Attachment E: Data Usability Evaluation

The primary objective of the data usability evaluation is to identify appropriate data for use in the risk assessment. Evaluation of the analytical data for Parcels A/B, in terms of usability for this assessment, was conducted in accordance with the criteria presented in the *Guidance for Data Usability in Risk Assessment (Parts A and B)* (U.S. EPA, 1992a,b) and the *NDEP Supplemental Guidance for Assessing Data Usability for Environmental Investigations at the BMI Facility in Henderson, NV* (NDEP, 2010). These criteria include:

- Site data report content
- Documentation
- Data sources
- Analytical methods and detection limits
- Data review
- Data quality indicators (DQIs): precision, accuracy, representativeness, comparability, and completeness (PARCC).

The site-wide soil gas HRA will include a discussion of the data usability for all soil gas samples collected as part of the Phase B Source Area Soil Gas Investigation. As requested by NDEP, this data usability evaluation is limited to the nine soil gas samples located in Parcels A/B. A summary of the data analysis relevant to usability criteria for risk assessment are provided in Table E-1.

Table E-1: Data Usability Evaluation for Soil Gas Samples in Parcels A/B

Data Usability Criteria	Evaluation Results
Reports	All soil gas site characterization data in Parcels A/B were reviewed. Data are presented in the Revised Data Validation Summary Report (DVSR; Appendix D). Soil gas samples were collected from May 7 through May 29, 2008. Validation of laboratory data was completed by August 19, 2008 and a draft DVSR was submitted to NDEP on August 25, 2008. NDEP provided comments to the DVSR on September 18, 2008 and September 30, 2008; Tronox provided responses to NDEP comments on September 29, 2008 with a revised DVSR submitted on October 13, 2008; which was approved by NDEP on October 20, 2008. The DVSR and accompanying lab reports were considered complete for HRA purposes.
Documentation	Parcels A/B include nine soil gas sample locations (five locations in Parcel A and four locations in Parcel B) and represents a small subset of the entire Phase B Source Area Soil Gas Investigation. The placement of the site-wide sample locations (including Parcels A/B) were based on review of Phase A soil data (ENSR 2007) and historical groundwater data collected from prior investigations (Hargis and Associates 2008). All reviewed reports provide adequate information regarding sample results related to location and sampling procedures.
Data Sources	All analytical data for the soil gas samples were provided. Soil gas locations were placed at the property boundary, while other locations were spread randomly throughout the Parcels. Some soil gas locations were co-located near groundwater monitoring wells. Based on placement, and considering the context of Parcels A/B soil gas data within the entire site-wide investigation, the sample results were deemed representative to evaluate Parcel A/B soil gas conditions.
Analytical Method and Detection Limits	Soil gas samples were analyzed for VOCs using EPA Method TO-15. This method is adequate to characterize VOCs in soil gas. All helium tracer gas analyses utilized modified EPA Method 3C. Method detection limits were confirmed to be adequate for risk assessment applications.
Data Review	The quality of the analytical results was reviewed by Renee Kalmes CIH and Greg Brorby DABT of Exponent. The data review included review of: • Agreement of analyses conducted with chain-of-custody (COC) requests • Data package completeness • Holding times • Initial and continuing calibrations

	• Method blanks/canister blanks • Surrogate spike recoveries • Internal standard results • Laboratory control sample (LCS) results • Field duplicate results • Laboratory duplicate results • Quantitation limits and sample results
Data Quality Indicators	Based on the LCS results, field and laboratory duplicate results, surrogate spike recoveries and canister blanks, precision and accuracy were deemed acceptable. Representativeness of the data was deemed acceptable as soil gas sampling included site-wide locations and locations biased to accommodate groundwater locations with higher VOC concentrations. The only data quality indicators associated with Parcels A/B soil gas data were based on method blank contamination (acetone, methylene chloride, vinyl acetate, carbon disulfide) and quantitation problems for acetone in which two samples were qualified as J+ (See Table E-2). In all cases, the qualified data were deemed acceptable for risk assessmen purposes.

The specific information that Exponent reviewed as part of the data usability evaluation is discussed below.

