Geosyntec consultants

180A Marketplace Blvd
Knoxville, TN 37922
PH 865.330.0037
www.geosyntec.com

Memorandum

Date:	21 January 2021
To:	Cindy Bartlett, RG, LG Geosyntec Consultants, Portland, Oregon
From:	Jennifer Pinion
CC:	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverables – Pace Analytical Sample Delivery Groups L1233953 and L1235402**

SITE: Cascade TSA Data Gaps; Job No: PNG0564519

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of three soil samples, collected on 24 and 29 June 2020 as part of the site investigation activities for the Cascade Corp., Fairview Oregon sampling event.

The solid samples were analyzed by Pace Analytical [formerly ESC Lab Sciences (ESC)], Mt. Juliet, Tennessee for the following analytical test:

- United States Environmental Protection Agency (US EPA) Method 8260D – Volatile Organic Compounds (VOCs)

The solid data used for dry weight analysis was not validated.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below and based on the information provided, the data are usable for supporting project objectives.

The data were reviewed based on the following documents, the pertinent method referenced by the data package and professional and technical judgment:

- US EPA National Functional Guidelines for Organic Superfund Methods Data Review, January 2017 (EPA-540-R-2017-002)
- US EPA National Functional Guidelines for Inorganic Superfund Data Review, January 2017 (EPA-540-R-2017-001)

The following samples were analyzed in the data sets:

Laboratory IDs	Client IDs
L1233953-01	VMW-L 67
L1233953-02	VMW-L 72

Laboratory IDs	Client IDs
L1235402-01	VMWJ2-82.75-20200629

The soil samples were received at the laboratory within the temperature criteria of 0-6 degrees Celsius (ºC).

The following issues were noted on the chain of custody (COC) forms. No qualifications were applied to the data based on the issues discussed below.

- Incorrect error corrections were observed on the COC in laboratory reports L1233953 and L1235402 instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

- The COC for laboratory report L1235402 indicated that both preserved and unpreserved containers were received with the shipment. Additional information from the laboratory indicated that the preserved sample container was used for the VOC analysis.

1.0 VOLATILE ORGANIC COMPOUNDS

The soil samples were analyzed for VOCs per US EPA method 8260D.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogate
✓ Field Duplicate
✓ Sensitivity
⊗ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in these data packages are considered usable for supporting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for the sample set is 100%.

1.2 Holding Time

The holding time for the VOC analysis of a preserved soil sample is 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches WG1502044 and WG1504838). VOCs were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

2-Butanone (MEK) was detected at an estimated concentration greater than the MDL and less than the reporting detection limit (RDL) in the method blank in batch WG1502044. Since the concentrations of 2-butanone were greater than the RDL and based on professional and technical judgement, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS and one LCS/LCS duplicate (LCSD) pair was reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria with the following exceptions.

L1233953: The recovery of 1,2,4-trichlorobenzene in the LCS in batch WG1502044 was high and outside the laboratory specified acceptance criteria. Since 1,2,4-trichlorobenzene was not detected in the associated samples, no qualifications were applied to the data.

L1235402: The recovery of 1,1,2-trichloroethane in the LCS in batch WG1504838 was high and outside the laboratory specified acceptance criteria. Since 1,1,2-trichloroethane was not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Field Duplicate

Field duplicates were not collected with the sample set

1.8 Sensitivity

The sample results were reported to the RDLs. Elevated non-detect results were not reported.

1.9 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20% as part of the data validation process. It was noted that the samples were reported to the RDLs and the method blank QC was reported to the MDLs in the level II report; both the RDLs and the MDLs were listed in the EDD. It was also noted that the data were reported in units of parts per million (ppm) in the EDD, while the soil sample data were reported in units of mg/kg in the level II report. This did not affect the quality of the data. No other discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.
J-	The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	**Description**
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed or modified: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference