

Data Validation Services

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October 16, 2013

Cody Martin
C&S Companies
90 Broadway
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RE: **Data Usability Summary Report (DUSR) for HARBORcenter Site Analytical Laboratory Data**
TAL-Buffalo SDG Nos. 480-36619-1, 480-36717-1, 480-36833-1, 480-36915-1, 480-37016-1,
480-37165-1, 480-37238-1, 480-37308-1, 480-37388-1, 480-37529-1, 480-37529-2, 480-37596-
1, 480-37636-1, 480-37638-1, 480-37782-1, 480-38089-1, 480-38259-1, 480-38262-1, 480-
38447-1, 480-38627-1, 480-38691-1, 480-38873-1, 480-38875-1, 480-42606-1, and 480-42606-2
Paradigm SDG No. 132817

Dear Mr. Martin:

Review has been completed for the analytical data packages noted above, generated by TestAmerica Laboratories, that pertain to samples collected between 04/17/13 and 07/24/13 HARBORcenter site. One hundred four samples, ten field duplicates, nine aqueous samples, and two aqueous field duplicates were processed for TCL volatiles, TCL semivolatiles, and TAL metals. The aqueous samples were also processed for dissolved samples. Six soil samples were processed for acetone on one container, and hexavalent chromium and acetone on a second container; a field duplicate was also processed for hexavalent chromium. Trip blanks and sample matrix spikes were processed. The analytical methods that were utilized are those of the USEPA SW846 8260C, 8270D, 6010C, 7470/7471, and 7196. The hexavalent chromium analyses and half of the acetone analyses were conducted by TAL-Edison.

The laboratory data packages that were submitted contain full deliverables for validation, and this usability report is primarily generated from review of the summary form information, with full review of sample raw data, and limited review of associated QC raw data. The reported summary forms have been reviewed for application of validation qualifiers with guidance from the USEPA national and regional validation guidelines.

The following items were reviewed:

- * Laboratory Narrative Discussion
- * Custody Documentation
- * Holding Times
- * Surrogate Standard Recoveries
- * Matrix Spike Recoveries/Duplicate Correlations
- * Blind Field Duplicate Correlations

- * Preparation/Calibration Blanks
- * Laboratory Control Samples (LCSs)
- * Calibration/Low Level Standards
- * ICP Serial Dilution
- * Instrument MDLs
- * Sample Result Verification

The data review includes evaluation of the specific items noted in The NYS DER-10 Appendix B section 2.0 (c). The items listed above that show deficiencies are discussed within the text of this narrative. The laboratory QC forms illustrating the excursions can be found within the laboratory data packages.

In summary, analyses were primarily conducted in compliance with the required analytical protocols. Most sample results are usable either as reported or with qualification as estimated in value. However, the results for semivolatile phenolic analytes in three soil samples and for the acetone analyses performed on the hexavalent chromium soil containers are rejected and not usable.

Due to delayed preservation, the results for filtered metals in the samples have been qualified as estimated in value, with a possible low bias.

Copies of the sample identification summaries and the validation qualifier definitions are attached to this text. Also included with the report are client results tables edited with the qualifications recommended within this report.

The following text discusses quality issues of concern.

Blind Field Duplicates

The blind field duplicates were collected at locations MW-04, MW-06, G2 9-10, F1 8, SE11 3-6, B4 13-14, B2 12', B5 10', NE9 3-8, NE10 3-8, SW6 3-9, SW-10 7, and B-B2 5 bg. Correlations fall within validation guidelines, with the following exceptions, results for which are qualified as estimated in the parent sample and its duplicate:

- o caprolactum ($>\pm$ CRDL) in MW-04
- o aluminum ($>\pm$ CRDL) in MW-06-Total
- o iron (110%RPD) in MW-06-Dissolved
- o toluene ($>2X\pm$ CRDL) in G2 9-10
- o lead (77%RPD) in F1 8
- o aluminum (61%RD) in B5 10'
- o methyl acetate ($>2X\pm$ CRDL), calcium (53%RPD), and mercury (66%RPD) in NE9 3-8
- o cyclohexane, methylcyclohexane (both $>2X\pm$ CRDL), and barium, beryllium, copper, and manganese (75%RPD to 124%RPD) in NE10 3-8
- o aluminum, barium, copper, magnesium, manganese, potassium, sodium, vanadium, and zinc (57%RPD to 143%RPD) in SW-10 7

Chain-of-Custody/Sample Receipt

The dissolved metals fractions were not filtered and preserved until sample receipt. Therefore, results for filtered samples have been qualified as estimated in value.

The fact that the aqueous samples submitted for dissolved metals were not filtered and preserved until after laboratory receipt was not mentioned on either the laboratory login forms or the case narrative.

Samples reported in SDG 480-38262 were shipped three days after collection, and received by the laboratory four days after collection, two days beyond the allowable timeframe.

Identifications assigned at collection to eleven of the soil samples were corrected after the data packages were generated. Upon request, the laboratory resubmitted the five affected data packages (480-36833-1, 480-37016-1, 480-36915-1, and 480-38262-1) to reflect the corrected IDs. In some cases the correct IDs were on the containers, but the custody IDs were used during login.

The relinquish entries on the custody forms for samples reported in SDGs 480-36619-1, do not include the date and time that the samples were released.

The final laboratory receipt signatures were not entered on the custody forms associated with samples reported in SDG 480-37636

Discrepancies between container and custody identifications observed at sample receipt were resolved by using the custody identifications (SDG 480-36833-1).

The fields designating the specific sample analytical fraction requirements were not filled in on the custodies associated with samples reported in SDG 480-37165-1. The column headers were filled in.

Trip blanks were submitted with some of the sample batches, but were not logged onto the custody forms.

The down-arrows were omitted from the collection dates of samples reported in SDG 480-37308 and 480-42606.

The first page of the subcontract custody forms for the hexavalent chromium analyses shows no receipt signature, and the second page shows not receipt entries at all. The first page shows a date of 9/26/13 that should be 7/26/13.

The matrix designation on the custody form for the matrix spikes of MW-02 show "soil". The parent sample correctly shows "aqueous."

Strikeovers on the custodies should have been dated and initialed.

TCL Volatile and Acetone Analyses by EPA 8260C

The acetone results reported in SDG 480-42606-2 were from analyses on the same containers used for samples collected 07/24/13 and submitted originally for hexavalent chromium analyses. Because the analyses were conducted from soils in previously opened containers that were possibly used in an environment not protected from volatile analytes, there is potential for external contamination and/or losses. Therefore, those data are not usable, and are to be rejected.

The following detections are qualified as tentative in identification and estimated in value due to interferences in the mass spectra:

- isopropylbenzene in E3 10'
- benzene in B19 10 and SW7 3-5
- o-xylene in SE8 3-8 and DUPA

The following detections are edited to reflect non-detection due to very poor mass spectral quality:

- benzene in NE8 4-6 and DUPH
- methyl acetate in SW4 3-6
- 1,2-dibromo-3-chloropropane in SW7 3-5

The following detections are considered external contamination, and edited to reflect non-detection due to presence in the associated method blanks:

- toluene and xylenes flagged as "B" in the samples reported in SDG 480-36717-1
- methylene chloride DUPJ, and in the samples reported in SDG 480-37238, 480-37308, 480-38262,
- toluene in F2 10
- ethylbenzene, toluene, and xylenes in soils reported in 480-38529

Due to very poor response (signal to noise ratio) in the lowest concentration calibration standard, the reporting limits for 1,1,2-1,2,2-trichloroethane in the aqueous samples reported in SDG 480-36717-1 have been edited upward by a factor of five. Other calibration responses meet analytical and validation requirements, with the following exceptions, the results for which are qualified as estimated in the indicated samples:

- bromomethane (low RRF), carbon tetrachloride, dibromochloromethane, bromoform, and 1,2-dibromo-3-chloropropane (25%D to 33%D) in the aqueous samples reported in SDG 480-36717-1
- acetone, 2-butanone (MEK) and methyl acetate (23%D to 26%D) in C2 10', E2 10' and J5
- bromomethane and chloromethane (21%D and 22%D) in aqueous samples reported in 480-37016
- acetone and 2-butanone (low RRF) in soils reported in 480-37016
- 1,2-dibromo-3-chloropropane (24%D) in MW-05
- bromomethane, bromoform and 1,2-dibromo-3-chloropropane (21%D to 40%D) in SE1 0-8, SW2 6-9, SE2 3-8, SW3 4-10, SE3 3-10, J4 10, H4 14 and SW1 3-9
- bromoform, and 1,1,2-1,2,2-trichlorotrifluoroethane, and 1,2-dibromo-3-chloropropane (29%D and 39%D) in NE5 3'-8'
- bromoform, isopropyl alcohol, and 1,2-dibromo-3-chloropropane (28%D to 40%D) in all soils reported in SDG 480-37238 except F2 10
- carbon disulfide, 1,2-dibromo-3-chloropropane and bromoform (26%D to 30%D) in B1 9'-10' and NE8 4'-10'
- bromoform (27%D) in MW-02
- dichlorodifluoromethane and carbon disulfide (21%D to 29%D) in SE10 8' and E1 8'-9'
- bromomethane and chlorodifluoromethane (23%D and 29%D) in SE6 3'-6', SE9 6'-8', SE8 3'-8', SE7 3'-8', SE11 3'-6', F1 8', DUP A, DUP B and DUP C
- dichlorofluoromethane (22%D and 29%D) in all samples reported in SDG 480-38638
- carbon disulfide (27%D) in B2 10, A2 10, C5 10 DUPD, DUPE, and DUPF

- bromomethane (21%D and 23%D) in DUPJ and the samples reported in SDG 480-38691
- bromomethane, chloroethane, and acetone (21%D to 24%D) in SDG 480-480-38447

Due to elevated surrogate standard recoveries, the results for detected analytes in F3 10' are qualified as estimated in value. Other surrogate recoveries are acceptable, with the exception of that for BFB in B-D2 3.5'. This sample also exhibited a low internal standard response. The result for acetone in that sample is qualified as estimated.

The detection of acetone in B-D4 Dbg is considered potential external contamination, and is edited to reflect non-detection at a slightly elevated reporting limit. The initial calibration standard linearity of the instrument is very poor (147%RSD), with proportionally elevated responses at lower concentrations that indicate system contamination or noise.

Matrix spikes of TCL volatiles in H4 14, J4 10, F2 10, MW-02, E1 8-9, SE 3-8, 5 10, SW7 3-5, NW4 0-10, NW5 3-5, show acceptable recoveries and correlations for the 13 evaluated analytes, with the following exceptions, results for which are qualified as estimated in the indicated parent sample:

- 1,2-dichloroethane (56% and 62%) in F2 10
- 1,1-dichloroethane in (74% to 79%) SE7 3-8 and SW7 3-5

The matrix spikes of NE4 3-8 show outlying recoveries for most of the evaluated analytes. However, review of the recoveries of the surrogate recoveries show inconsistencies that may indicate spiking anomalies. For example toluene recovered at 67% and 66%, but surrogate d8-toluene recovered at 102% in both matrix spikes. The recoveries should be nearly identical. No qualification is made.

Because the limited spike analyte list does not include acetone, there was no applicable LCS evaluation for the acetone analyses reported in SDG 480-42606-1.

MW-02 was processed at dilution due to foaming. This results in elevated reporting limits for analytes not detected in the sample.

Some of the samples were processed at medium level (using the methanol fractions rather than the low level fractions), even though there was little or no matrix responses. In some cases, they were processed at medium level due to the holding time exceedence for the low level that was caused by delayed sample receipt. Reporting limits are proportionally elevated.

The report forms in the Paradigm data package do not include the required information for solids content, sample weights, and volumes.

TCL Semivolatile Analyses by EPA 8270

Results for the phenolic compounds in SE6 3-6, SE11 3-6, and DUPC are rejected and not usable due to the failure of surrogate standard 2,4,6-tribromophenol to recover in those samples.

The following detections are qualified as tentative in identification and estimated in value due to interferences in the mass spectra:

- butylbenzylphthalate in MW-03
- anthracene in J5
- anthracene, benzo(g,h,i)perylene, and chrysene in C2 10'
- benzo(a)anthracene in NW2 10'
- anthracene and fluoranthene in E3 10'
- carbazole in H4 10'
- 2-methylnaphthalene in J4 10', H4 10', SE7 3-8, and DUPA
- naphthalene, anthracene, and biphenyl in SW2 6-9
- anthracene and fluorene in J4 10
- anthracene in B18 and SE6 3-6
- fluoranthene in SE7 3-8 and DUPC
- fluorene in DUPA and DUPC
- benzo(k)fluoranthene and chrysene in SE9 6-8

The following detections are edited to non-detection due to very poor mass spectral quality:

- indeno(1,2,3-cd)pyrene in C2 10'
- isophorone in E2 10'
- n-nitrosodiphenylamine and fluoranthene in E3 12'
- 2-methylphenol and 4-methylphenol in MW-09 (the same instrument response was erroneously reported as both)
- fluoranthene in J4 10'
- n-nitrosodiphenylamine in J4 10' and H4 10'
- benzo(k)fluoranthene and phenol in MW-0
- n-nitrosodiphenylamine in SW2 6-9, SW3 4-10, and J4 10
- carbazole in SE4 3-6
- 2-methylnaphthalene in B19-10
- chrysene in G1 8 and B5 13
- dibenzofuran in G2 9-10 and NW8-5
- bis(2-ethylhexyl)phthalate SE8 3-8 and SE11 3-6
- 4-nitroaniline in B5 10

Results for analytes initially reported with the "E" flag are derived from the dilution analyses of the samples, thus reflecting responses within the established linear range of the instrument.

The following detections are edited to reflect non-detection due to presence in the associated method blanks:

- di-n-butylphthalate in aqueous samples reported in 480-36717, 480-36915, 480-37165
- di-n-butylphthalate and butylbenzylphthalate in aqueous samples reported in 480-36717
- phenanthrene in MW-02, SE4 3-8, J1 6-7, in four samples reported in SDG 480-37636, seven samples reported in SDG 480-38638, and in all samples reported in 480-37338 except B19 -10

The result for 2,4-dinitrophenol in the aqueous samples reported in SDG 480-36915 are qualified as estimated due to low recovery (36%RD) in one of the associated LCSs.

Surrogate recoveries acceptable, unless analyzed at significant dilution, thus prohibiting evaluation). Holding times are met, and internal standards show compliant responses.