As part of the soil gas DVSR, individual validation memoranda were developed for batches of soil gas samples. Appendix C of the DVSR presents these documents. Exponent reviewed the following ENSR validation memoranda that contained data for the relevant Parcel A/B soil gas data:

- Validation Memo TH539to15wwb for SG-01, SG-02, SG-03, SG-04, SG-05
- Validation Memo TH537to15wwb for SG-06
- Validation Memo TH536to15wwb for SG-10, SG-11 and SG-12

ELEMENTS REVIEWED

Sample data were reviewed for the following elements as reported in the validation memoranda for the relevant Parcels A/B data:

- Agreement of analyses conducted with COC requests
- Data package completeness
- Holding times

- Initial and continuing calibrations
- Method blanks/canister blanks
- Surrogate spike recoveries
- Internal standard results
- LCS results
- Field duplicate results
- Laboratory duplicate results
- Quantitation limits and sample results

DISCUSSION

Agreement of Analyses Conducted with COC Requests

No discrepancies were noted.

Data Package Completeness

The data packages were complete as received.

Holding Times

The samples were analyzed within the method-specified holding time.

Initial and Continuing Calibrations

The percent relative standard deviations (%RSDs), and the response factors (RFs) of all target compounds were within the quality control (QC) acceptance criteria for the initial and continuing calibrations associated with the sample analyses.

Method Blanks/Canister Blanks

Selected target compounds were detected in several laboratory method blanks associated with the sample analyses. The presence of blank contamination indicates that false positives may exist for these compounds in the associated samples. Action levels (ALs) were established at 10× the concentration detected in the laboratory method blank for the common laboratory contaminants acetone and 2-butanone, and at 5× the concentration detected in the method blank for the remaining compounds. Sample results were qualified as follows:

- If the sample result was < the sample quantitation limit (SQL) and < the AL, the result was reported as not detected (U) at the SQL.

- If the sample result was > SQL but < AL, the result was reported as not detected (U) at the reported concentration.
- If the sample result was > AL, the result was not qualified.

Target compounds were not detected in the canister blanks.

The samples were collected in canisters verified as clean by the laboratory through routine checks of ten percent of the canisters cleaned.

Surrogate Spike Recoveries

Surrogate percent recoveries (%Rs) met the QC acceptance criteria for all samples in this data set.

Internal Standard Results

All internal standard recoveries met the QC acceptance criteria.

LCS Results

The LCS %Rs met the QC acceptance limits of 70-130% for all sample analyses.

Field Duplicate Results

Duplicates were obtained on select samples within each validation report group and each validation report lists the relative percent difference (RPD) of the detected compounds. No Parcels A/B data were qualified due to field duplication issues.

Laboratory Duplicate Results

Laboratory duplicate analyses were performed on select samples within the three data validation group reports. The RPDs for all target compounds in the duplicate samples met the QC acceptance criteria.

Quantitation Limits and Sample Results

All samples were analyzed at minor dilutions due to the requirement to pressurize the canisters prior to analysis. Sample results and SQLs were adjusted accordingly.

In addition, all samples required additional dilution due to target compound concentrations that exceeded the calibration range. All dilution factors associated with Parcel A/B reported results are tabulated below.

Sample ID	Dilution Factors
SG01B-05	1.7
SG02B-05	1.7
SG03B-05	1.61
SG04B-05	1.53
SG05B-05	1.63
SG06B-05	1.54
SG10B-05	1.55, 7.75
SG11B-05	1.47, 14.7
SG12B-05	1.54, 7.7

The laboratory combined the results from multiple runs to ensure that all results were within the calibration range, and non-detect results were reported at the lowest possible reporting limit. The laboratory did not adjust the reporting limits for the additional analytical dilutions.

The laboratory appended an "M" qualifier to selected results to indicate possible matrix interference due to elution of non-target compounds, leading to a potential high bias in the results. Associated results less than the reporting limit were already flagged with a "J" to indicate an estimated result; in these cases, the "M" qualifier was removed and the "J" qualifier was retained. If the associated result was greater than the reporting limit, the "M" qualifier was replaced with "J+" during validation to indicate an estimated value with possible high bias.

CONCLUSION

Evaluation of the analytical data for Parcels A/B, in terms of usability for the risk assessment, was conducted in accordance with U.S. EPA and NDEP guidance. A small number of data points were found to be qualified based on method blank and quantitation issues but were deemed acceptable. Based on the evaluation, all Data Usability requirements were met and all Parcel A/B soil gas data were deemed to be usable for risk assessment purposes.

REFERENCES

Nevada Division of Environmental Protection (NDEP). 2010. Supplemental Guidance for Assessing Data Usability for Environmental Investigations at the BMI Facility in Henderson, NV. September 1.

U.S. Environmental Protection Agency (U.S. EPA). 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 (U.S. EPA). 1992b. Guidance for Data Usability in Risk Assessment. Part B. Office of Emergency and Remedial Response, Washington D.C. Publication 9285.7-09B. PB92-963362. May.