STEWART ENVIRONMENTAL CONSULTANTS, LLC
ENGINEERING FOR LIFE

ACEC MEMBER

November 11, 2013

Mr. David Wyman
Pagoda Pure Water Recycling
4600 East Highway 40
Craig, Colorado 81625

Subject: Additional Soil Sampling at Pagoda Unit 33-34P and Robson-Wyman 14-16 Wells
Remediation Numbers 7275 and 7280 – Pagoda, Colorado
Project No.: 4264.001(15)

Dear Mr. Wyman:

After review of closure criteria and analysis of previous soil samples from pits associated with the "Pagoda Unit 33-34P" and "Robson-Wyman 14-16" wells in Pagoda, Colorado, the Colorado Oil & Gas Conservation Commission (COGCC) requested additional information relative to conditions at each well. Response to their request and discussion of sample results is provided below.

Pagoda Unit 33-34P

COGCC: Provide depth of each sample collected.

Response: Previous samples were collected from a depth of 4" to 8" below ground surface.

COGCC: Sample the area where the blow down line from the separator discharged directly into the road side ditch.

Response: This area was sampled at a depth of approximately 4" to 8" below ground surface. The sample was analyzed for parameters cited in COGCC E&P Waste Management Table 910-1. Sample results are summarized in Table 1 and laboratory reports are attached. Results of the laboratory testing are summarized in Table 1 (attached) and indicate that the concentrations of the parameters of concern are well within the regulatory limits.

Robson-Wyman 14-16

COGCC: Treat and resample the area to address high SAR and pH level.

Response: Previous soil samples from a depth of 4" to 8" below ground surface at the Robson-Wyman 14-16 well contained elevated values for SAR (29.8 to 49.7) and pH (8.48 s.u.to 9.97 s.u.). Depending upon the reference material cited a SAR value above 12 to 15 is considered indicative of an excess of sodium and a problem for plants to absorb water. A typical response may be to add gypsum to free the sodium. However, given the gypsum content of the surrounding soils, the area was simply turned-over, exposed to precipitation, and the salts were allowed to leach from the soil. Additional testing indicates success, with the SAR dropping to 2 and the pH dropping to a neutral 7.53 s.u. Other selected parameters from COGCC Table 910-1 were analyzed for comparison purposes and concentrations are similar to previous results. Sample results are summarized in Table 1 and laboratory reports are attached.

COGCC: Delineate potential salt impact in the area extending approximately one half mile north of the pit.

Response: The area was investigated by observing soil conditions in the vicinity then collecting a composite sample in the barest spots to assess the potential of impact from the onsite operations. The sample was evaluated by analyzing for various salts, measuring the pH, and determining a SAR value. Sample results are summarized in Table 1 and laboratory reports are attached. Chloride and sulfate were detected in concentrations consistent with expected background values; 274 mg/kg and 21 mg/kg, respectively. The pH was fairly neutral at 8.08 s.u. The SAR was measured at 1 and individually the sodium, calcium, and magnesium values were not elevated.

The exact reason(s) for sparse vegetation in the area is unknown. Evidence of struggling plant growth indicates that there may have been historic salt impacts from site operations. However, laboratory results indicate that the potential impacts are limited. Additionally, onsite oil recycling operations have been halted and the onsite evaporation ponds have been closed under direction and approval of the Colorado Department of Public Health and Environment. Orchard grass and other vegetation have returned to the area and plant growth is expected to continue to improve.

This information should be submitted to the COGCC for their use and review of pit closures.

If you have any questions or comments relative to this letter, please contact us.

Sincerely,

STEWART ENVIRONMENTAL CONSULTANTS, LLC

Paul A. Stone, PG
Senior Geologist

Robert J. Blinderman
Environmental Services Manager

Enc.

