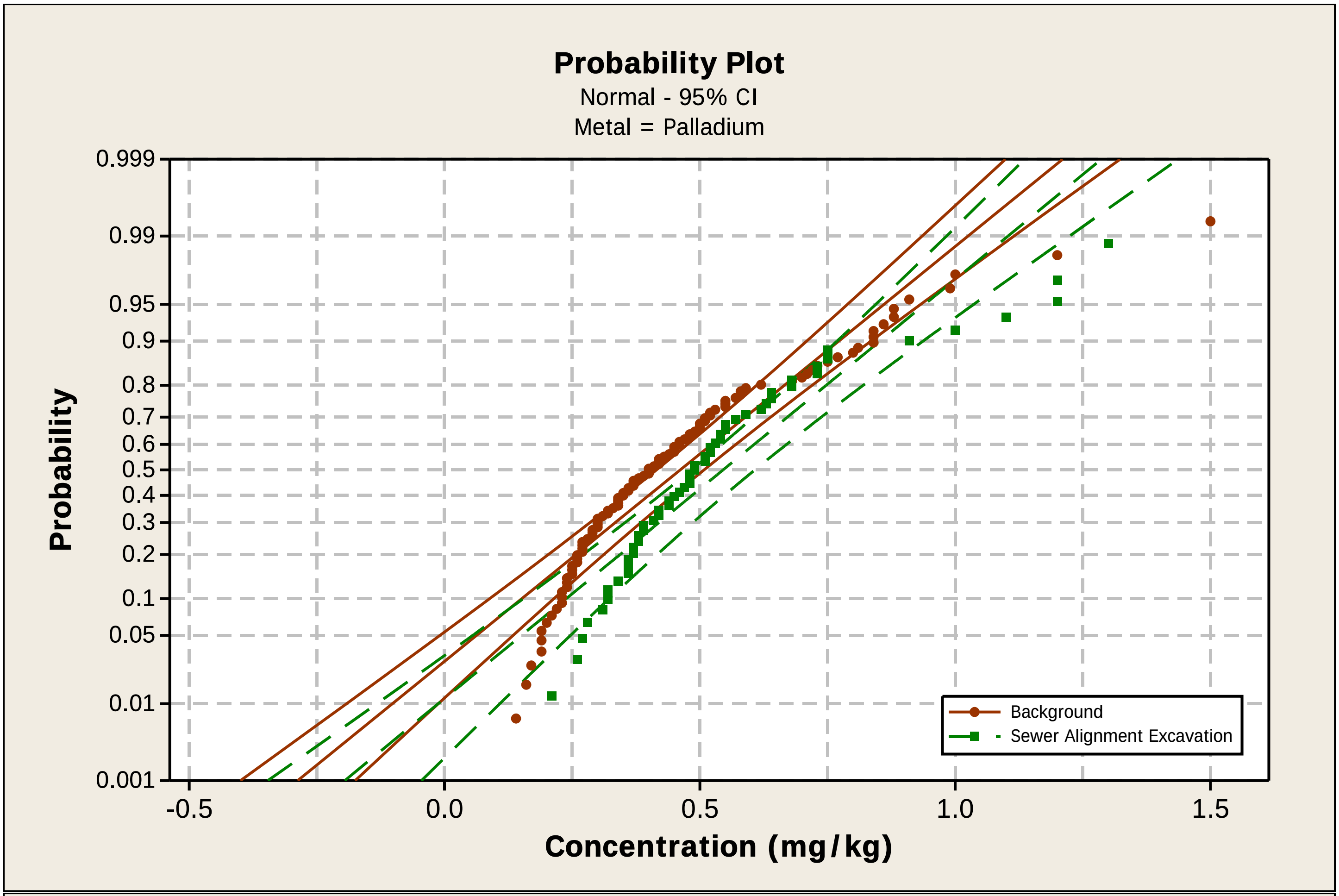
Boxplot
Metal = Nickel
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
40
35
30
25
20
15
10
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background

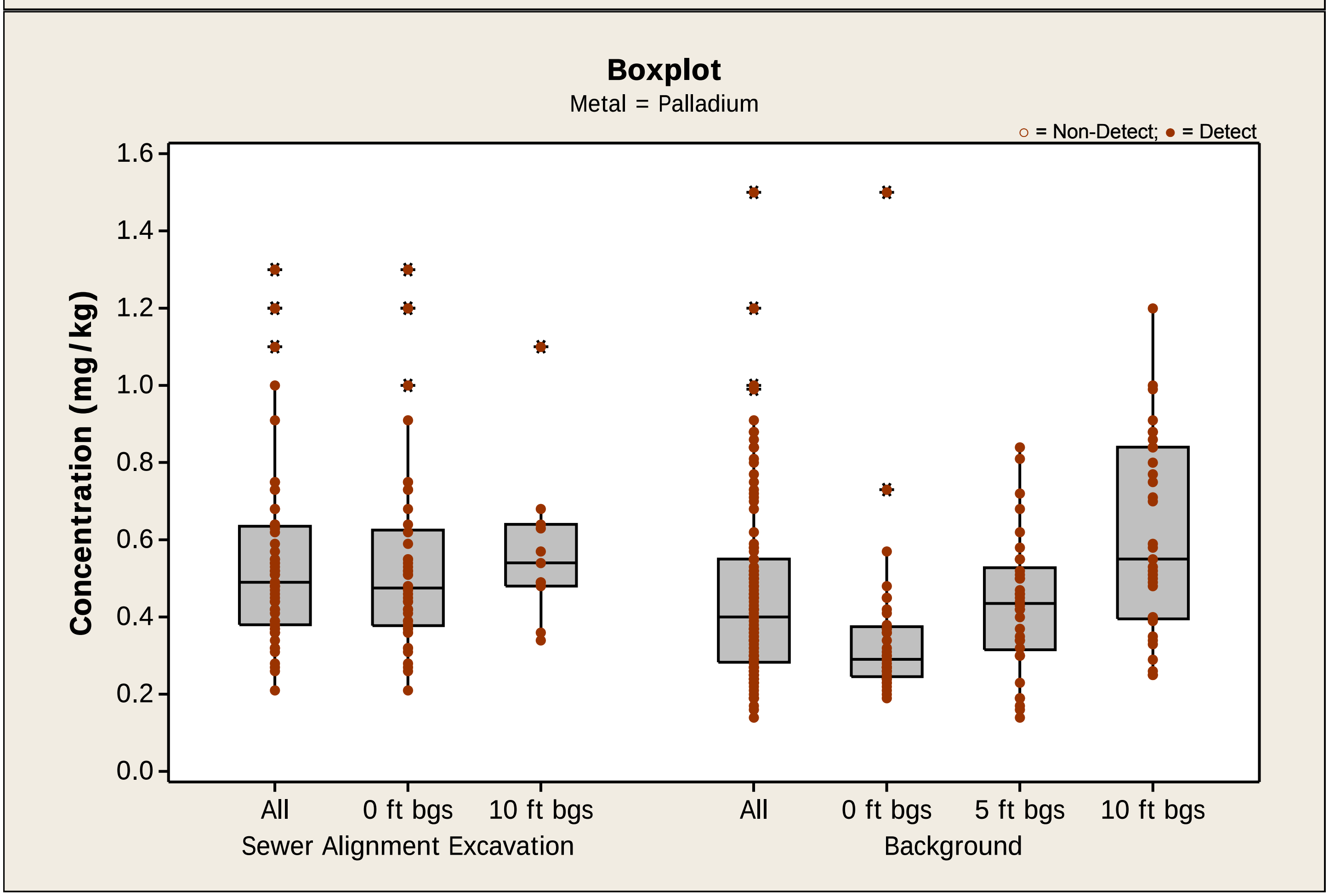


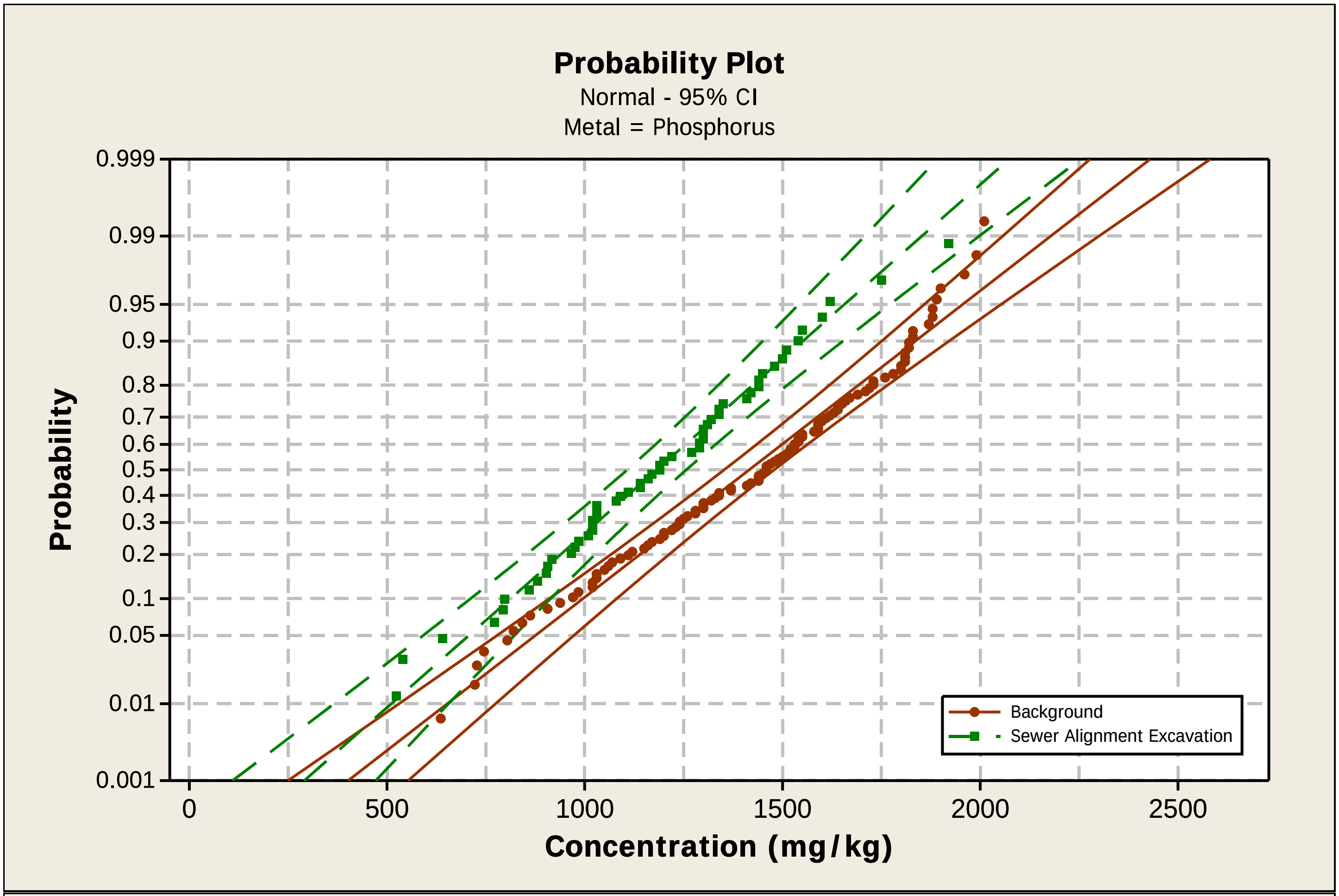
Probability Plot
Normal - 95% CI
Metal = Niobium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-40
-20
0
20
40
60
80
Concentration (mg/kg)
Background
Sewer Alignment Excavation



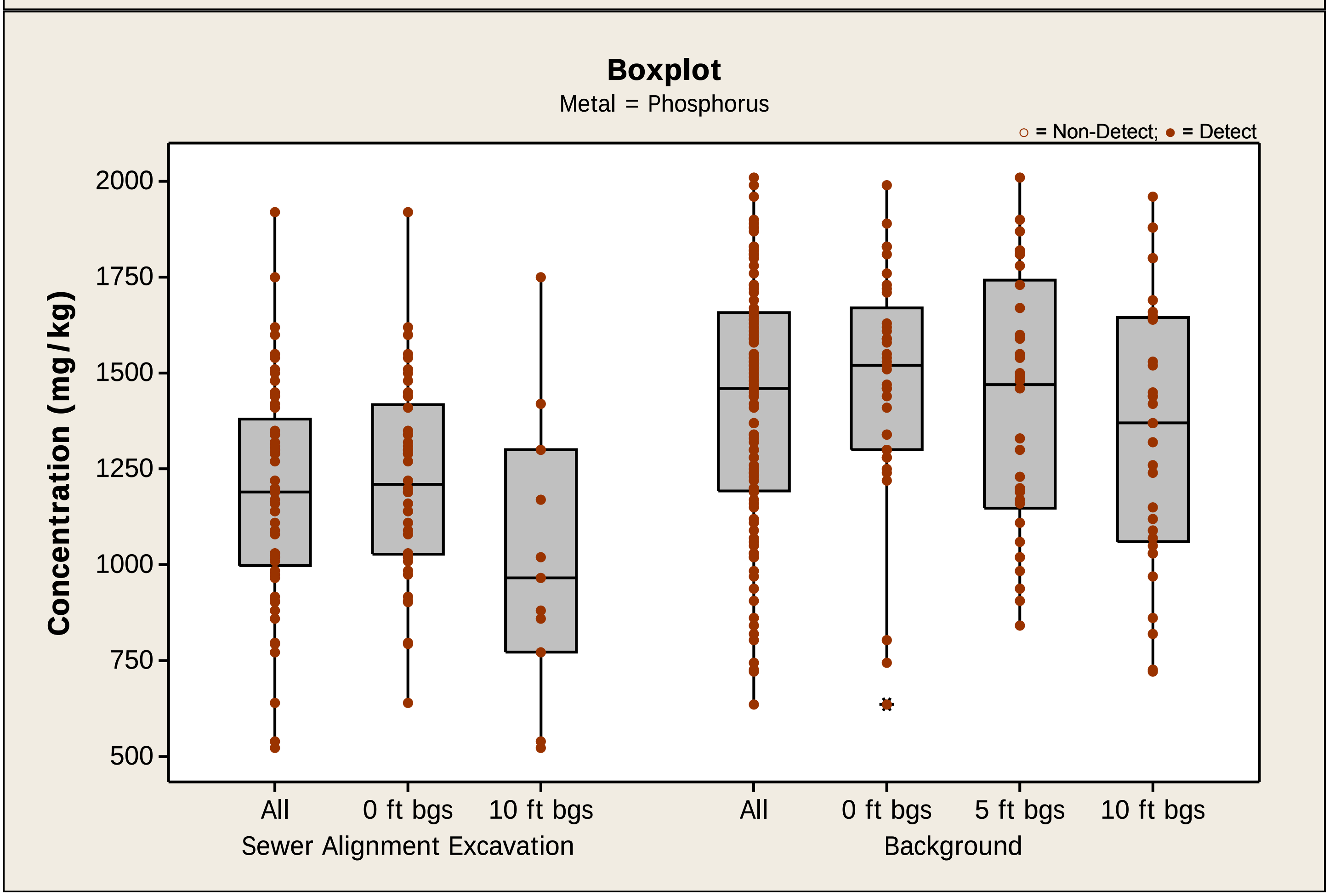
Boxplot
Metal = Niobium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
70
60
50
40
30
20
10
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Palladium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.5
0.0
0.5
1.0
1.5
Concentration (mg/kg)
Background
Sewer Alignment Excavation

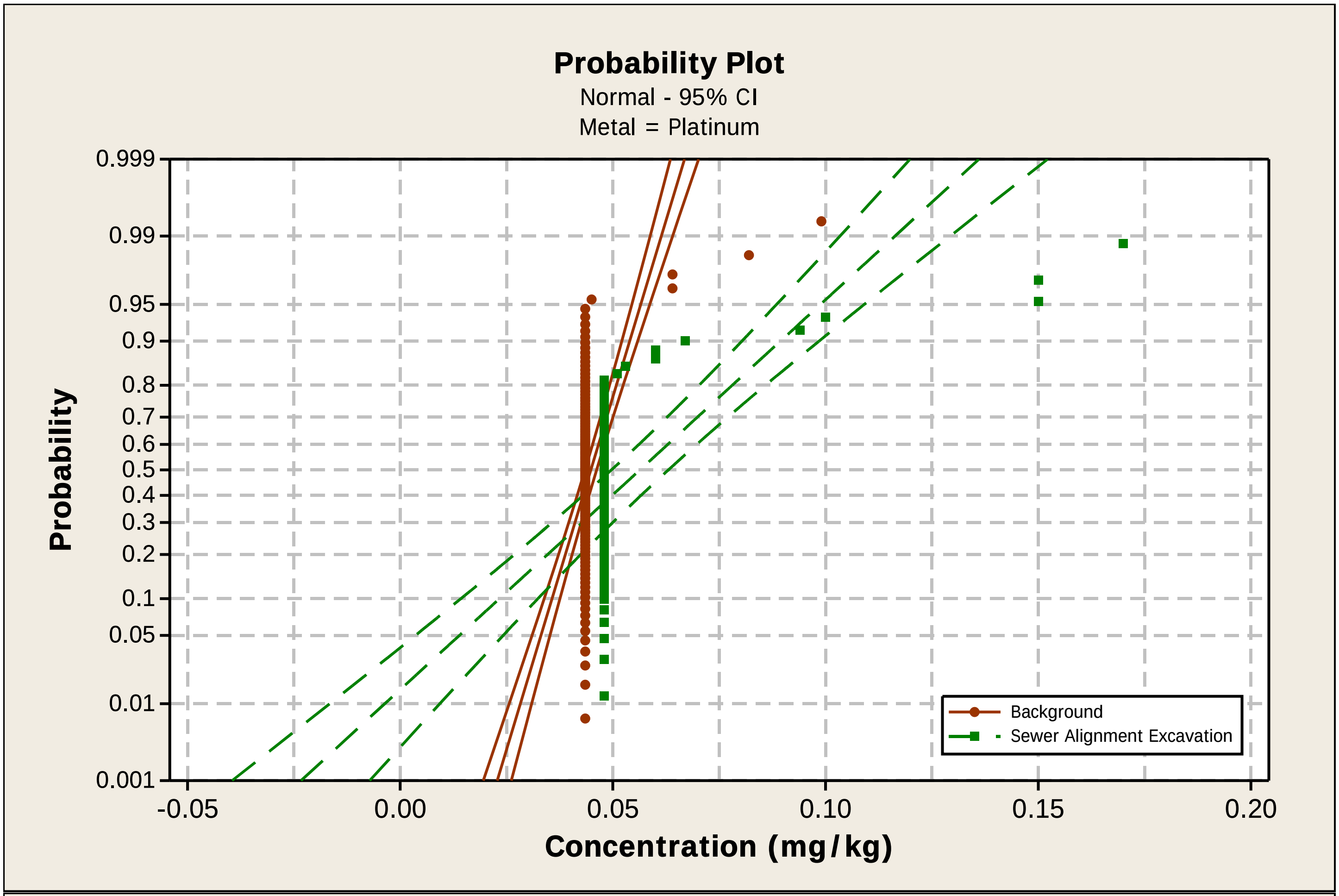

Boxplot
Metal = Palladium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



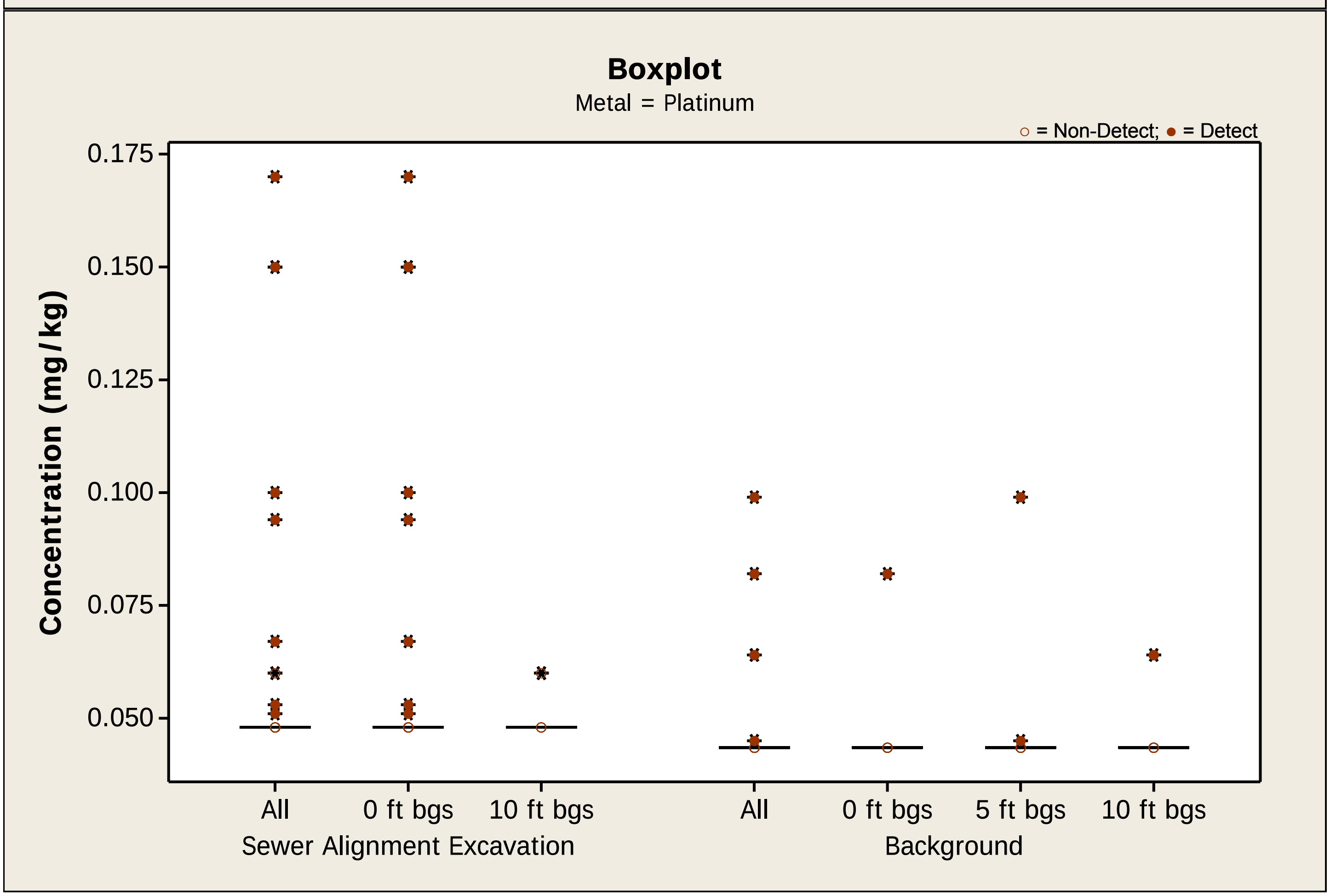
Probability Plot
Normal - 95% CI
Metal = Phosphorus
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
500
1000
1500
2000
2500
Concentration (mg/kg)
Background
Sewer Alignment Excavation



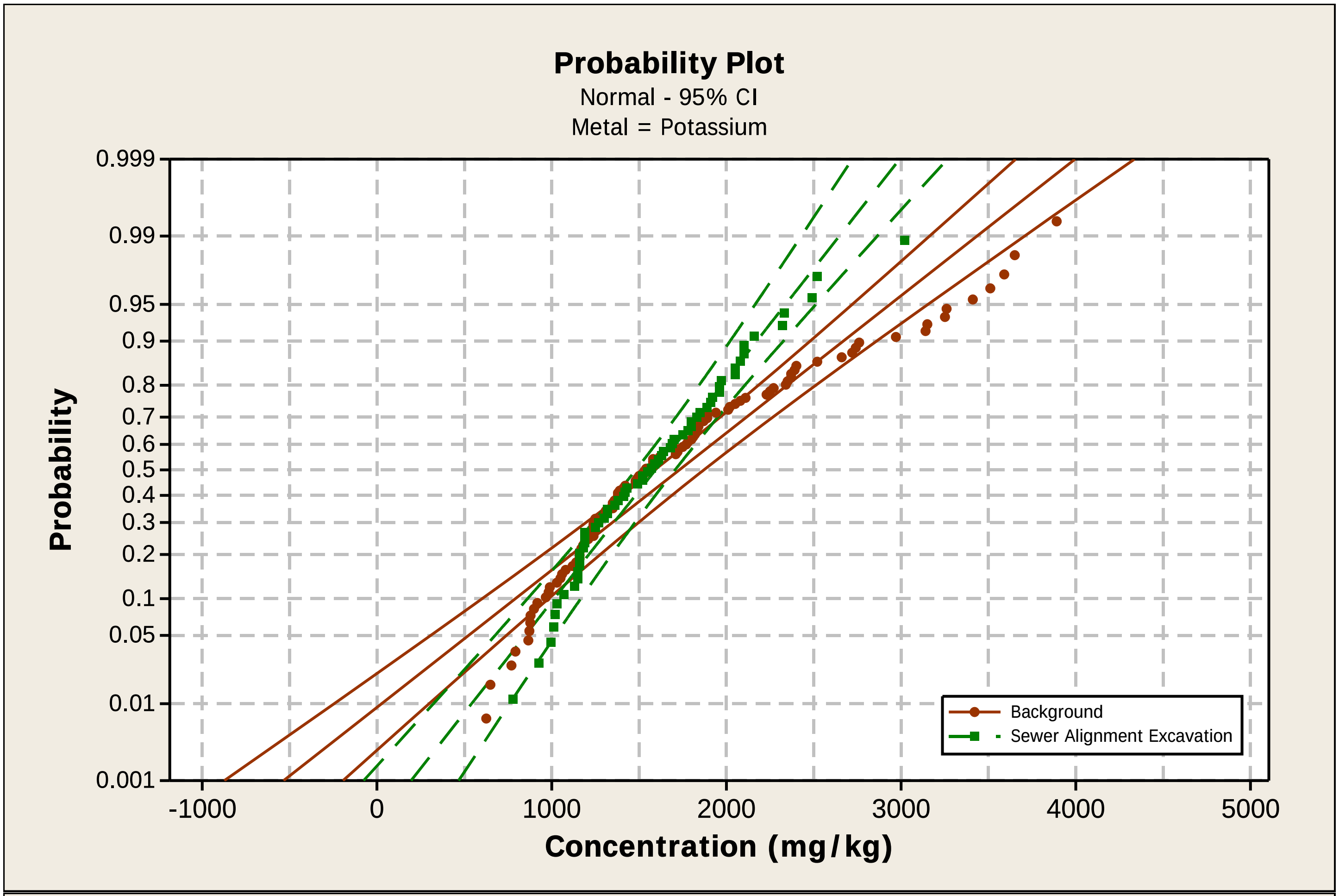
Boxplot
Metal = Phosphorus
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
2000
1750
1500
1250
1000
750
500
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



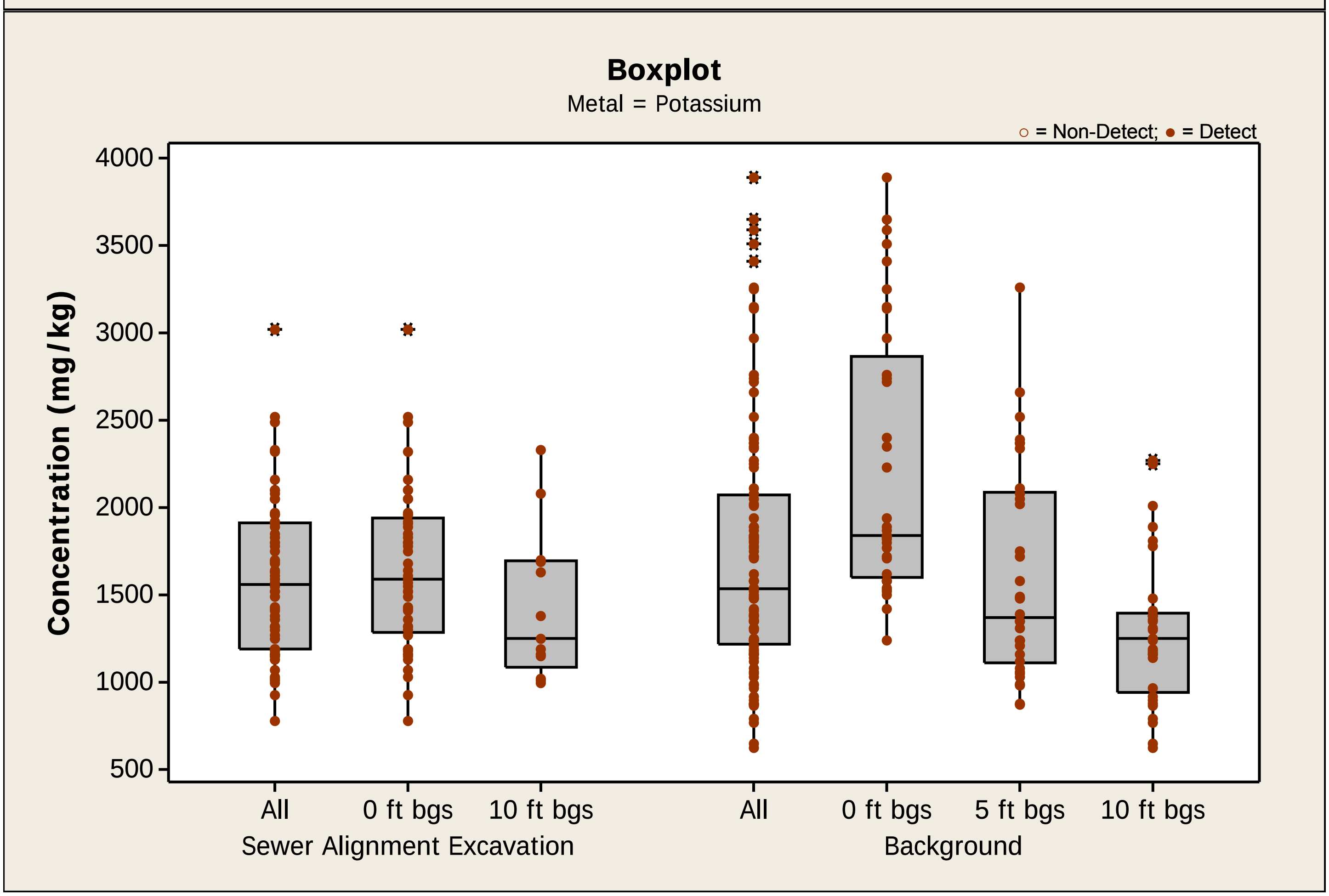
Probability Plot
Normal - 95% CI
Metal = Platinum
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.05
0.00
0.05
0.10
0.15
0.20
Concentration (mg/kg)
Background
Sewer Alignment Excavation



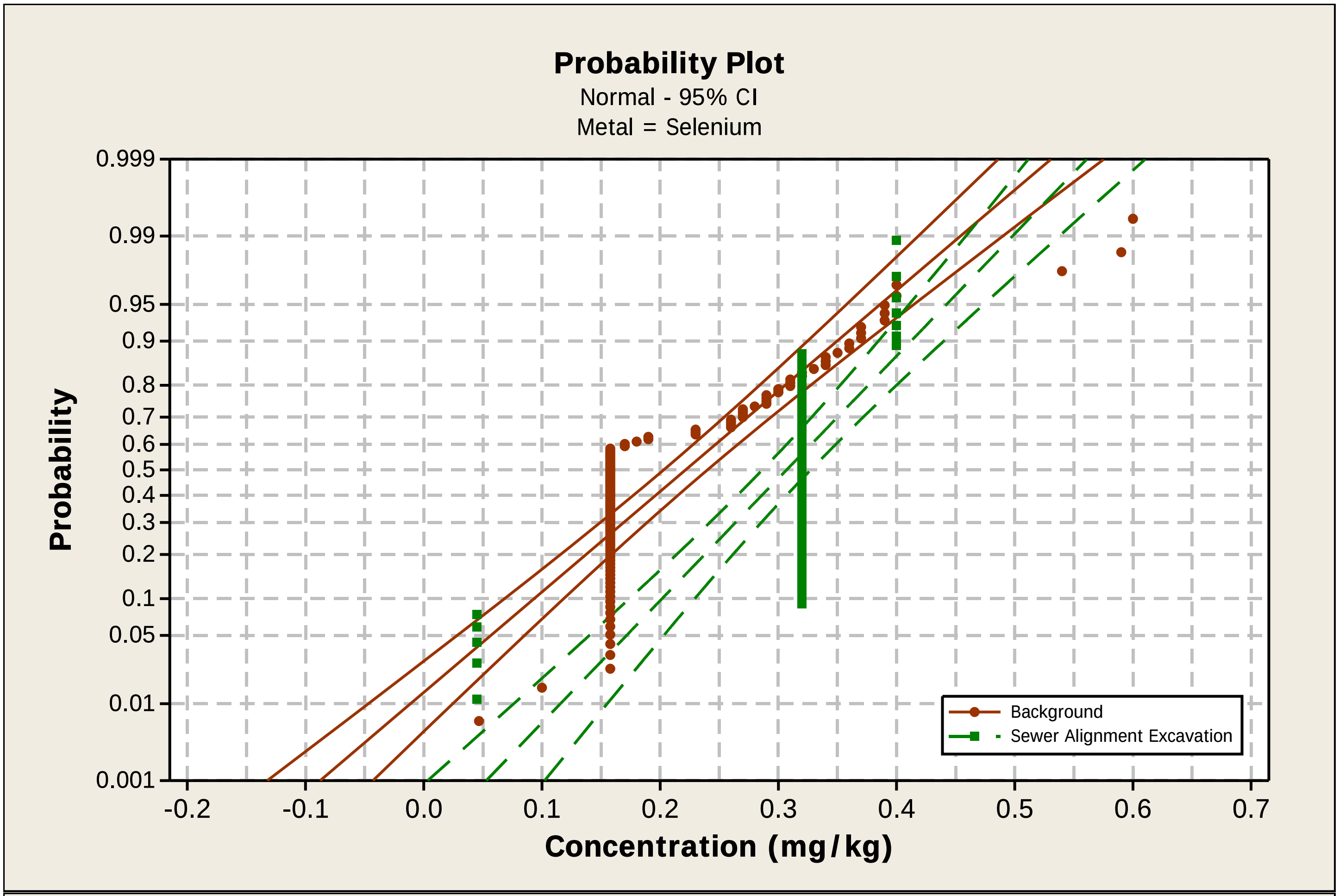
Boxplot
Metal = Platinum
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.175
0.150
0.125
0.100
0.075
0.050
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



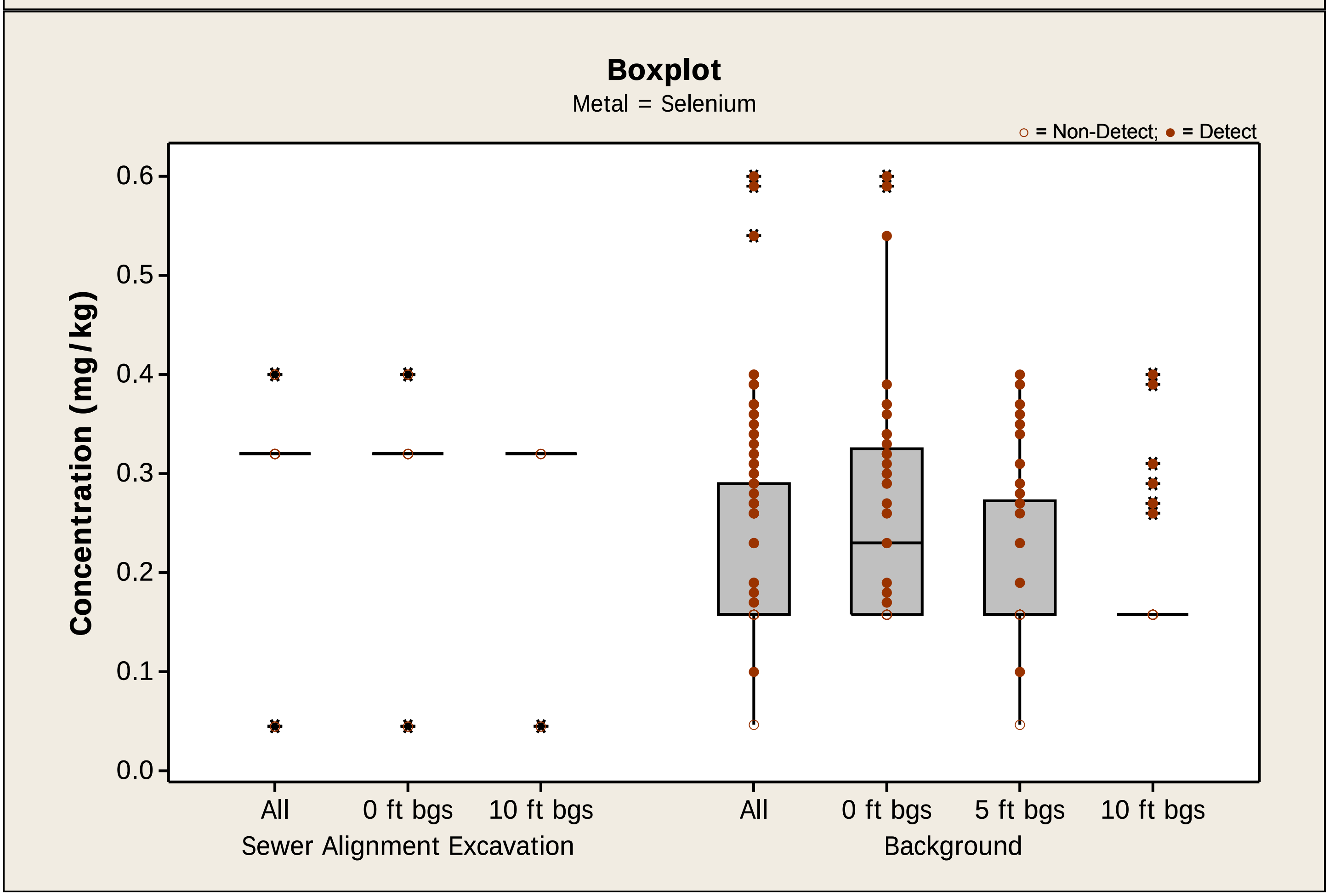
Probability Plot
Normal - 95% CI
Metal = Potassium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1000
0
1000
2000
3000
4000
5000
Concentration (mg/kg)
Background
Sewer Alignment Excavation



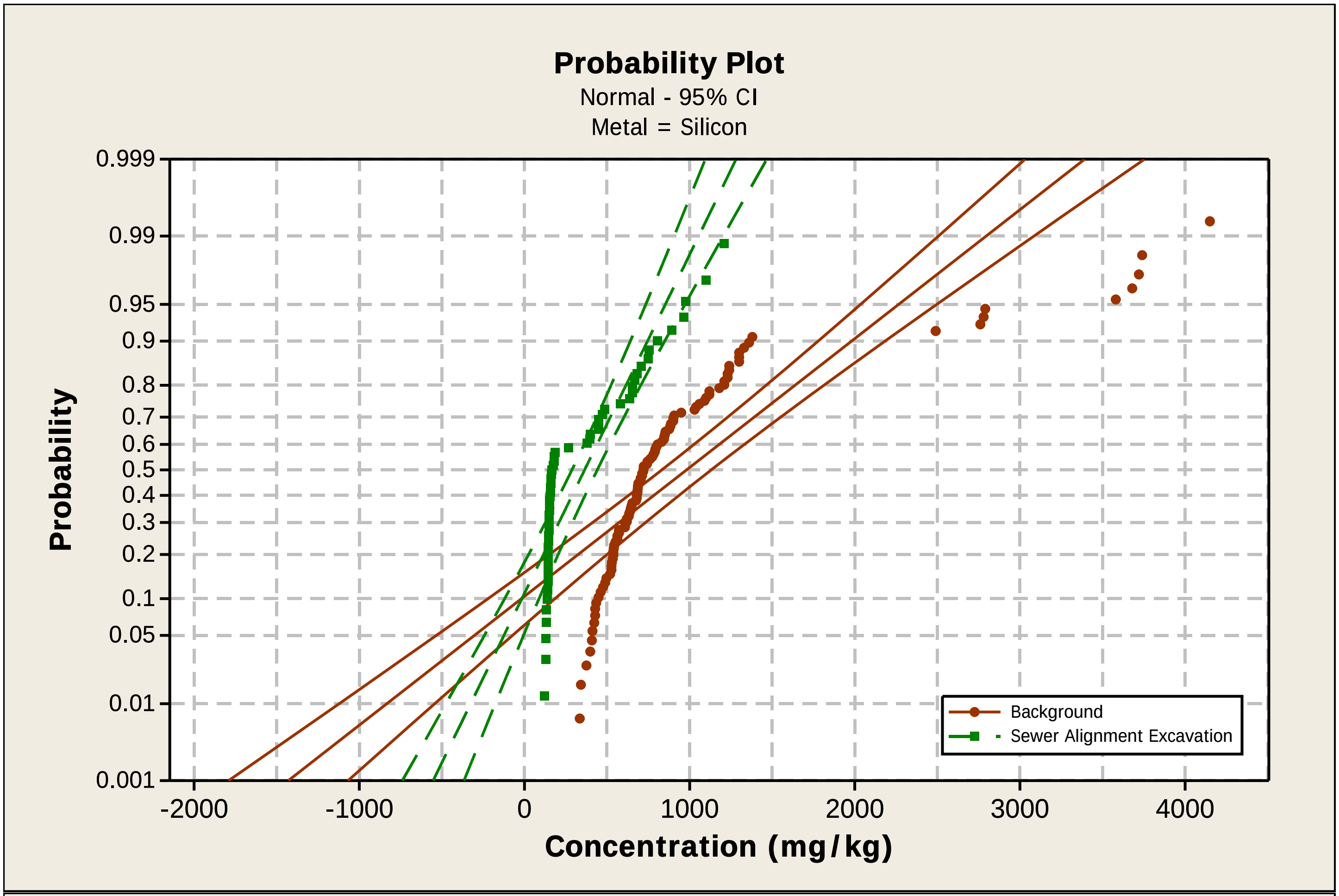
Boxplot
Metal = Potassium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
4000
3500
3000
2500
2000
1500
1000
500
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background