The matrix spike evaluations of C2 10', J4 10, F2 10, H4 14, NE4 3-8, MW-02, E1 8, C5 10, SW4 3-6, SW7 3-5, NW4 0-10, and NW5 3-8 show acceptable recoveries and duplicate correlations for the twelve evaluated analytes, or responses that were diluted beyond evaluation. The analytical protocols require that all target analytes be evaluated in the matrix spikes and LCS.

The matrix spikes of SE7 3-8 show no recovery of 2,4-dinitrophenol and 3,3'-dichlorobenzidine, and results for those two compounds are therefore rejected in the parent sample.

Due to low response in the lowest initial calibration standards ($RRF < 0.05$), the results for 2,4-dinitrophenol in the samples reported in SDG 480-36619 are qualified as estimated, with a possible low bias. Other calibration standards meet analytical and validation requirements, with the following exceptions, the results for which are qualified as estimated in the indicated samples:

- hexachlorocyclopentadiene and 2,4-dinitrophenol (24%D and 29%D) in D4 10', D4 11', D5 10', E3 10', E3 12', E4 10', E5 10' and D5 12'
- hexachlorocyclopentadiene (24%D) in samples reported in SDG 480-38691
- bis(2-chloroisopropyl)ether (24%D) in the samples reported in SDG 480-38873

The laboratory indicated that samples J5 and D4 10' were decanted prior to sample preparation, due to the liquid content. This is an acceptable practice, but the solids contents that were used for the dry weight corrections were not aliquot specific. Therefore, the results for those samples are qualified as estimated in value, with a possible high bias.

Some of the samples were processed at dilution due to the viscosity of the extract or other matrix issues. The reporting limits for undetected analytes in those samples are proportionally elevated.

TAL Metals Analyses by EPA 6010C/7471

The aqueous samples were not filtered until after receipt at the laboratory. Due to subsequent delay in preservation, the results for dissolved metals in the samples have been qualified as estimated in value, with a possible low bias.

The following elements were found at significantly higher concentrations in the filtered fractions than in the unfiltered fractions, and results for those have been qualified as estimated in both fractions of the indicated samples:

- MW-01 -manganese
- MW-02 -lead and magnesium
- MW-03 -antimony

The matrix spikes of TAL metals in MW-03-Dissolved, MW-04-Dissolved, MW-09, MW-7A, and MW-02-Total and Dissolved, and of mercury in MW-01-Total, MW-01-Dissolved, D4 11', DUP1, MW-06, NW3, MW-05-Total and Dissolved, SE4 3-8, A3 10, and D3 8-9 show acceptable accuracy and precision.

The following matrix spikes/duplicates show recoveries and/or correlations outside the recommended limits, indicating a matrix effect on analyte recovery from the samples, and results for the listed elements are qualified as estimated in the samples reported in the indicated SDGs:

Parent Sample	Element	%Recoveries	%RPD	Affected Samples
F2 10'	Antimony	51 and 49		Soils in 480-36619, 480-36717, and 480-36833
	Manganese	-8 and 338	64	
	Potassium	139 and 138		
B3 10'	Antimony	50 and 47		Soils in 480-36915
	Manganese		51	
D3 10'	Mercury	158 and 473	52	Soils in 480-37016
J3 10'	Antimony	45 and 48		
J4 10	Antimony	46 and 43		Soils in 480-37238
	Mercury	66 and 71		
F2 10	Antimony	43 and 46		
	Calcium	74 and 70		
H4 14	Antimony	43 and 43		
	Potassium	141 and 134		
	Selenium	57 and 51		
NE4 3-5	Barium	145 and 171		Soils in 480-37308
	Aluminum	239 and 220		
	Calcium		45	
	Magnesium		49	
NE6 5-7	Aluminum	519 and 303		Soils in 480-37338
	Calcium		72	
	Manganese		72	
	Zinc	263 and 122	48	
J2 10	Aluminum	153 and 140		Soils in 480-37529 and 480-37596
E1 8-9	Antimony	49 and 50		Soils in 480-37636
	Potassium	139 and 159		
	Mercury	127 and 177		
SE7 3-8	Iron	23 and 39		
	Magnesium	29 and 42		
	Manganese	69 and 476	70	
	Calcium		43	
C5 10	Antimony	62 and 62		Soils in 480-37638
	Potassium	136 and 137		
SW4 3-6	Aluminum			Soils in 480-37782
	Barium	171 and 206		
	Copper	65 and 137	39	
	Iron	337 and 621	36	
	Nickel	135 and 128		

<u>Parent Sample</u>	<u>Element</u>	<u>%Recoveries</u>	<u>%RPD</u>	<u>Affected Samples</u>
SW4 3-6, cont'd	Potassium	163 and 163		Soils in 480-37782, cont'd
	Vanadium	127 and 128		
	Zinc	-151 and -94		
SW7 3-5	Aluminum	149 and 51		Soils in 480-38089
	Chromium	41 and 73		
	Barium		69	
	Copper		67	
	Calcium		60	
	Iron		137	
	Lead		71	
	Zinc		94	
NW4 0-10	Antimony	62 and 73		Soils in 480-38259 and 480-38262
	Potassium	188 and 170		
	Mercury	153 and 211		
NW5 3-8	Aluminum	215 and 274		
	Magnesium	147 and 27		
	Manganese	821 and 188	88	
	Calcium		42	
NW8-5	Aluminum	149 and 130		Soils in 480-38447, 480-627, 480- 38691, 480-38873, and 480-38875
	Barium		37	
	Copper	46 and 50		
	Zinc	34 and 61		

The ICP serial dilution evaluations of MW-03-Dissolved, MW-04, MW-06, B3 10', MW-7A, J4 10, MW-02-Total and Dissolved, J2 10, E1 8-9, and NW4 0-10 show acceptable correlations.

The following ICP serial dilution evaluations show elevated correlations, and therefore results for samples reported in the indicated SDGs have been qualified as estimated in value. A matrix effect that suppresses analyte response is indicated:

<u>Parent Sample</u>	<u>Element</u>	<u>%Difference</u>	<u>Associated Samples</u>
F2 10'	Calcium	21	Soils in 480-36619, 480-36717, and 480-36833
J3 10'	Magnesium	11	Soils in 480-37016
NE4 3-8	Calcium	11	Soils in 480-37308
	Iron	13	
	Zinc	123	
NE6 5-7	Calcium	12	Soils in 480-37338
	Chromium	18	
	Iron	12	
	Manganese	14	

<u>Parent Sample</u>	<u>Element</u>	<u>%Difference</u>	<u>Associated Samples</u>
C5 10	Potassium	13	Soils in 480-37638
SW-7 3-5	Cadmium	12	Soils in 480-37782 and 480-38089
	Calcium	14	
NW8-5	Sodium	11	Soils in 480-38447, 480-627, 480- 38691, 480-38873, and 480-38875


Blanks show no contamination above the RL or within tenfold of the sample concentrations. Calibration and low level standards produce acceptable recoveries.

Hexavalent Chromium Analyses by EPA 7196

The soluble and insoluble matrix spikes, and the laboratory duplicate of B-B4-3.5' show acceptable recoveries and correlations. Holding times were met, and blanks show no contamination. LCS recoveries are compliant.

Please do not hesitate to contact me if you have comments or questions regarding this report.

Very truly yours,



Judy Harry

VALIDATION DATA QUALIFIER DEFINITIONS

- U** The analyte was analyzed for, but was not detected above the level of the associated reported quantitation limit.
- J** The analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample.
- UJ** The analyte was not detected. The associated reported quantitation limit is an estimate and may be inaccurate or imprecise.
- NJ** The detection is tentative in identification and estimated in value. Although there is presumptive evidence of the analyte, the result should be used with caution as a potential false positive and/or elevated quantitative value.
- R** The data are unusable. The analyte may or may not be present.
- EMPC** The results do not meet all criteria for a confirmed identification. The quantitative value represents the Estimated Maximum Possible Concentration of the analyte in the sample.

CLIENT and LABORATORY SAMPLE IDs

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-36619-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-36619-1	G4 10'	Solid	04/17/2013 1200	04/18/2013 1725

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-36717-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-36717-1	MW-01	Water	04/19/2013 1030	04/19/2013 1615
480-36717-2	C2 10'	Solid	04/19/2013 1045	04/19/2013 1615
480-36717-3	E2 10'	Solid	04/19/2013 0940	04/19/2013 1615
480-36717-4	MW-02	Water	04/19/2013 1300	04/19/2013 1615
480-36717-5	MW-03	Water	04/19/2013 0220	04/19/2013 1615
480-36717-6	J5	Solid	04/19/2013 0300	04/19/2013 1615

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-36833-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-36833-1	D4 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-2	D4 11'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-3	D5 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-4	E3 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-5	E3 12'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-6	E4 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-7	E5 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-8	D5 12'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-9	C4 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-10	F3 12'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-11	NW1 4-6	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-12	NW2 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-13	F3 10'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-14	F3 12'	Solid	04/22/2013 0600	04/23/2013 1110
480-36833-15	MW-04	Water	04/22/2013 0600	04/23/2013 1110
480-36833-16	DUP 1	Water	04/22/2013 0600	04/23/2013 1110

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-36915-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-36915-1	MW-06	Water	04/23/2013 1100	04/24/2013 1155
480-36915-2	DUP2	Water	04/23/2013 1100	04/24/2013 1155
480-36915-3	NW3	Solid	04/23/2013 0900	04/24/2013 1155
480-36915-4	NE1	Solid	04/23/2013 1030	04/24/2013 1155
480-36915-5	NE2	Solid	04/23/2013 1040	04/24/2013 1155
480-36915-6	NE3	Solid	04/23/2013 1100	04/24/2013 1155
480-36915-7	D2 10'	Solid	04/23/2013 0400	04/24/2013 1155
480-36915-8	D2 14'	Solid	04/23/2013 0330	04/24/2013 1155
480-36915-9	B2 10'	Solid	04/23/2013 0330	04/24/2013 1155

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37016-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37016-1	MW-09	Water	04/24/2013 1530	04/25/2013 1140
480-37016-2	D2 10'	Solid	04/24/2013 1230	04/25/2013 1140
480-37016-3	C2 12'	Solid	04/24/2013 1200	04/25/2013 1140
480-37016-4	J4 10'	Solid	04/24/2013 1630	04/25/2013 1140
480-37016-5	J3 10'	Solid	04/24/2013 1630	04/25/2013 1140
480-37016-6	G5 10'	Solid	04/24/2013 1730	04/25/2013 1140
480-37016-7	H5 10'	Solid	04/24/2013 1715	04/25/2013 1140
480-37016-8	G3 10'	Solid	04/24/2013 1710	04/25/2013 1140
480-37016-9	H3 10'	Solid	04/24/2013 1700	04/25/2013 1140
480-37016-10	H4 10'	Solid	04/24/2013 1815	04/25/2013 1140
480-37016-11	H4 14'	Solid	04/24/2013 1800	04/25/2013 1140
480-37016-12	F4 10'	Solid	04/24/2013 1730	04/25/2013 1140
480-37016-13	F5 10'	Solid	04/24/2013 1815	04/25/2013 1140
480-37016-14	F5 12'	Solid	04/24/2013 1810	04/25/2013 1140
480-37016-15	H2 10'	Solid	04/24/2013 1810	04/25/2013 1140

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37165-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37165-1	MW-05	Water	04/25/2013 0930	04/26/2013 1615
480-37165-2	MW-7A	Water	04/26/2013 1200	04/26/2013 1615

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37238-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37238-1	SE1 0-8	Solid	04/27/2013 1130	04/29/2013 1235
480-37238-2	SW2 6-9	Solid	04/27/2013 1130	04/29/2013 1235
480-37238-3	SE2 3-8	Solid	04/27/2013 1115	04/29/2013 1235
480-37238-4	SW3 4-10	Solid	04/27/2013 1100	04/29/2013 1235
480-37238-5	SE3 3-10	Solid	04/27/2013 1115	04/29/2013 1235
480-37238-6	J4 10	Solid	04/27/2013 0700	04/29/2013 1235
480-37238-6MS	J4 10	Solid	04/27/2013 0700	04/29/2013 1235
480-37238-6MSD	J4 10	Solid	04/27/2013 0700	04/29/2013 1235
480-37238-7	F2 10	Solid	04/27/2013 0700	04/29/2013 1235
480-37238-7MS	F2 10	Solid	04/27/2013 0700	04/29/2013 1235
480-37238-7MSD	F2 10	Solid	04/27/2013 0700	04/29/2013 1235
480-37238-8	H4 14	Solid	04/27/2013 0730	04/29/2013 1235
480-37238-8MS	H4 14	Solid	04/27/2013 0730	04/29/2013 1235
480-37238-8MSD	H4 14	Solid	04/27/2013 0730	04/29/2013 1235
480-37240-1	SW1 3-9	Solid	04/27/2013 1145	04/29/2013 1600

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37308-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37308-1	NE5 3'-8'	Solid	04/29/2013 0500	04/30/2013 1100
480-37308-2	NE4 3'-8'	Solid	04/29/2013 0430	04/30/2013 1100
480-37308-2MS	NE4 3'-8'	Solid	04/29/2013 0430	04/30/2013 1100
480-37308-2MSD	NE4 3'-8'	Solid	04/29/2013 0430	04/30/2013 1100
480-37308-3	SE4 3'-6'	Solid	04/29/2013 1400	04/30/2013 1100
480-37308-4	NE4/ NE5	Solid	04/29/2013 1325	04/30/2013 1100

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37388-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37388-1	B1 9'-10'	Solid	04/30/2013 1130	05/01/2013 1315
480-37388-2	B1 11'	Solid	04/30/2013 1130	05/01/2013 1315
480-37388-3	C1 8'	Solid	04/30/2013 1300	05/01/2013 1315
480-37388-4	D1 8'	Solid	04/30/2013 1500	05/01/2013 1315
480-37388-5	NE6 3'-7'	Solid	04/30/2013 1200	05/01/2013 1315
480-37388-6	NE7 4'-8'	Solid	04/30/2013 1130	05/01/2013 1315
480-37388-7	NE8 4'-10'	Solid	04/30/2013 1500	05/01/2013 1315

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37529-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37529-1	MW-02	Water	05/01/2013 1500	05/02/2013 1745
480-37529-1MS	MW-02	Water	05/01/2013 1500	05/02/2013 1745
480-37529-1MSD	MW-02	Water	05/01/2013 1500	05/02/2013 1745
480-37529-2	SE4 3'-8'	Solid	05/01/2013 1600	05/02/2013 1745
480-37529-3	SE5 3'-6'	Solid	05/01/2013 1730	05/02/2013 1745
480-37529-4	J1 6'-7'	Solid	05/01/2013 1600	05/02/2013 1745
480-37529-5	J2 10'	Solid	05/01/2013 1600	05/02/2013 1745
480-37529-6	TRIP BLANK	Water	05/01/2013 0000	05/02/2013 1745

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37596-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37596-1	G1-8'	Solid	05/02/2013 0930	05/03/2013 1255
480-37596-2	G2-9'-10'	Solid	05/02/2013 0930	05/03/2013 1255
480-37596-3	G2-10'-11'	Solid	05/02/2013 0930	05/03/2013 1255
480-37596-4	H1 8'	Solid	05/02/2013 0930	05/03/2013 1255

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37636-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37636-1	SE10 8'	Solid	05/02/2013 1330	05/03/2013 1255
480-37636-2	SE6 3'-6'	Solid	05/02/2013 1330	05/03/2013 1255
480-37636-3	SE9 6'-8'	Solid	05/02/2013 1340	05/03/2013 1255
480-37636-4	E1 8'-9'	Solid	05/02/2013 1300	05/03/2013 1255
480-37636-4MS	E1 8'-9'	Solid	05/02/2013 1300	05/03/2013 1255
480-37636-4MSD	E1 8'-9'	Solid	05/02/2013 1300	05/03/2013 1255
480-37636-5	SE8 3'-8'	Solid	05/02/2013 1400	05/03/2013 1255
480-37636-6	SE7 3'-8'	Solid	05/02/2013 1415	05/03/2013 1255
480-37636-6MS	SE7 3'-8'	Solid	05/02/2013 1415	05/03/2013 1255
480-37636-6MSD	SE7 3'-8'	Solid	05/02/2013 1415	05/03/2013 1255
480-37636-7	SE11 3'-6'	Solid	05/02/2013 1400	05/03/2013 1255
480-37636-8	F1 8'	Solid	05/02/2013 1250	05/03/2013 1255
480-37636-9	DUP A	Solid	05/02/2013 1230	05/03/2013 1255
480-37636-10	DUP B	Solid	05/02/2013 1250	05/03/2013 1255
480-37636-11	DUP C	Solid	05/02/2013 1400	05/03/2013 1255

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37637-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37637-1	S-1	Solid	05/03/2013 1445	05/03/2013 1716
480-37637-2	S-2	Solid	05/03/2013 1451	05/03/2013 1716
480-37637-3	S-3	Solid	05/03/2013 1458	05/03/2013 1716
480-37637-4	S-4	Solid	05/03/2013 1507	05/03/2013 1716
480-37637-5	S-5	Solid	05/03/2013 1517	05/03/2013 1716
480-37637-6	S-6	Solid	05/03/2013 1524	05/03/2013 1716
480-37637-7	S-7	Solid	05/03/2013 1535	05/03/2013 1716
480-37637-8	COMP 1-3	Solid	05/03/2013 1700	05/03/2013 1716
480-37637-9	COMP 4-7	Solid	05/03/2013 1707	05/03/2013 1716

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37638-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37638-1	B2 10'	Solid	05/03/2013 1300	05/03/2013 1545
480-37638-2	B2 12'	Solid	05/03/2013 1300	05/03/2013 1545
480-37638-3	B4 10'	Solid	05/03/2013 1215	05/03/2013 1545
480-37638-4	B4 13'-14'	Solid	05/03/2013 1215	05/03/2013 1545
480-37638-5	B5 10'	Solid	05/03/2013 1030	05/03/2013 1545
480-37638-6	B5 13'	Solid	05/03/2013 1030	05/03/2013 1545
480-37638-7	A2 10'	Solid	05/03/2013 1200	05/03/2013 1545
480-37638-8	A2 12'	Solid	05/03/2013 1200	05/03/2013 1545
480-37638-9	C5 10'	Solid	05/03/2013 1000	05/03/2013 1545
480-37638-9MS	C5 10'	Solid	05/03/2013 1000	05/03/2013 1545
480-37638-9MSD	C5 10'	Solid	05/03/2013 1000	05/03/2013 1545
480-37638-10	DUP D	Solid	05/03/2013 1030	05/03/2013 1545
480-37638-11	DUP E	Solid	05/03/2013 1215	05/03/2013 1545
480-37638-12	DUP F	Solid	05/03/2013 1300	05/03/2013 1545

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-37782-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-37782-1	SW 4 3'-6'	Solid	05/07/2013 0750	05/07/2013 1540
480-37782-1MS	SW 4 3'-6'	Solid	05/07/2013 0750	05/07/2013 1540
480-37782-1MSD	SW 4 3'-6'	Solid	05/07/2013 0750	05/07/2013 1540
480-37782-2	NE 9 3'-8'	Solid	05/07/2013 0821	05/07/2013 1540
480-37782-3	NE 10 3'-8'	Solid	05/07/2013 0840	05/07/2013 1540
480-37782-4	DUP G	Solid	05/07/2013 0821	05/07/2013 1540
480-37782-5	DUP H	Solid	05/07/2013 0840	05/07/2013 1540

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38089-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38089-1	SW 7 3'-5'	Solid	05/09/2013 1046	05/10/2013 1125
480-38089-1MS	SW 7 3'-5'	Solid	05/09/2013 1046	05/10/2013 1125
480-38089-1MSD	SW 7 3'-5'	Solid	05/09/2013 1046	05/10/2013 1125
480-38089-2	SW 6 3'-9'	Solid	05/08/2013 1215	05/10/2013 1125
480-38089-3	SW 5 0-7	Solid	05/07/2013 1630	05/10/2013 1125
480-38089-4	DUP I	Solid	05/08/2013 1215	05/10/2013 1125

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38259-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38259-1	H/J 4	Solid	05/14/2013 1140	05/14/2013 1550

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38262-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38262-1	NE4 0-10'	Solid	05/10/2013 1030	05/14/2013 1550
480-38262-1MS	NE4 0-10'	Solid	05/10/2013 1030	05/14/2013 1550
480-38262-1MSD	NE4 0-10'	Solid	05/10/2013 1030	05/14/2013 1550
480-38262-2	NE5 3'-8'	Solid	05/10/2013 1630	05/14/2013 1550
480-38262-2MS	NE5 3'-8'	Solid	05/10/2013 1630	05/14/2013 1550
480-38262-2MSD	NE5 3'-8'	Solid	05/10/2013 1630	05/14/2013 1550
480-38262-3	NE6 5'	Solid	05/10/2013 1645	05/14/2013 1550
480-38262-4	NE7 5'	Solid	05/10/2013 1700	05/14/2013 1550

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38447-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38447-1	A3 10'	Solid	05/16/2013 1000	05/16/2013 1505
480-38447-2	A3 13'	Solid	05/16/2013 1013	05/16/2013 1505

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38627-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38627-1	E2 8'-9'	Solid	05/20/2013 1400	05/20/2013 1535

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38691-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38691-1	D3 8'-9'	Solid	05/21/2013 1040	05/21/2013 1455

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38873-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38873-1	DUP J	Solid	05/22/2013 1330	05/23/2013 1440
480-38873-2	SW8 7'	Solid	05/22/2013 1324	05/23/2013 1440
480-38873-3	SW10 7'	Solid	05/22/2013 1330	05/23/2013 1440
480-38873-4	SW9 7'	Solid	05/22/2013 1338	05/23/2013 1440
480-38873-5	TB	Water	05/22/2013 0000	05/23/2013 1440

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-38875-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-38875-1	NW8-5'	Solid	05/23/2013 1030	05/23/2013 1440
480-38875-2	TB	Water	05/23/2013 0000	05/23/2013 1440

SAMPLE SUMMARY

Client: C&S Engineers, Inc.

Job Number: 480-42606-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
480-42606-1	B-C1 3' bg	Solid	07/24/2013 1625	07/25/2013 1350
480-42606-2	B-D2 3.5' bg	Solid	07/24/2013 1648	07/25/2013 1350
480-42606-3	B-C3 3.5' bg	Solid	07/24/2013 1701	07/25/2013 1350
480-42606-4	B-E4 4' bg	Solid	07/24/2013 1706	07/25/2013 1350
480-42606-5	B-E3 3' bg	Solid	07/24/2013 1730	07/25/2013 1350
480-42606-6	B-D4 4' bg	Solid	07/24/2013 1757	07/25/2013 1350
480-42606-7	B-F4 3.5' bg	Solid	07/24/2013 1800	07/25/2013 1350
480-42606-8	B-F5 3.5' bg	Solid	07/24/2013 1838	07/25/2013 1350
480-42606-9	B-G5 4.5' bg	Solid	07/24/2013 1900	07/25/2013 1350
480-42606-10	B-C2 4.5' bg	Solid	07/24/2013 1911	07/25/2013 1350
480-42606-11	B-B2 5' bg	Solid	07/24/2013 1924	07/25/2013 1350
480-42606-12	B-B4 3.5' bg	Solid	07/24/2013 1930	07/25/2013 1350
480-42606-12MS	B-B4 3.5' bg ms	Solid	07/24/2013 1930	07/25/2013 1350
480-42606-12MSD	B-B4 3.5' bg msd	Solid	07/24/2013 1930	07/25/2013 1350
480-42606-13	DUP1	Solid	07/24/2013 1924	07/25/2013 1350