4264.001(15)\pagoda pure cogcc soil 11nov13.ltr

TABLE 1
SUMMARY OF SOIL SAMPLE LABORATORY RESULTS
Pagodas Unit 33-34P and Robson-Wyman 14-16 Wells
Craig, Colorado
Project No.: 4264-001

Well ID	BTEX				TVPH	TEPH	PAH	EC	SAR	pH	Metals												
	Benzene	Toluene	Ethyl Benzene	Total Xylenes							As	Ba	B	Cd	Cr(III)	Cr(VI)	Cu	Pb	Hg	Ni	Se	Ag	Zn
	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	umhos/cm	--	S.U.	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km	mg/km
2010 Samples																							
Pagoda Unit #33-34 P E	<0.002	<0.004	<0.004	<0.004	<10	<5	ND	1.67	2.96	7.67	3.09	145	18.8	<0.17	5.71	<0.1	0.283	5.99	<0.033	4.24	<1.1	0.442	19.6
Pagoda Unit #33-34 P W	<0.002	<0.004	<0.004	<0.004	<10	<5	ND	1.77	3.76	8.43	5.24	131	18	<0.18	7.85	<0.1	1.78	7.07	<0.033	5.3	<1.2	0.588	26.8
2013 Sample																							
Pagoda Unit #33-34 P	<0.002	<0.004	<0.004	<0.004	<10	<10	ND	320	0.19	7.66	0.0512	3.43	0.314	0.0099	0.253	<0.1	0.159	0.723	<0.033	0.192	0.0231	<0.005	0.996
2010 Samples																							
Robson-Wyman #14-16 N	<0.002	<0.004	<0.004	<0.004	<10	<5	ND	1.31	**45.7**	**9.97**	8.2	146	38.7	0.343	13.6	<0.1	5.87	11.8	<0.033	13.1	<1.2	<0.3	66.1
Robson-Wyman #14-16 S	<0.002	<0.004	<0.004	<0.004	<10	<5	ND	1.5	**29.8**	8.48	6.8	132	31.4	0.378	9.82	<0.1	6.36	10.2	<0.033	11	<1.2	0.378	65
2013 Sample																							
Robson-Wyman #14-16	<0.002	<0.004	<0.004	<0.004	<10	<10	---	430	2	7.53	6.14	156	21.2	0.552	18.9	<0.1	11.2	49.4	---	11.7	<1	<0.3	62.4
Pagoda Unit - Background	---	---	---	---	---	---	---	1.61	---	---	1.86	126	24.2	<0.163	10.1	<0.1	3.82	5.33	<0.033	7.97	<1.09	0.478	32.4
Regulatory Standard	0.17	85	100	175	500	500	various	2xbkgrd	12	6-9	0.39	15000	2	70	120000	23	3100	400	23	1600	390	390	23000
USGS Background Values	---	---	---	---	---	---	---	---	---	---	5 - 9	---	20 - 40	---	---	---	---	---	---	---	---	---	---

2013 Sample	PARAMETER						
	SAR	pH	Calcium	Chloride	Magnesium	Sodium	Sulfate
Associated with Robson-Wyman #14-16							
Bare Area NW of Pit	1	8.08	8049	274	3809	428	21
Regulatory Standard / Low Risk Value	12	6-9	---	---	---	---	<3000
USGS Background Values	---	---	3500 - 12000	50-325	2000 - 7000	700-10000	---

STEWART ENVIRONMENTAL CONSULTANTS, LLC
ENGINEERING FOR LIFE

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LABORATORY TESTING RESULTS

DATE: October 11, 2013
SUBJECT: Pagoda Pure Water Recycling
JOB NO.: 4264-001 (15)

Please find enclosed laboratory testing results for the samples received at our laboratory on July 31, 2013 and August 23, 2013.

We appreciate the opportunity to provide these analytical services and look forward to working with you in the future. If you have any questions regarding this report, do not hesitate to contact us.

STEWART ENVIRONMENTAL CONSULTANTS, LLC.

M.A. Glavanovich

Michael A. Glavanovich
Laboratory Manager

Enc.

Laboratory Report

Client:
Pagoda Pure Water

Attn: SEC Engineering Department

Project# 4264.001 BG15

Date Sampled:	7/26/2013	12:00:00 PM
Date Received:	7/31/2013	
Batch No:	28434	
Laboratory ID:	S132121155	
Matrix:	Soil	Comp
Sample Name:	Bare Area NW of Pit	

Analysis	Results	Units	MRL	Method	Analysis Date	Analyst	Sent Out	Laboratory
_Digest/Total Prep. Batch	101	Dig #	0	SM 3030 F	8/6/2013	SRK	☐	
Calcium	8049	ppm	0.05	EPA 200.7	8/13/2013	WVS	☐	
Chloride	274	ppm	0.5	EPA 300.0	8/9/2013	JNS	☐	
Magnesium	3809	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	
pH	8.08	SU	0	SM 4500 H+ B	8/14/2013	SRK	☐	
Sodium	428	ppm	0.1	EPA 200.7	8/13/2013	WVS	☐	
Sodium Abs. Ratio	1	#	0	NA	8/13/2013	WVS	☐	
Sulfate	21	ppm	0.5	EPA 300.0	8/8/2013	JNS	☐	

Stewart Environmental Consultants LLC
3801 Automation Way, Suite 200 ♦ Fort Collins, CO 80525
Phone 970-226-5500 ♦ Fax:970-226-4946

Client:
Pagoda Pure Water

Attn: SEC Engineering Department

Project# 4264.001 BG15

Date Sampled:	7/26/2013	13:00:00 PM
Date Received:	7/31/2013	
Batch No:	28434	
Laboratory ID:	S132121157	
Matrix:	Soil	Grab
Sample Name:	Robson-Wyman 14-16	

Analysis	Results	Units	MRL	Method	Analysis Date	Analyst	Sent Out	Laboratory
. BTEX Batch #	212	Batch #	0	EPA 8260 B	8/7/2013	WVS	☐	
. Pet. Hydrocarb/Tot.	< 10	ppm	2	EPA 8015 B	8/8/2013	WVS	☐	
. Pet. Hydrocarb/Tot. Volatile	< 10	ppm	2	EPA 8015 B	8/8/2013	WVS	☐	
.Benzene	< 0.002	ppm	0.001	EPA 8260 B	8/7/2013	WVS	☐	
.Ethylbenzene	< 0.004	ppm	0.002	EPA 8260 B	8/7/2013	WVS	☐	
.Toluene	< 0.004	ppm	0.02	EPA 8260 B	8/7/2013	WVS	☐	
.Xylene, m,p-	< 0.004	ppm	0.02	EPA 8260 B	8/7/2013	WVS	☐	
.Xylene, o-	< 0.004	ppm	0.02	EPA 8260 B	8/7/2013	WVS	☐	
_Digest/Total Prep. Batch	101	Dig #	0	SM 3030 F	8/6/2013	SRK	☐	
Arsenic	6.14	ppm	0.02	EPA 200.7	8/13/2013	WVS	☐	
Barium	156	ppm	0.002	EPA 200.7	8/13/2013	WVS	☐	
Boron	21.2	ppm	0.01	EPA 200.7	8/13/2013	WVS	☐	
Cadmium	0.552	ppm	0.003	EPA 200.7	8/13/2013	WVS	☐	
Chromium	18.9	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	
Chromium (VI)	<0.1	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	
Conductivity	430	µmhos/cm	0	SM 2510 B	8/14/2013	SRK	☐	
Copper	11.2	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	
Lead	49.4	ppm	0.02	EPA 200.7	8/13/2013	WVS	☐	
Nickel	11.7	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	
pH	7.53	SU	0	SM 4500 H+ B	8/14/2013	SRK	☐	
Selenium	< 1	ppm	0.01	EPA 200.7	8/13/2013	WVS	☐	
Silver	< 0.3	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	
Sodium Abs. Ratio	2	#	0	NA	8/13/2013	MAG	☐	
Zinc	62.4	ppm	0.005	EPA 200.7	8/13/2013	WVS	☐	

Stewart Environmental Consultants LLC
3801 Automation Way, Suite 200 ♦ Fort Collins, CO 80525
Phone 970-226-5500 ♦ Fax:970-226-4946

Client:
Pagoda Pure Water

Attn: SEC Engineering Department

Project# 4264.001 BG15

Date Sampled:	8/22/2013	9:00:00 AM
Date Received:	8/23/2013	
Batch No:	28801	
Laboratory ID:	S132380950	
Matrix:	Soil	Grab
Sample Name:	Pagoda Unit 33-34P	

Analysis	Results	Units	MRL	Method	Analysis Date	Analyst	Sent Out	Laboratory
. BTEX Batch #	238	Batch #	0	EPA 8260 B	9/5/2013	WVS	☐	
. PAH 8270	1308503	Batch #	10	EPA 8270	9/9/2013		☑	ALS
. Pet. Hydrocarb/Tot.	< 10	ppm	2	EPA 8015 B	9/5/2013	WVS	☐	
. Pet. Hydrocarb/Tot. Volatile	< 10	ppm	2	EPA 8015 B	9/5/2013	WVS	☐	
.Benzene	< 0.002	ppm	0.001	EPA 8260 B	9/5/2013	WVS	☐	
.Ethylbenzene	< 0.004	ppm	0.002	EPA 8260 B	9/5/2013	WVS	☐	
.Toluene	< 0.004	ppm	0.02	EPA 8260 B	9/5/2013	WVS	☐	
.Xylene, m,p-	< 0.004	ppm	0.02	EPA 8260 B	9/5/2013	WVS	☐	
.Xylene, o-	< 0.004	ppm	0.02	EPA 8260 B	9/5/2013	WVS	☐	
_Digest/Total Prep. Batch	106	Dig #	0	SM 3030 F	8/27/2013	SRK	☐	
Arsenic	0.0512	ppm	0.02	EPA 200.7	8/29/2013	WVS	☐	
Barium	3.43	ppm	0.002	EPA 200.7	8/29/2013	WVS	☐	
Boron	0.314	ppm	0.01	EPA 200.7	8/29/2013	WVS	☐	
Cadmium	0.0099	ppm	0.003	EPA 200.7	8/29/2013	WVS	☐	
Chromium	0.253	ppm	0.005	EPA 200.7	8/29/2013	WVS	☐	
Chromium (VI)	<0.1	ppm	0.005	EPA 200.7	8/29/2013	WVS	☐	
Conductivity	320	µmhos/cm	0	SM 2510 B	8/27/2013	SRK	☐	
Copper	0.159	ppm	0.005	EPA 200.7	8/29/2013	WVS	☐	
Lead	0.723	ppm	0.02	EPA 200.7	8/29/2013	WVS	☐	
Mercury	< 0.033	ppm	0.000	SW7470	9/10/2013		☑	ALS
Nickel	0.192	ppm	0.005	EPA 200.7	8/29/2013	WVS	☐	
pH	7.66	SU	0	SM 4500 H+ B	8/27/2013	SRK	☐	
Selenium	0.0231	ppm	0.01	EPA 200.7	8/29/2013	WVS	☐	
Silver	< 0.005	ppm	0.005	EPA 200.7	8/29/2013	WVS	☐	
Sodium Abs. Ratio	0.19	#	0	NA	8/29/2013	MAG	☐	
Zinc	0.996	ppm	0.005	EPA 200.7	8/29/2013	WVS	☐	

See attached report for results of the Polynuclear Aromatic Hydrocarbon (PAH) analysis.

Results Approved by:

Michael Glavanovich, Laboratory Manager
Date Reported: 10/11/2013

Stewart Environmental Consultants LLC
3801 Automation Way, Suite 200 ♦ Fort Collins, CO 80525
Phone 970-226-5500 ♦ Fax:970-226-4946

GC/MS Semivolatiles

Case Narrative

Stewart Environmental Consultants

Work Order Number: 1308503

1. This report consists of 1 soil sample. The sample was received intact at ambient temperature by ALS on 08/28/13.

2. The sample was prepared and analyzed according to SW-846, 3rd Edition procedures. Specifically, the soil sample was extracted using soxhlet procedures according to SW-846 Method 3540C, utilizing the current revision of SOP 625.

3. The extracts were analyzed using GC/MS with a DB-5MS capillary column according to the current revision of SOP 506 based on SW-846 Method 8270D. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.

4. All initial calibration criteria were met. If average response factors were used in the initial calibration, %RSD was ≤20%. If linear or higher order regression calibrations were used in the initial calibration, the coefficient of determination (r^2) ≥0.99.

5. All initial calibration standards are verified by comparing a second source standard initial calibration verification (ICV) against the calibration curve. All target compounds in the second source verification had a %D ≤30%.

6. All compounds in each of the daily (continuing) calibration verifications were within 20%D.

7. All method blank criteria were met.

8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.

9. The sample was designated as the quality control sample for this analysis. Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample

other than the native sample selected for QC. All matrix spike and matrix spike duplicate recoveries and RPDs were within acceptance criteria with the following exceptions:

Spiked Compound	QC Sample	Direction
Several Compounds	MS & MSD	Low & RPD

The recoveries of these compounds in the laboratory control sample and laboratory control sample duplicate were within control limits, which suggest the outliers in the matrix spikes may have been due to matrix effects, so no further action was taken.

10. The sample was extracted and analyzed within the established holding times.

11. All surrogate recoveries were within acceptance criteria.

12. All internal standard recoveries were within acceptance criteria with the following exception:

Internal Standard	Sample	Direction
Perylene-D_{12}	1308503-1, -1MS & -1MSD	Low

The sample was also used for the matrix spike and matrix spike duplicate. The spikes also contained internal standards outside the acceptance criteria, which suggest matrix effects are present in the sample. Further re-analyses were not required.

13. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Emily Lyons
Organics Primary Data Reviewer

9/11/13
Date

Organics Final Data Reviewer

9/11/13
Date

ALS
Data Qualifier Flags
Chromatography and Mass Spectrometry

U or ND:	**This flag indicates that the compound was analyzed for but not detected.**
J:	**This flag indicates an estimated value. This flag is used as follows: (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.**
B:	**This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.**
E:	**This flag identifies compounds whose concentration exceeds the upper level of the calibration range.**
A:	**This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.**
X:	**This flag indicates that the analyte was diluted below an accurate quantitation level.**
***:**	**This flag indicates that a spike recovery is equal to or outside the control criteria used.**
+:	**This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.**

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1308503
Client Name: Stewart Environmental Consultants
Client Project Name:
Client Project Number:
Client PO Number: 1186

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
238-0950	1308503-1		SOIL	22-Aug-13	12:00

CHAIN-OF-CUSTODY RECORD

1308503

STEWART ENVIRONMENTAL CONSULTANTS, LLC.
3801 Automation Way, Suite 200, Fort Collins, CO 80525
PHONE: (970) 226-5500
FACSIMILE: (970) 226-4946

P.O. Number	Client Name	Contract Laboratory
1186	Stewart Environmental Consultants, Inc.	ALS Laboratory Group

Sample Collection Information			Sample Identification	Number of Bottles	Matrix	CDPHE Form Needed	Analyses Requested
Date	Time	Grab / Comp					
8/22/13	12:00	G	238-0950 (1)	1	S	NO	PAH 8270, Hg (Dw 8/28/13)
~~8/28/13~~	~~8:30~~	G	~~240-1124~~	1	W	NO	~~TOC~~ #8 8/28/13

Notes:

5 of 2

RELINQUISHED	DATE/TIME	
	8/28/13	14:30
RECEIVED	DATE/TIME	
	8/28/13	1430

Requested Completion Date

SAMPLE MATRIX

W = Water
WW = Waste Water
DW = Drinking Water
L = Liquid
S = Soil
SD = Solid
SL = Sludge
A = Air