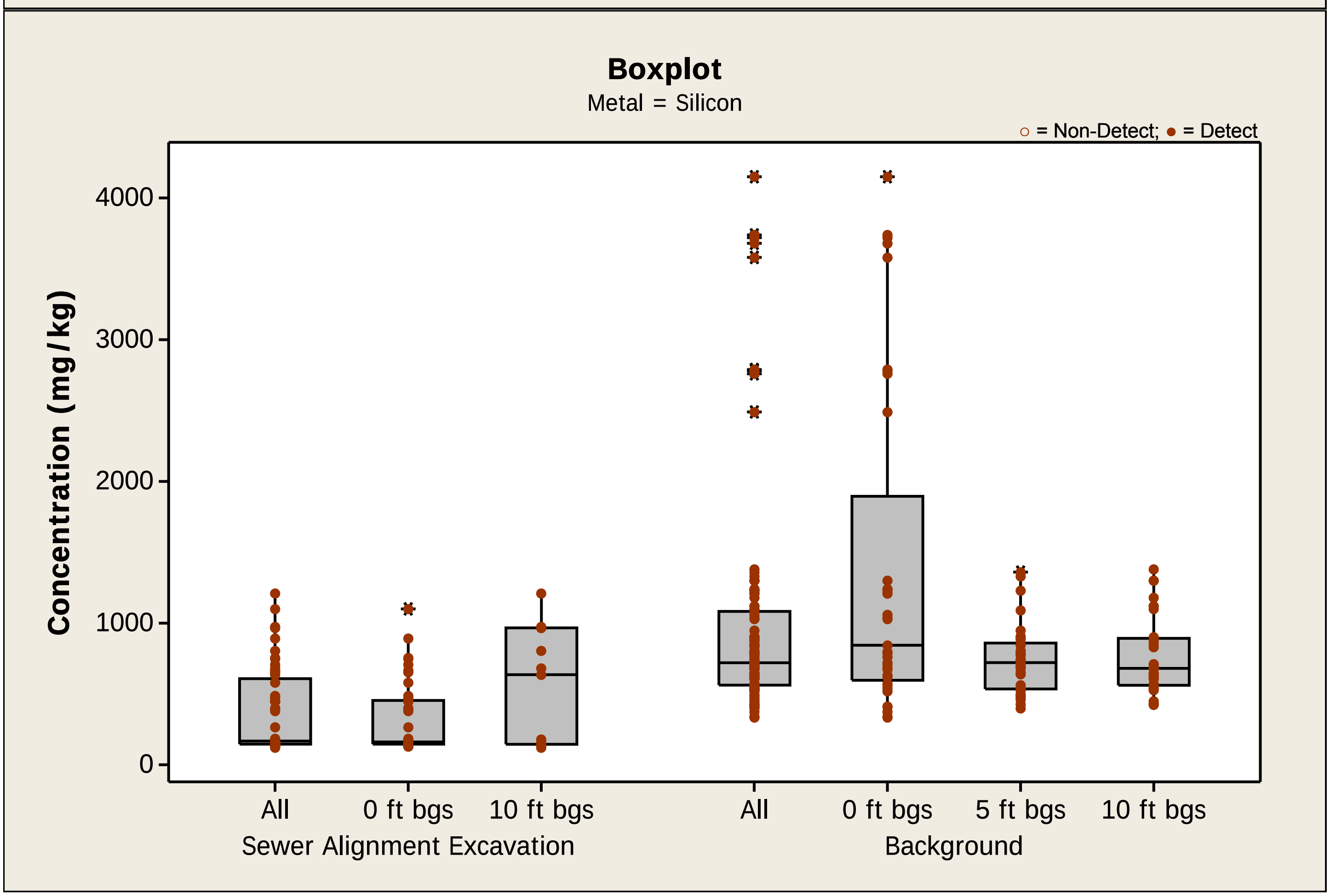


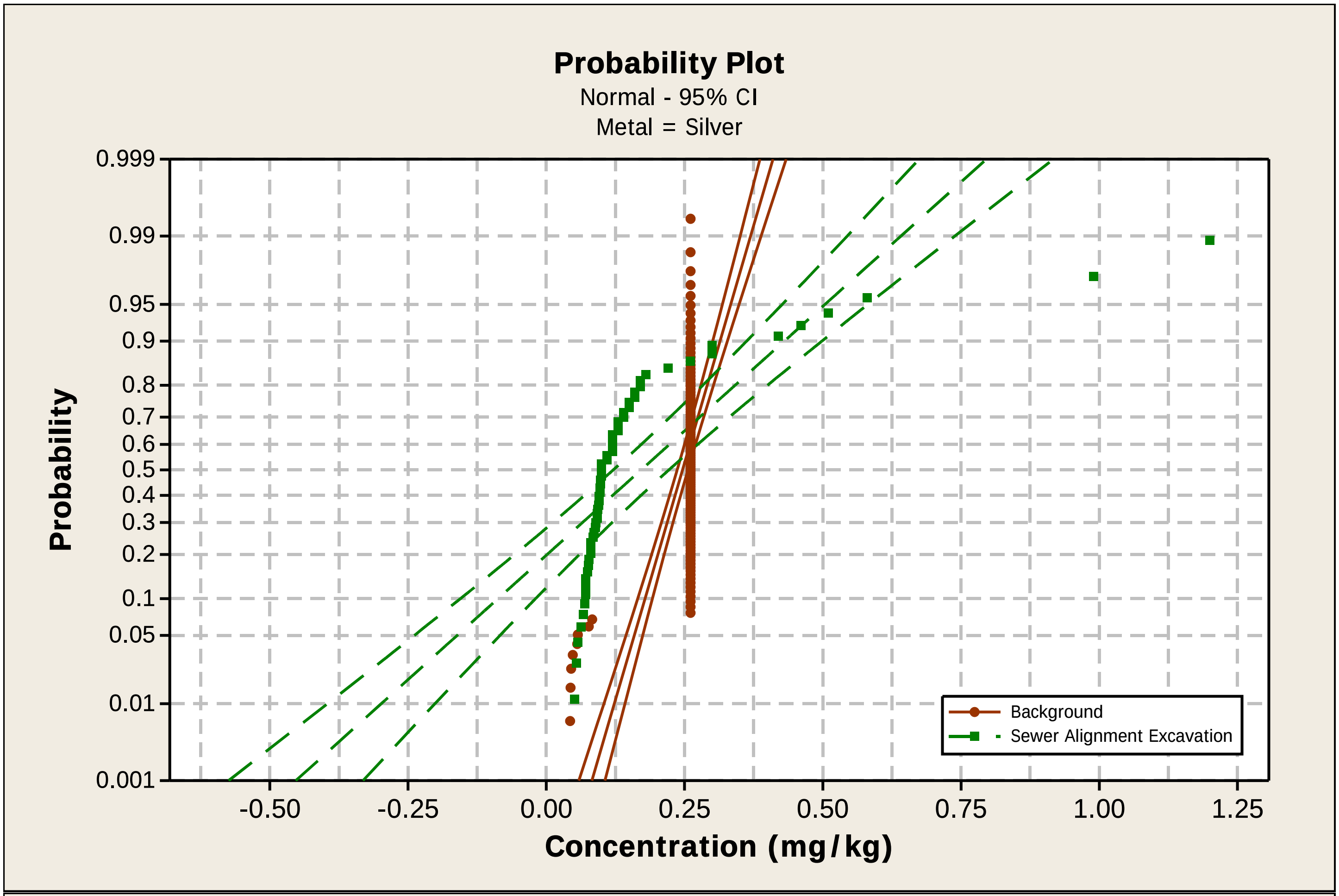
Probability Plot
Normal - 95% CI
Metal = Selenium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Concentration (mg/kg)
Background
Sewer Alignment Excavation

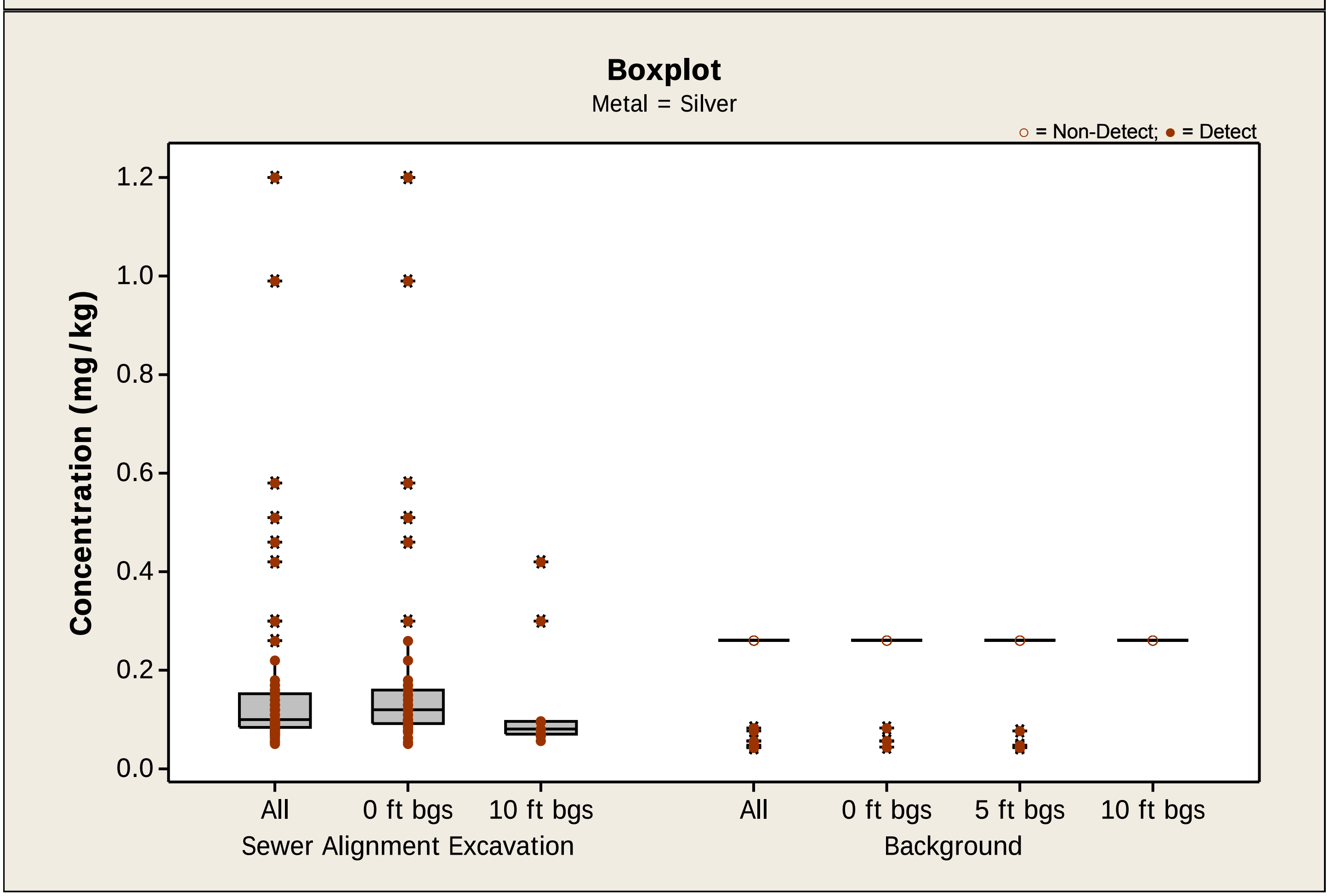


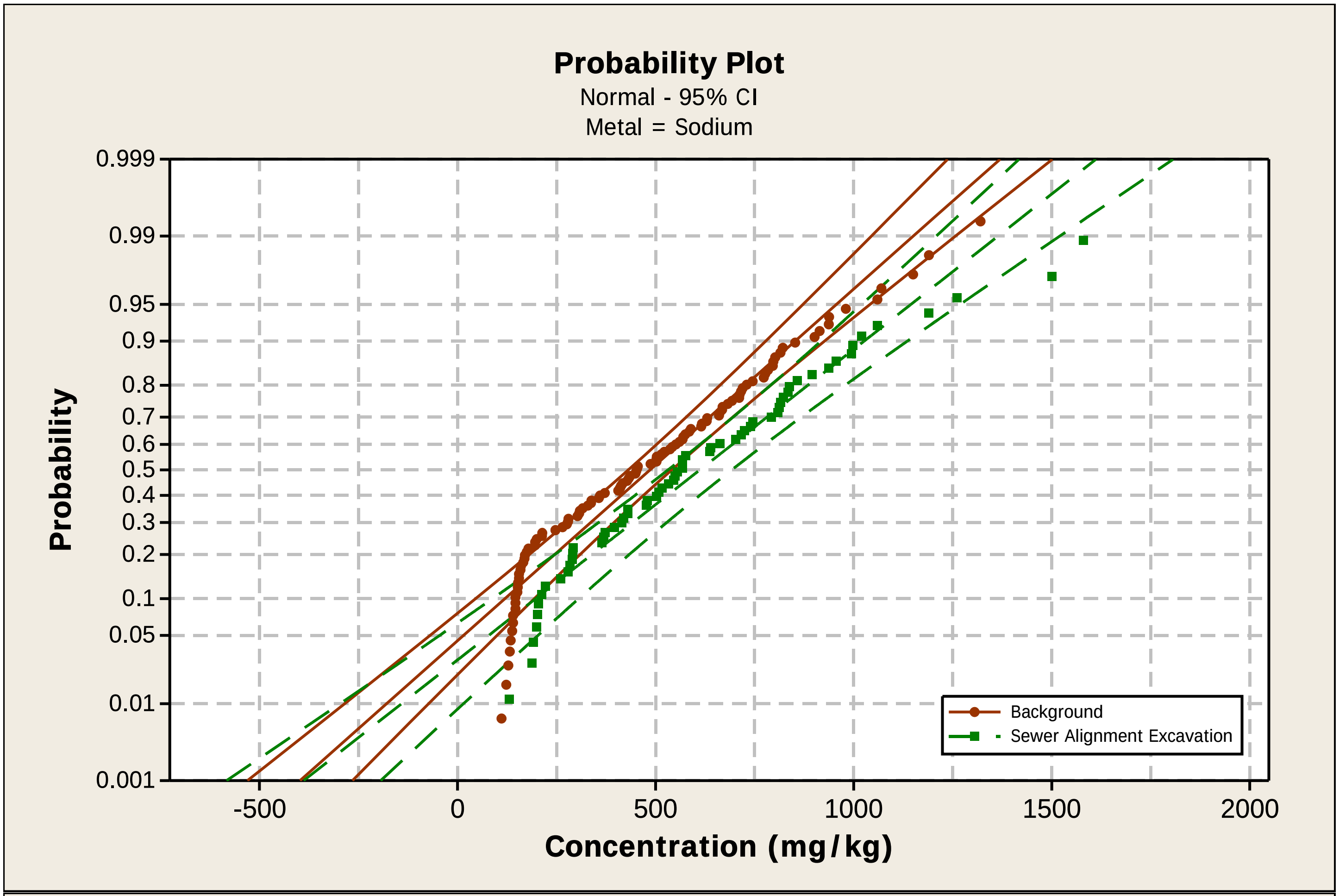
Boxplot
Metal = Selenium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
0.6
0.5
0.4
0.3
0.2
0.1
0.0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background


Probability Plot
Normal - 95% CI
Metal = Silicon
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-2000
-1000
0
1000
2000
3000
4000
Concentration (mg/kg)
Background
Sewer Alignment Excavation

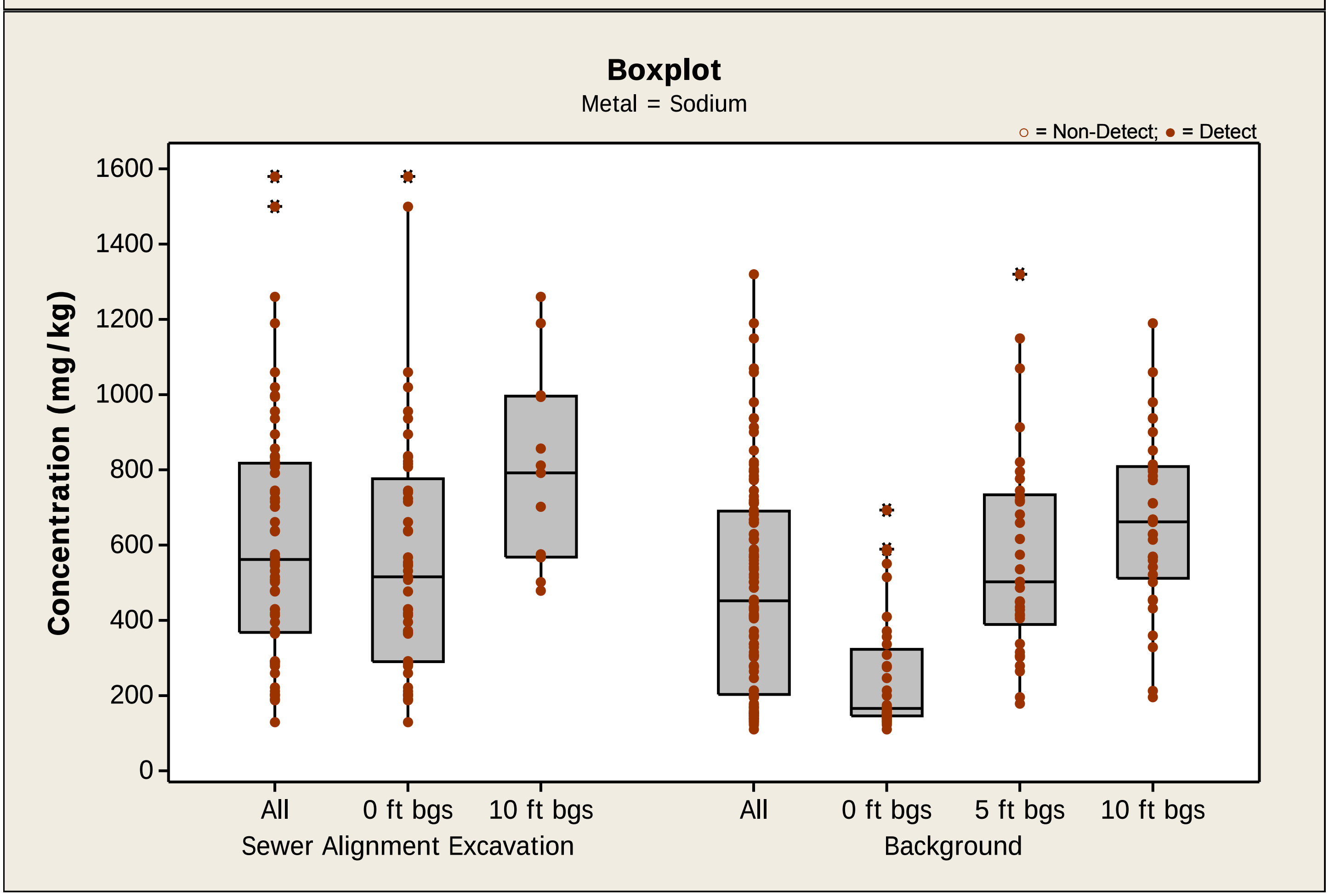

Boxplot
Metal = Silicon
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
4000
3000
2000
1000
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background


Probability Plot
Normal - 95% CI
Metal = Silver
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.50
-0.25
0.00
0.25
0.50
0.75
1.00
1.25
Concentration (mg/kg)
Background
Sewer Alignment Excavation

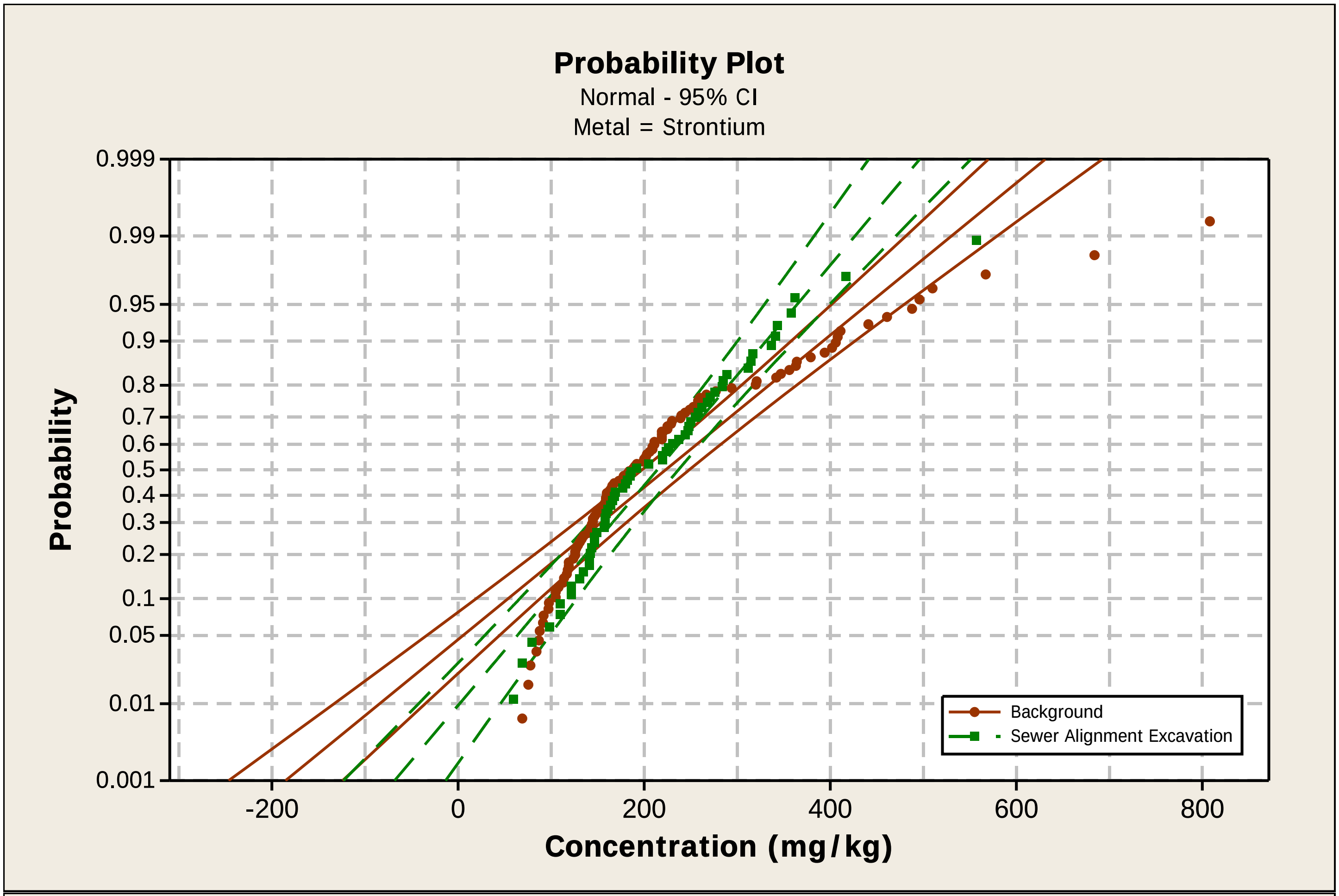

Boxplot
Metal = Silver
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



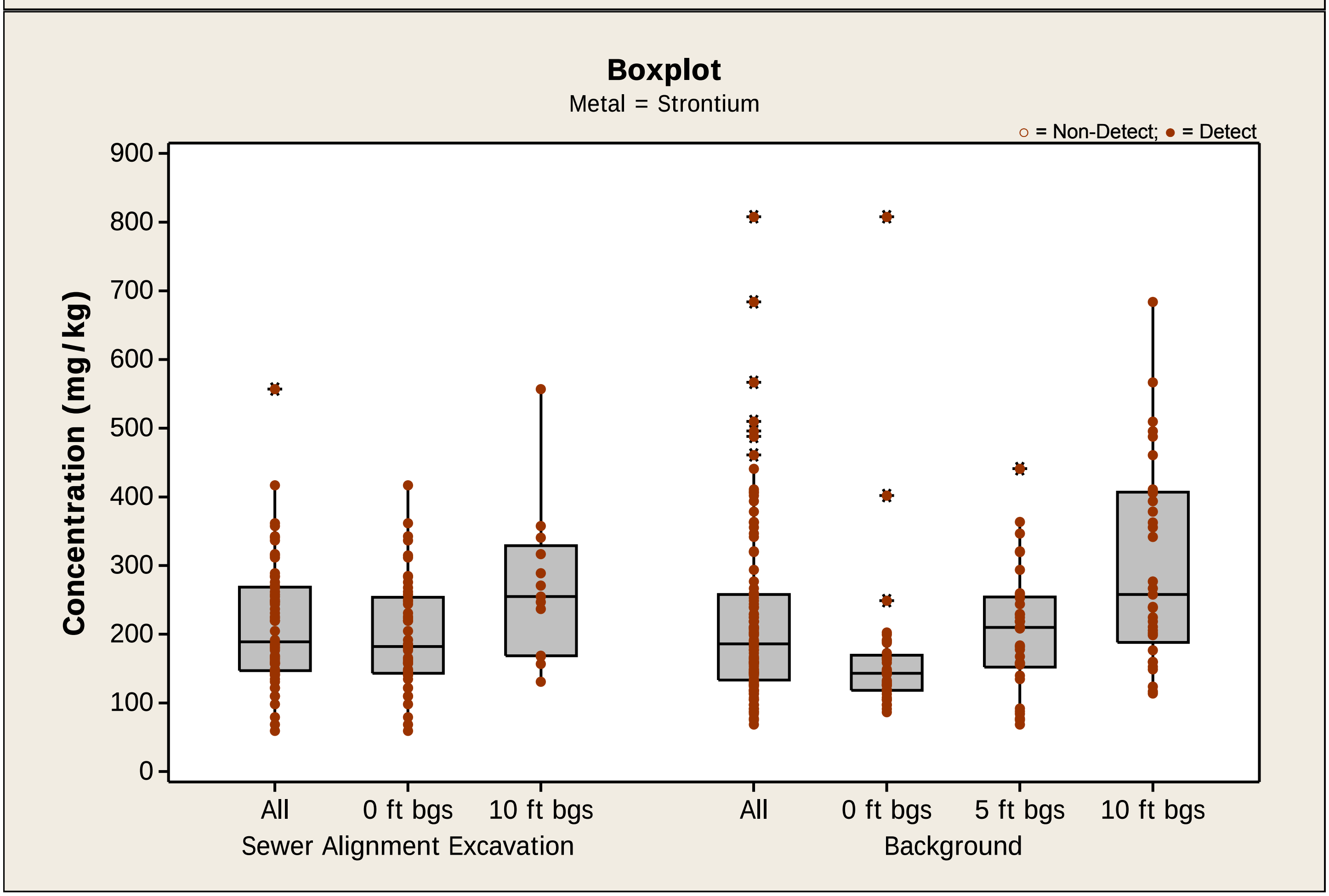
Probability Plot
Normal - 95% CI
Metal = Sodium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-500
0
500
1000
1500
2000
Concentration (mg/kg)
Background
Sewer Alignment Excavation



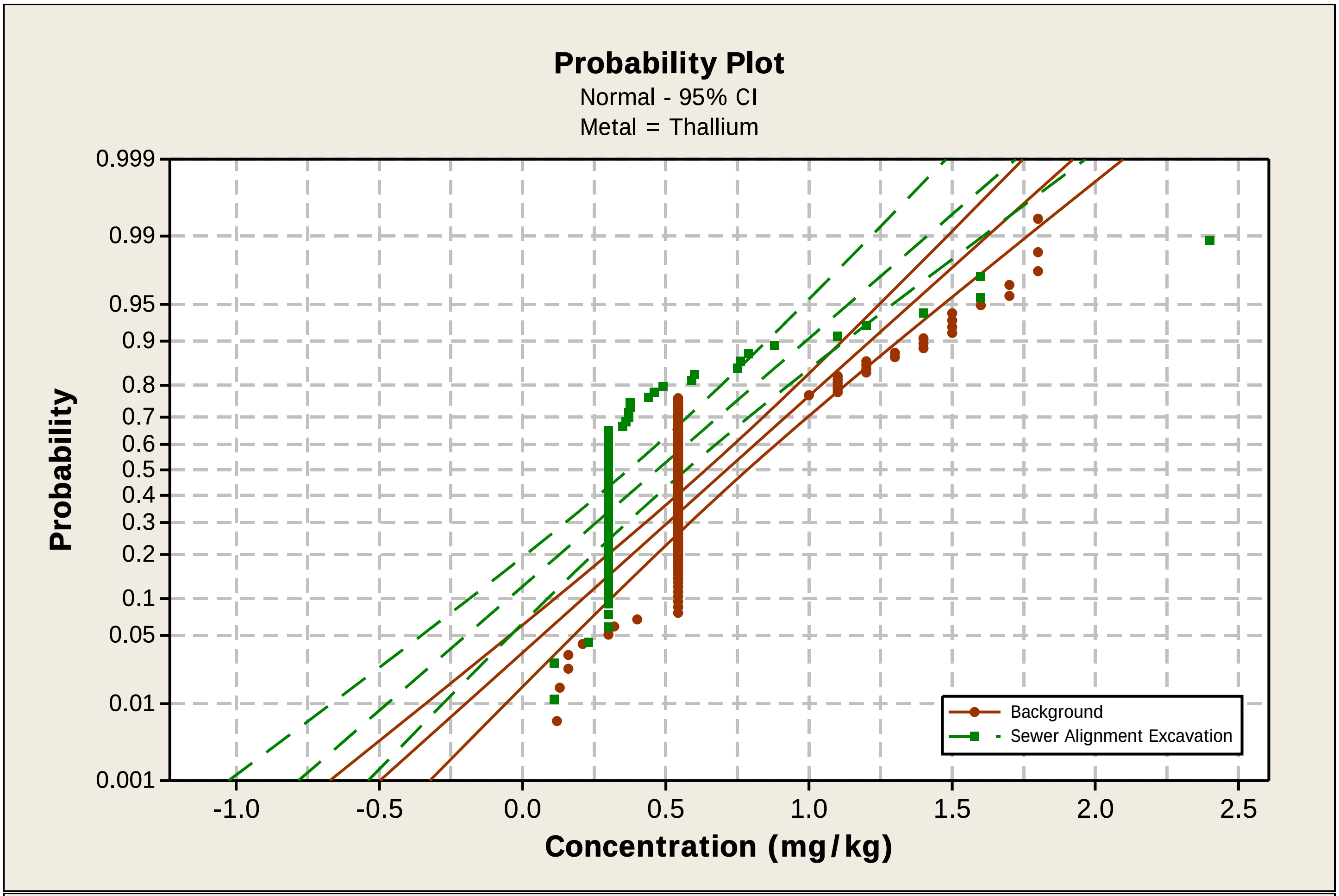
Boxplot
Metal = Sodium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
1600
1400
1200
1000
800
600
400
200
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



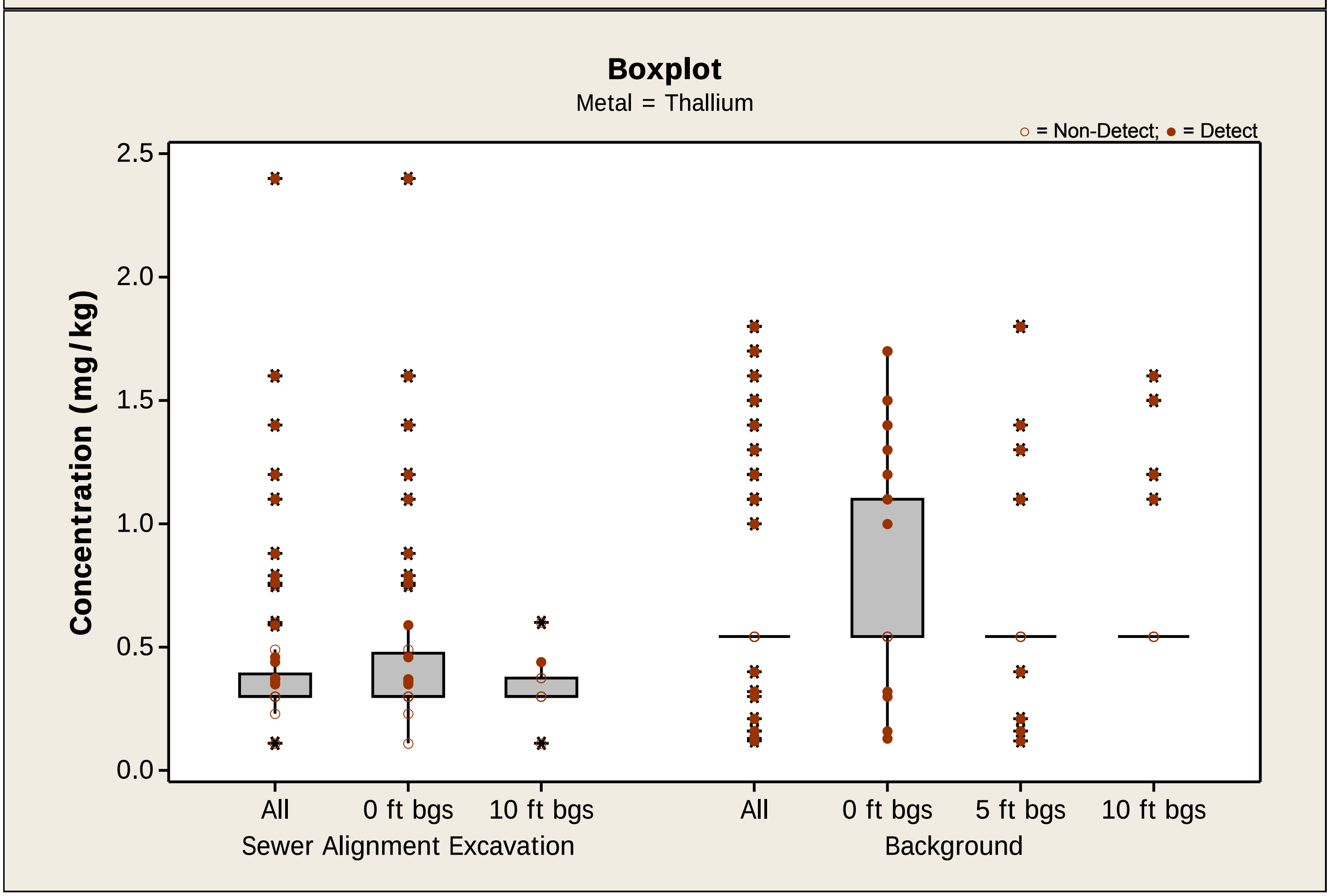
Probability Plot
Normal - 95% CI
Metal = Strontium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-200
0
200
400
600
800
Concentration (mg/kg)
Background
Sewer Alignment Excavation



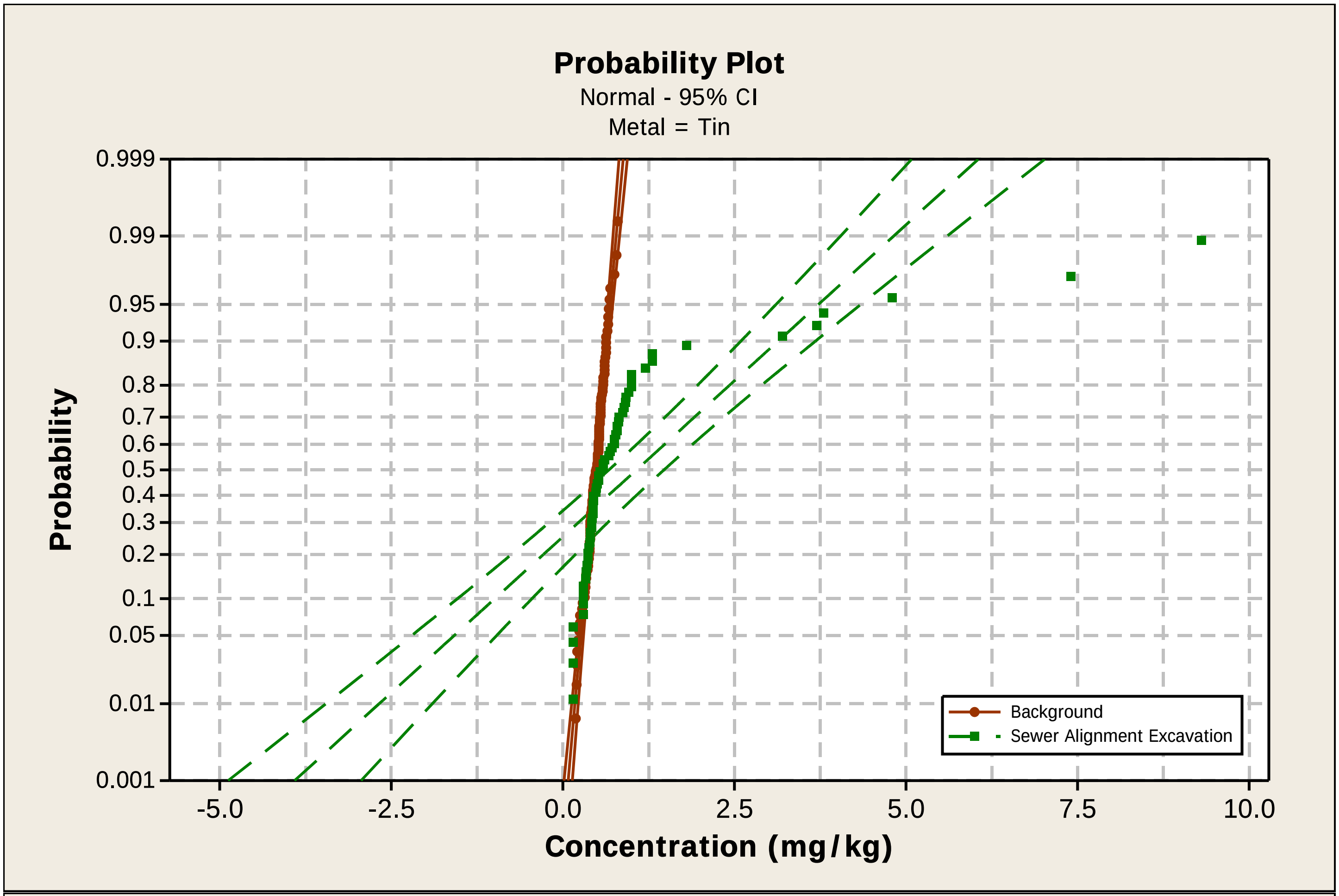
Boxplot
Metal = Strontium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
900
800
700
600
500
400
300
200
100
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



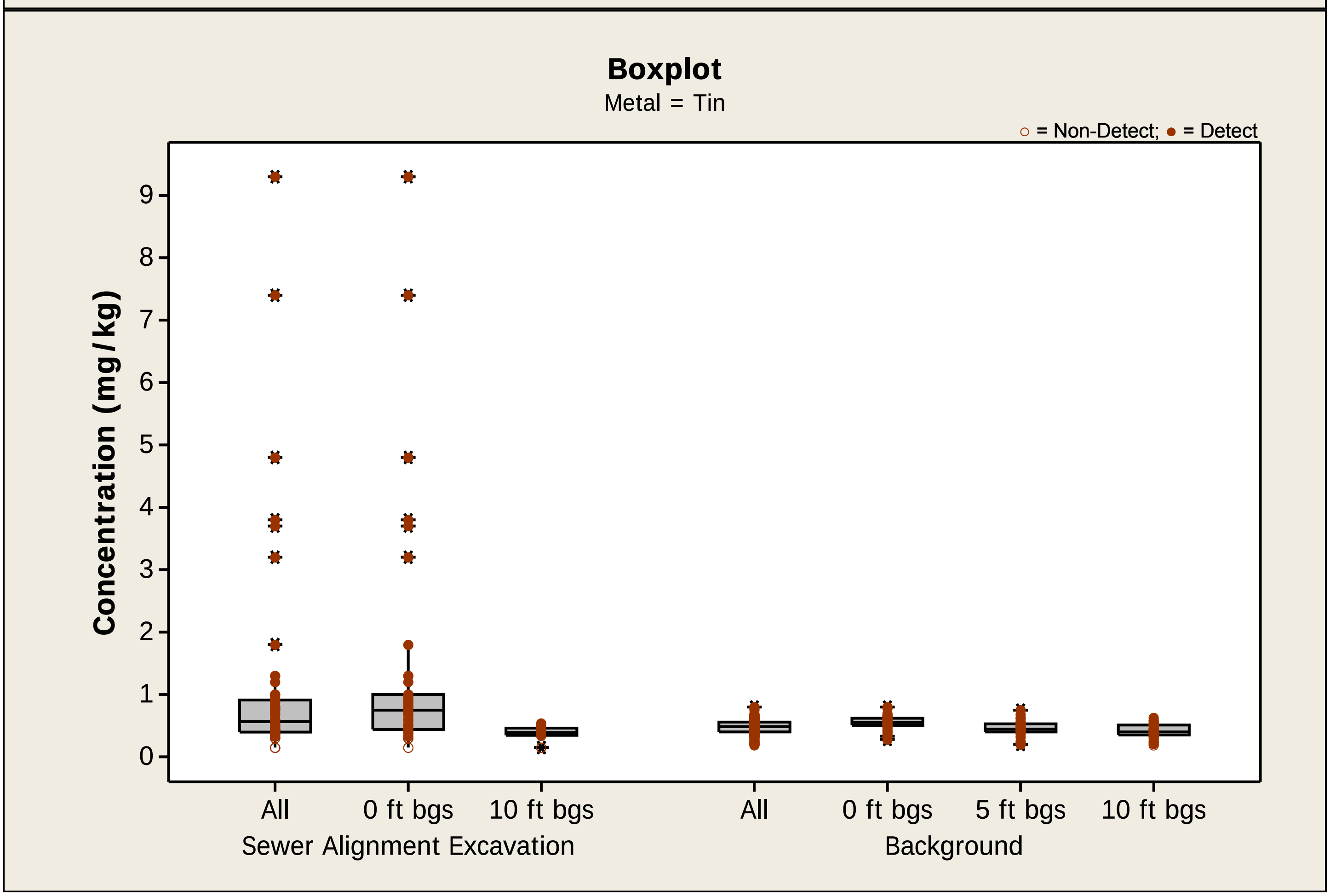
Probability Plot
Normal - 95% CI
Metal = Thallium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1.0
-0.5
0.0
0.5
1.0
1.5
2.0
2.5
Concentration (mg/kg)
Background
Sewer Alignment Excavation



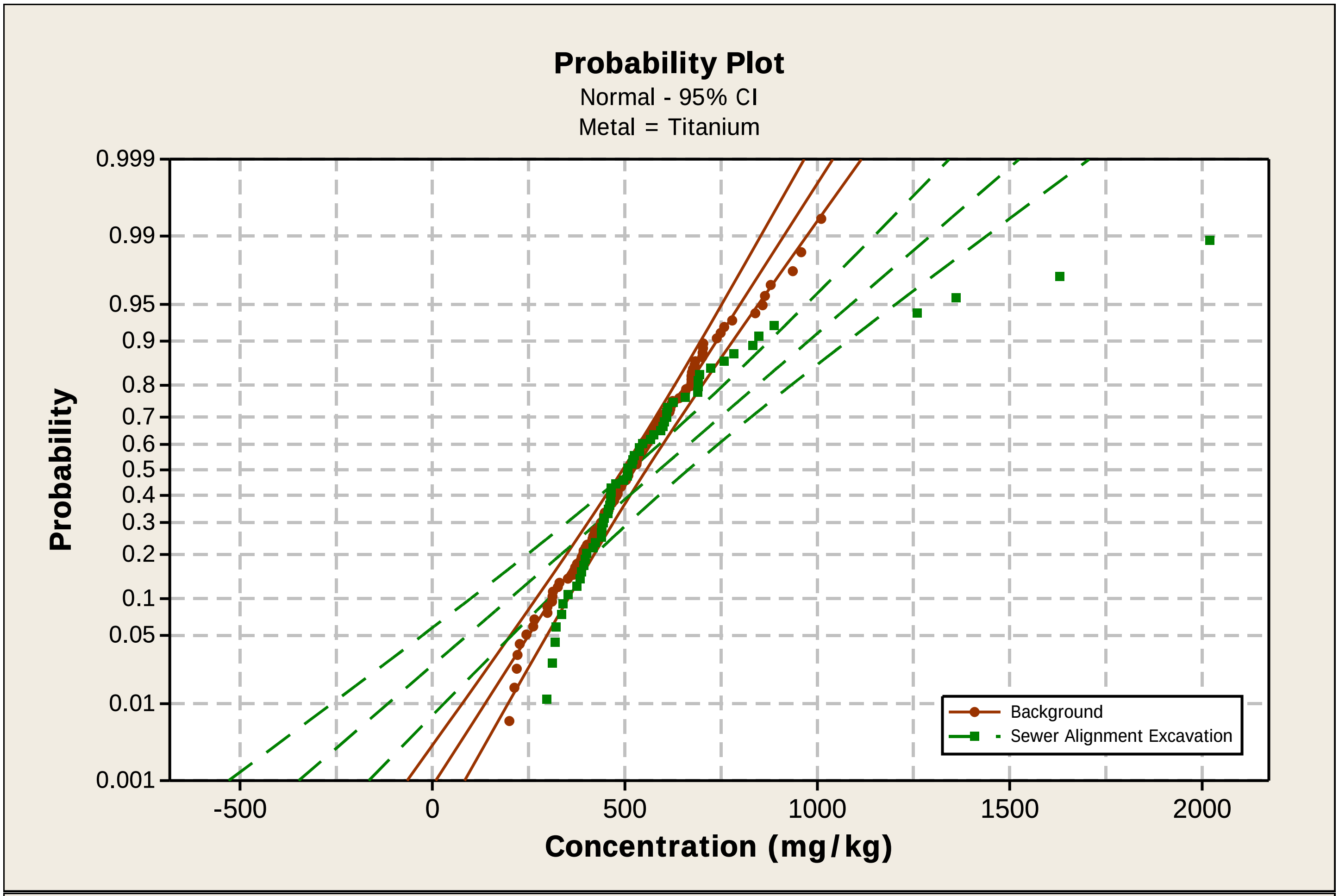
Boxplot
Metal = Thallium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
2.5
2.0
1.5
1.0
0.5
0.0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



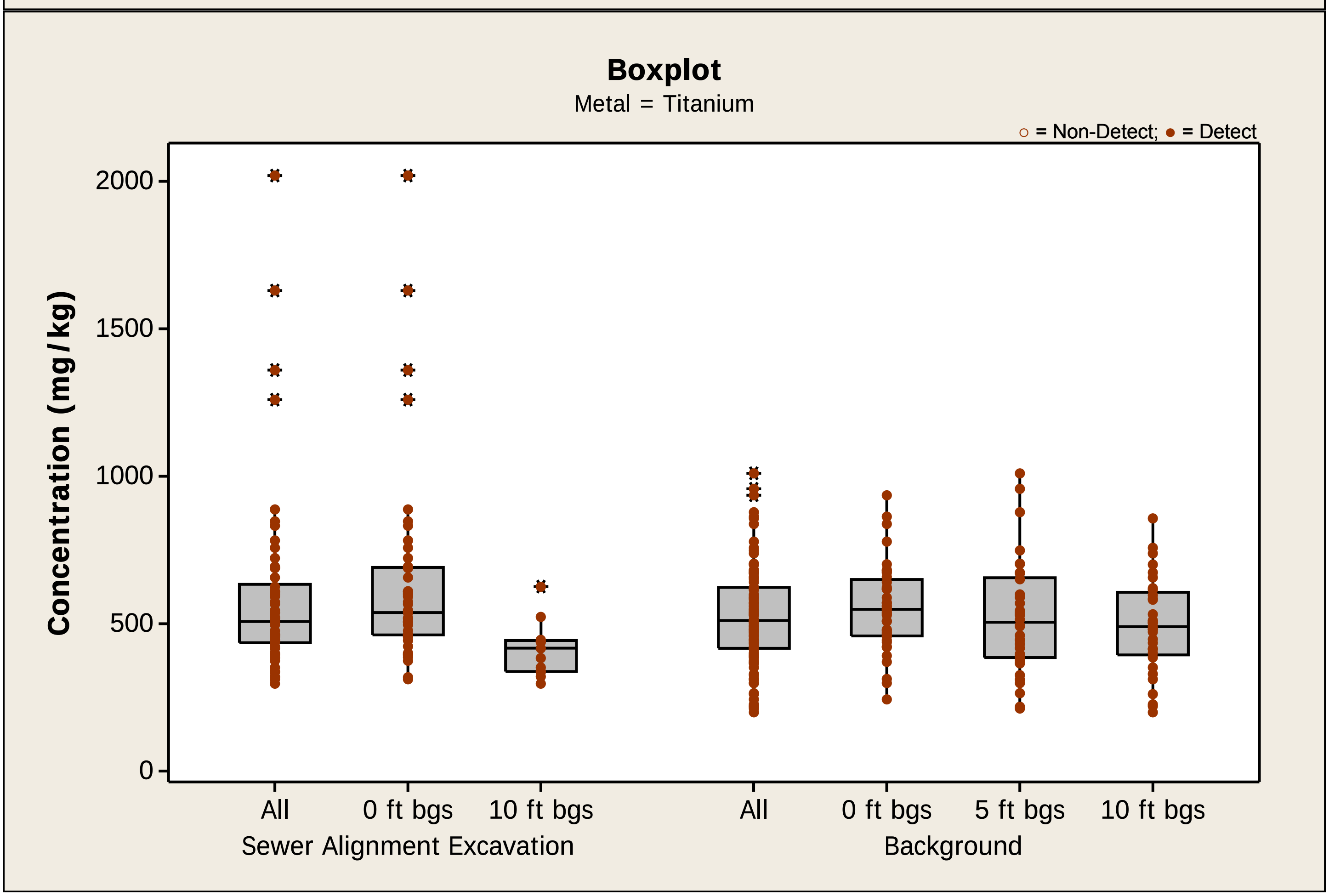
Probability Plot
Normal - 95% CI
Metal = Tin
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-5.0
-2.5
0.0
2.5
5.0
7.5
10.0
Concentration (mg/kg)
Background
Sewer Alignment Excavation



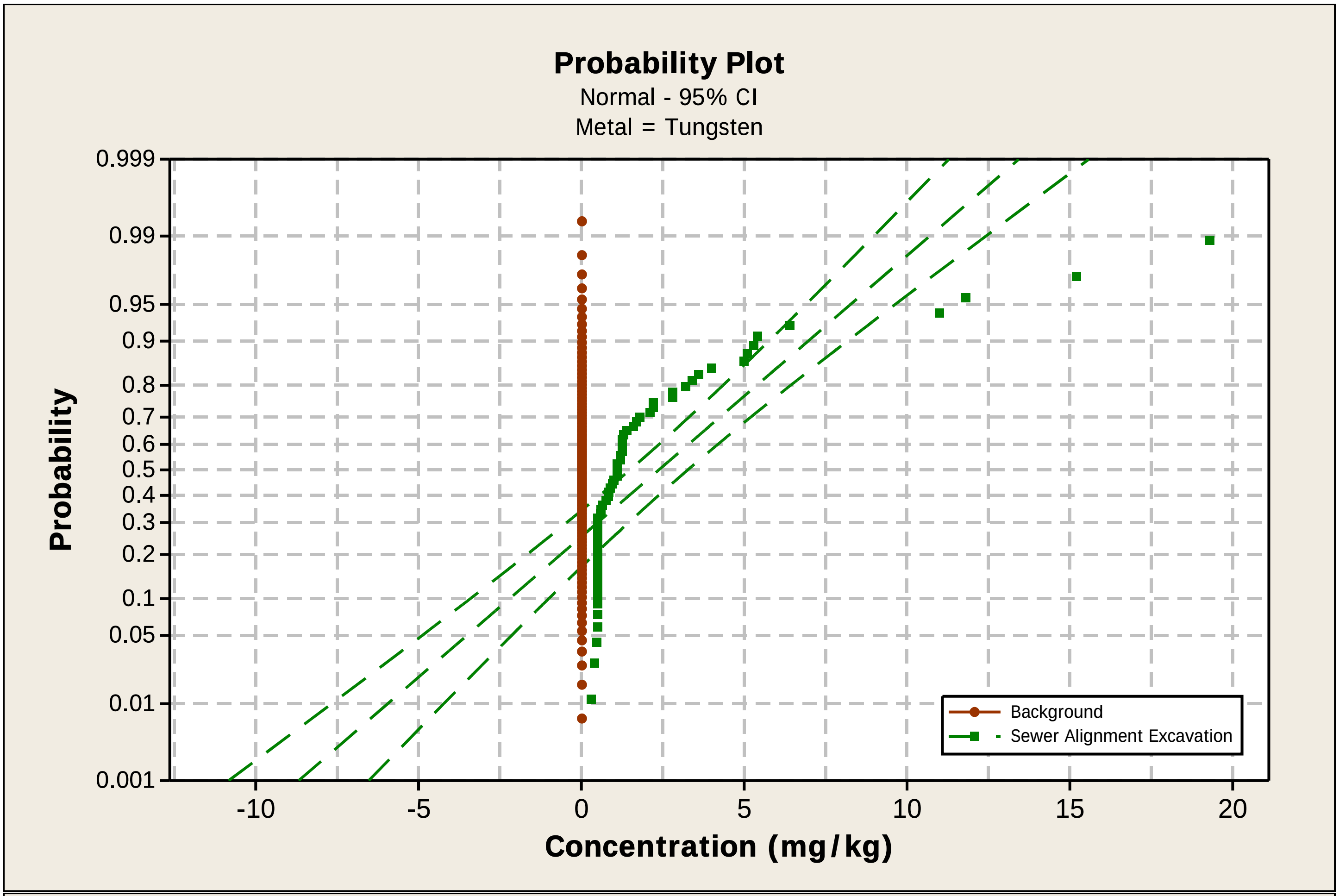
Boxplot
Metal = Tin
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
9
8
7
6
5
4
3
2
1
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



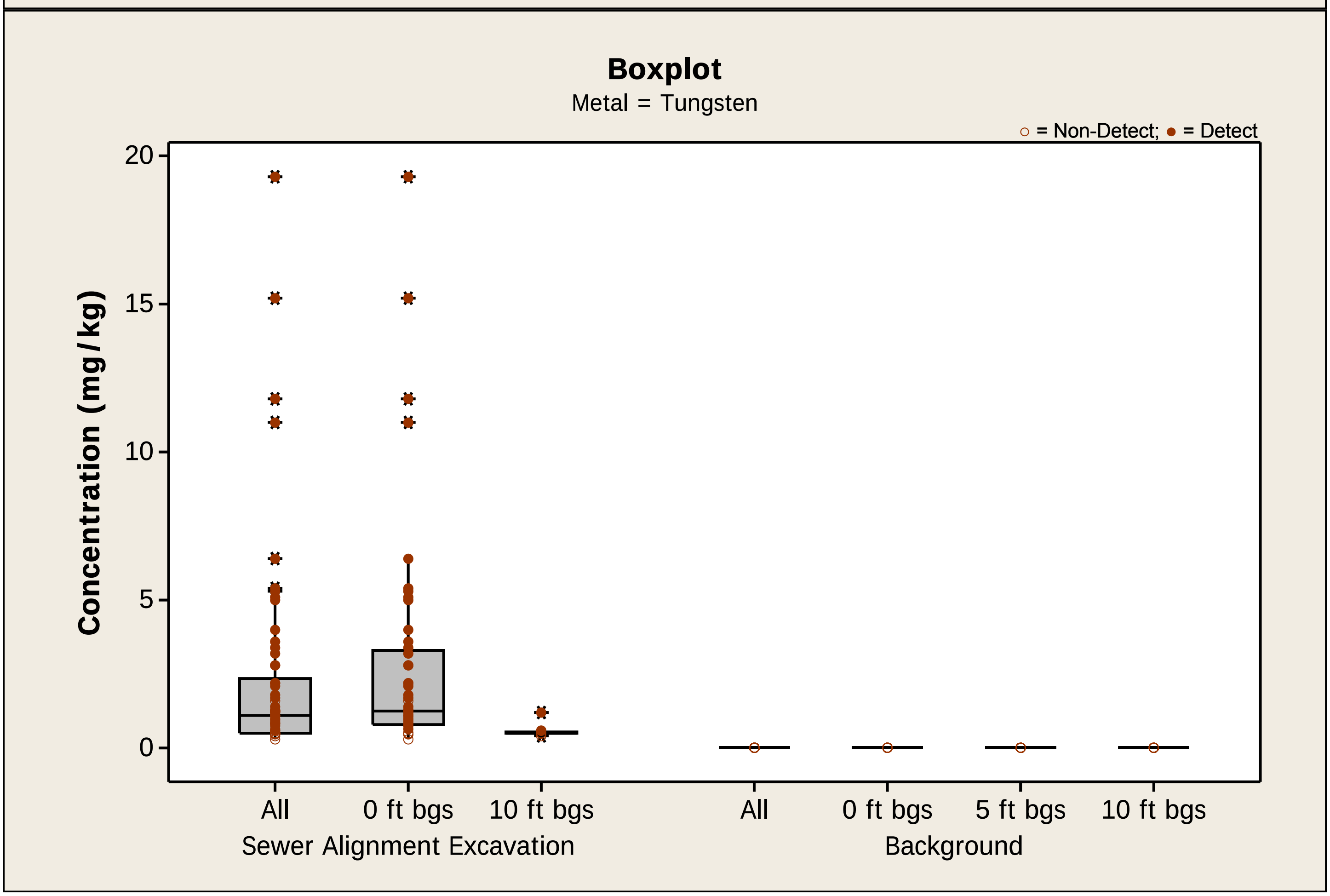
Probability Plot
Normal - 95% CI
Metal = Titanium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-500
0
500
1000
1500
2000
Concentration (mg/kg)
Background
Sewer Alignment Excavation



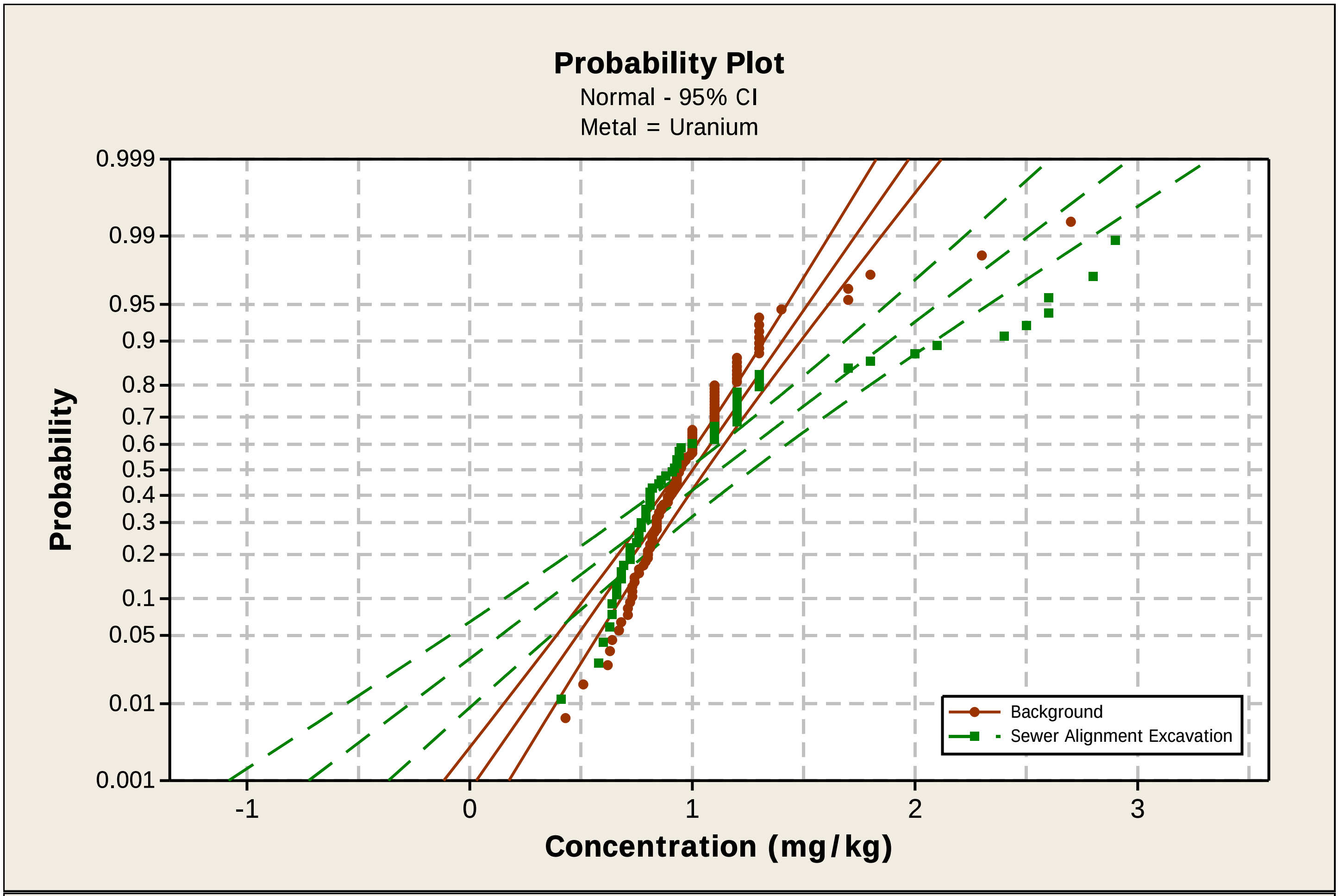
Boxplot
Metal = Titanium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
2000
1500
1000
500
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background

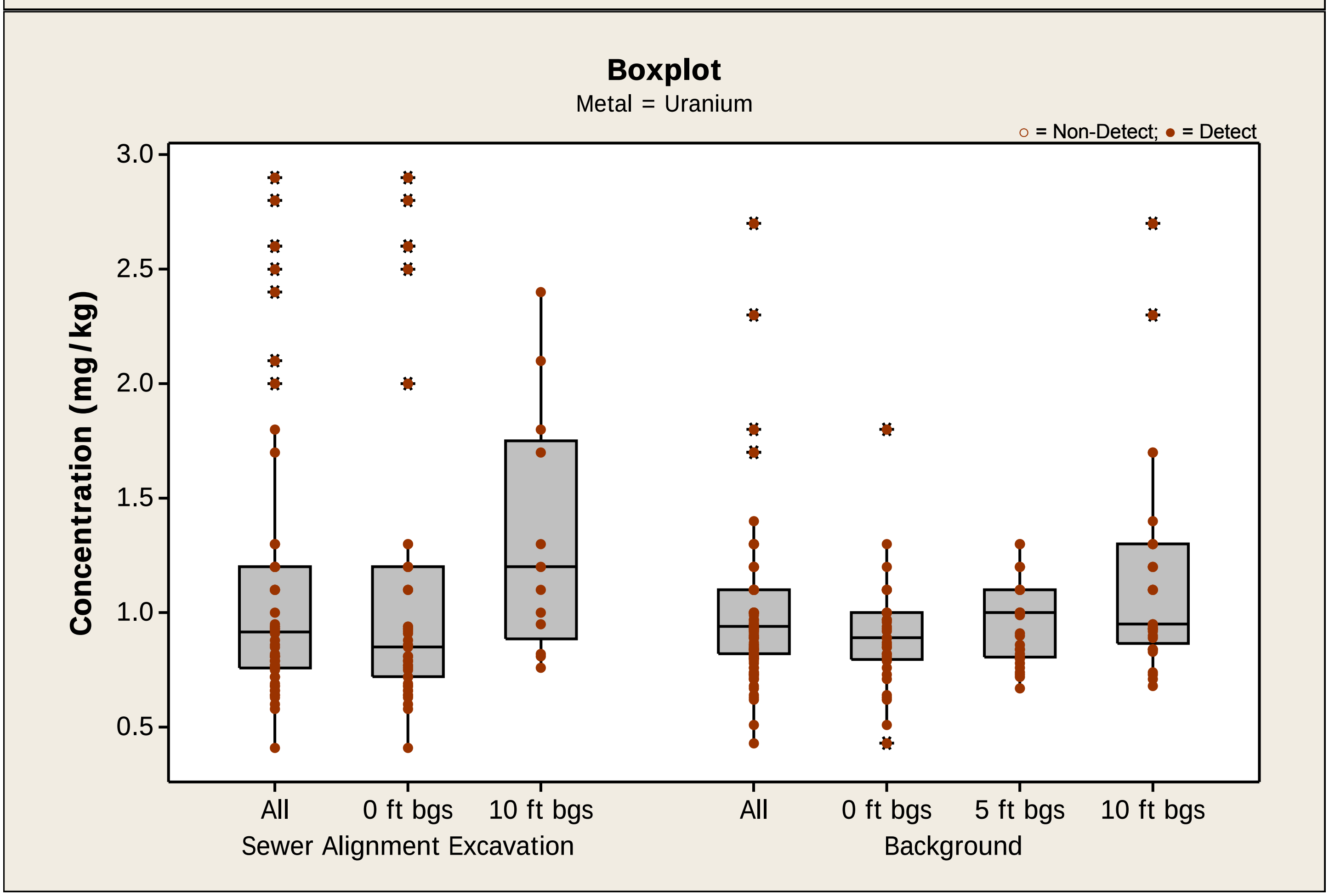


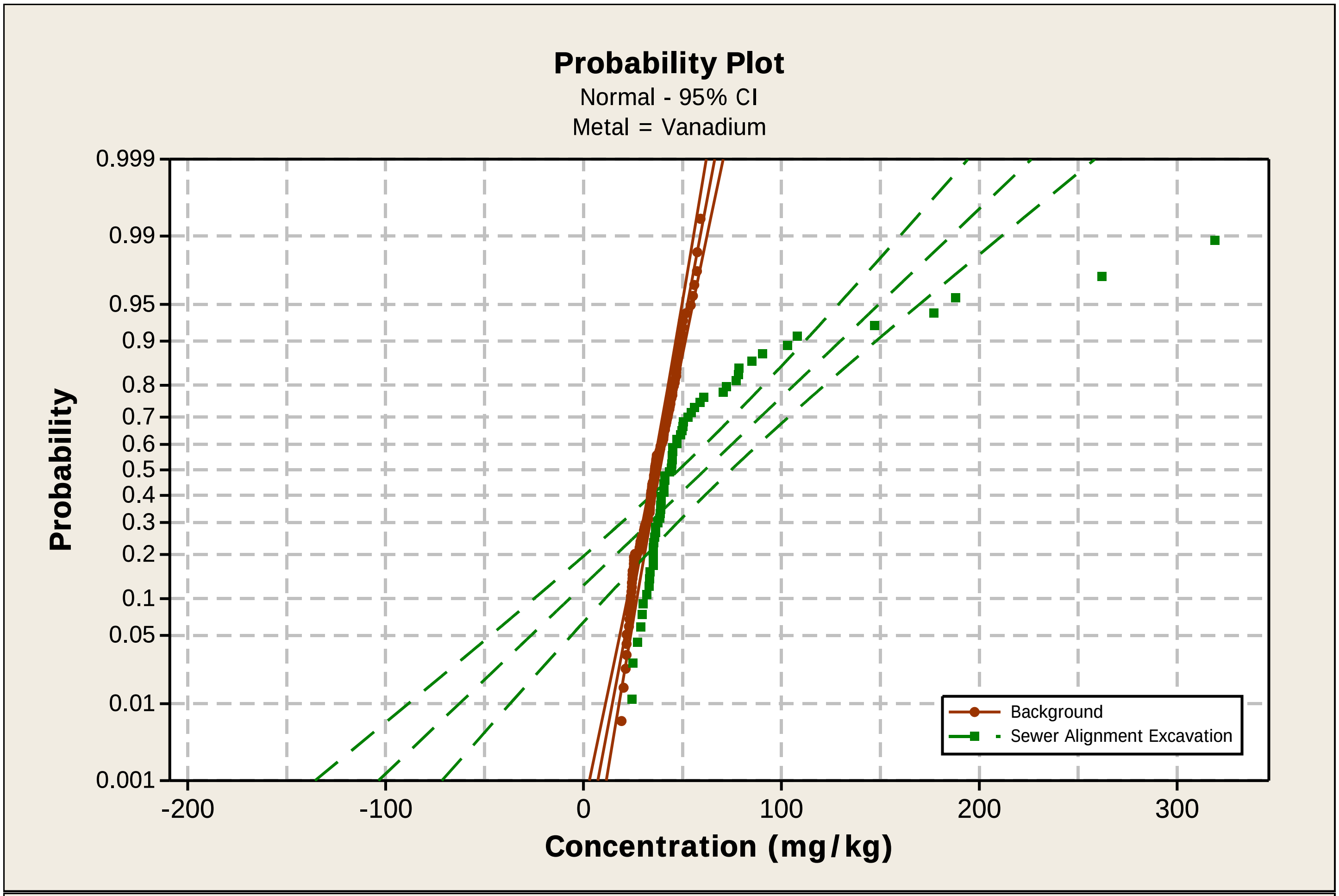
Probability Plot
Normal - 95% CI
Metal = Tungsten
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-10
-5
0
5
10
15
20
Concentration (mg/kg)
Background
Sewer Alignment Excavation



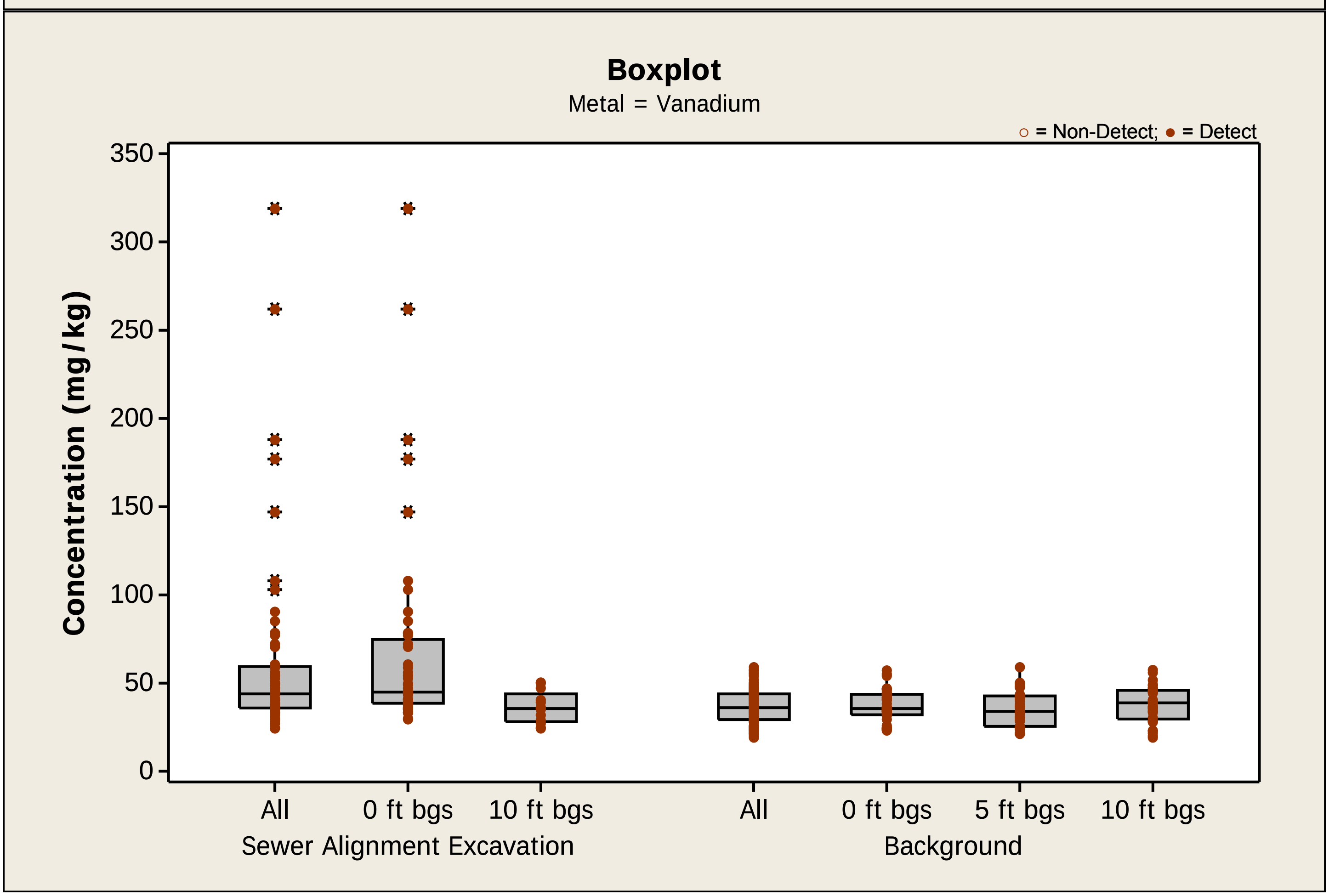
Boxplot
Metal = Tungsten
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
20
15
10
5
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Metal = Uranium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
Concentration (mg/kg)
Background
Sewer Alignment Excavation

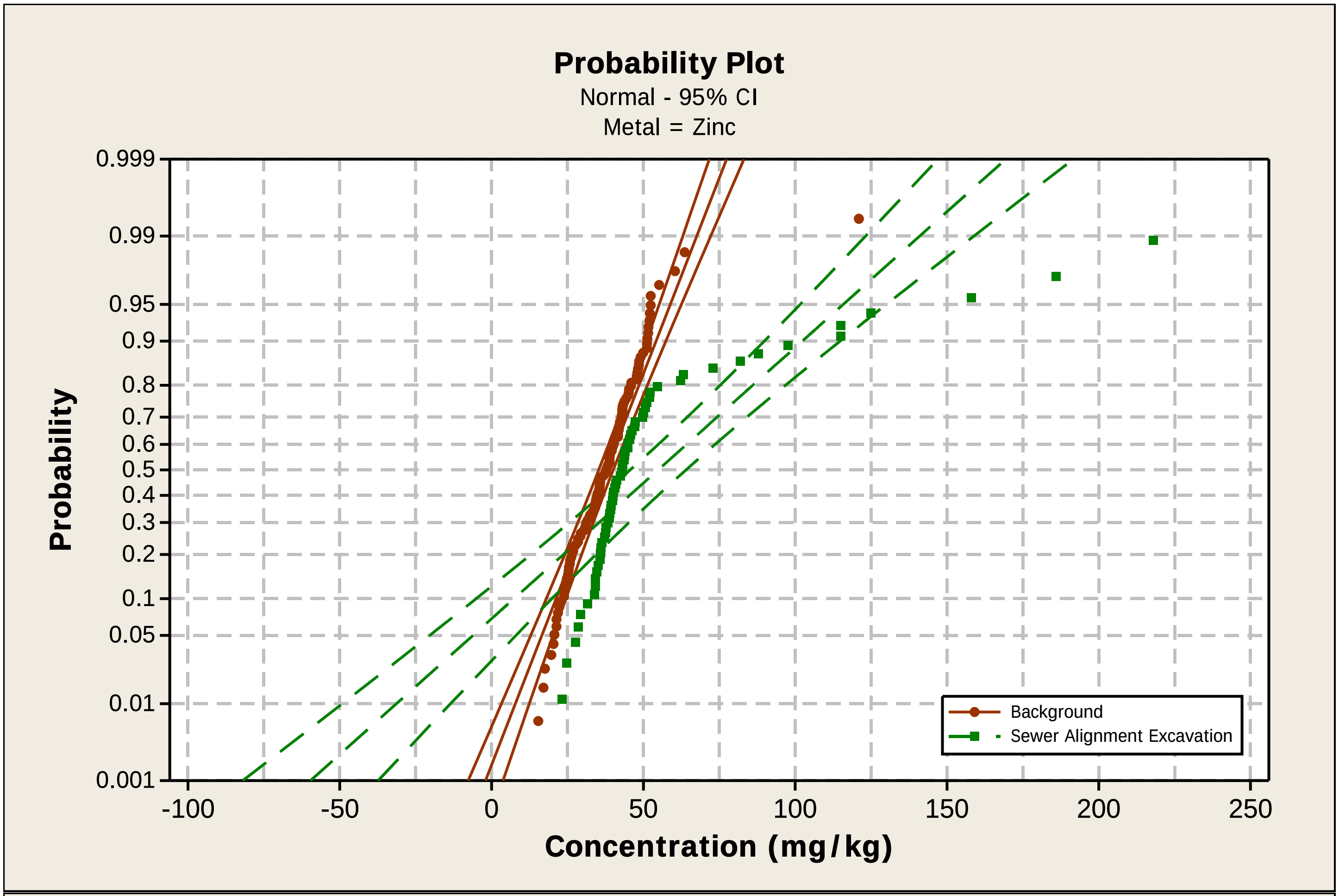

Boxplot
Metal = Uranium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
3.0
2.5
2.0
1.5
1.0
0.5
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



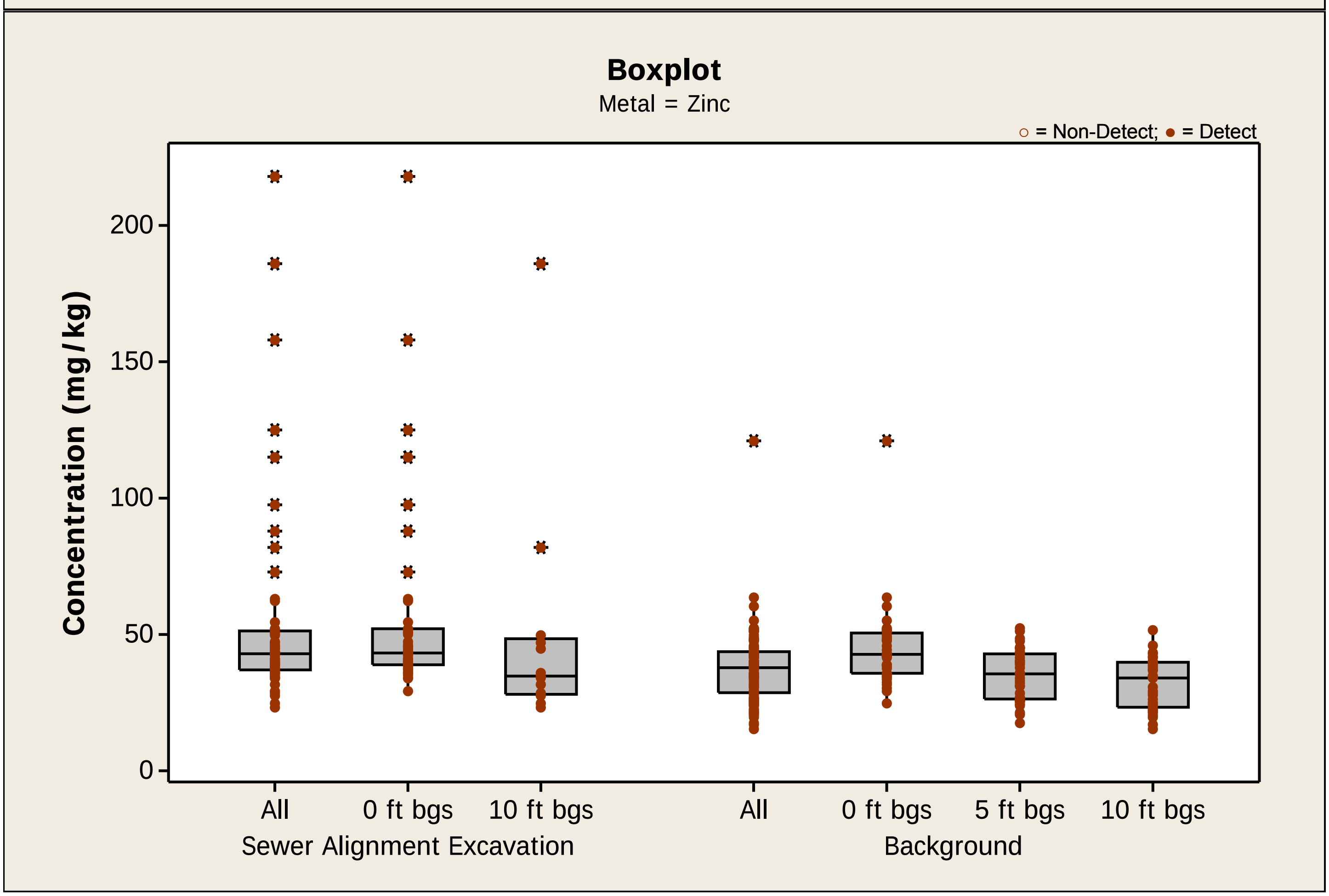
Probability Plot
Normal - 95% CI
Metal = Vanadium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-200
-100
0
100
200
300
Concentration (mg/kg)
Background
Sewer Alignment Excavation



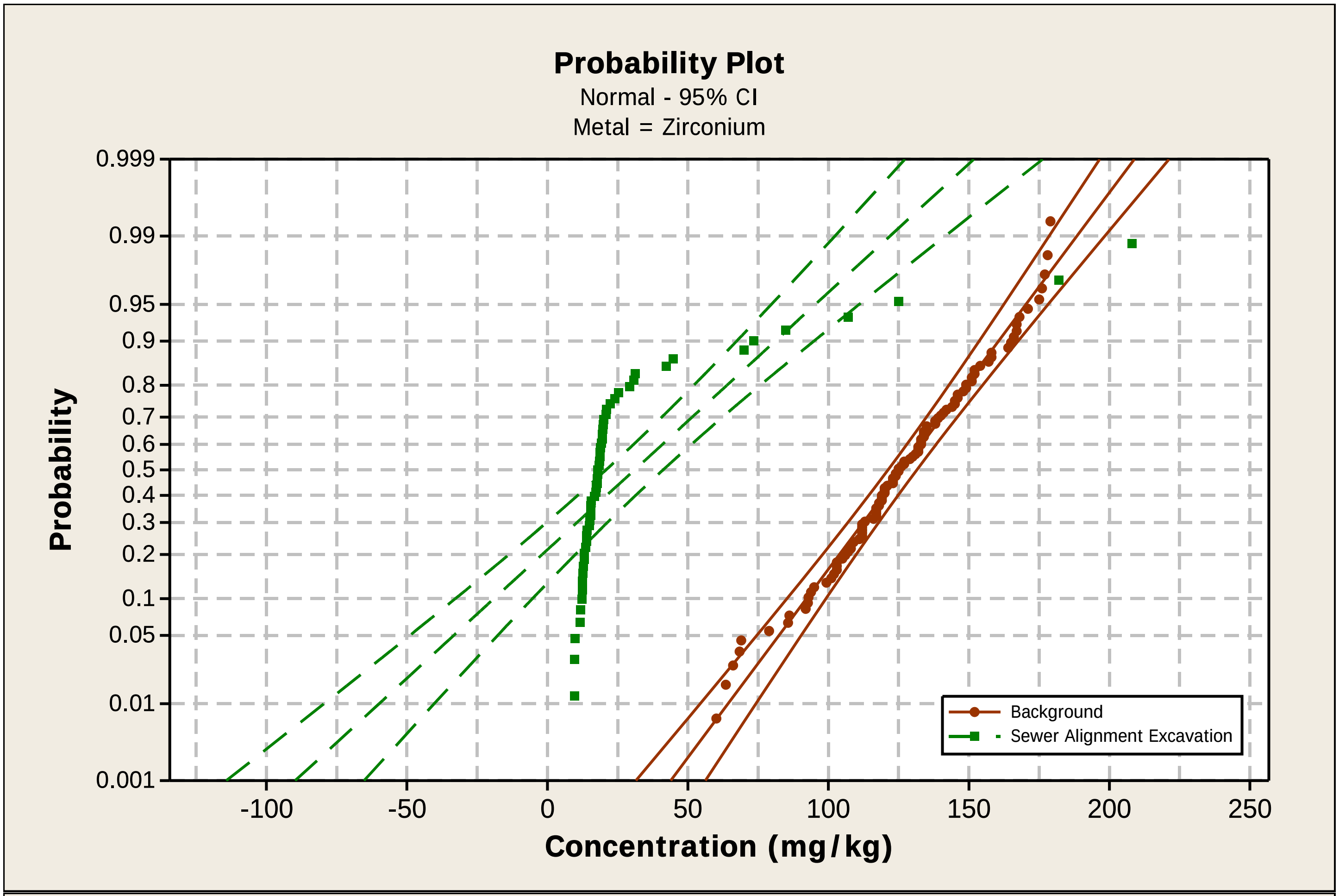
Boxplot
Metal = Vanadium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
350
300
250
200
150
100
50
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



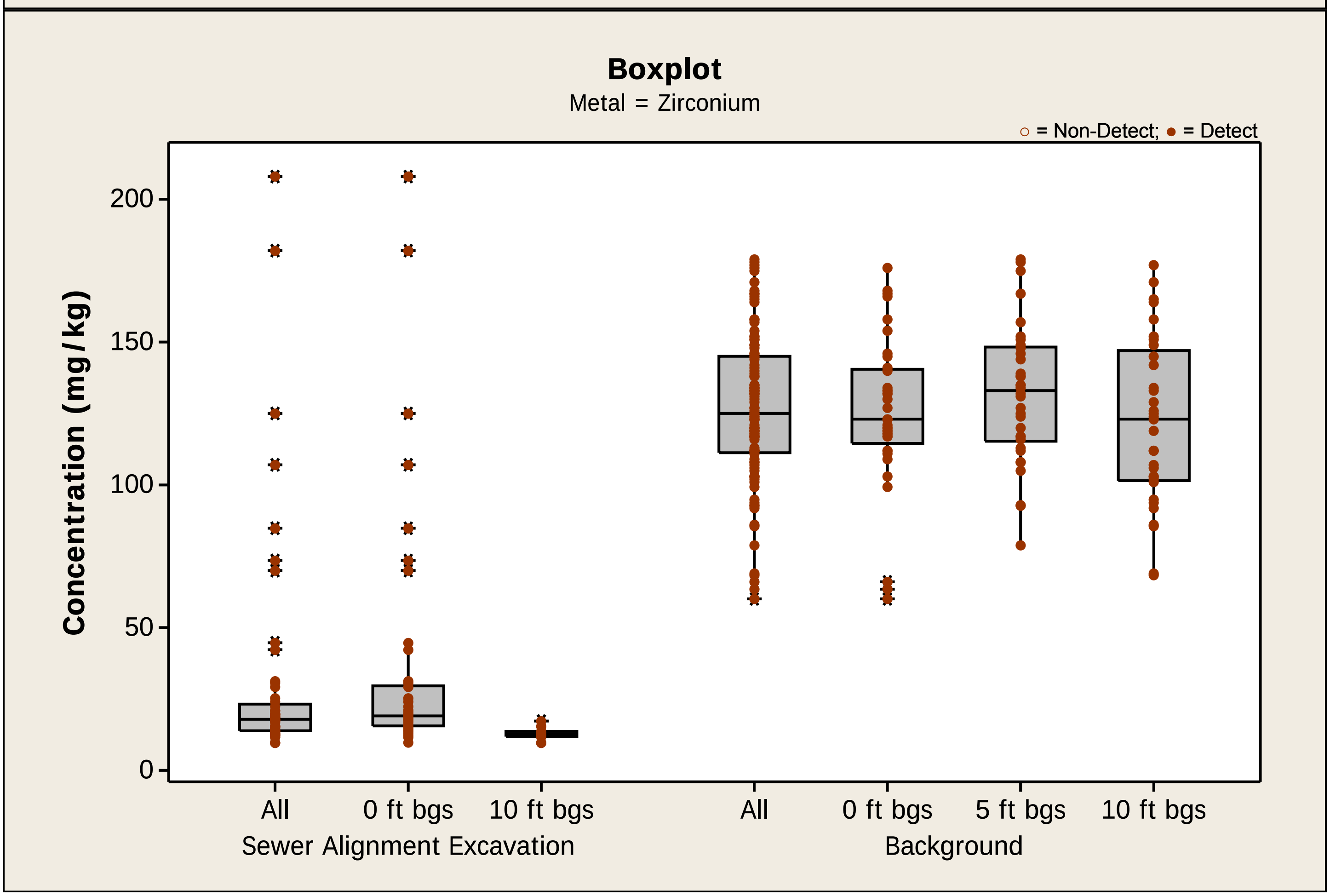
Probability Plot
Normal - 95% CI
Metal = Zinc
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-100
-50
0
50
100
150
200
250
Concentration (mg/kg)
Background
Sewer Alignment Excavation



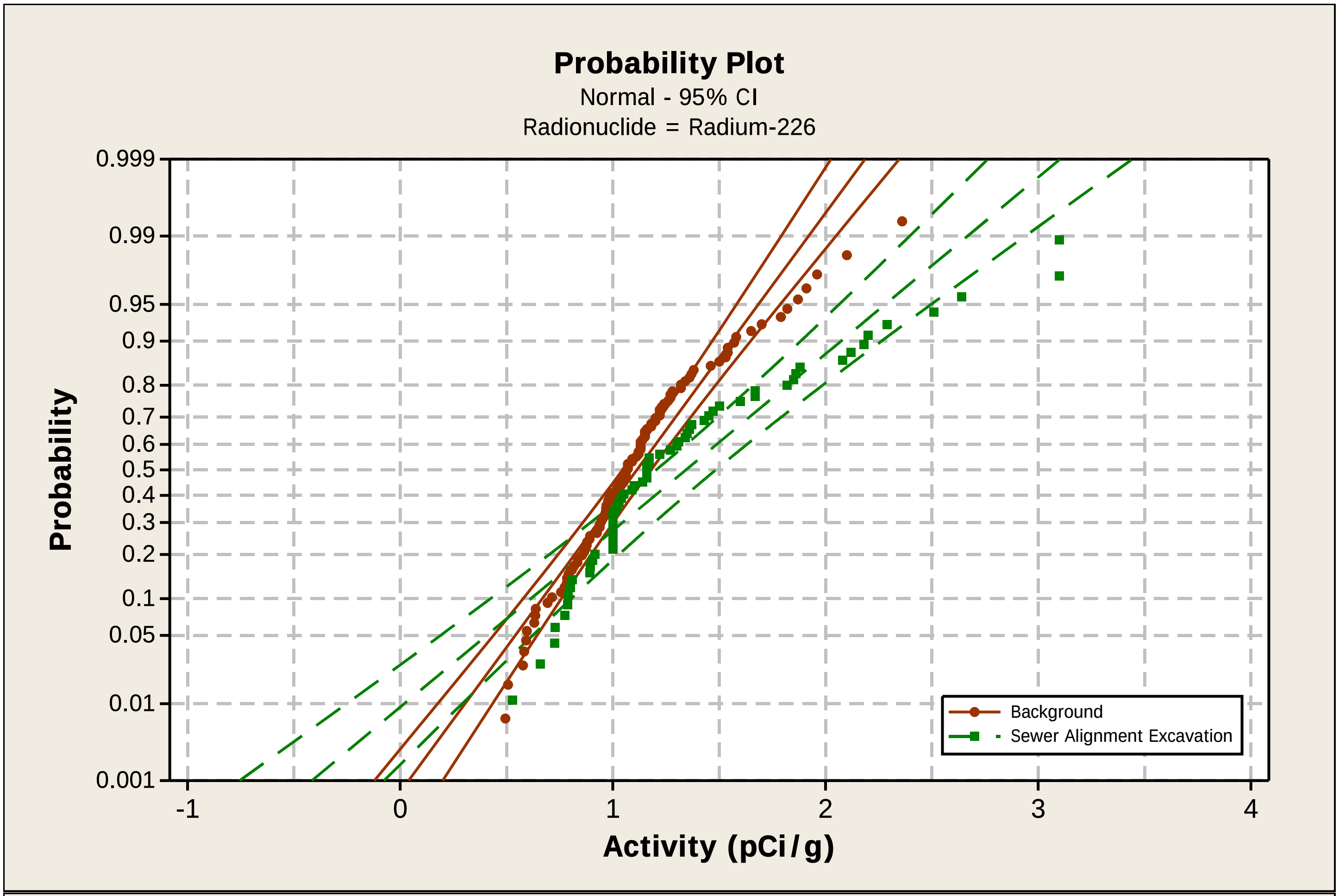
Boxplot
Metal = Zinc
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
200
150
100
50
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background

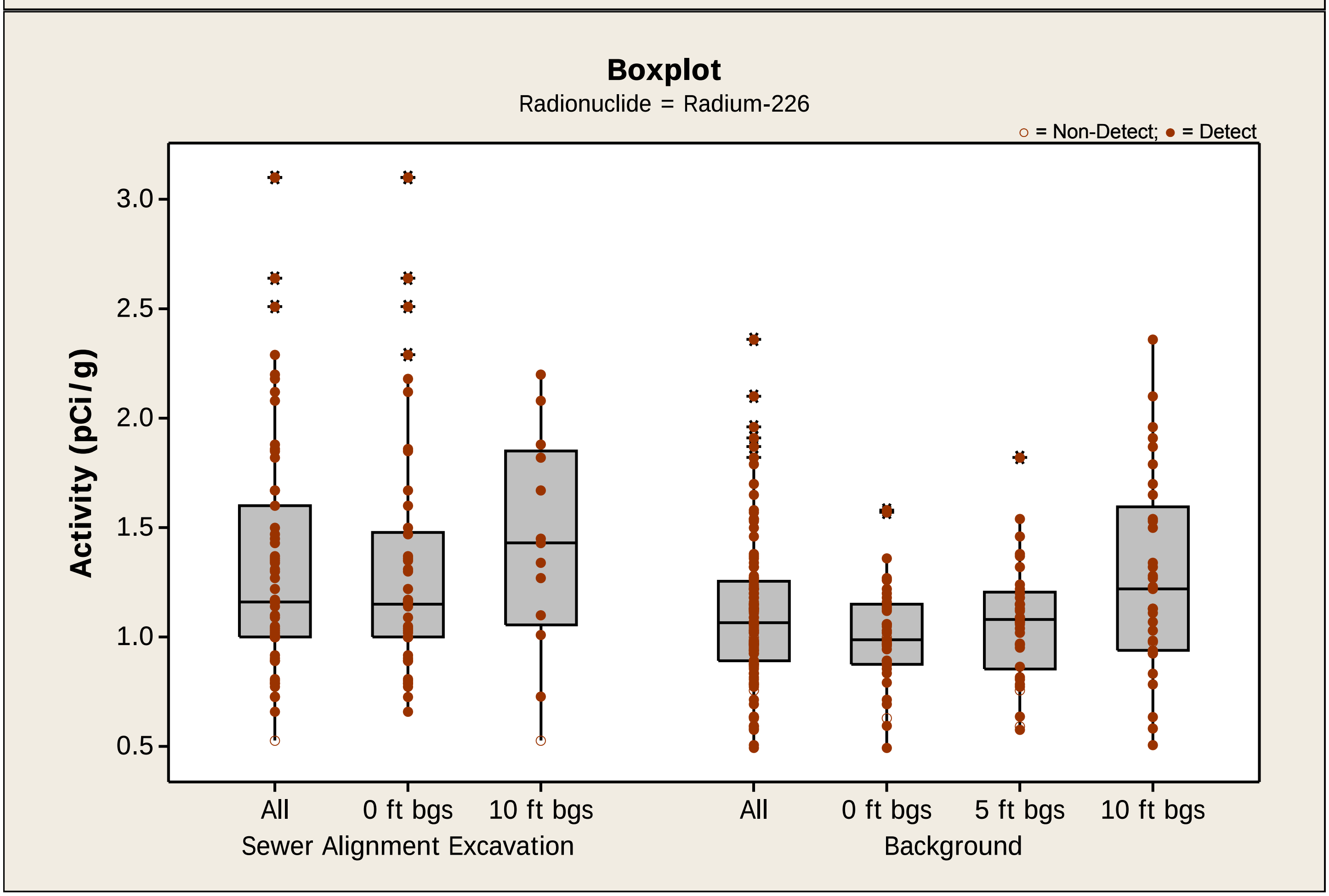


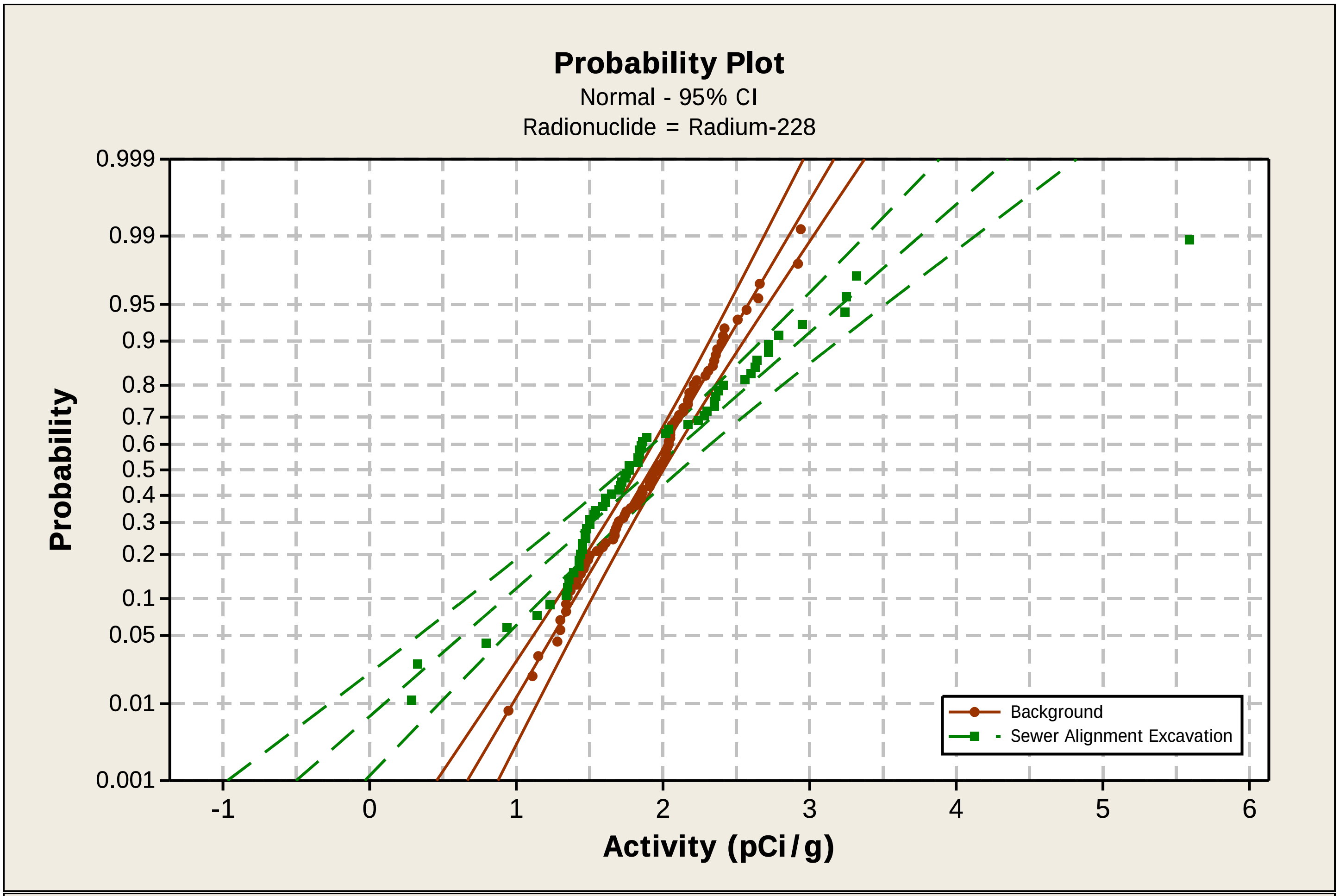
Probability Plot
Normal - 95% CI
Metal = Zirconium
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-100
-50
0
50
100
150
200
250
Concentration (mg/kg)
Background
Sewer Alignment Excavation



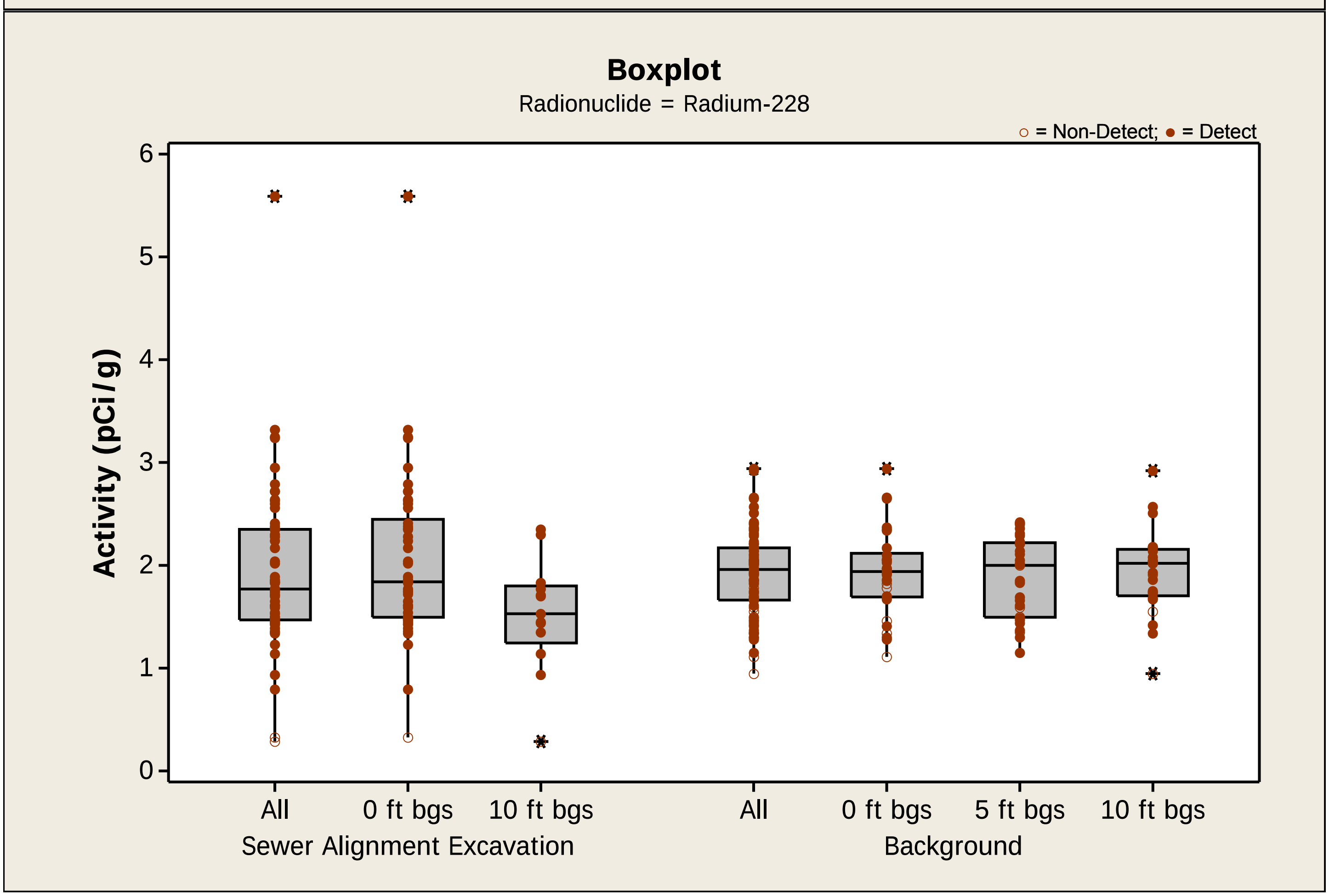
Boxplot
Metal = Zirconium
○ = Non-Detect; ● = Detect
Concentration (mg/kg)
200
150
100
50
0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background


Probability Plot
Normal - 95% CI
Radionuclide = Radium-226
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
4
Activity (pCi/g)
Background
Sewer Alignment Excavation

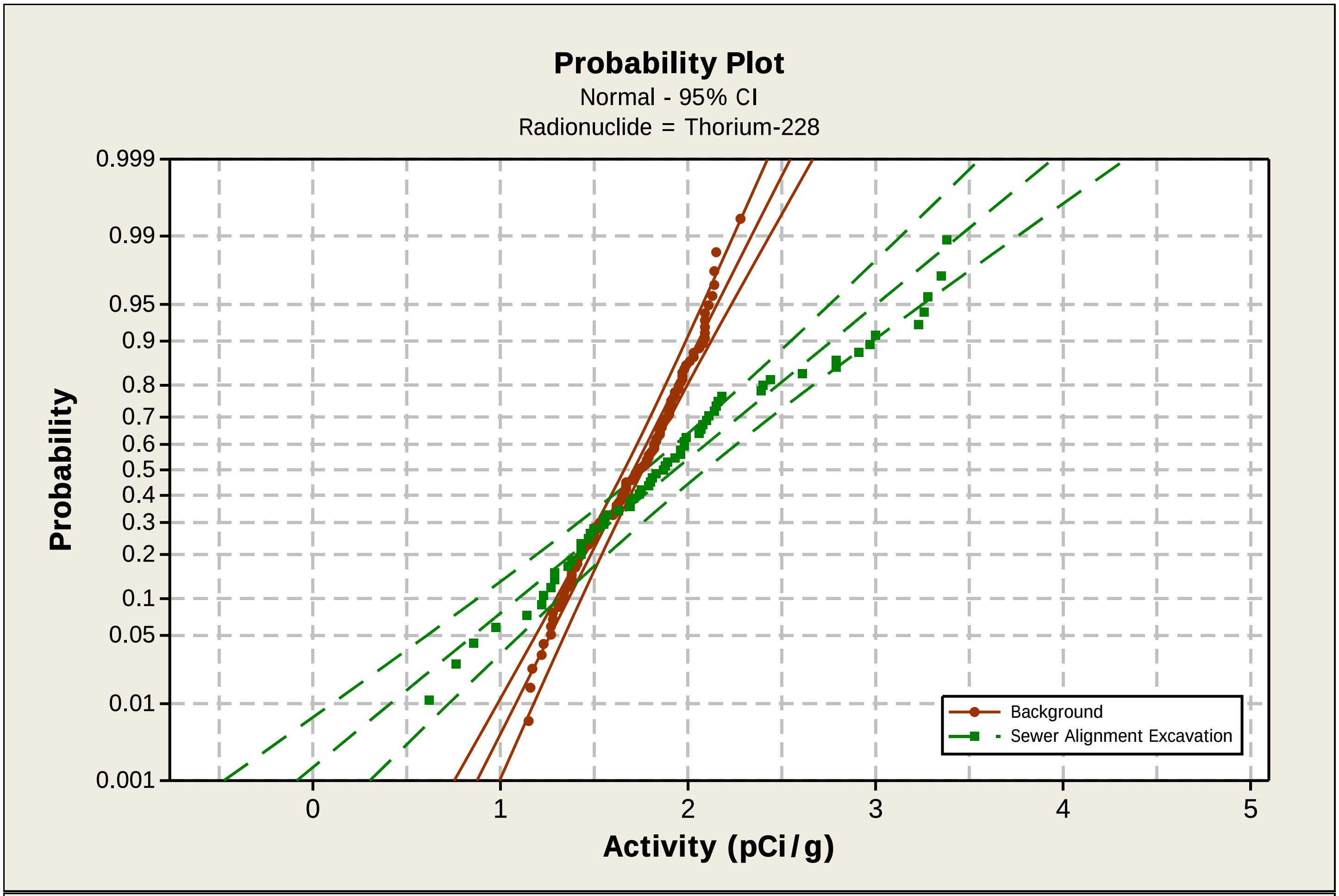

Boxplot
Radionuclide = Radium-226
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.0
2.5
2.0
1.5
1.0
0.5
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



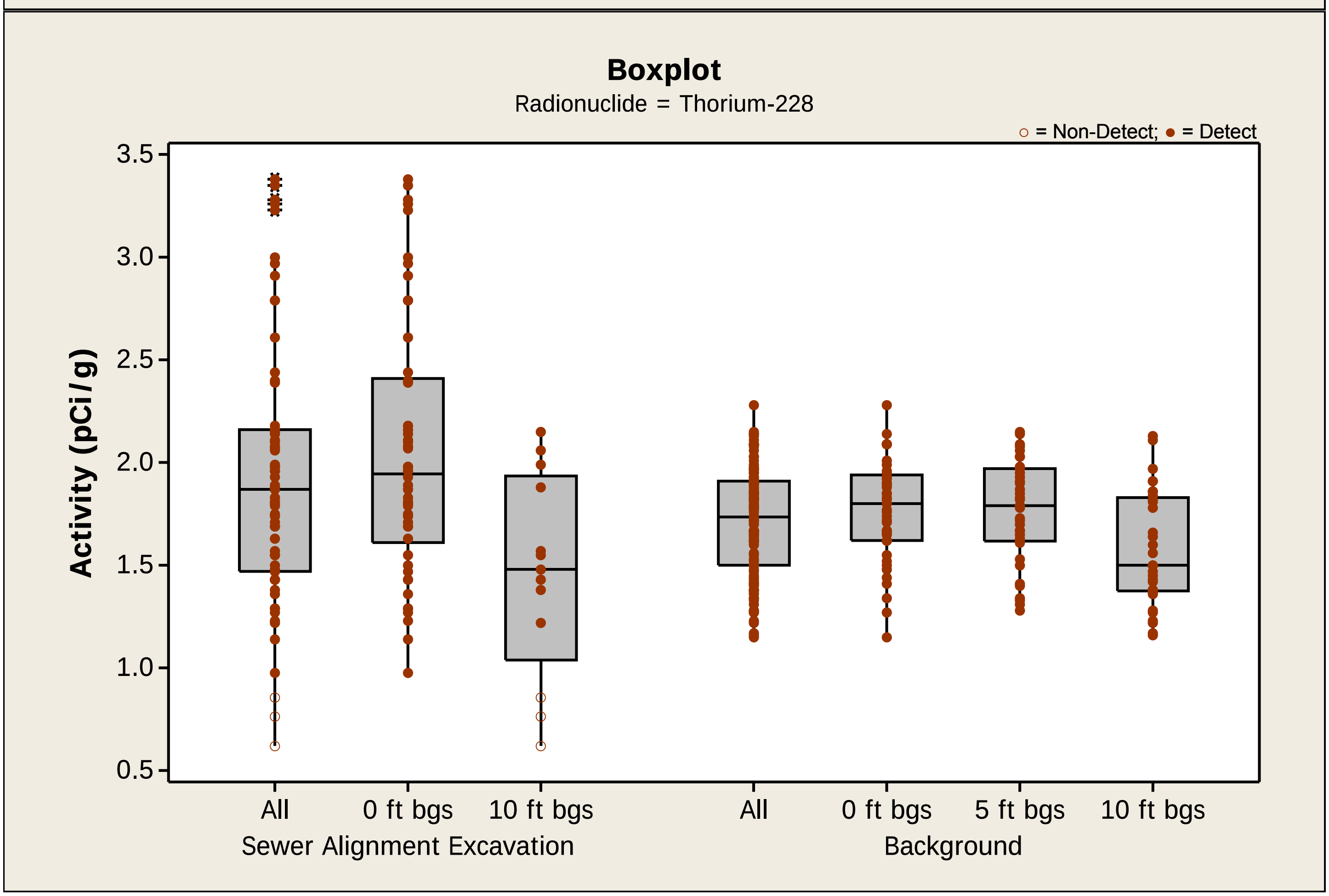
Probability Plot
Normal - 95% CI
Radionuclide = Radium-228
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
4
5
6
Activity (pCi/g)
Background
Sewer Alignment Excavation



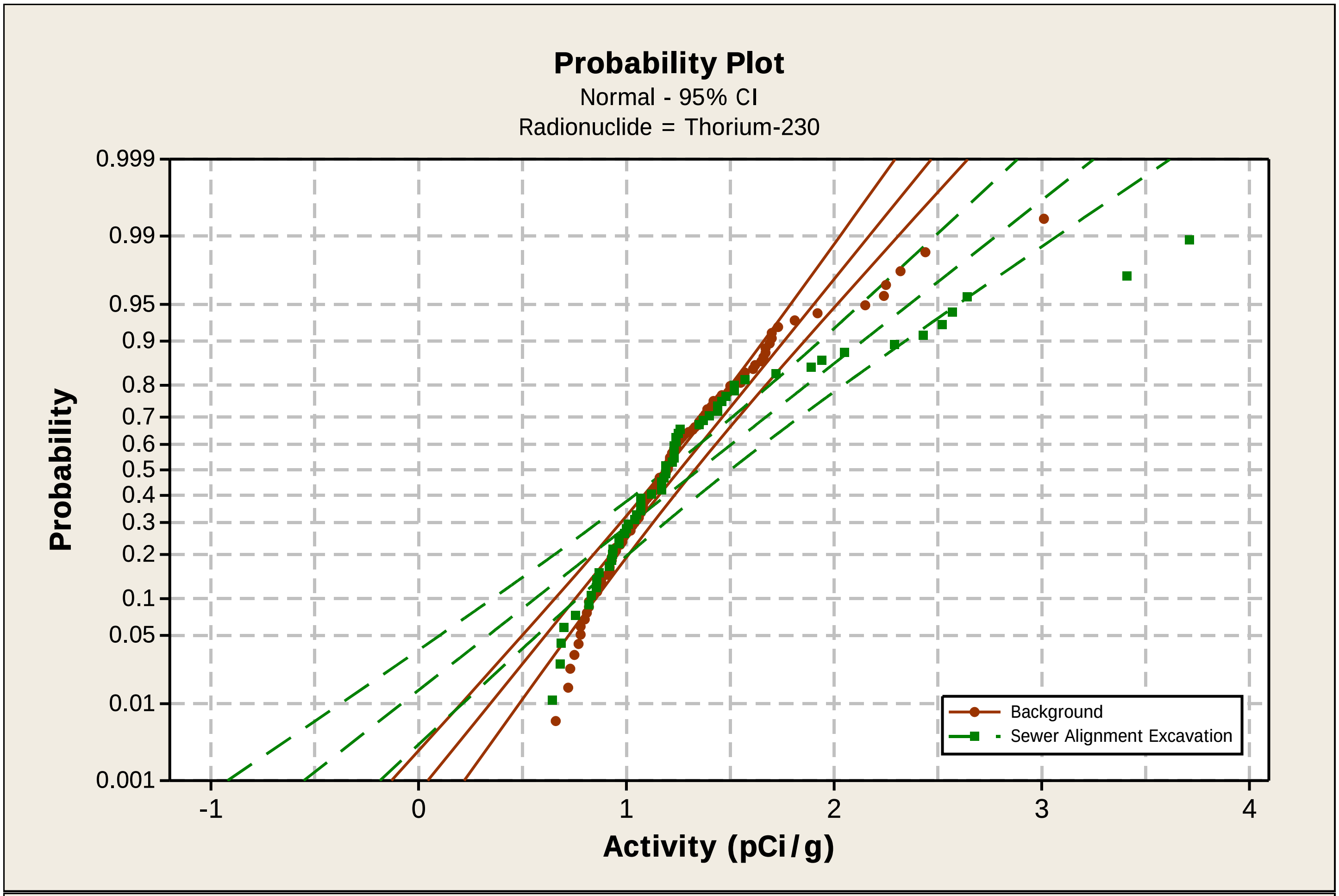
Boxplot
Radionuclide = Radium-228
○ = Non-Detect; ● = Detect
Activity (pCi/g)
6
5
4
3
2
1
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



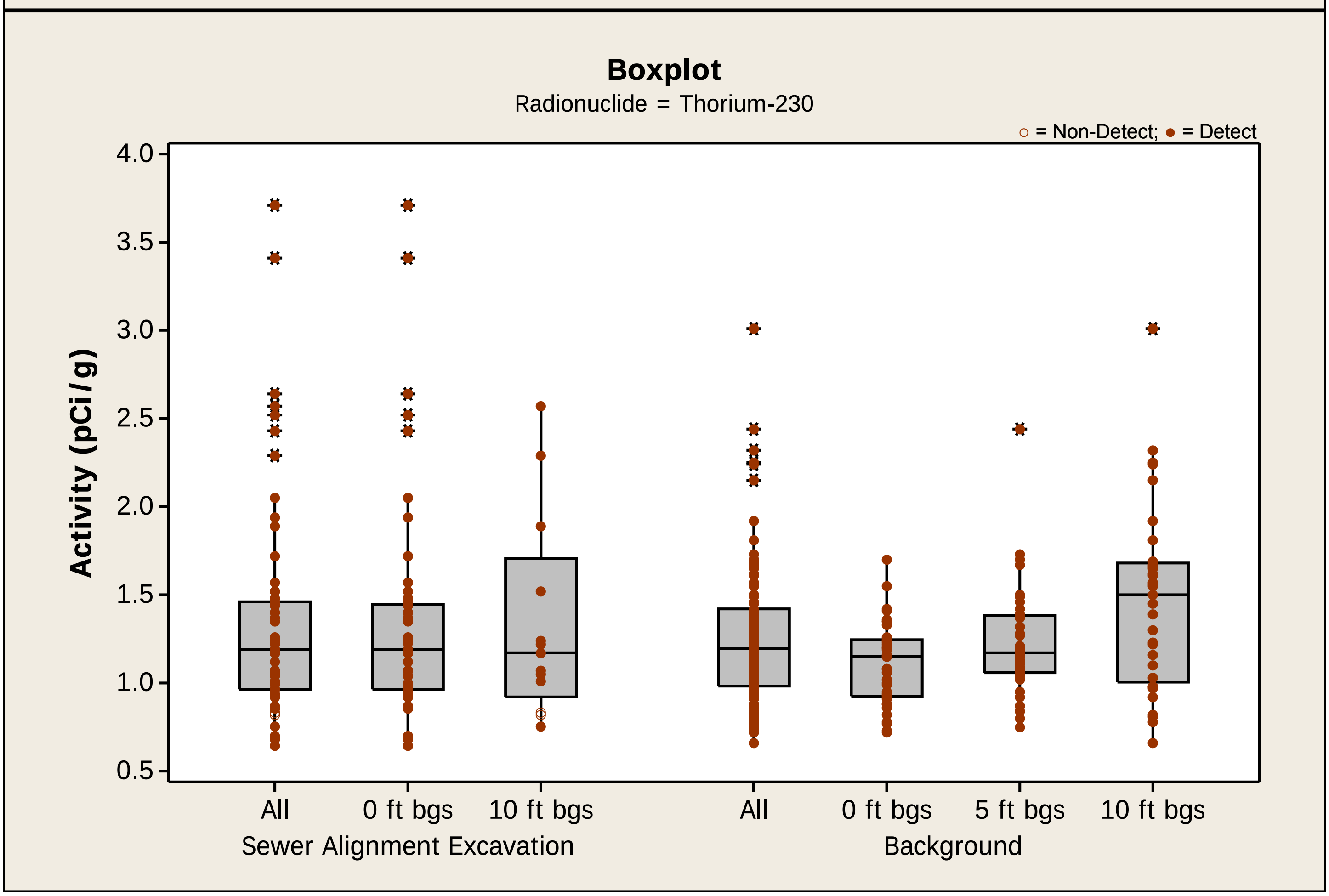
Probability Plot
Normal - 95% CI
Radionuclide = Thorium-228
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0
1
2
3
4
5
Activity (pCi/g)
Background
Sewer Alignment Excavation



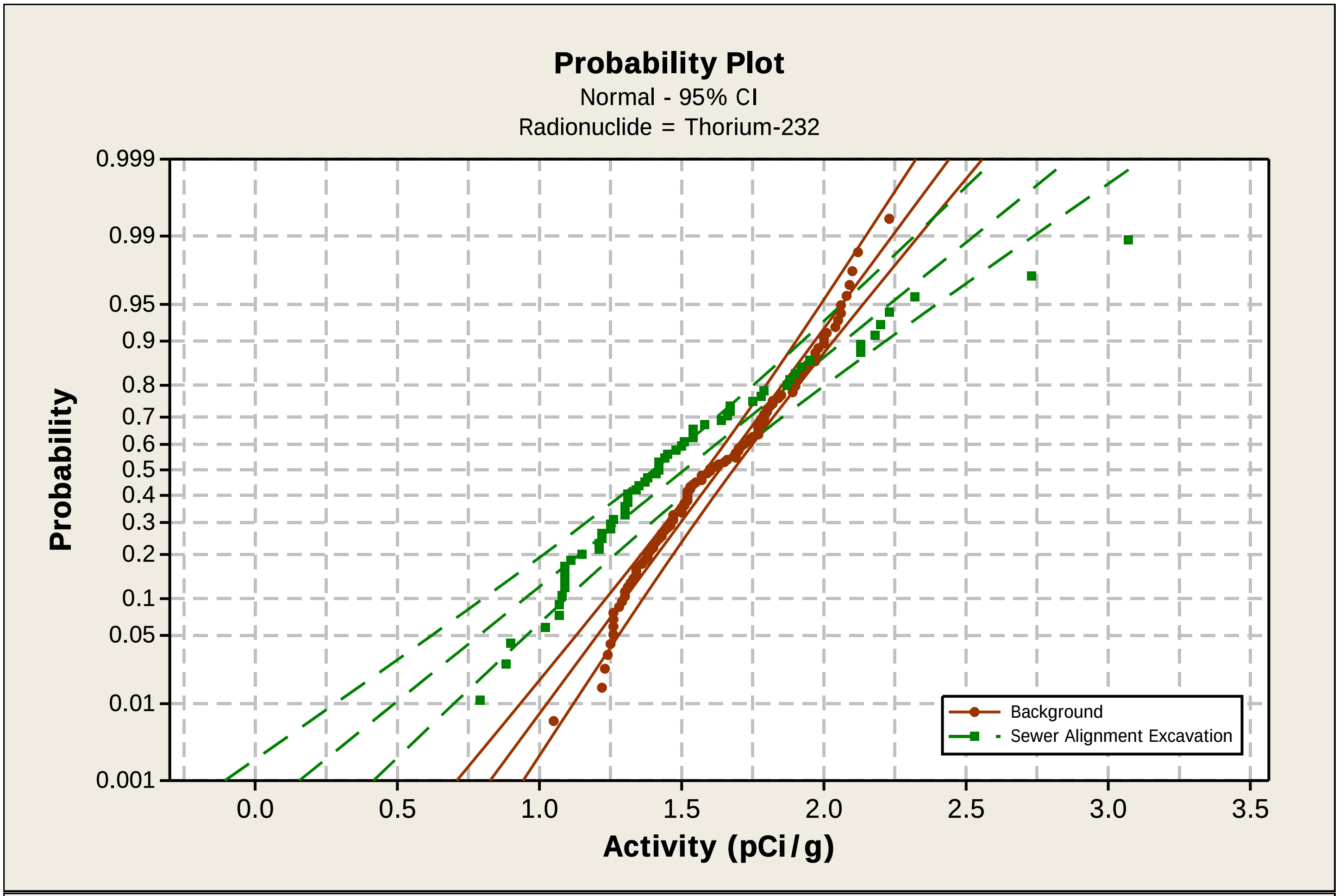
Boxplot
Radionuclide = Thorium-228
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background

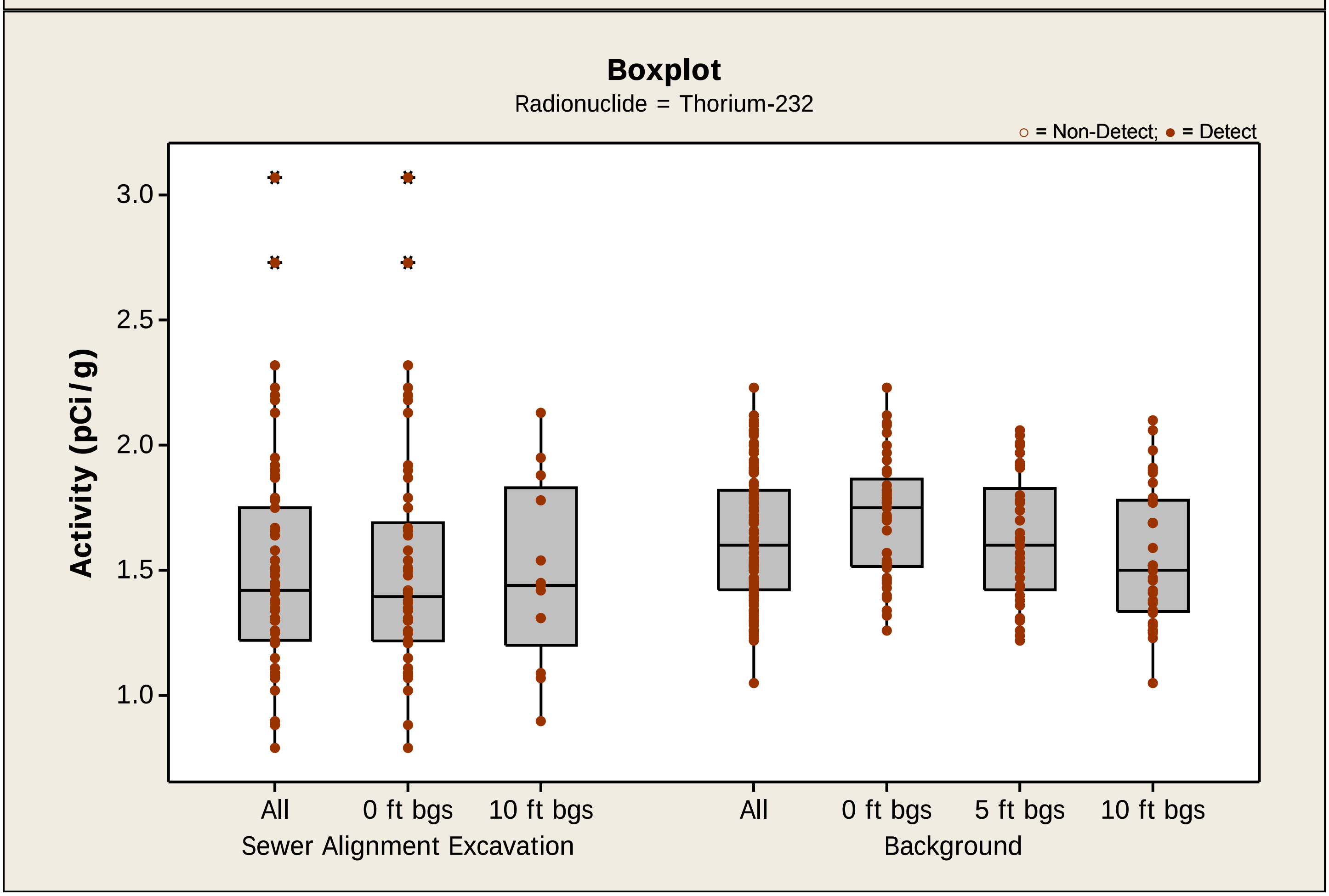


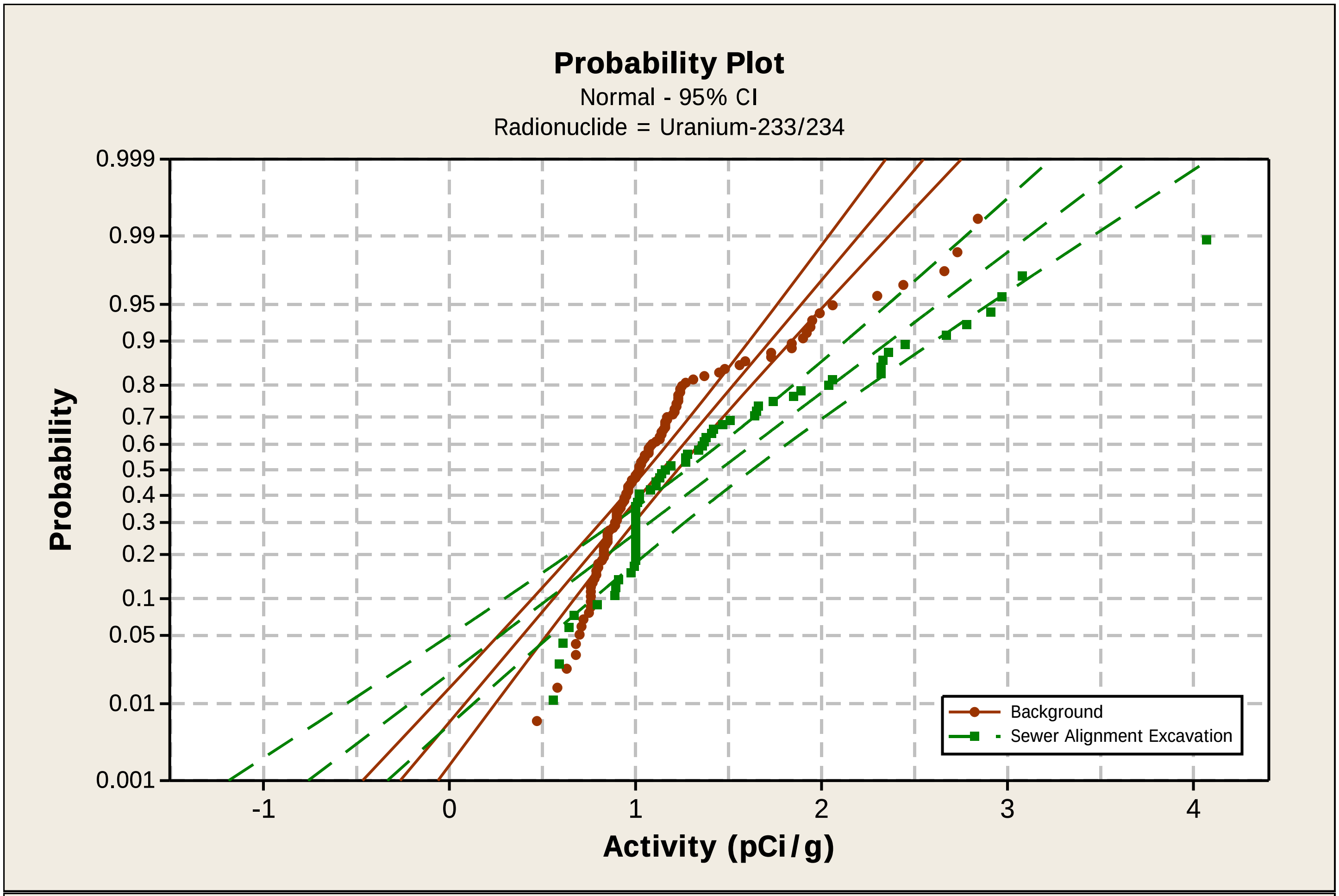
Probability Plot
Normal - 95% CI
Radionuclide = Thorium-230
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
4
Activity (pCi/g)
Background
Sewer Alignment Excavation



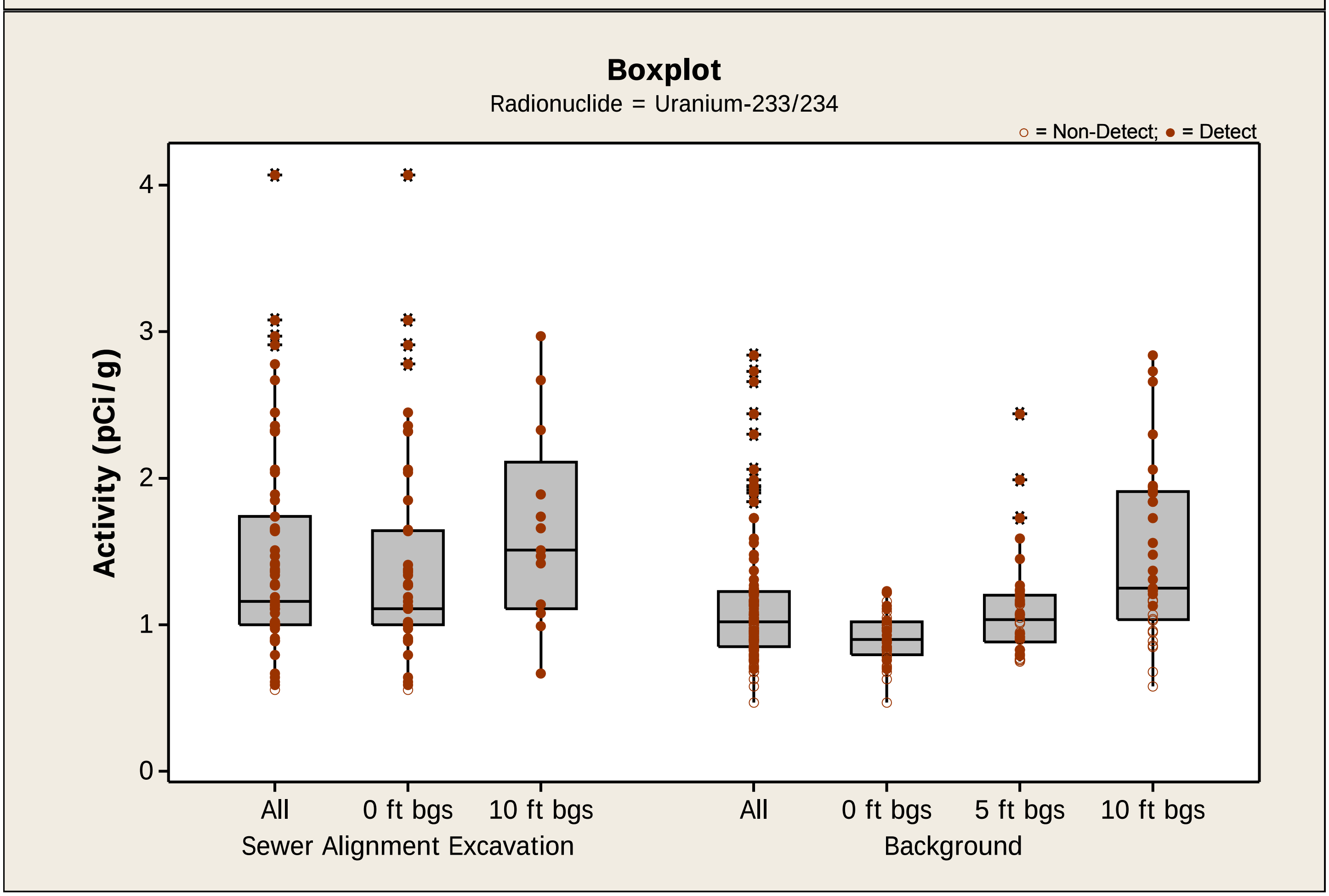
Boxplot
Radionuclide = Thorium-230
○ = Non-Detect; ● = Detect
Activity (pCi/g)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background


Probability Plot
Normal - 95% CI
Radionuclide = Thorium-232
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Activity (pCi/g)
Background
Sewer Alignment Excavation

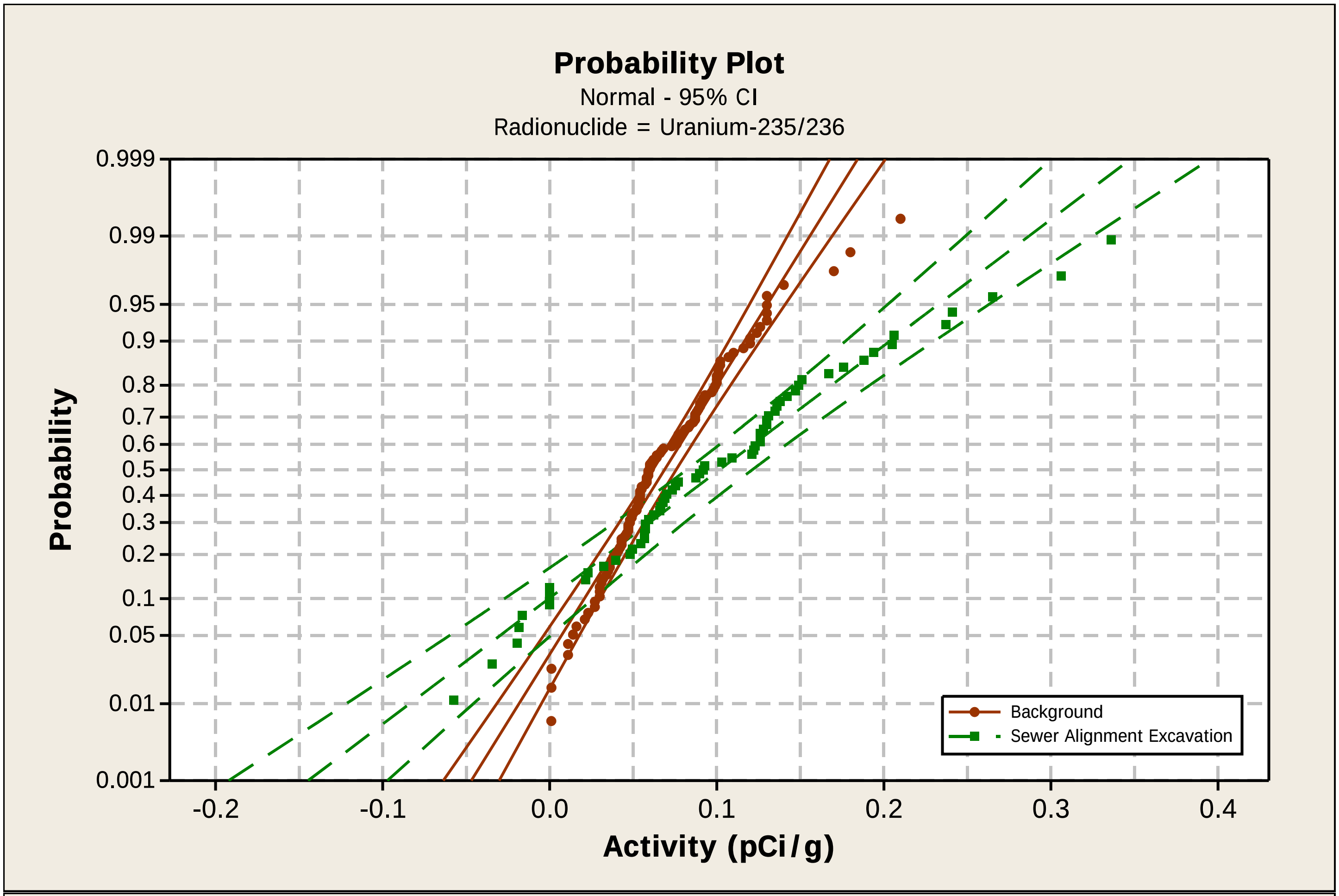

Boxplot
Radionuclide = Thorium-232
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.0
2.5
2.0
1.5
1.0
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background



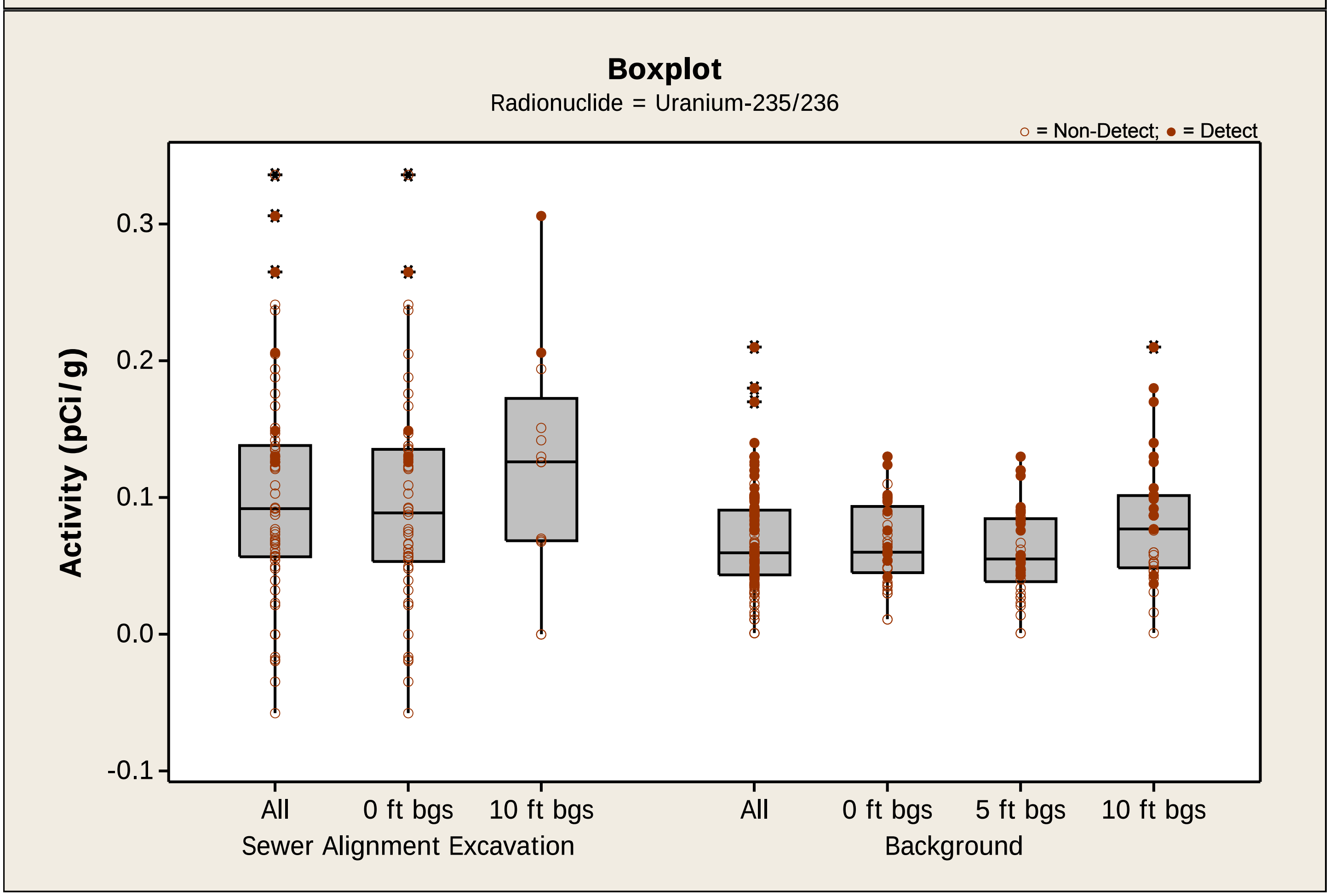
Probability Plot
Normal - 95% CI
Radionuclide = Uranium-233/234
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
4
Activity (pCi/g)
Background
Sewer Alignment Excavation



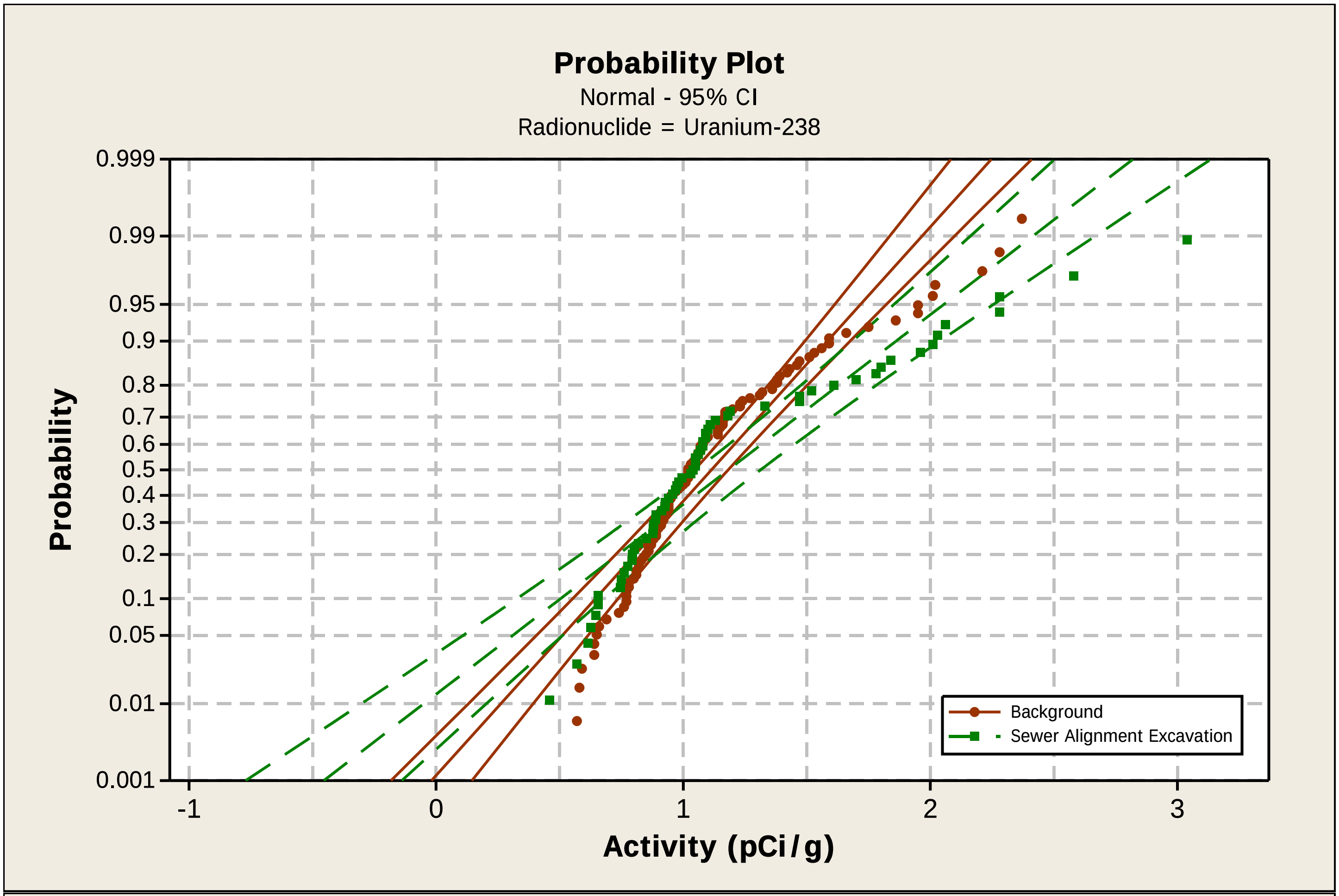
Boxplot
Radionuclide = Uranium-233/234
○ = Non-Detect; ● = Detect
Activity (pCi/g)
4
3
2
1
0
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



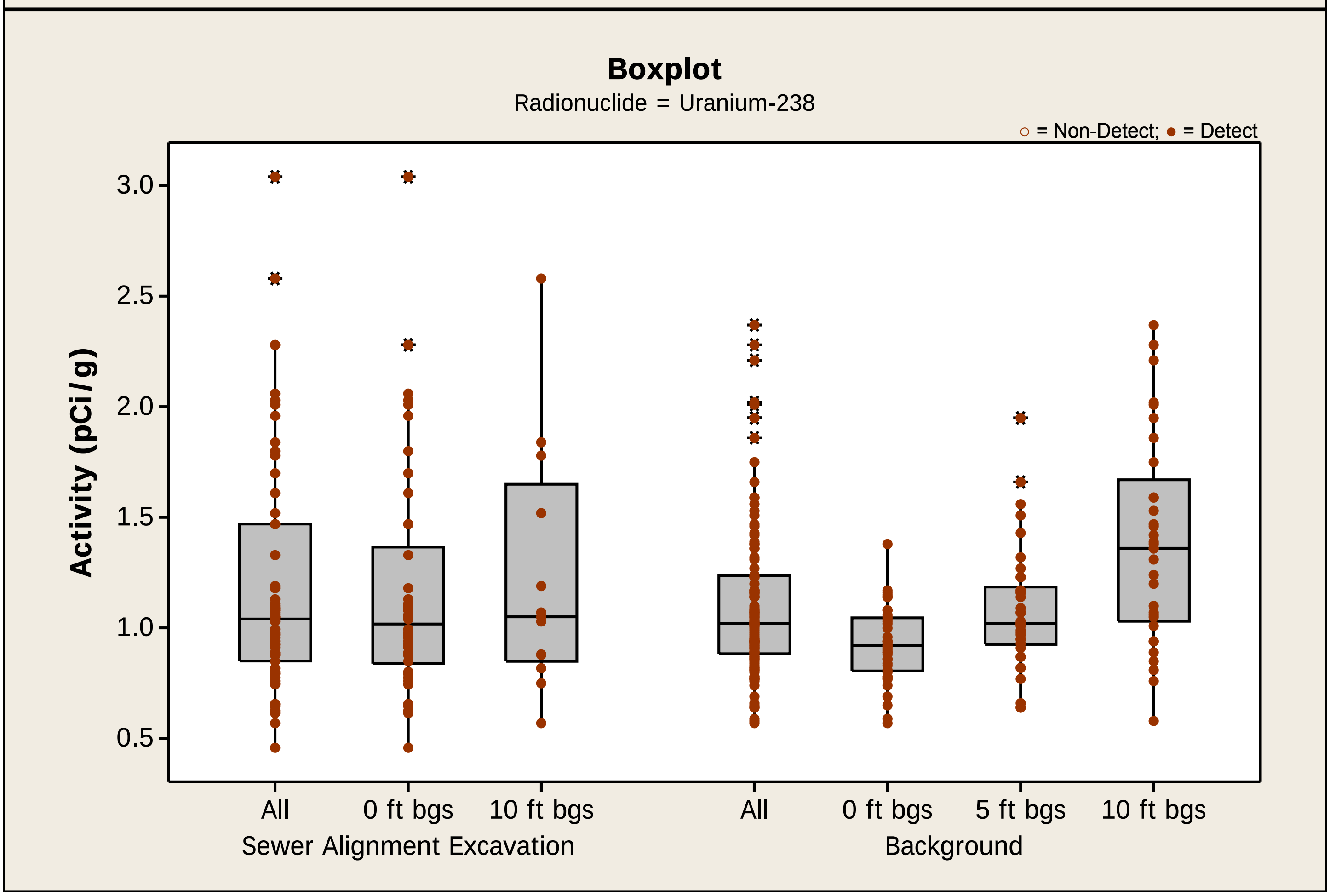
Probability Plot
Normal - 95% CI
Radionuclide = Uranium-235/236
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-0.2
-0.1
0.0
0.1
0.2
0.3
0.4
Activity (pCi/g)
Background
Sewer Alignment Excavation



Boxplot
Radionuclide = Uranium-235/236
○ = Non-Detect; ● = Detect
Activity (pCi/g)
0.3
0.2
0.1
0.0
-0.1
All
0 ft bgs
10 ft bgs
Sewer Alignment Excavation
All
0 ft bgs
5 ft bgs
10 ft bgs
Background



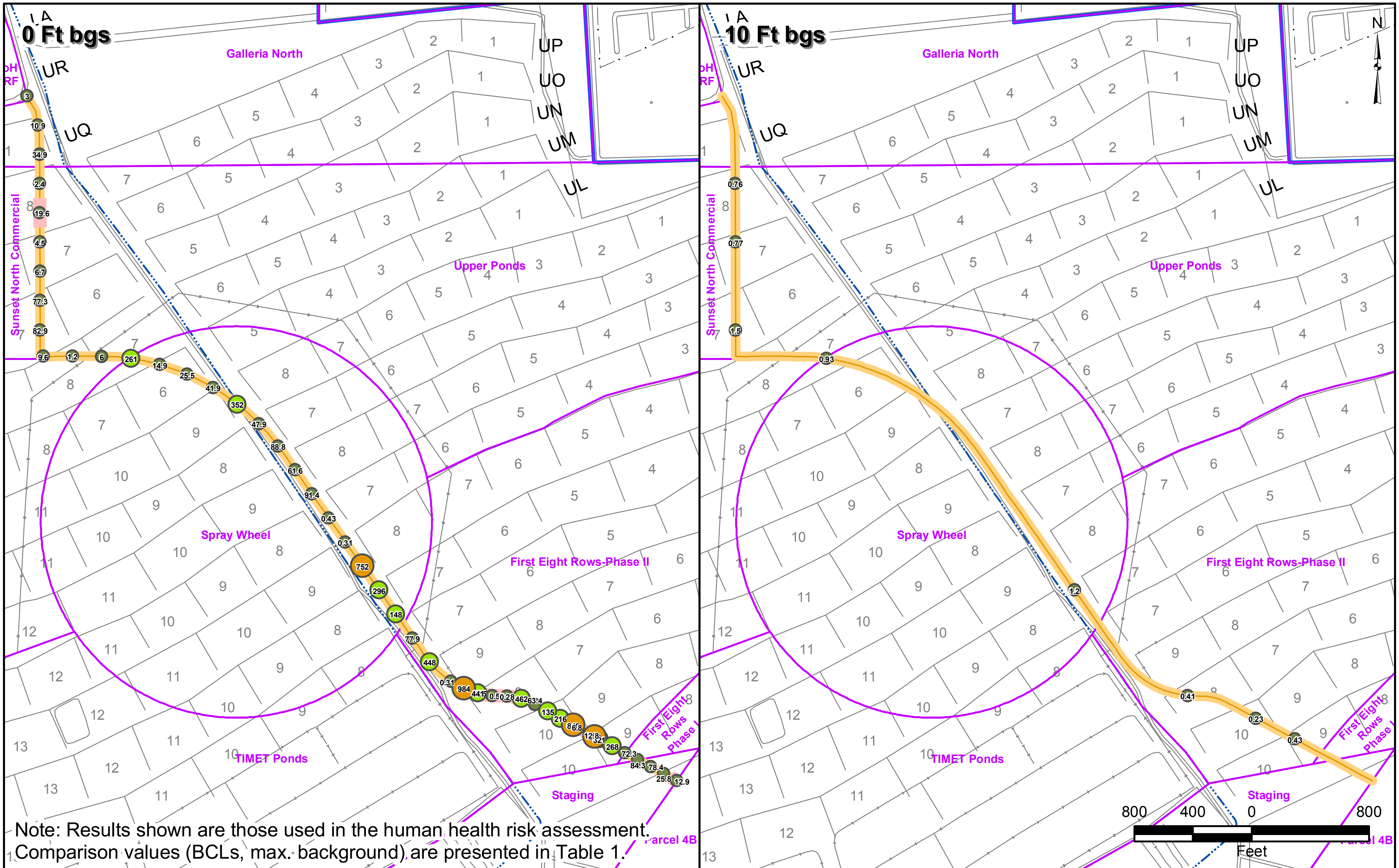
Probability Plot
Normal - 95% CI
Radionuclide = Uranium-238
Probability
0.999
0.99
0.95
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.05
0.01
0.001
-1
0
1
2
3
Activity (pCi/g)
Background
Sewer Alignment Excavation



Boxplot
Radionuclide = Uranium-238
○ = Non-Detect; ● = Detect
Activity (pCi/g)
3.0
2.5
2.0
1.5
1.0
0.5
All
0 ft bgs
10 ft bgs
All
0 ft bgs
5 ft bgs
10 ft bgs
Sewer Alignment Excavation
Background

APPENDIX E

CHEMICALS OF POTENTIAL CONCERN (COPC) INTENSITY PLOTS



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect

Detect < 100 ppt

>= 100 ppt and < 500 ppt

>= 500 ppt and < 1,000 ppt

>= 1,000 ppt (ATSDR action level)

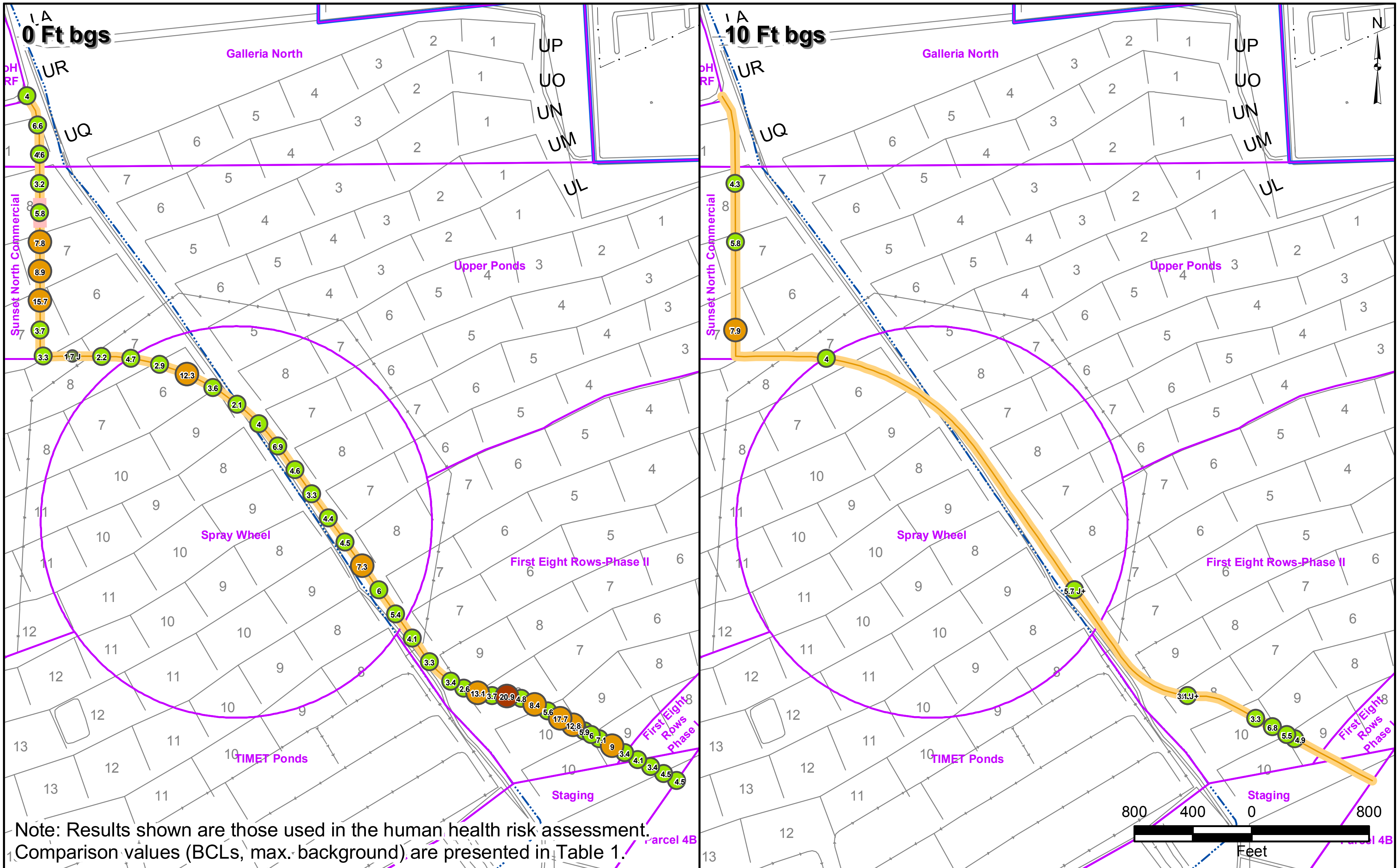
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-1

TCDD TEQ
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Note: Results shown are those used in the human health risk assessment.
Comparison values (BCLs, max. background) are presented in Table 1.

- Eastside Soil Sub-Areas
- Site AOC3 Boundary
- Remediation Zones
- Sewer Alignment
- Non-Detect
- Detect < Worker BCL
- >= BCL and < 7.2 mg/kg (Max. Background)
- >= 7.2 mg/kg and < 10x BCL
- >= 10x BCL

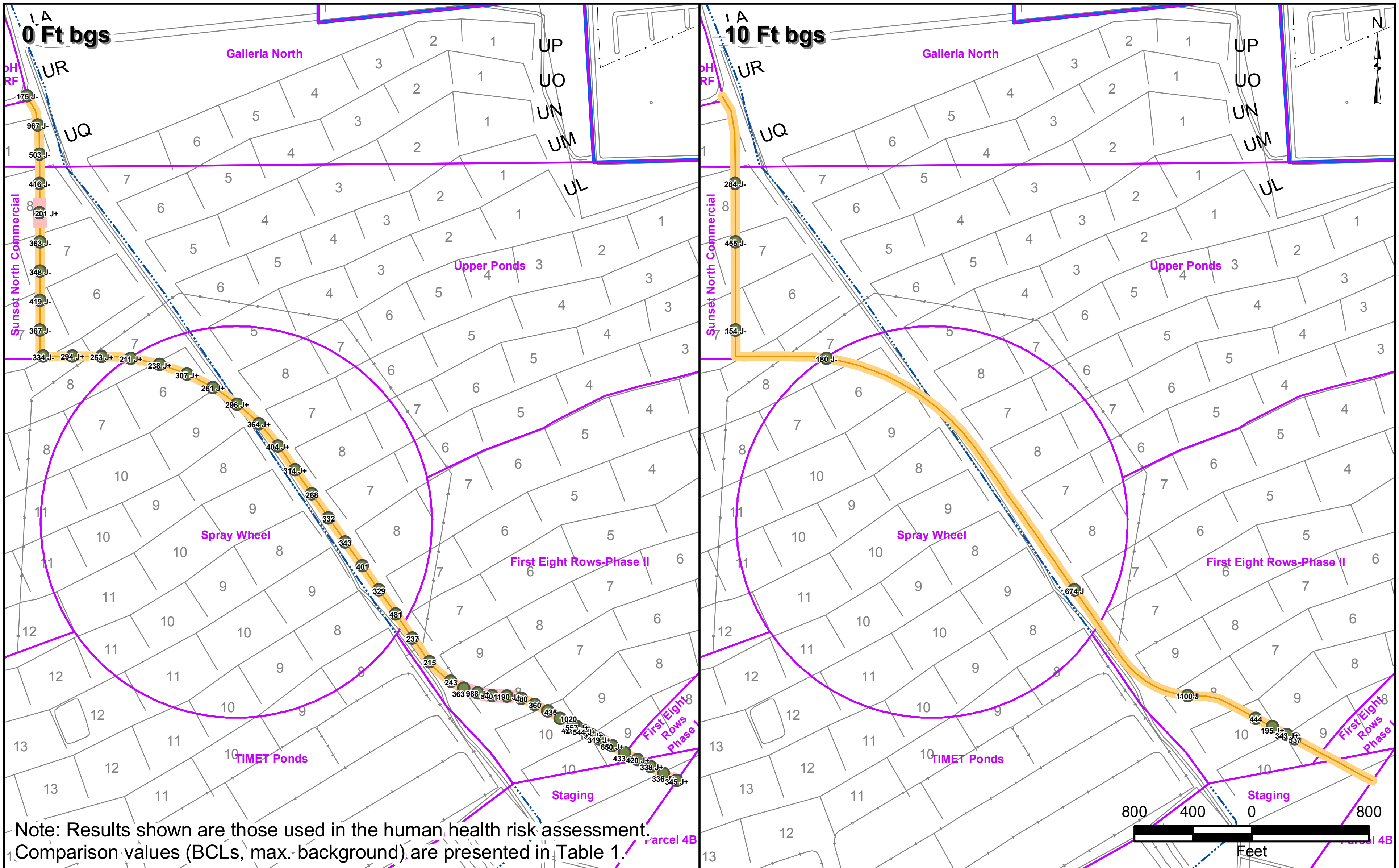
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-2

ARSENIC
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

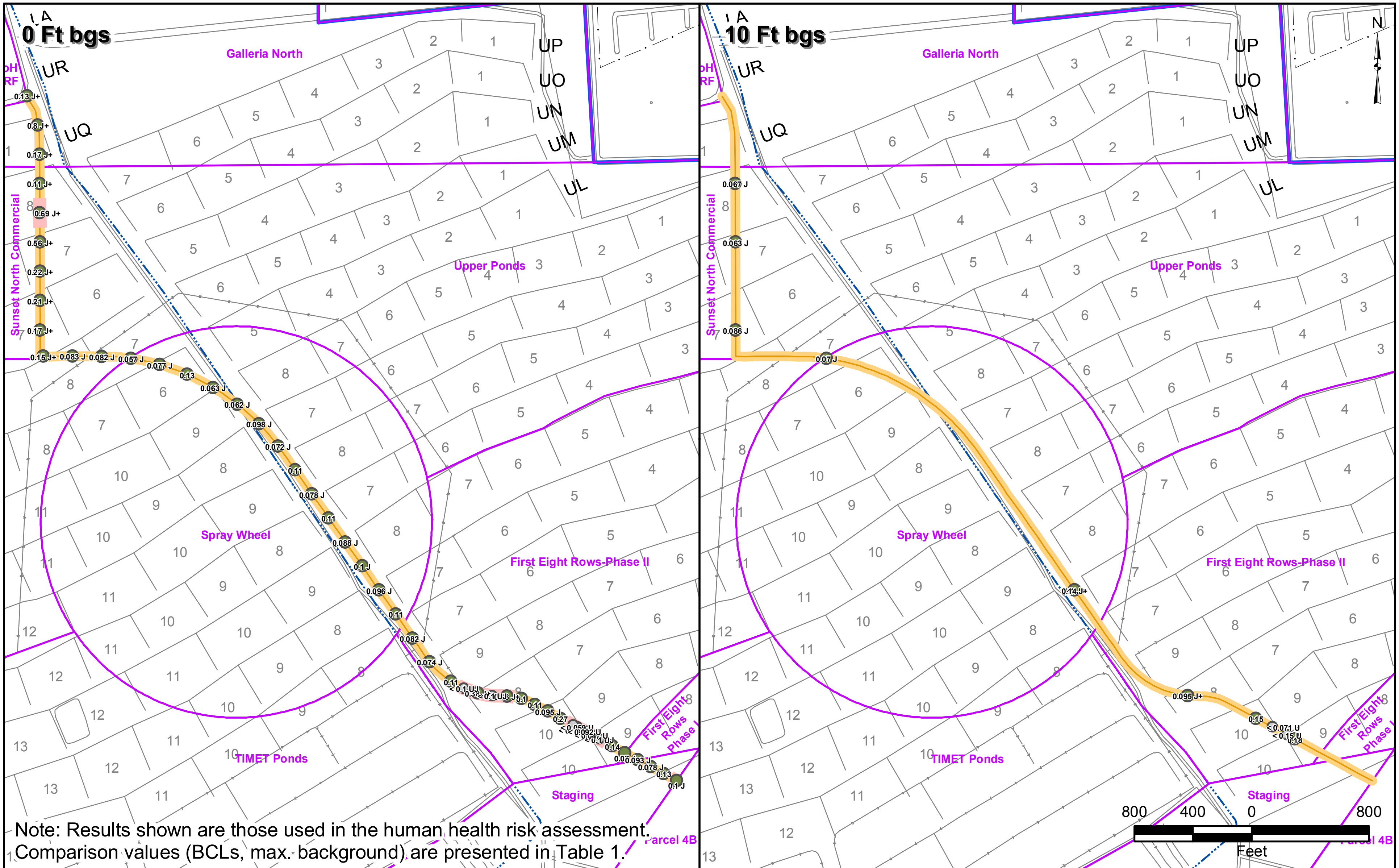
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-3

BARIUM
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

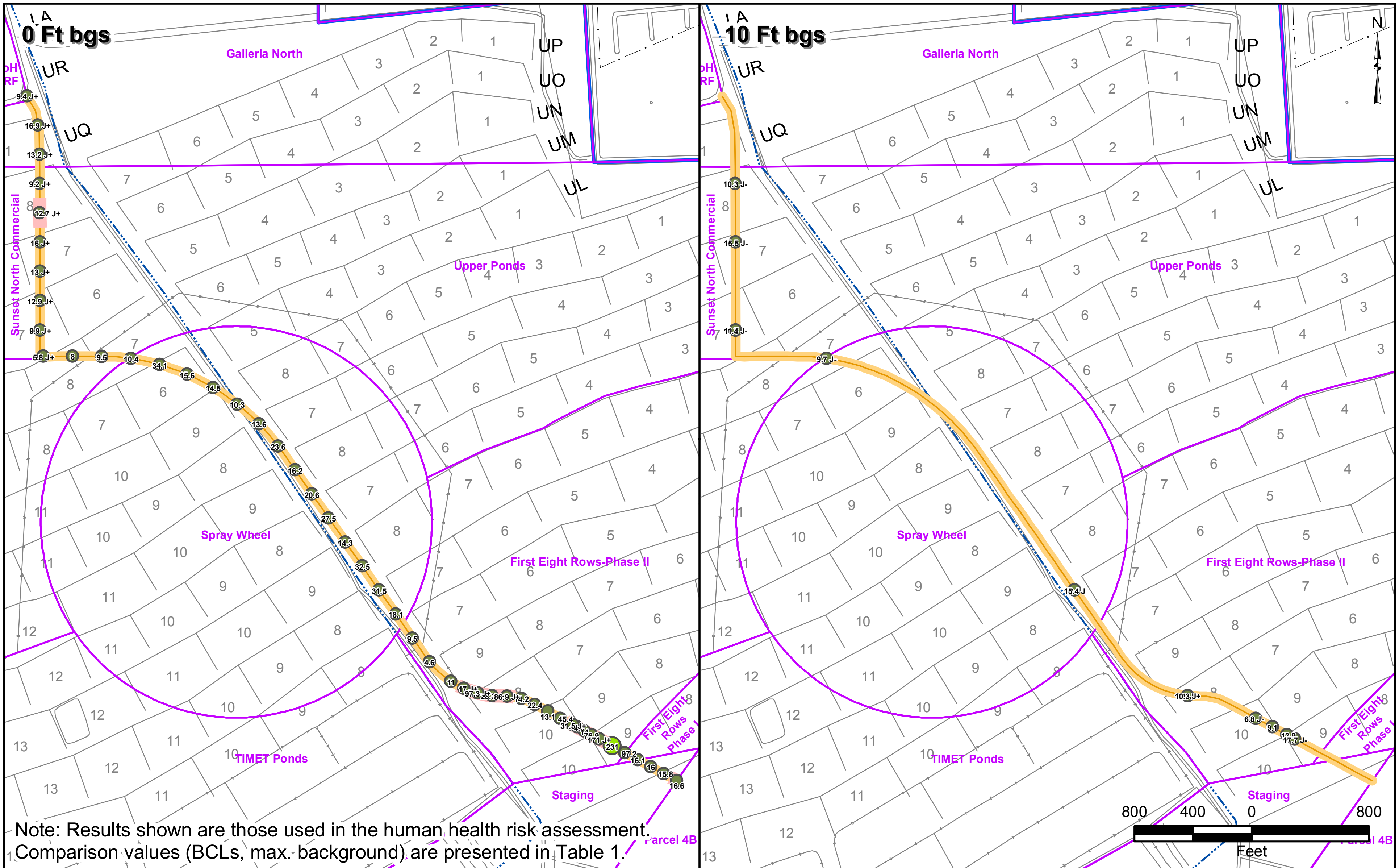
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-4

CADMIUM
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Note: Results shown are those used in the human health risk assessment. Comparison values (BCLs, max. background) are presented in Table 1.

- Eastside Soil Sub-Areas
- Site AOC3 Boundary
- Remediation Zones
- Sewer Alignment
- Non-Detect/No BCL
- Detect < 1/2-BCL
- >= 1/2-BCL and < BCL
- >= BCL and < 10x BCL
- >= 10x BCL

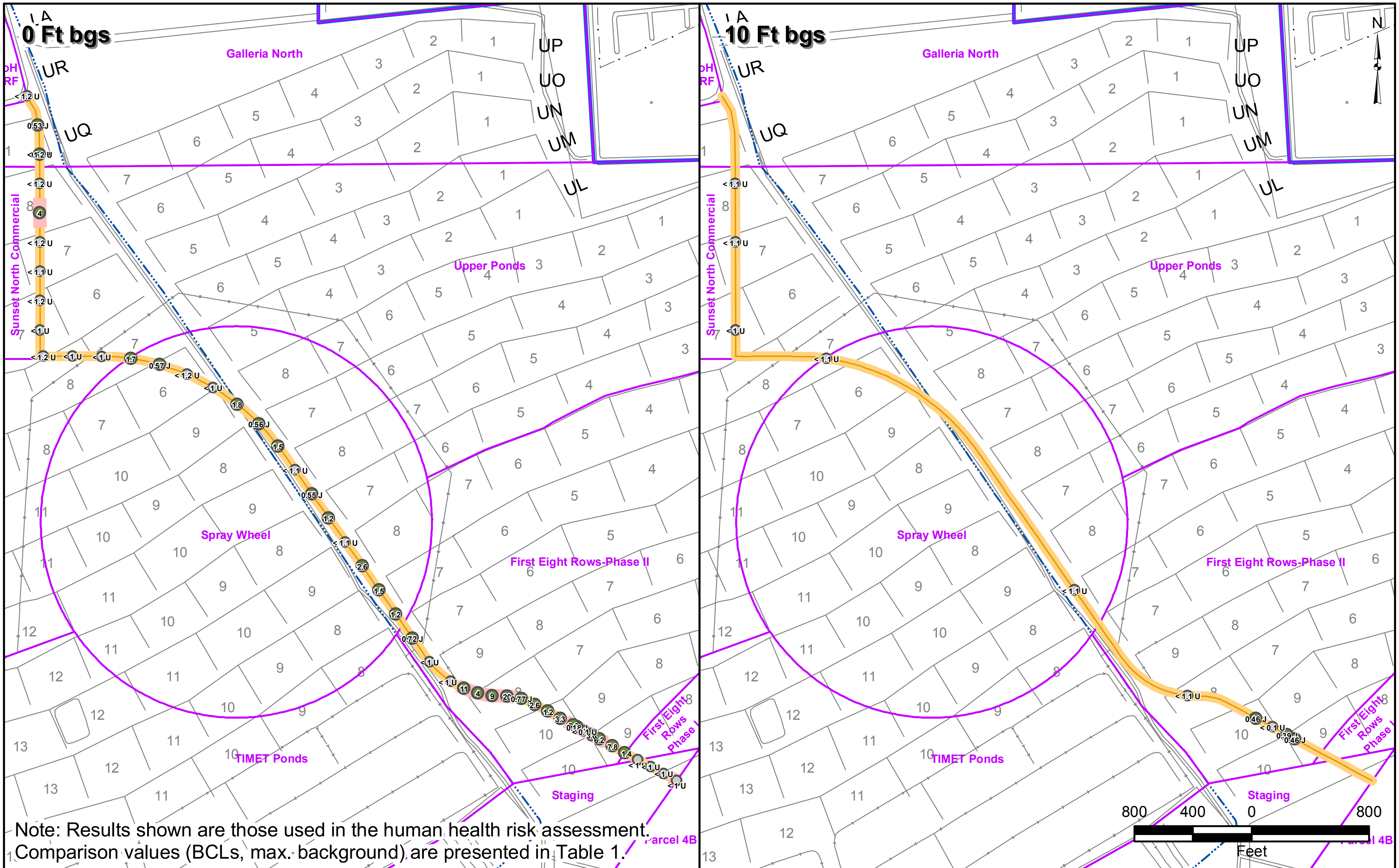
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-5

CHROMIUM (TOTAL) RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

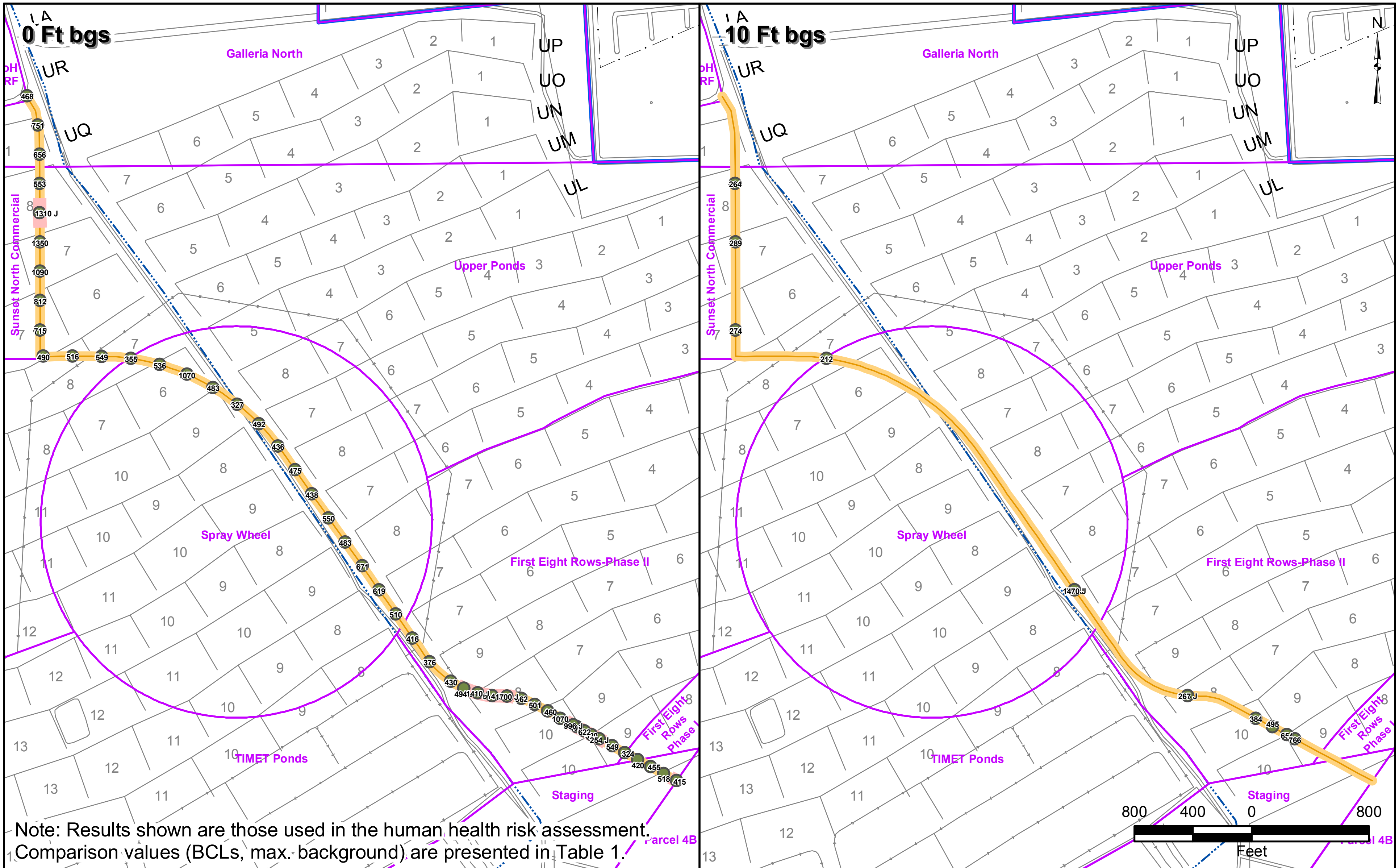
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-6

CHROMIUM (VI)
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 | FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

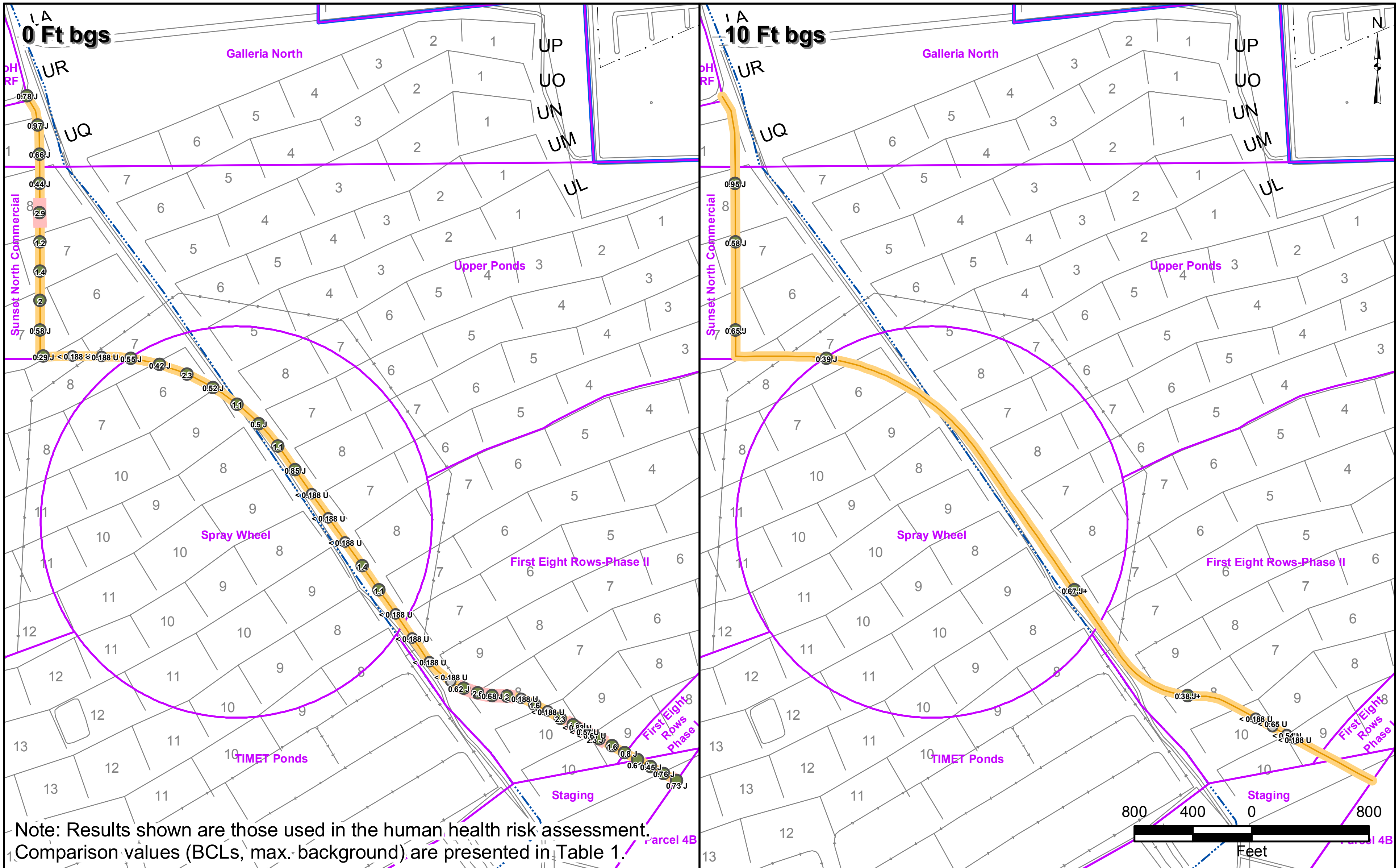
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-7

MANGANESE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Legend	
Eastside Soil Sub-Areas	Non-Detect/No BCL
Site AOC3 Boundary	Detect < 1/2-BCL
Remediation Zones	>= 1/2-BCL and < BCL
Sewer Alignment	>= BCL and < 10x BCL
	>= 10x BCL

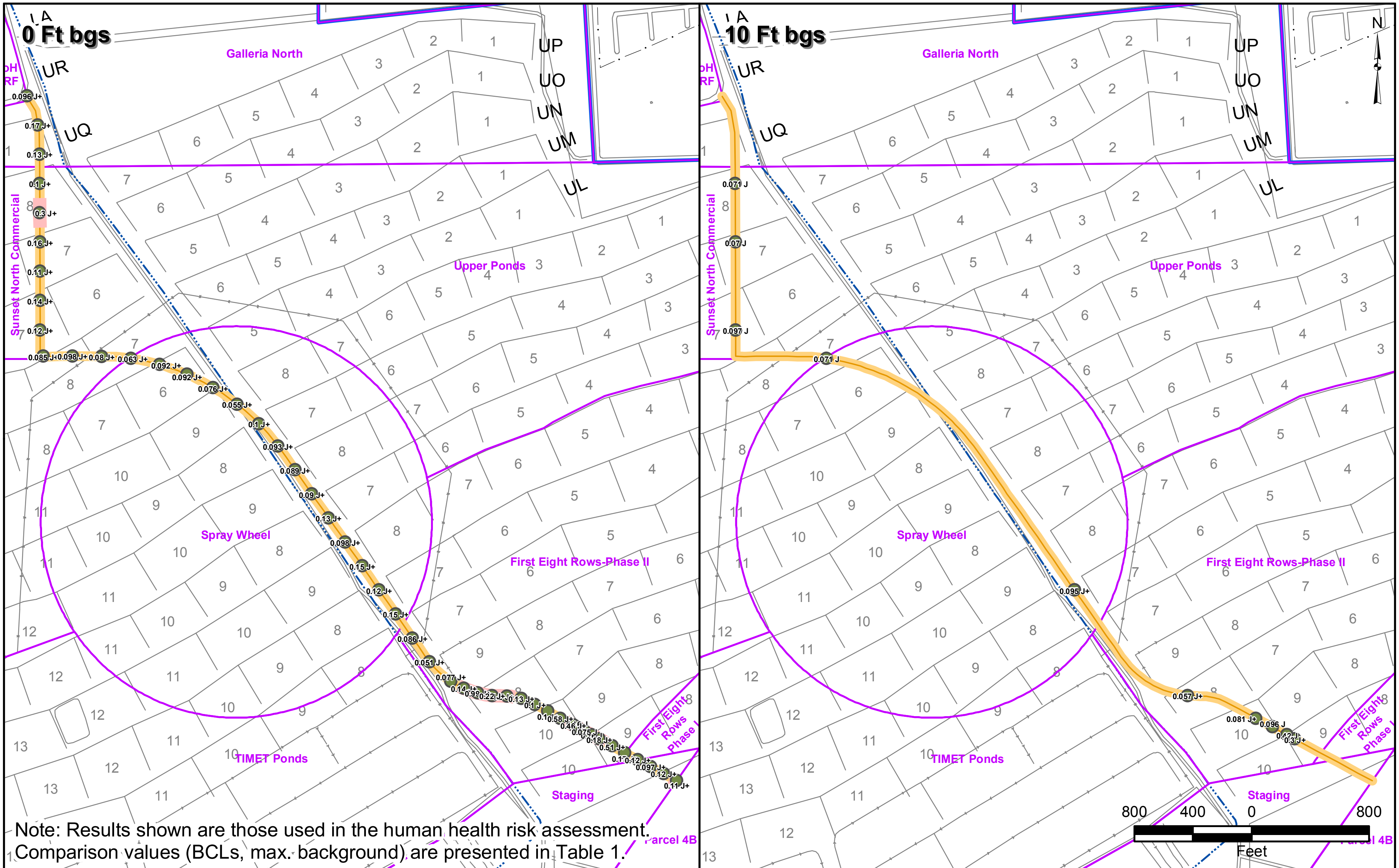
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-8

MOLYBDENUM RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 | FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

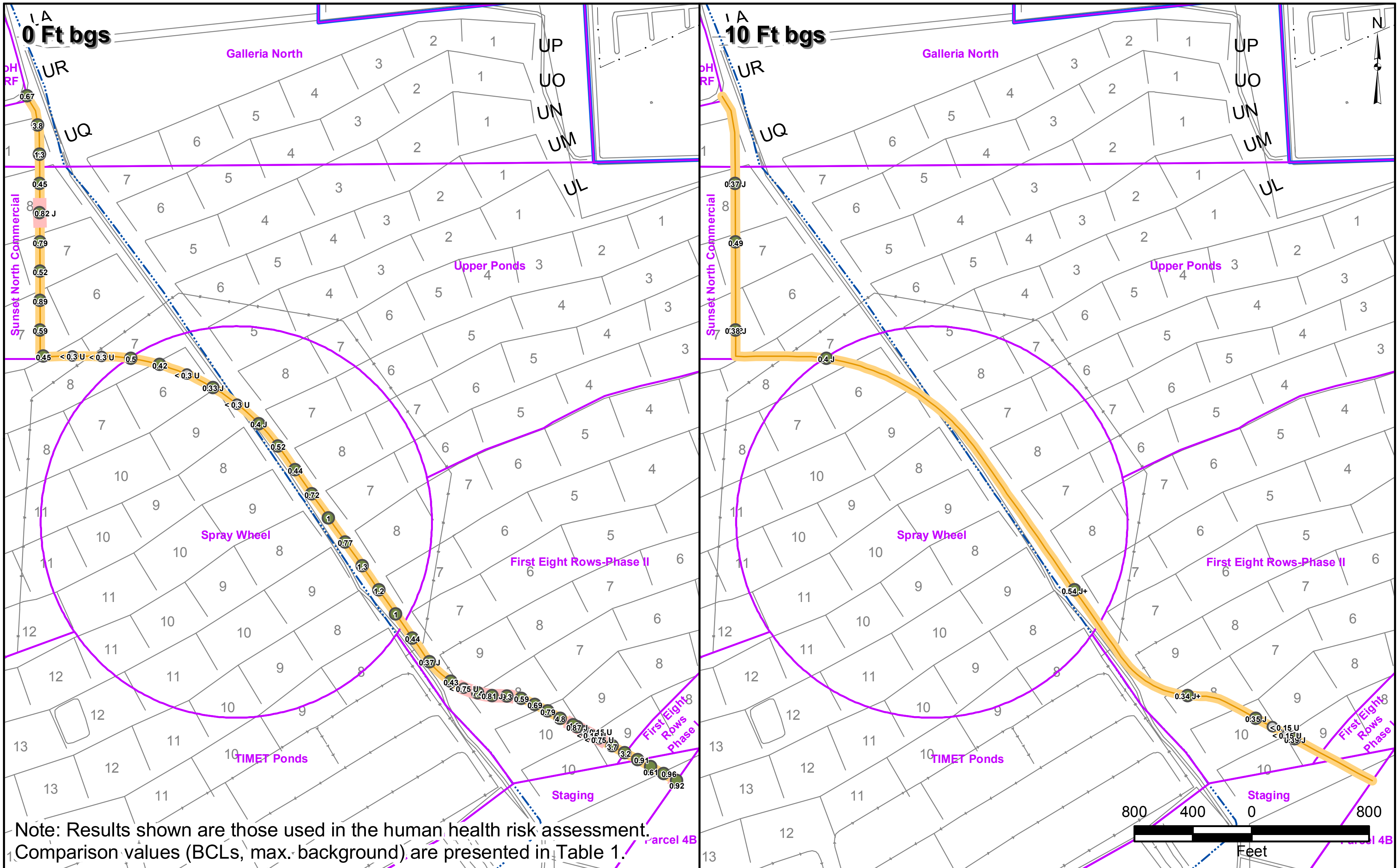
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-9

SILVER
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 | FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



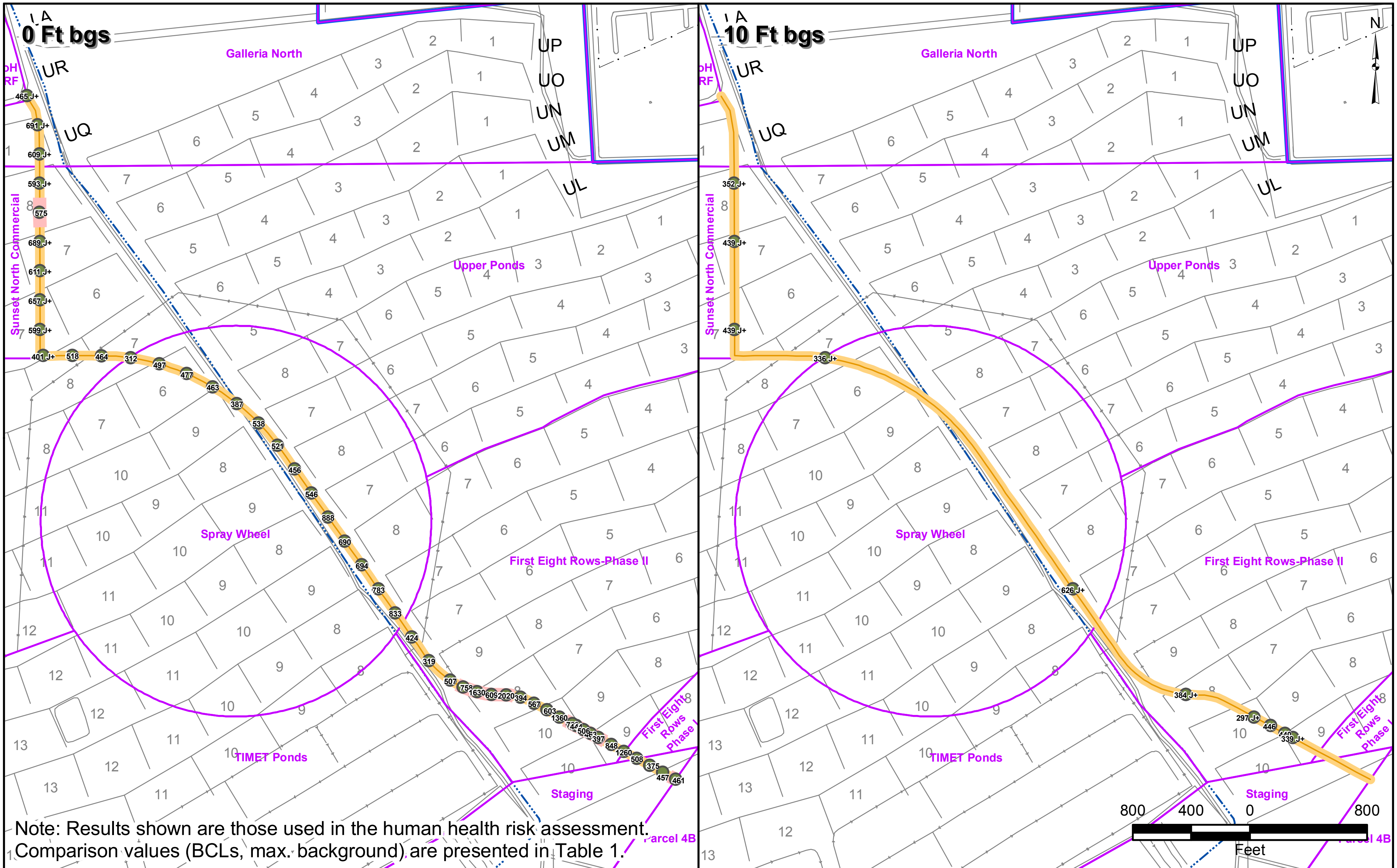
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-10

TIN
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas	Non-Detect/No BCL
Site AOC3 Boundary	Detect < 1/2-BCL
Remediation Zones	>= 1/2-BCL and < BCL
Sewer Alignment	>= BCL and < 10x BCL
	>= 10x BCL

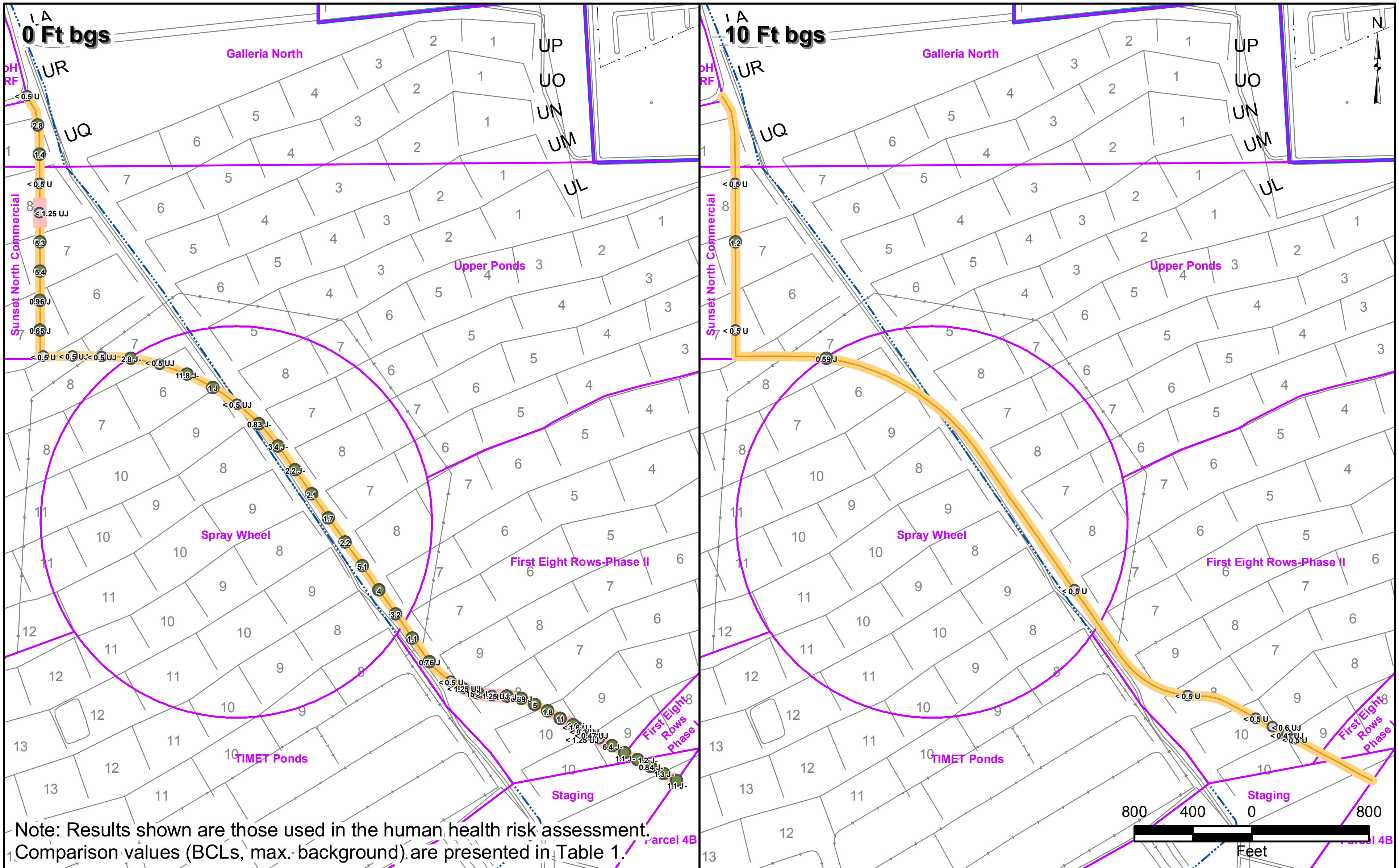
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-11

TITANIUM
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 | FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

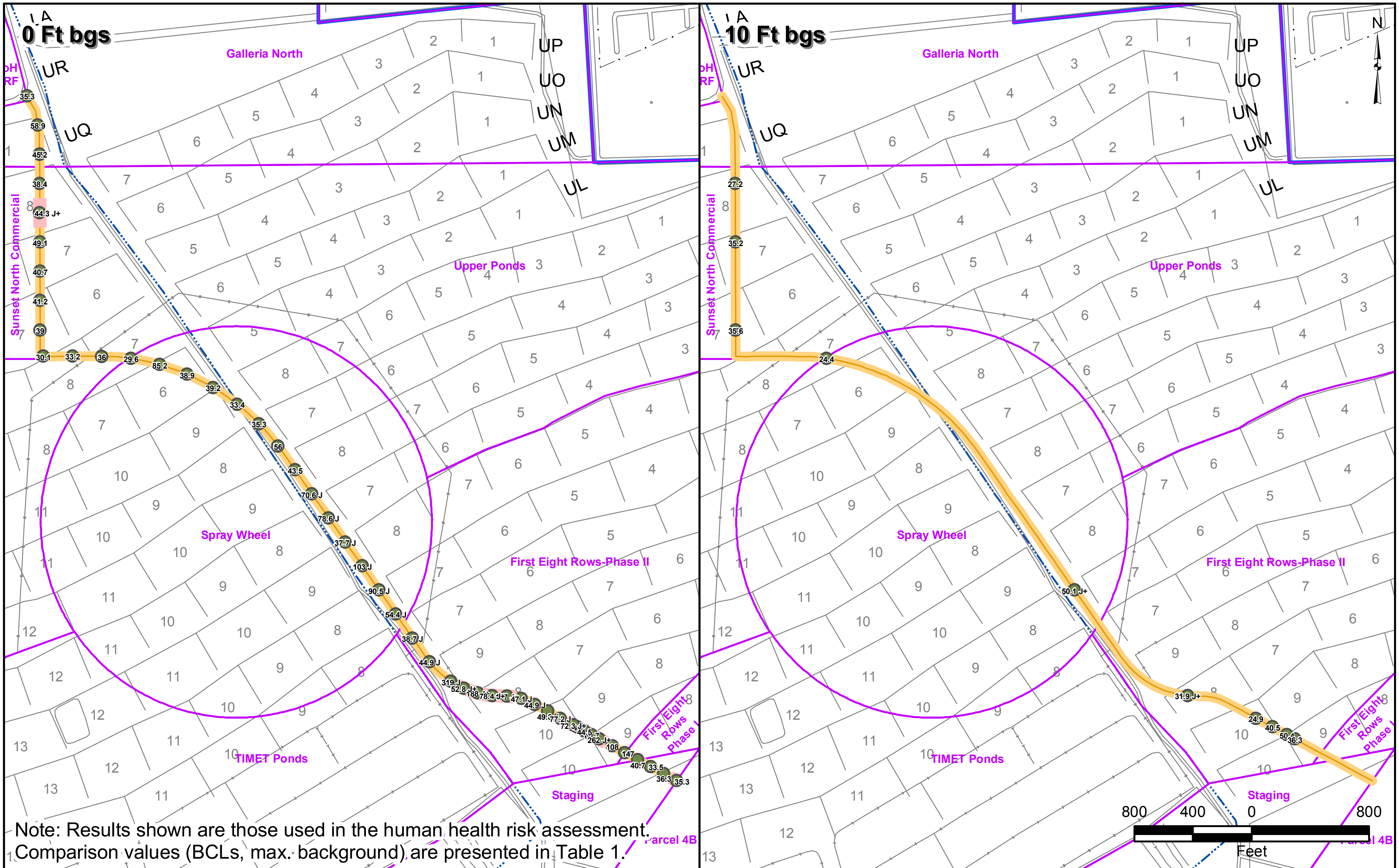
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-12

TUNGSTEN
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



- Eastside Soil Sub-Areas
- Site AOC3 Boundary
- Remediation Zones
- Sewer Alignment
- Non-Detect/No BCL
- Detect < 1/2-BCL
- >= 1/2-BCL and < BCL
- >= BCL and < 10x BCL
- >= 10x BCL

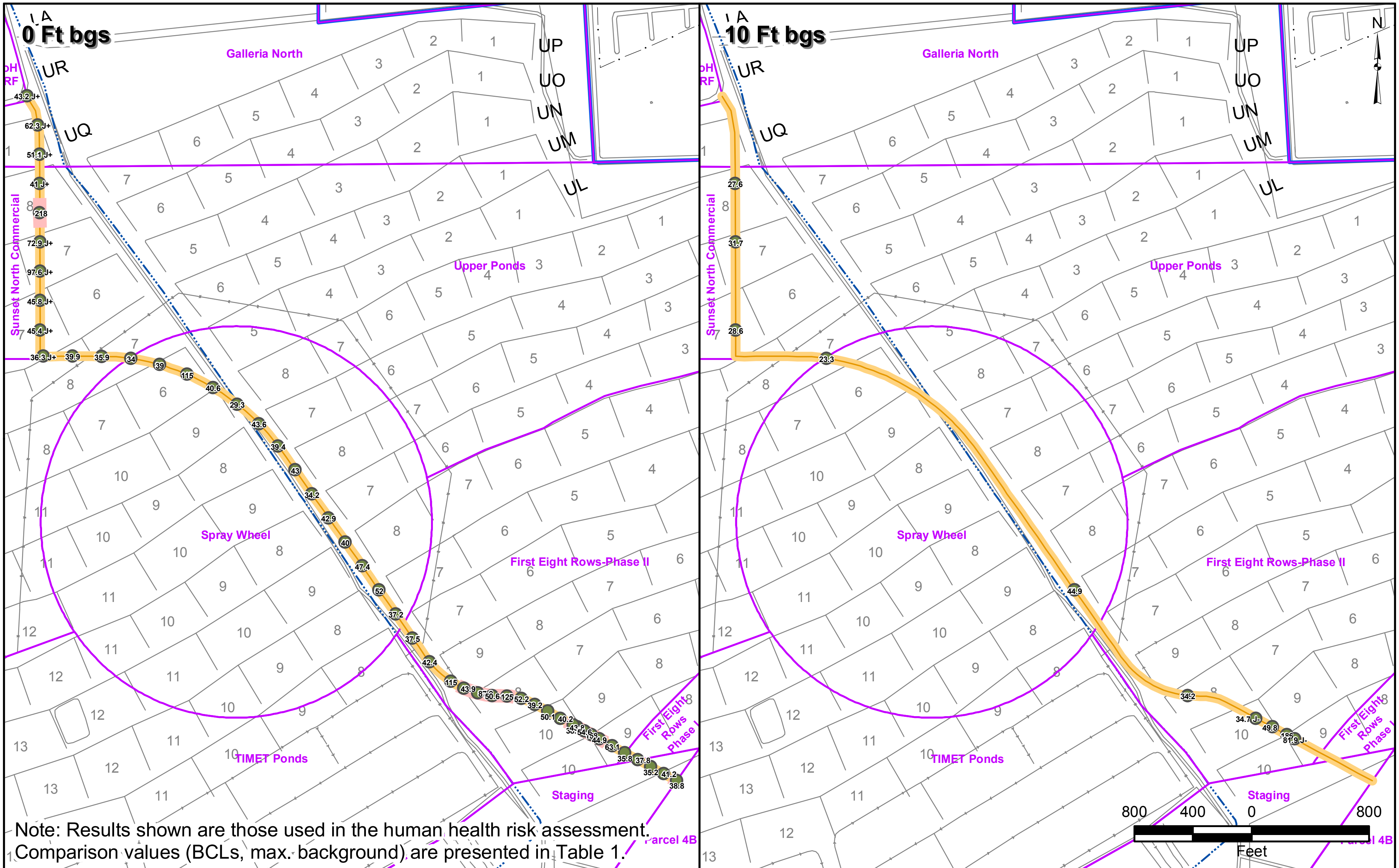
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-13

VANADIUM
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

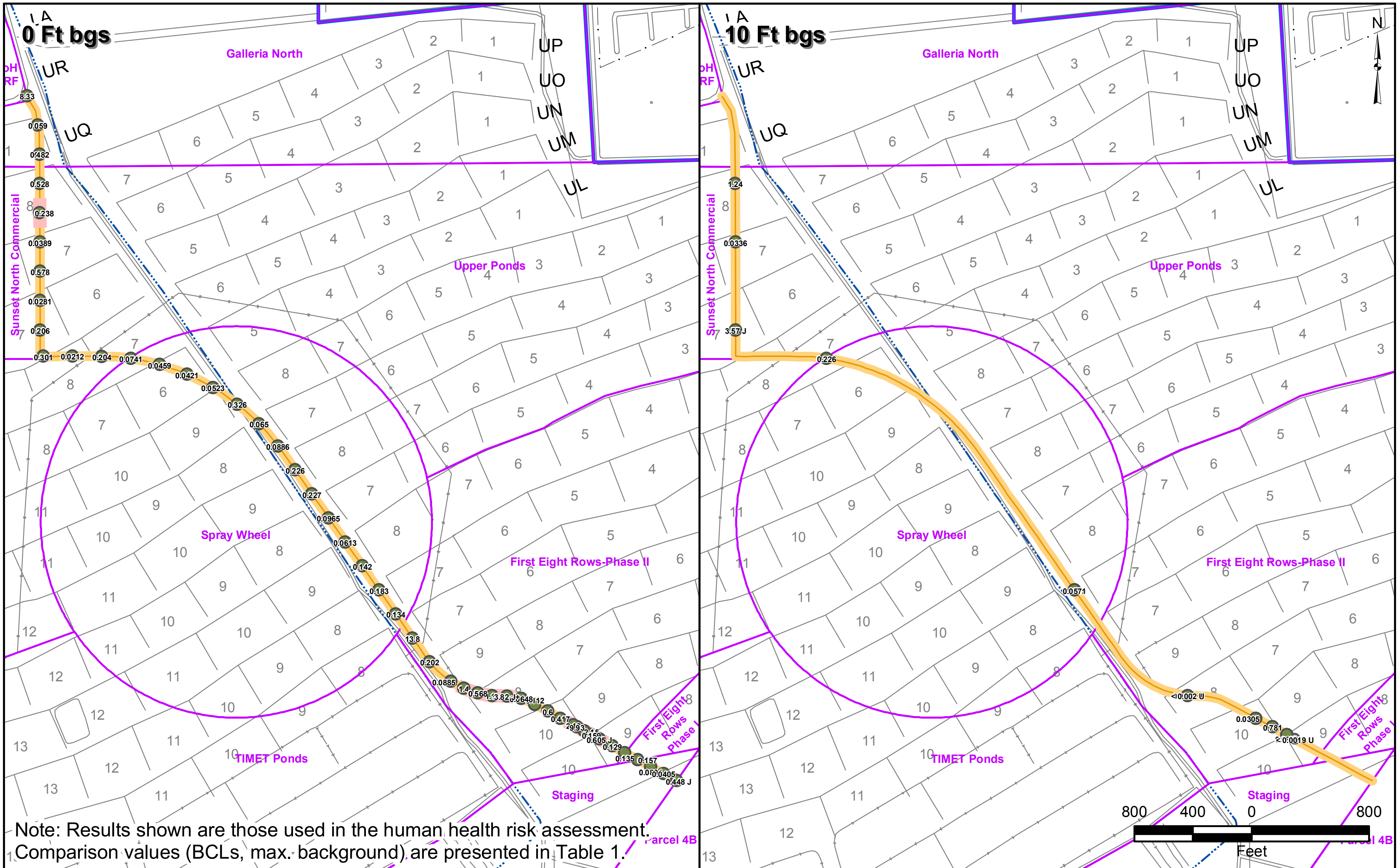
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-14

ZINC
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

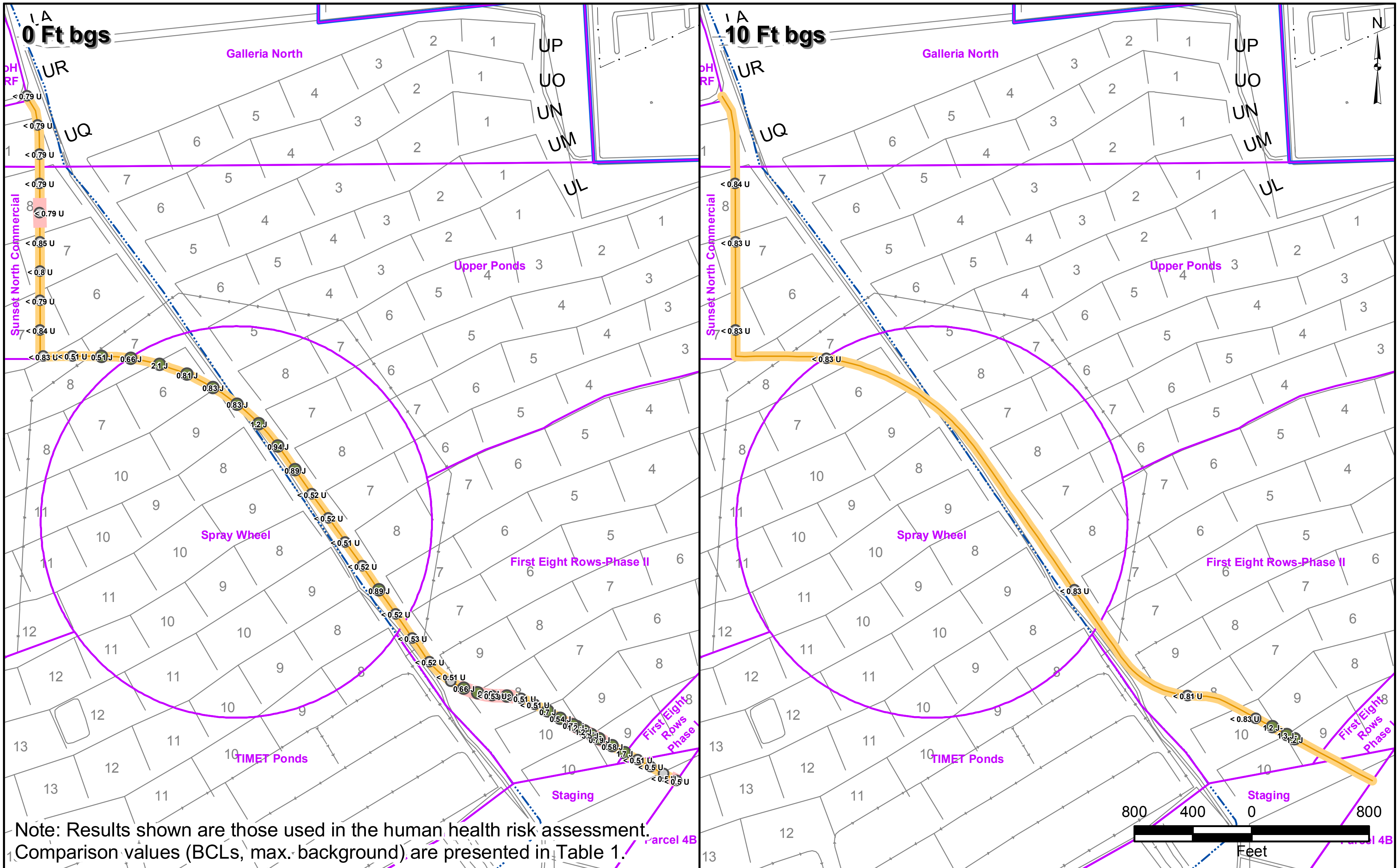
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-15

PERCHLORATE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

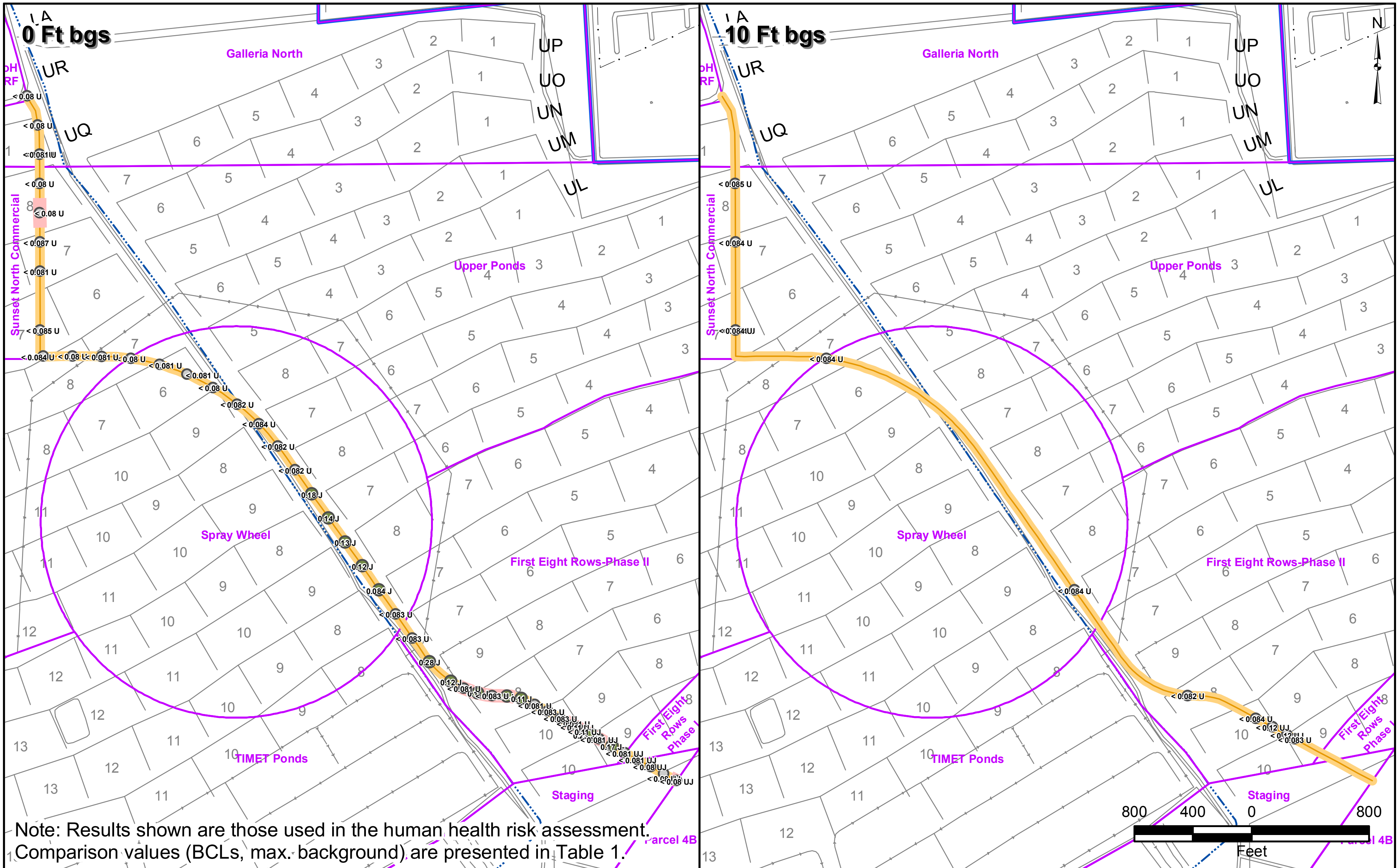
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-16

AMMONIA
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	
MKJ	08/10/09	JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

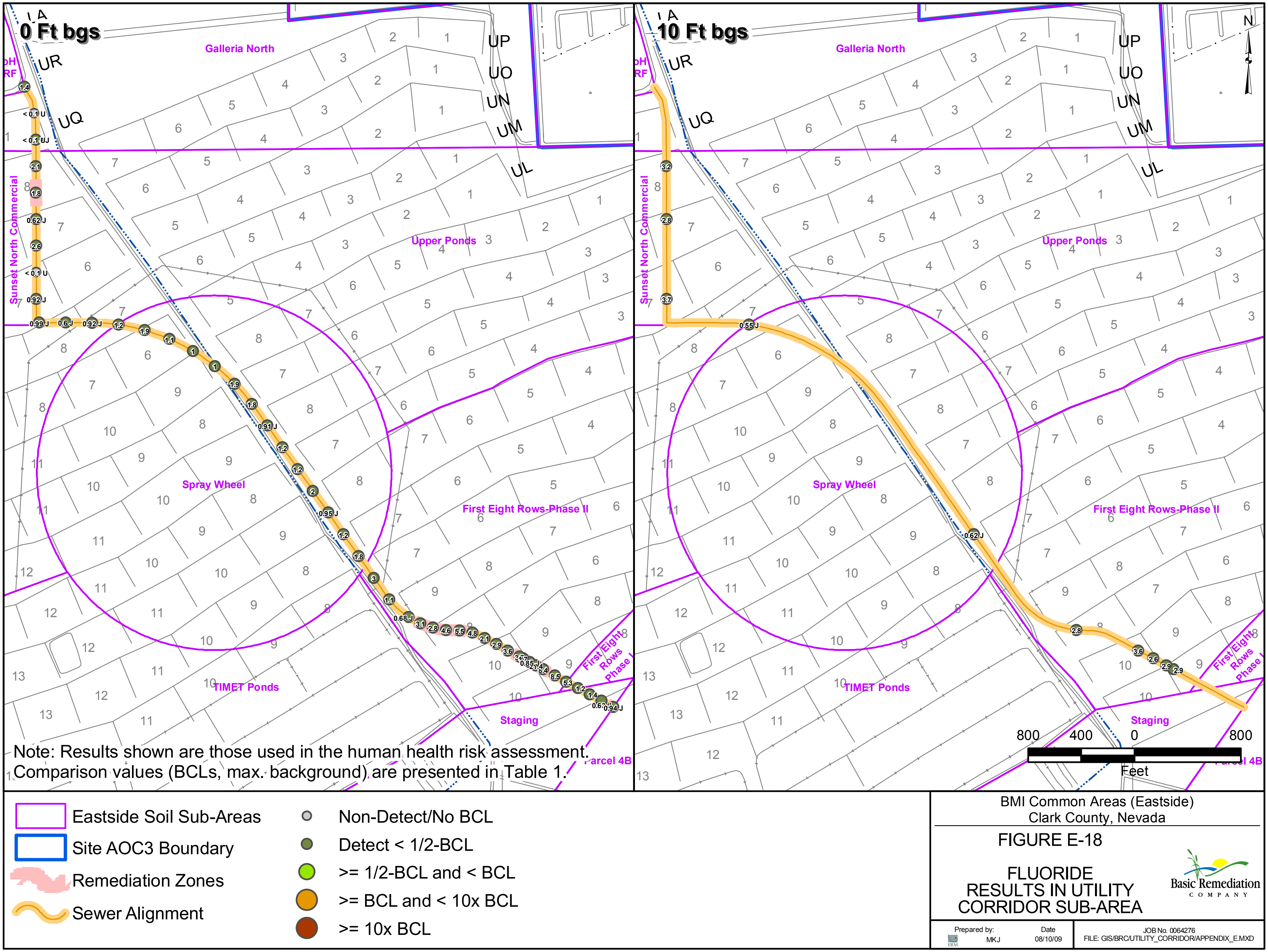
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-17

CYANIDE (TOTAL) RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



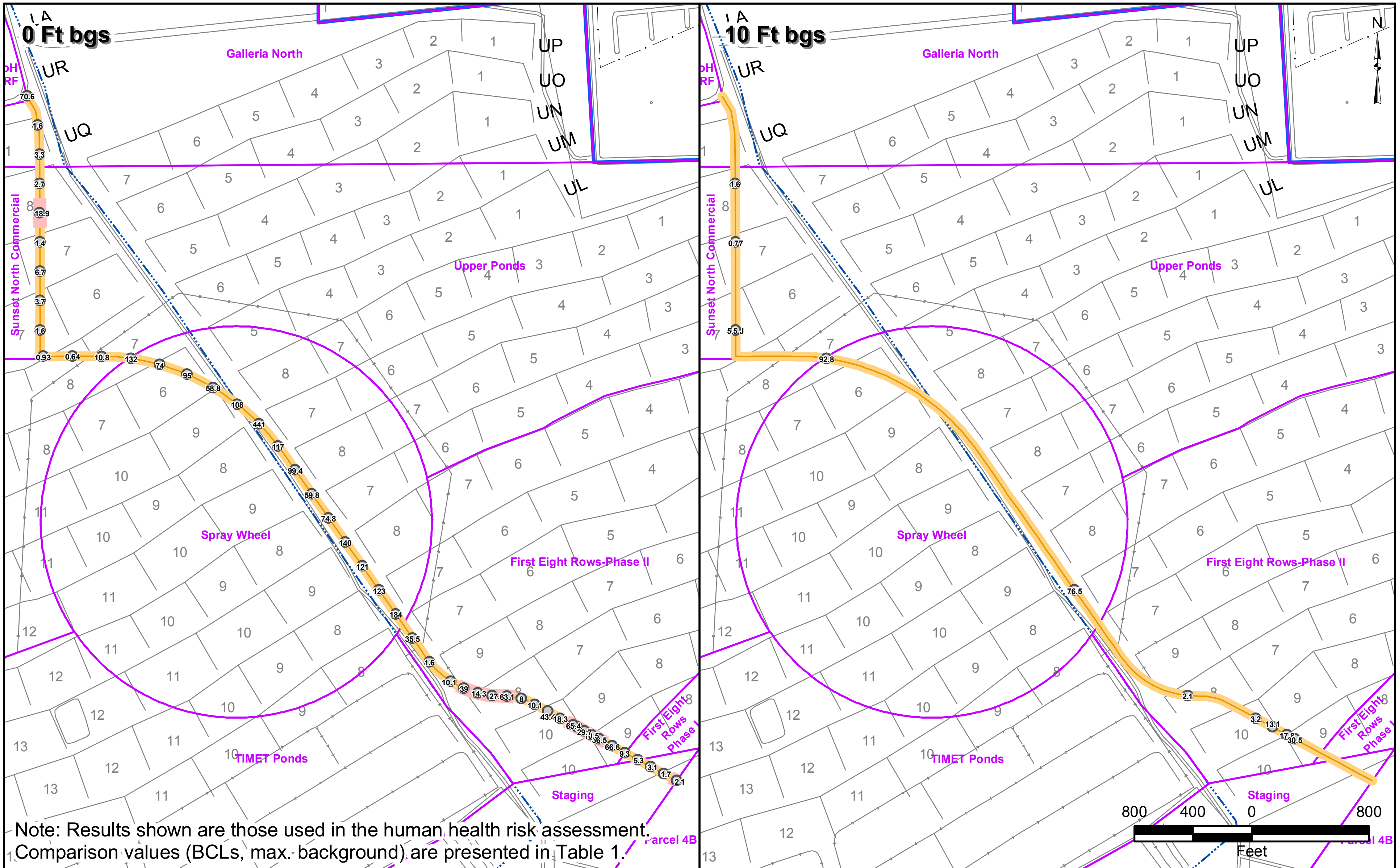
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-18

FLUORIDE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

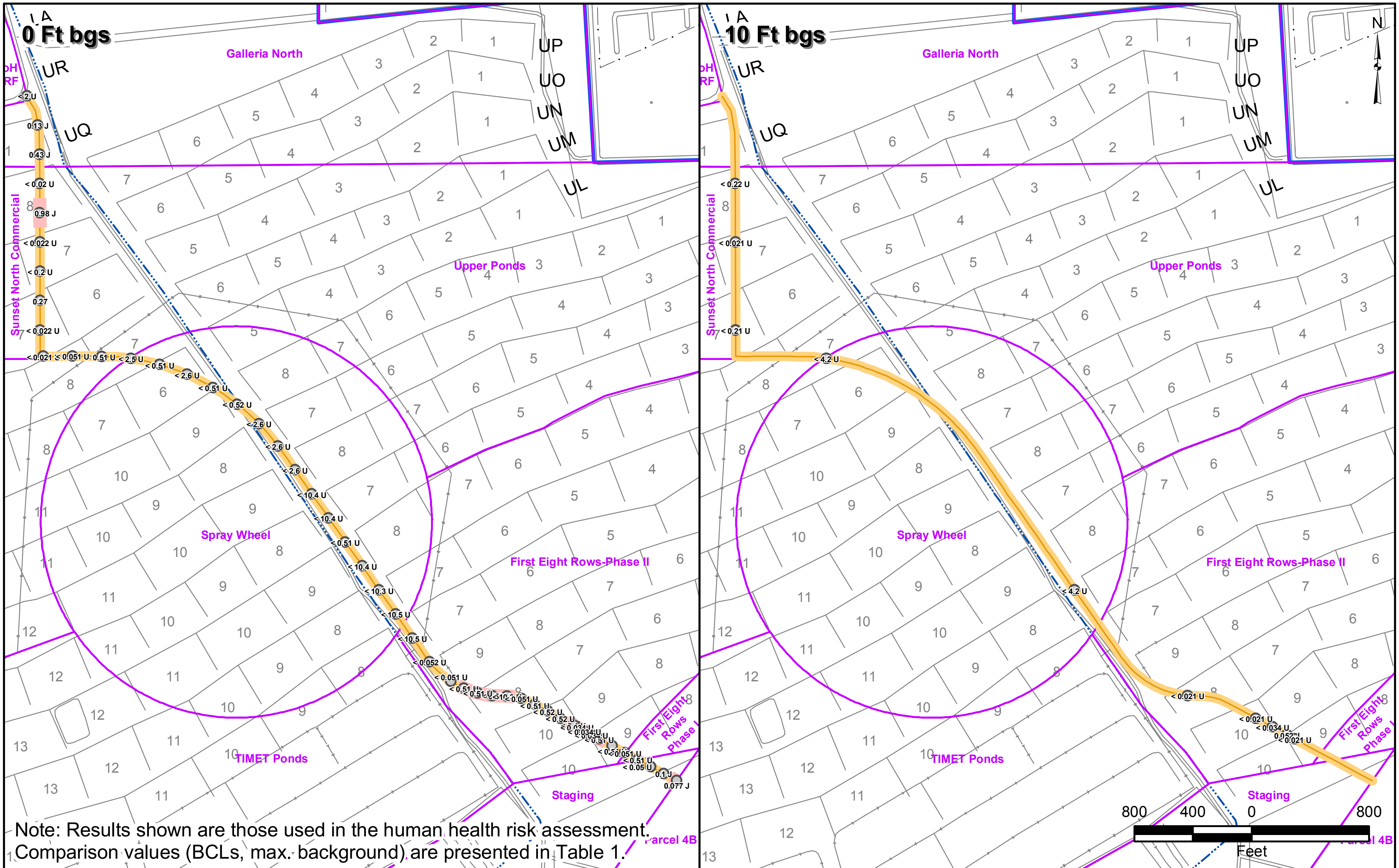
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-19

NITRATE (as N)
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Note: Results shown are those used in the human health risk assessment.
Comparison values (BCLs, max. background) are presented in Table 1.

Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

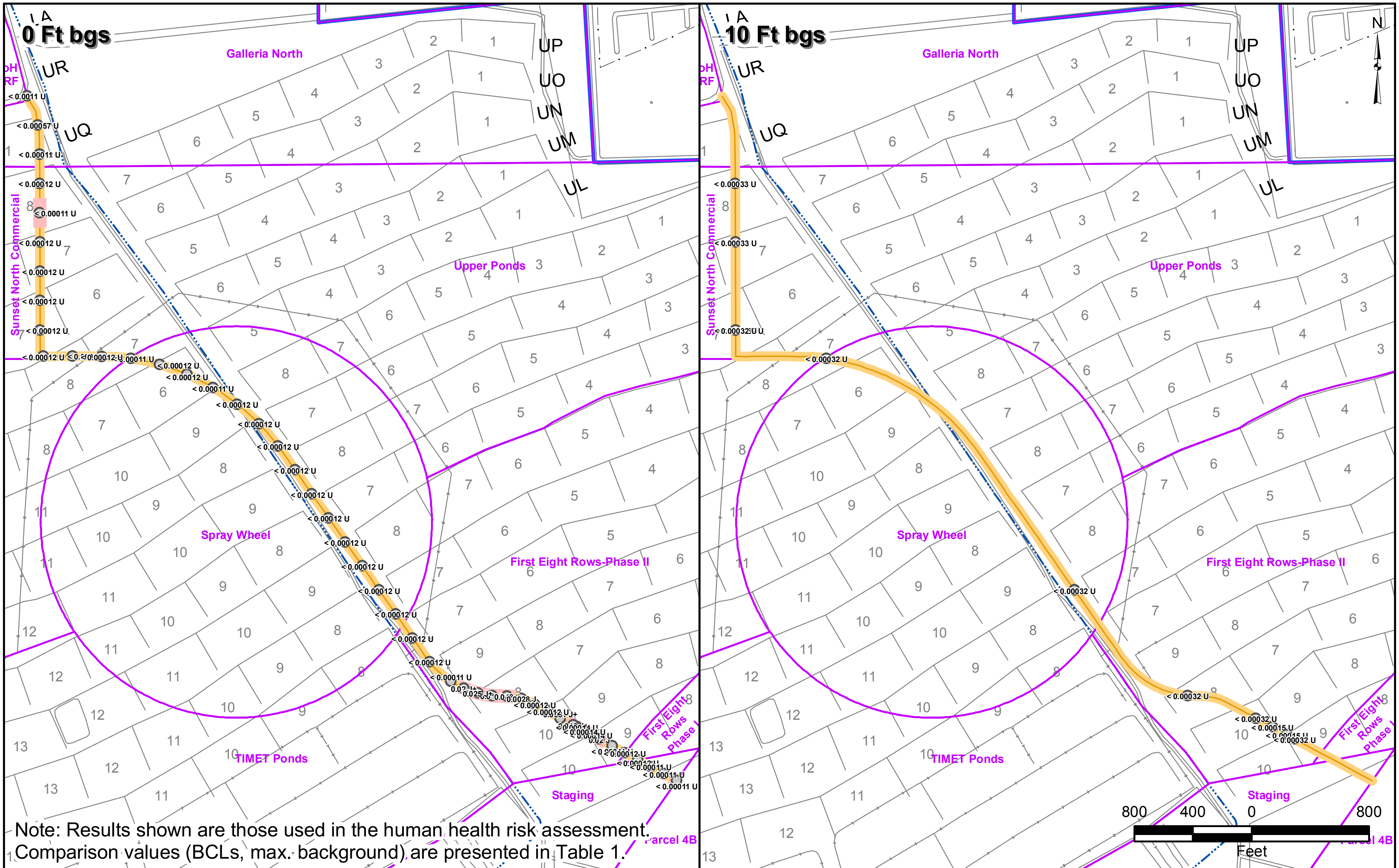
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-20

NITRITE (as N)
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment
Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

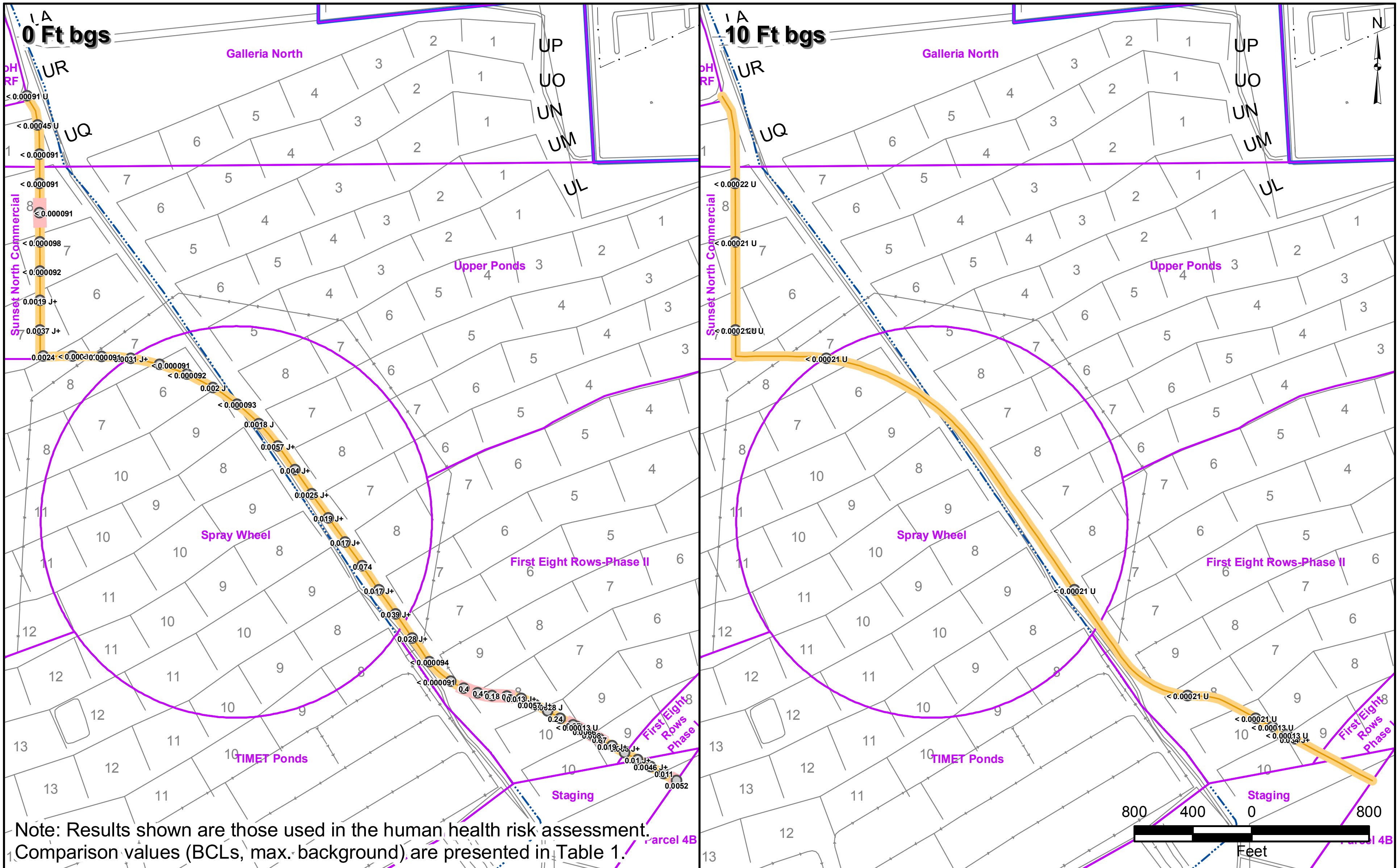
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-21

2,4'-DDD
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

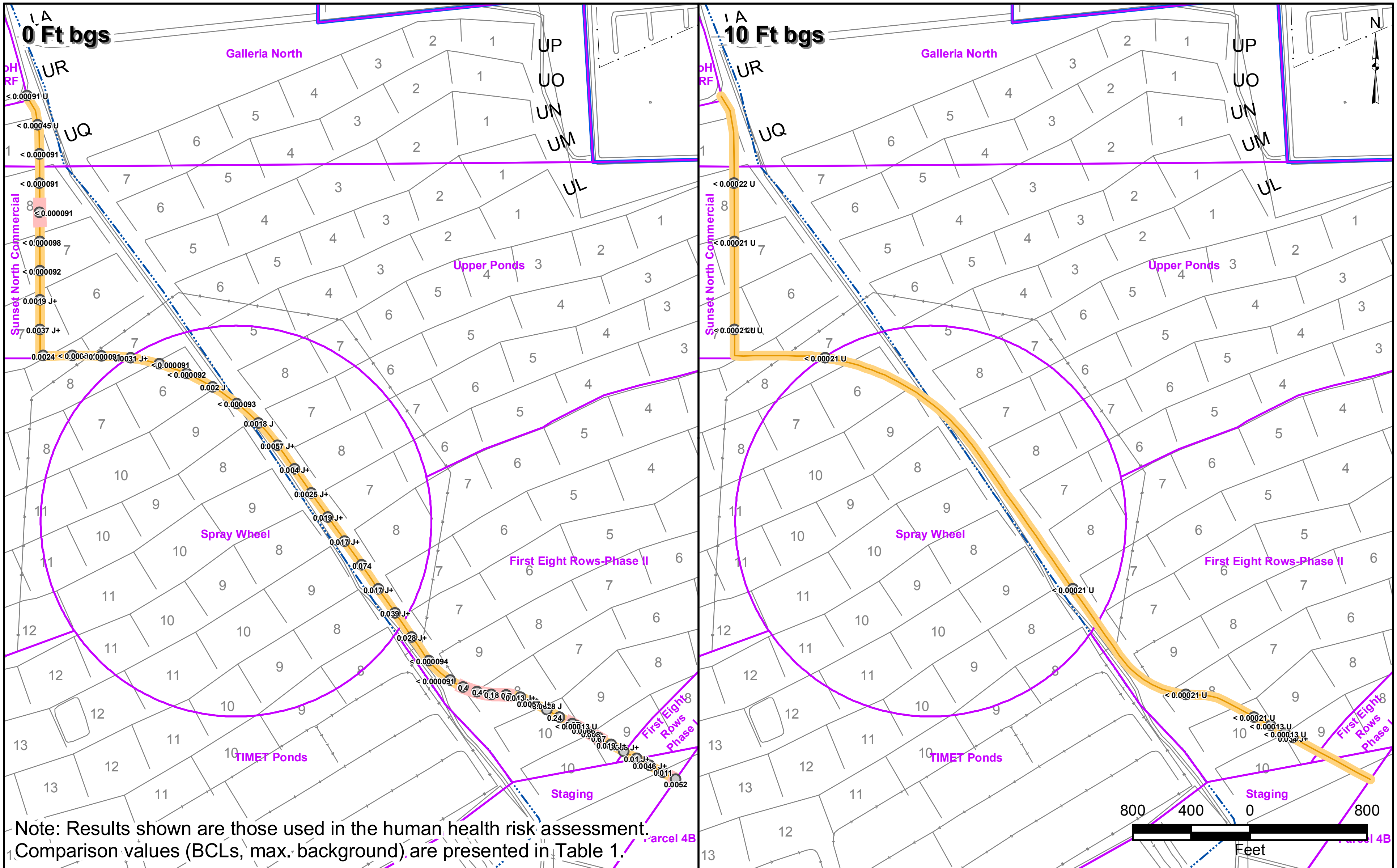
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-22

2,4'-DDE
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



- Eastside Soil Sub-Areas
- Site AOC3 Boundary
- Remediation Zones
- Sewer Alignment
- Non-Detect/No BCL
- Detect < 1/2-BCL
- >= 1/2-BCL and < BCL
- >= BCL and < 10x BCL
- >= 10x BCL

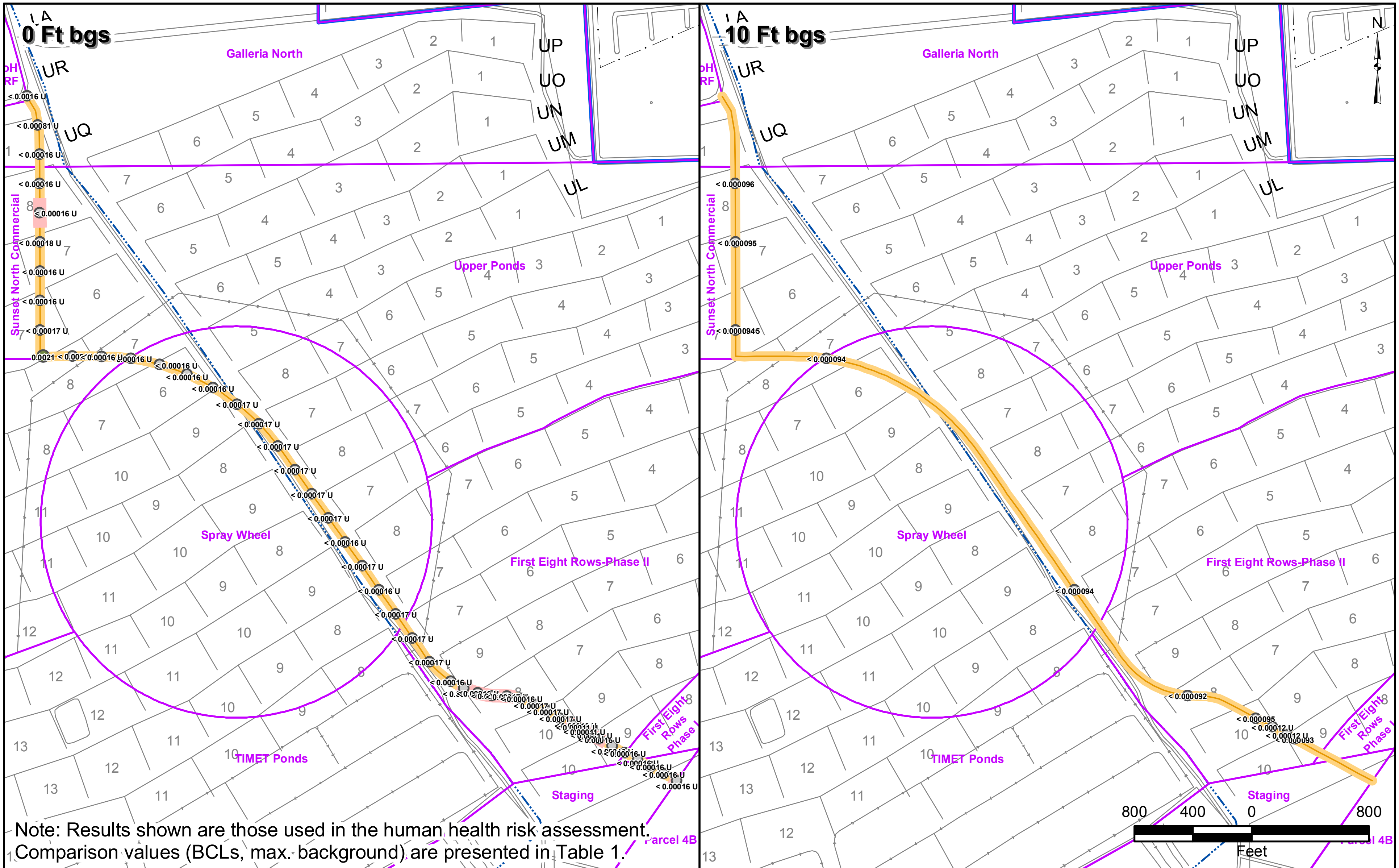
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-23

4,4'-DDD
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

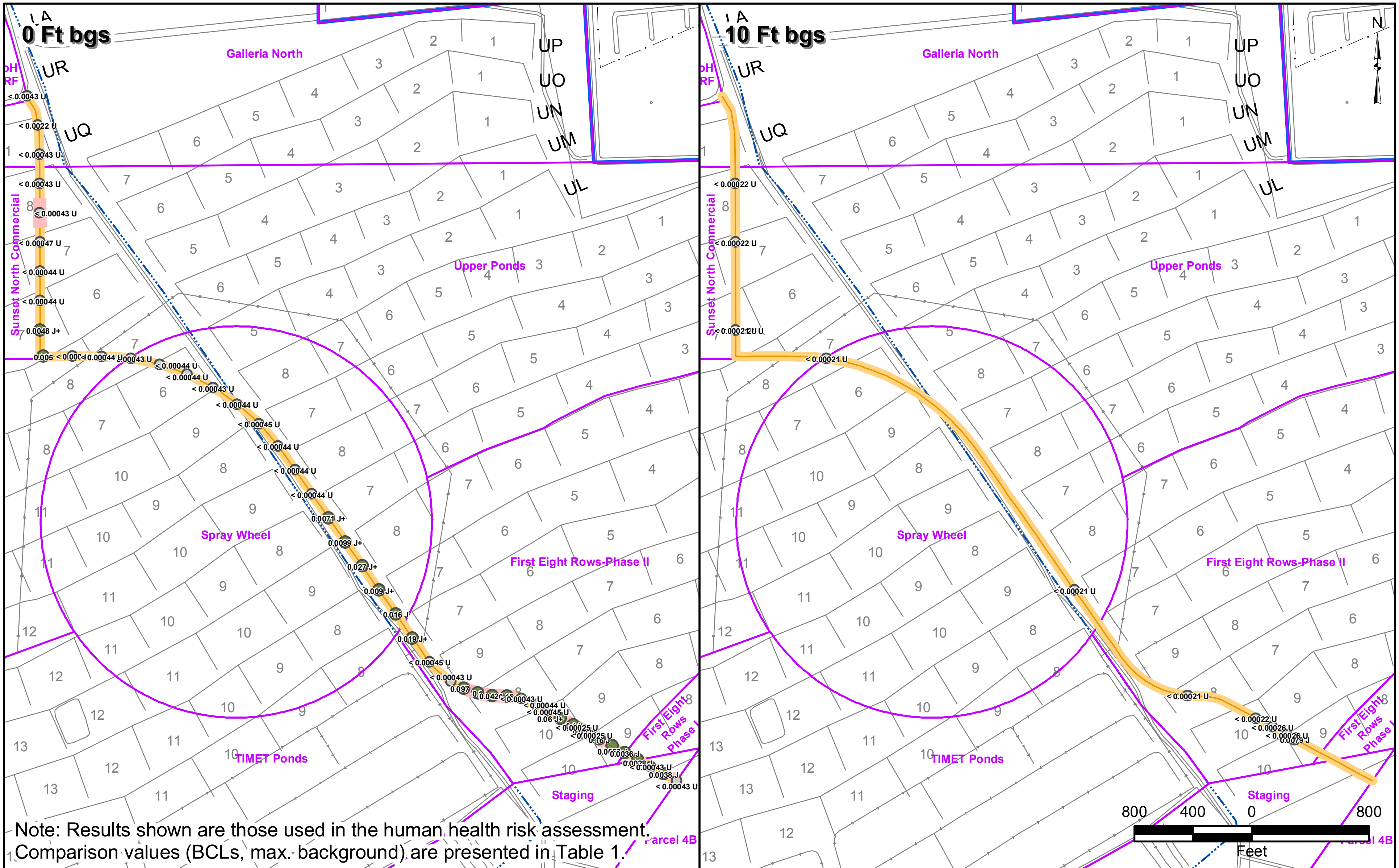
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-24

4,4'-DDE
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

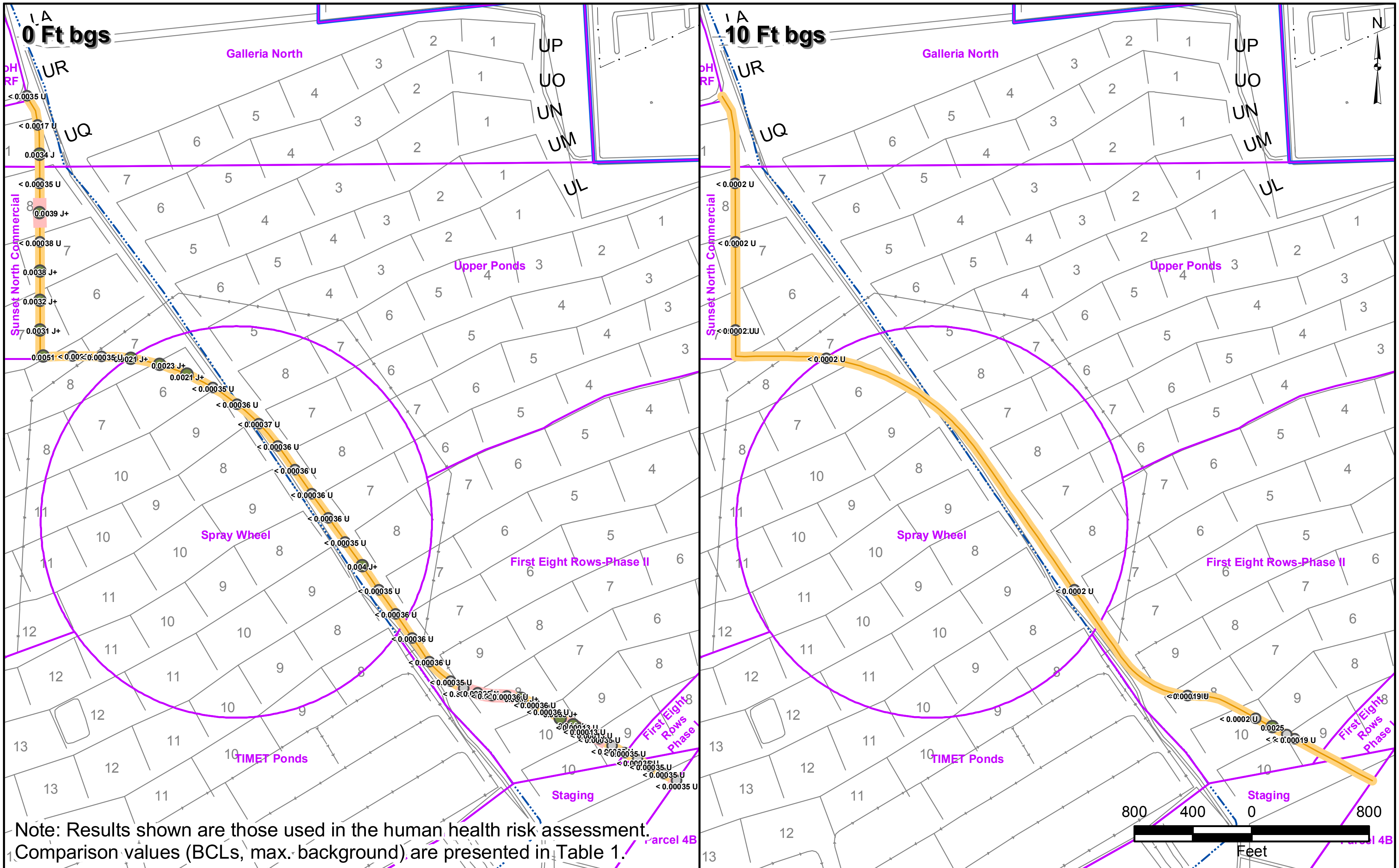
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-25

4,4'-DDT
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment
Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

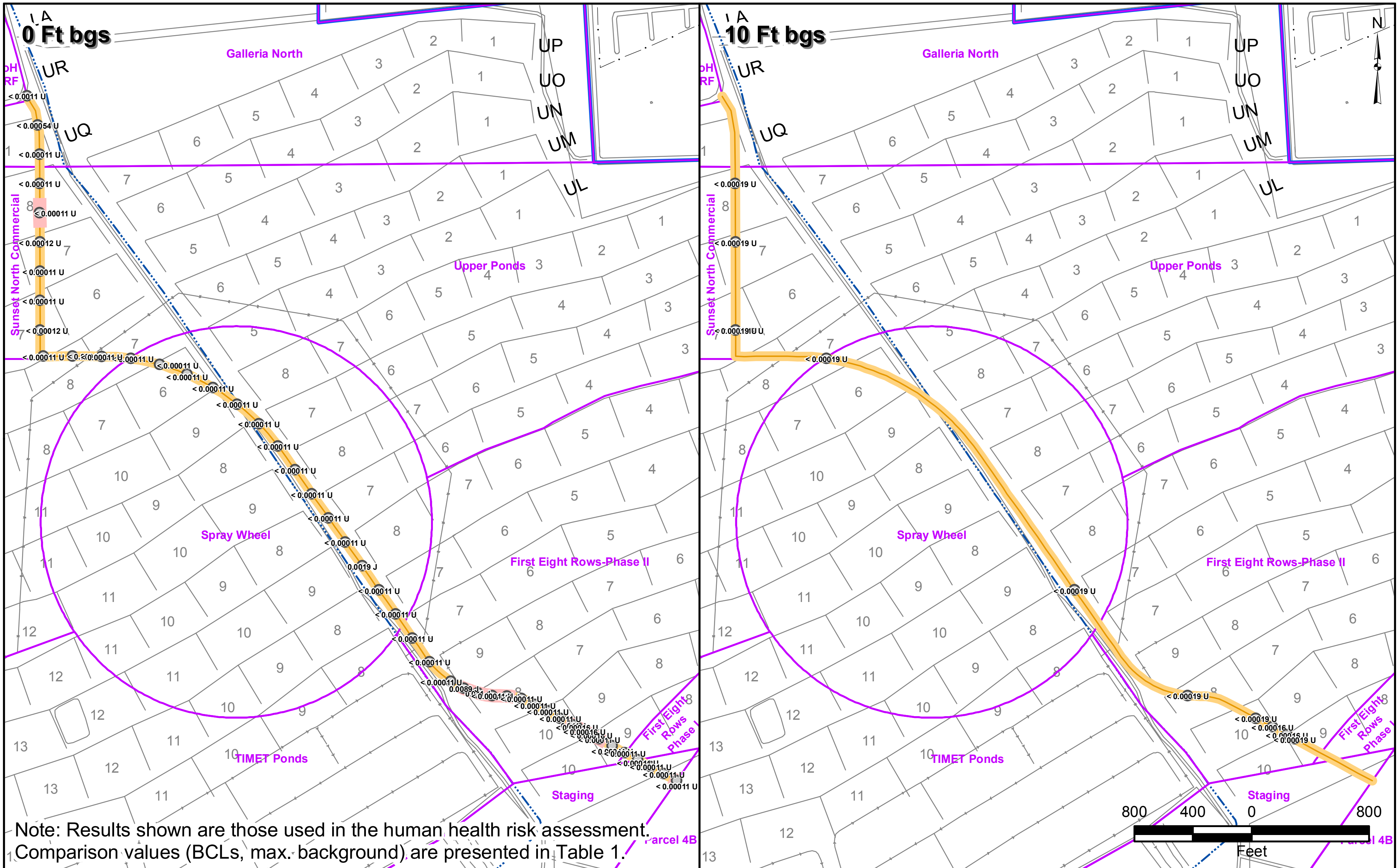
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-26

beta-BHC
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

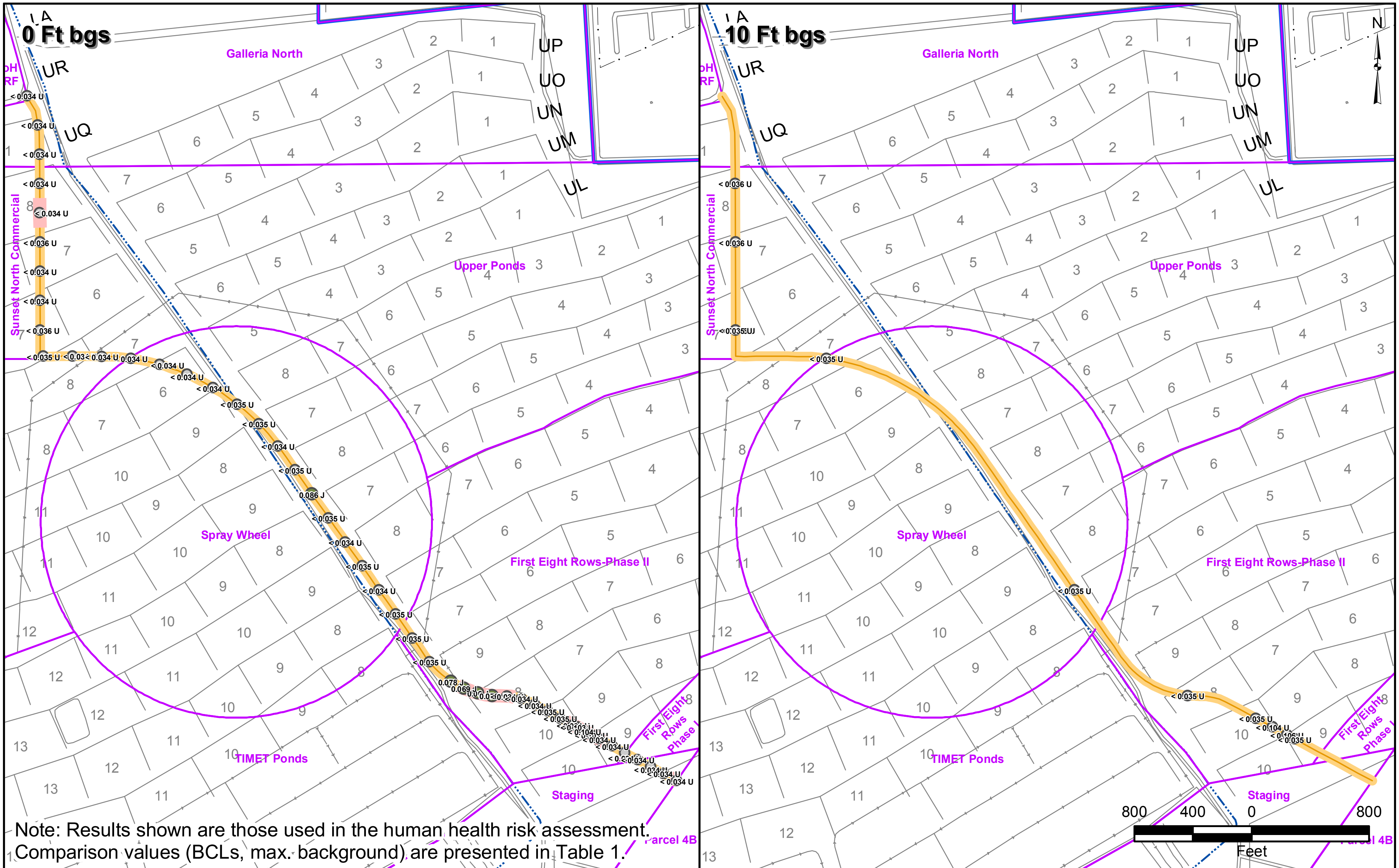
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-27

ENDRIN ALDEHYDE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment
Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

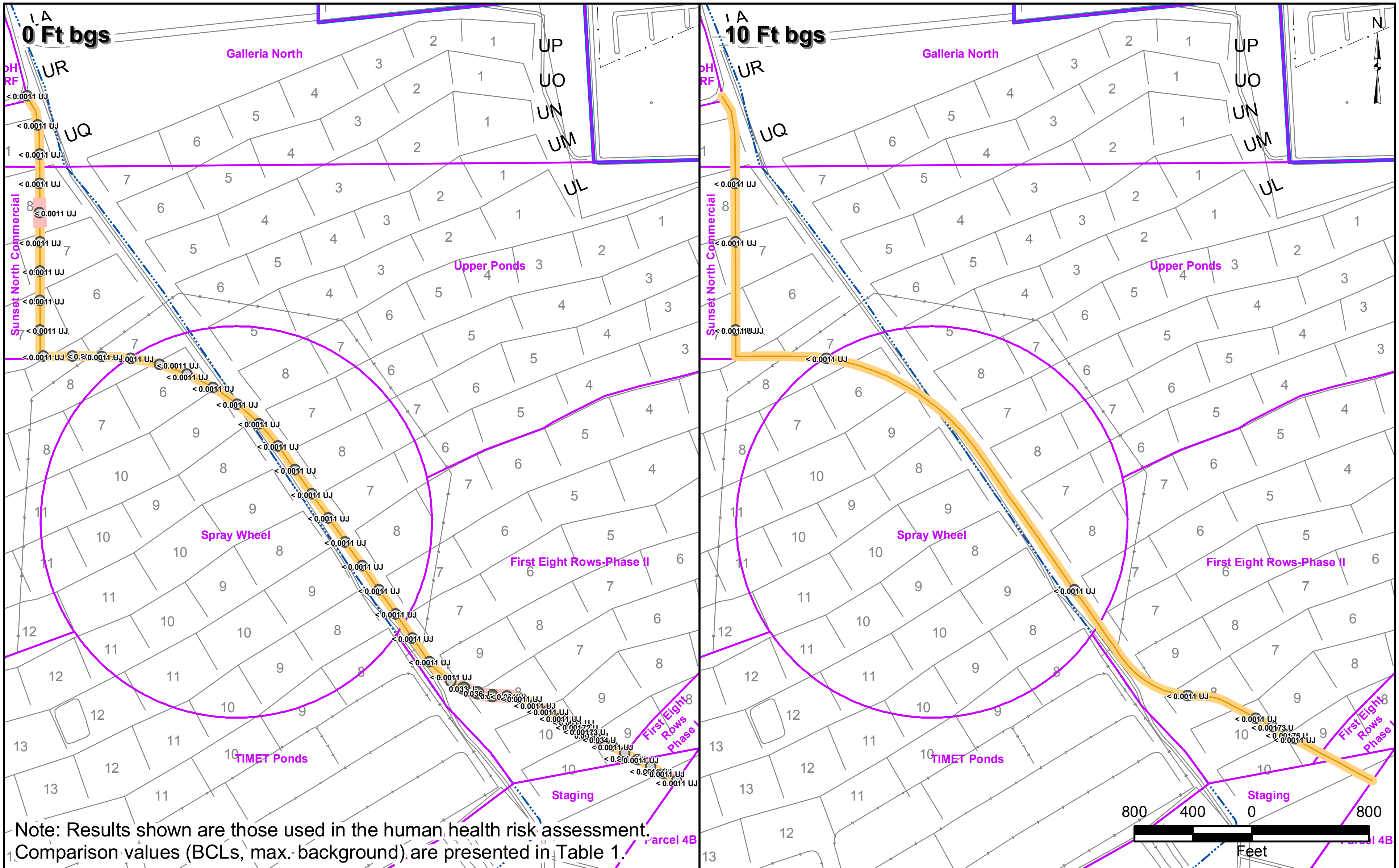
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-28

BENZYL ALCOHOL RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	
MKJ	08/10/09	JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

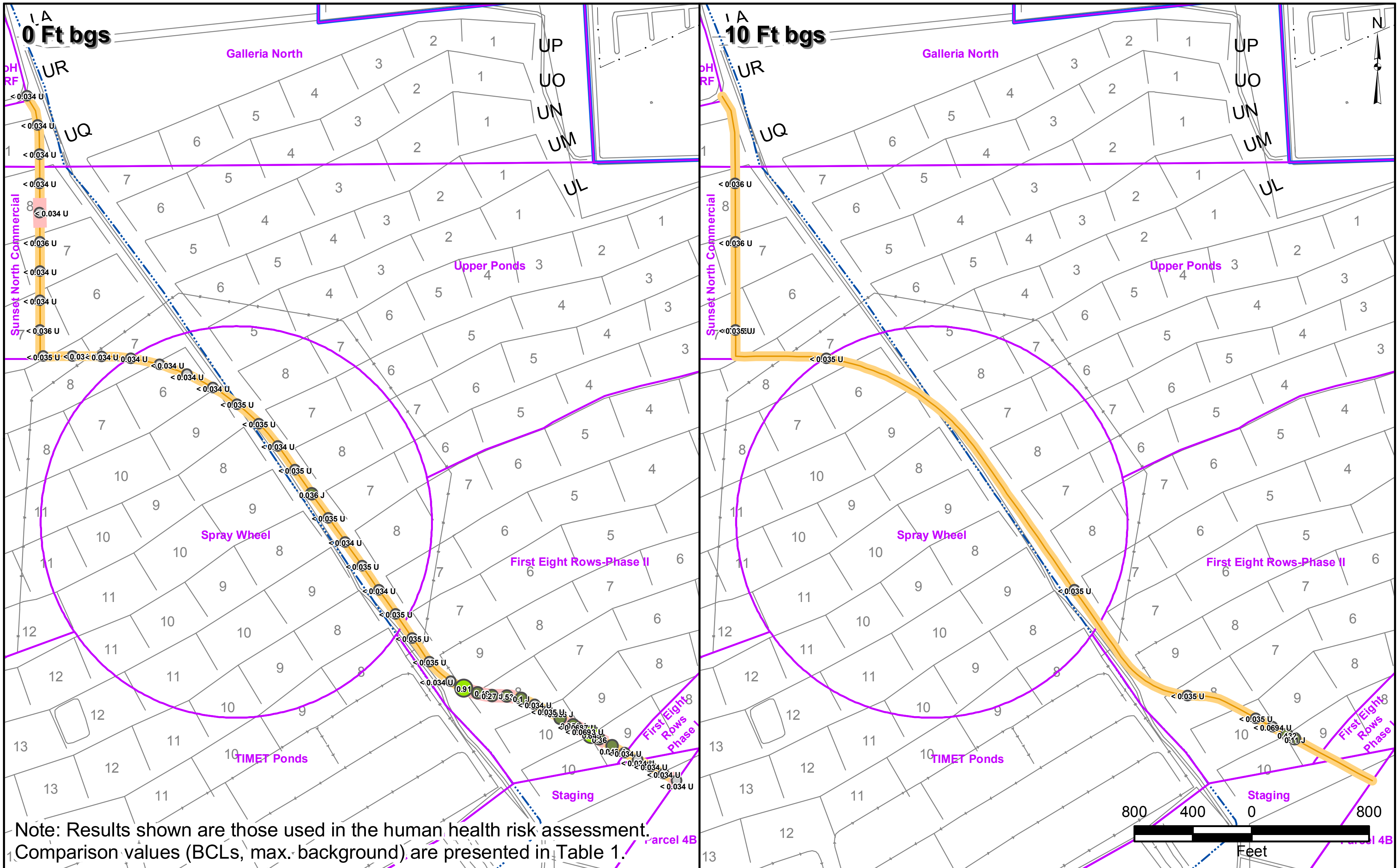
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-29

CHRYSENE
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by:	Date	JOB No. 0064276
ERM MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

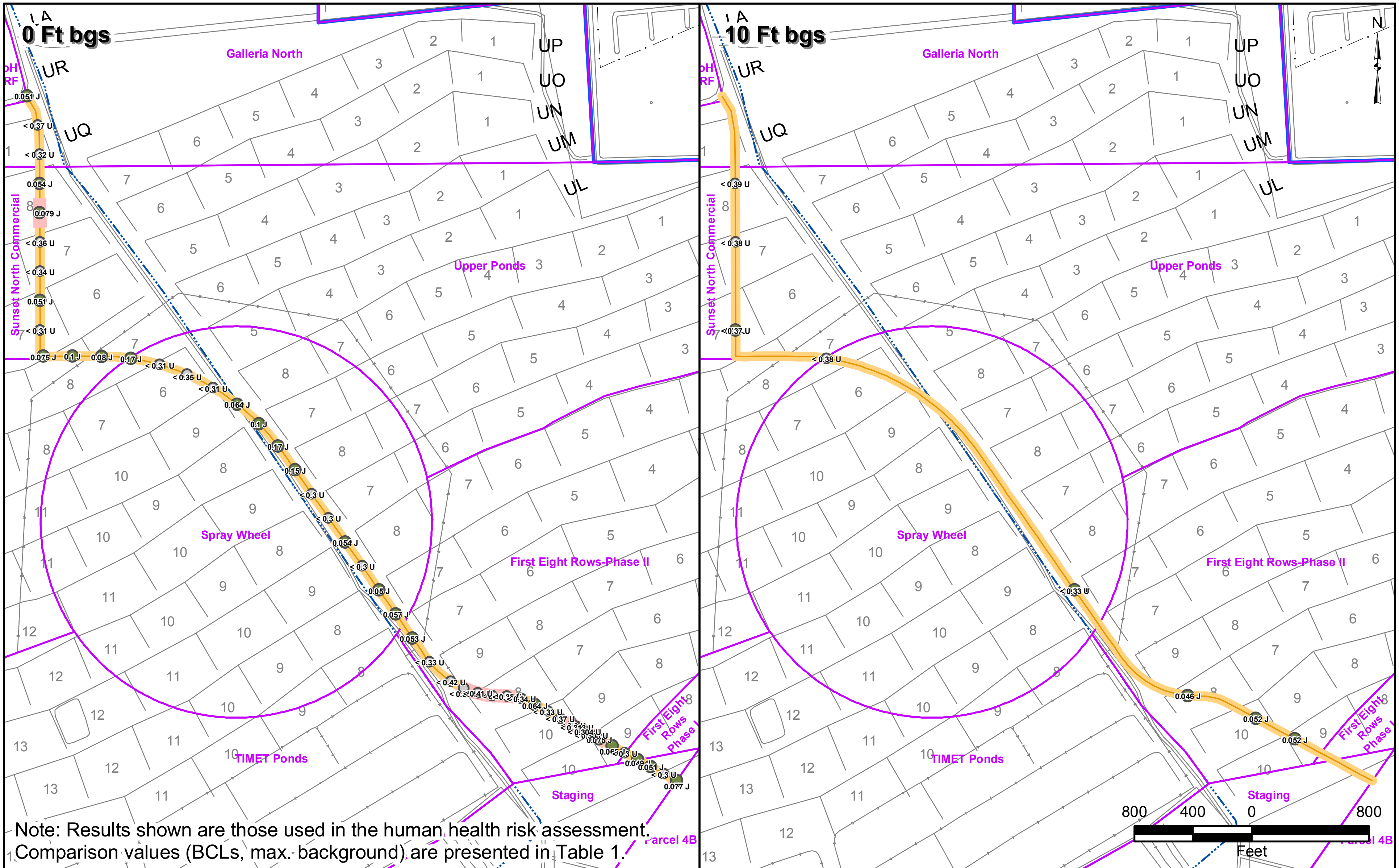
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-30

HEXACHLOROBENZENE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276
FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



- Eastside Soil Sub-Areas
- Site AOC3 Boundary
- Remediation Zones
- Sewer Alignment
- Non-Detect/No BCL
- Detect < 1/2-BCL
- >= 1/2-BCL and < BCL
- >= BCL and < 10x BCL
- >= 10x BCL

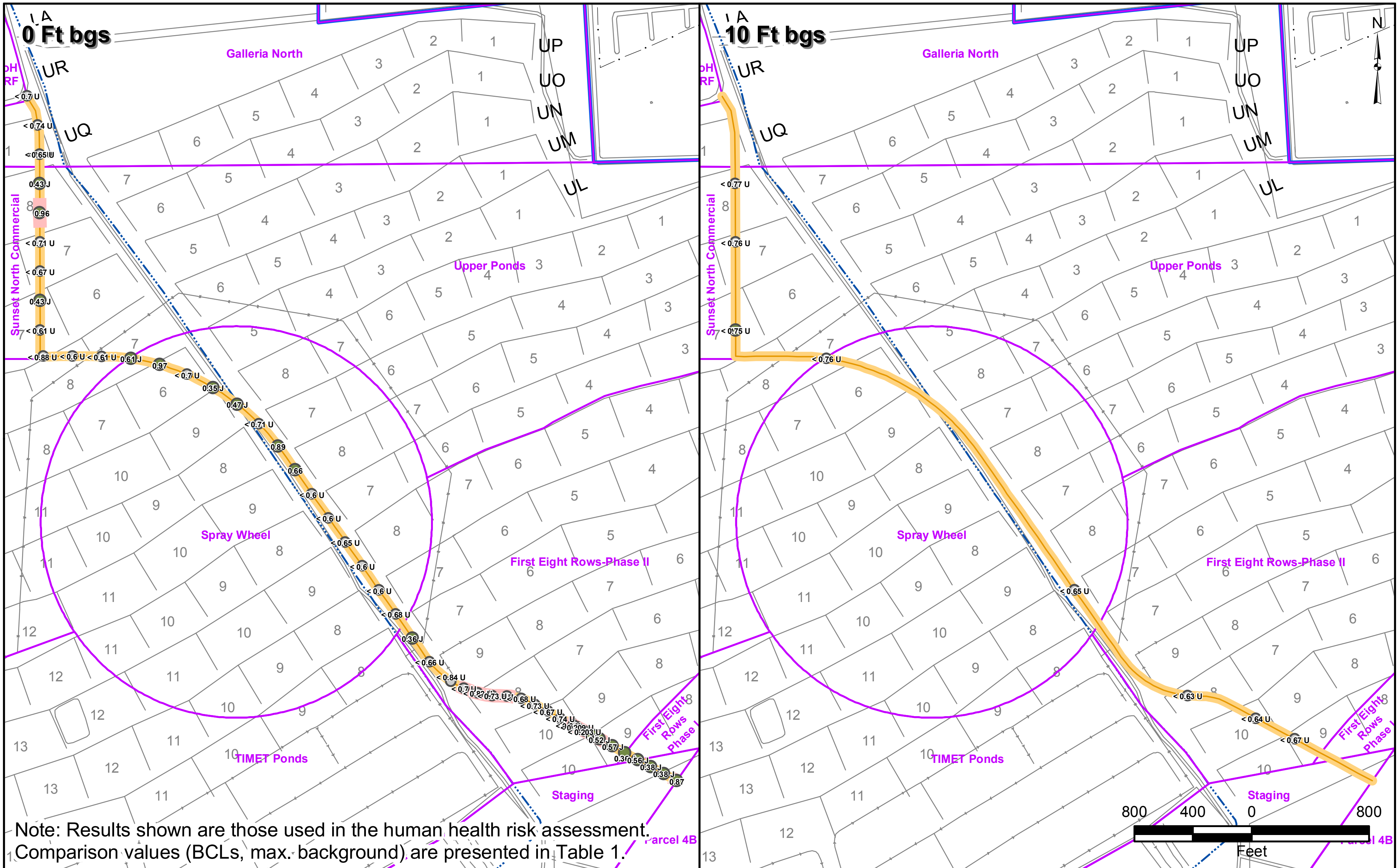
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-31

ACETALDEHYDE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas

Site AOC3 Boundary

Remediation Zones

Sewer Alignment

Non-Detect/No BCL

Detect < 1/2-BCL

>= 1/2-BCL and < BCL

>= BCL and < 10x BCL

>= 10x BCL

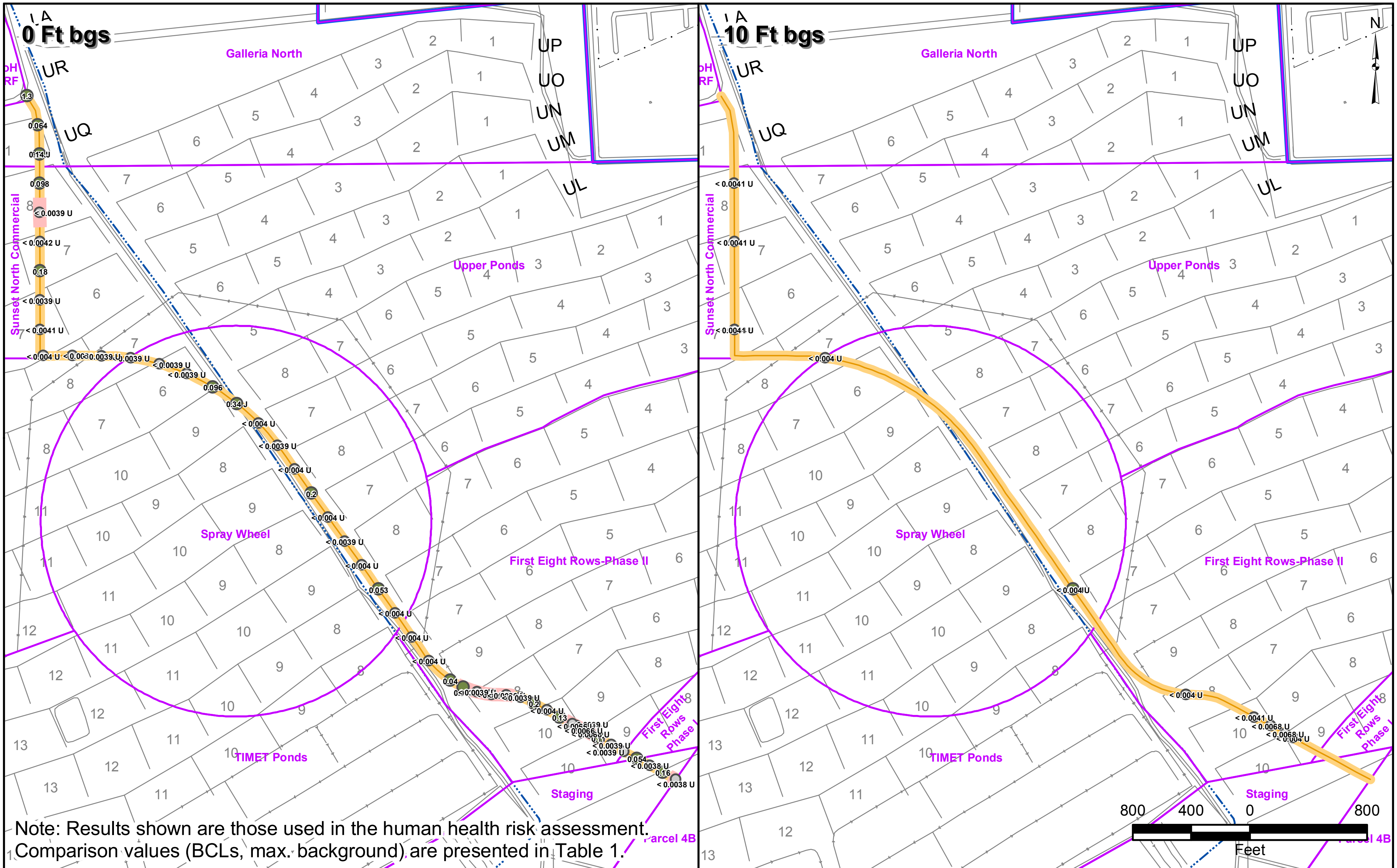
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-32

FORMALDEHYDE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Legend	
Eastside Soil Sub-Areas	Non-Detect/No BCL
Site AOC3 Boundary	Detect < 1/2-BCL
Remediation Zones	>= 1/2-BCL and < BCL
Sewer Alignment	>= BCL and < 10x BCL
	>= 10x BCL

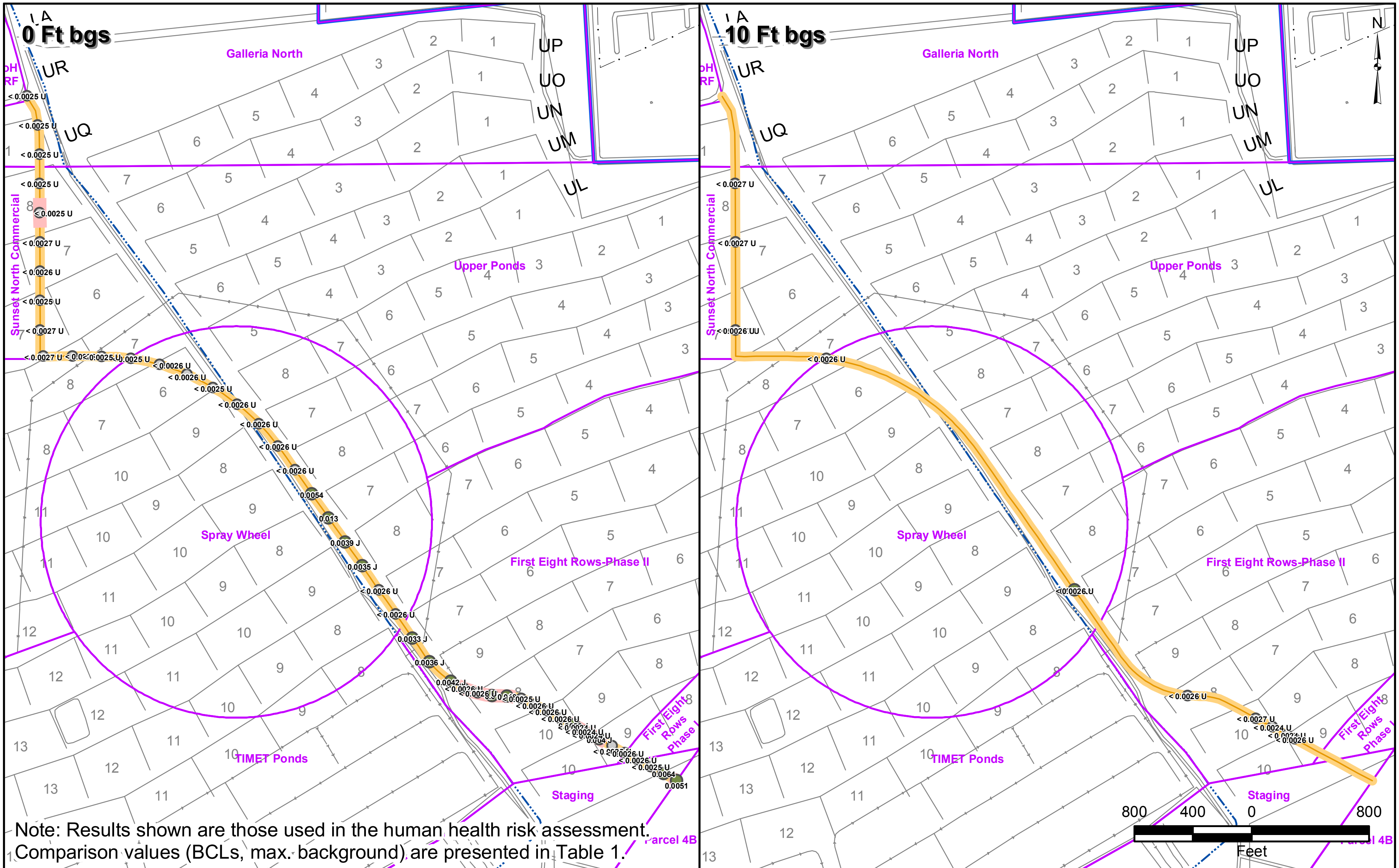
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-33

ACETONE
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation
COMPANY

Prepared by: MKJ
Date 08/10/09
JOB No. 0064276
FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

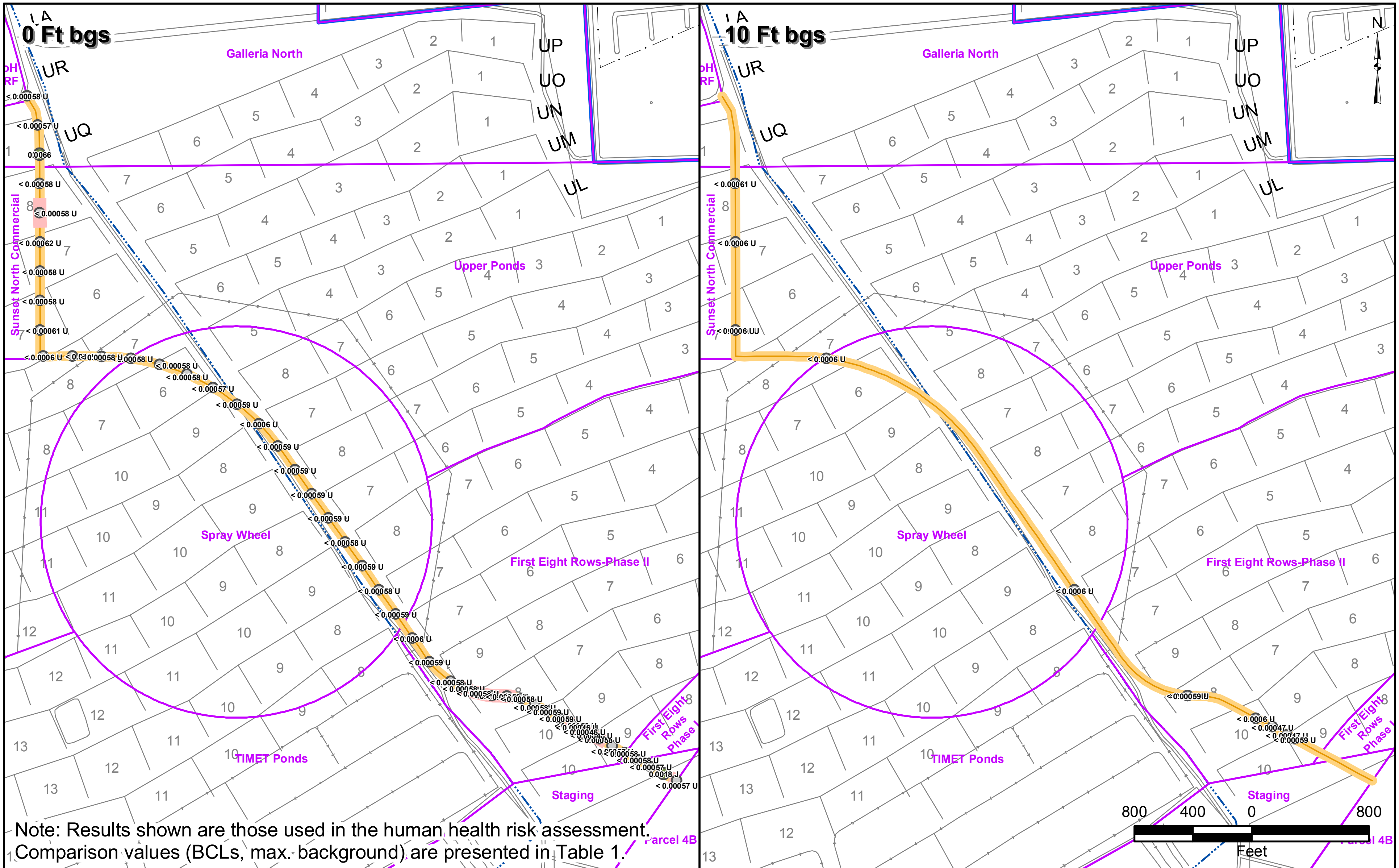
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-34

DICHLOROMETHANE RESULTS IN UTILITY CORRIDOR SUB-AREA

Basic Remediation COMPANY

Prepared by:	Date	JOB No. 0064276
MKJ	08/10/09	FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

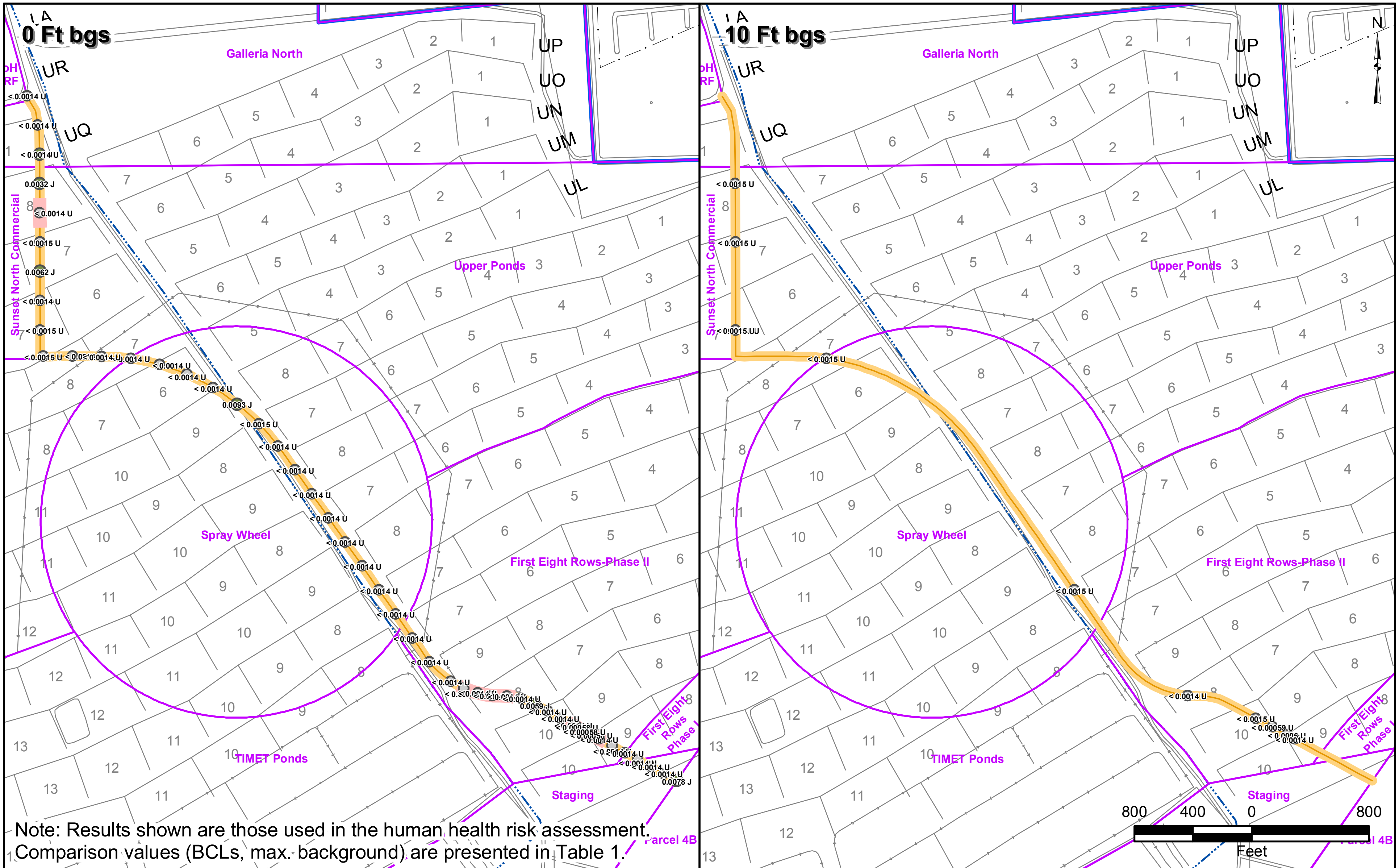
BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-35

m,p-XYLENE
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 | FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD



Eastside Soil Sub-Areas
Site AOC3 Boundary
Remediation Zones
Sewer Alignment

Non-Detect/No BCL
Detect < 1/2-BCL
>= 1/2-BCL and < BCL
>= BCL and < 10x BCL
>= 10x BCL

BMI Common Areas (Eastside)
Clark County, Nevada

FIGURE E-36

METHYL ETHYL KETONE
RESULTS IN UTILITY
CORRIDOR SUB-AREA

Basic Remediation Company

Prepared by: MKJ | Date 08/10/09 | JOB No. 0064276 FILE: GIS/BRC/UTILITY_CORRIDOR/APPENDIX_E.MXD

APPENDIX F

HUMAN HEALTH RISK ASSESSMENT CALCULATION SPREADSHEETS (ON CD)