Report to:	Michael Glavanovich	Phone:970-226-5500 Ext 229 Fax: 970-226-4946
Client:	Stewart Environmental Consultants, Inc.	
Address:	3801 Automation Way, Suite 200	
City/ State/ Zip:	Fort Collins, CO 80525	
Invoice to:	Accounts Payable Stewart Environmental Consultants, Inc.	
Address:	3801 Automation Way, Suite 200	
City/State/Zip:	Fort Collins, CO 80525	

ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Stewart Workorder No: 1308503

Project Manager: ARW Initials: LAS Date: 8/28/13

1.	Does this project require any special handling in addition to standard ALS procedures?		YES	(NO)
2.	Are custody seals on shipping containers intact?	(NONE)	YES	NO
3.	Are Custody seals on sample containers intact?	(NONE)	YES	NO
4.	Is there a COC (Chain-of-Custody) present or other representative documents?		(YES)	NO
5.	Are the COC and bottle labels complete and legible?		(YES)	NO
6.	Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		(YES)	NO
7.	Were airbills / shipping documents present and/or removable?	(DROP OFF)	YES	NO
8.	Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	(N/A)	YES	NO
9.	Are all aqueous non-preserved samples pH 4-9?	(N/A)	YES	NO
10.	Is there sufficient sample for the requested analyses?		(YES)	NO
11.	Were all samples placed in the proper containers for the requested analyses?		(YES)	NO
12.	Are all samples within holding times for the requested analyses?		(YES)	NO
13.	Were all sample containers received intact? (not broken or leaking, etc.)		(YES)	NO
14.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	(N/A)	YES	NO
15.	Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	(N/A)	YES	NO
16.	Were the samples shipped on ice?		YES	(NO)
17.	Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	RAD ONLY	YES	(NO)

Cooler #:	1							
Temperature (°C):	AMB							
No. of custody seals on cooler:	Ø							
DOT Survey/ Acceptance Information — External µR/hr reading:	N/A							
Background µR/hr reading:	11							

Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO (NA) (If no, see Form 008.)

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO (NA) Contact: _____ Date/Time: _____

Project Manager Signature / Date: 8/29/13

*IR Gun #2: Oakton, SN 29922500201-0066
*IR Gun #4: Oakton, SN 2372220101-0002

GC/MS Semi-volatiles

Method SW8270D

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1308503

Client Name: Stewart Environmental Consultants

ClientProject ID:

Lab ID: EX130830-8MB

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 30-Aug-13
Date Analyzed: 09-Sep-13
Prep Method: SW3540 Rev C

Prep Batch: EX130830-8
QCBatchID: EX130830-8-1
Run ID: SV130909-1
Cleanup: SW3640
Basis: N/A
File Name: N8348

Sample Aliquot: 30 g
Final Volume: 1 ml
Result Units: UG/KG
Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit LOD/LOQ	Result Qualifier	EPA Qualifier
91-20-3	NAPHTHALENE	1	330	330	U	
91-57-6	2-METHYLNAPHTHALENE	1	330	330	U	
208-96-8	ACENAPHTHYLENE	1	330	330	U	
83-32-9	ACENAPHTHENE	1	330	330	U	
86-73-7	FLUORENE	1	330	330	U	
85-01-8	PHENANTHRENE	1	330	330	U	
120-12-7	ANTHRACENE	1	330	330	U	
206-44-0	FLUORANTHENE	1	330	330	U	
129-00-0	PYRENE	1	330	330	U	
56-55-3	BENZO(A)ANTHRACENE	1	330	330	U	
218-01-9	CHRYSENE	1	330	330	U	
205-99-2	BENZO(B)FLUORANTHENE	1	330	330	U	
207-08-9	BENZO(K)FLUORANTHENE	1	330	330	U	
50-32-8	BENZO(A)PYRENE	1	330	330	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	330	330	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	330	330	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	330	330	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
321-60-8	2-FLUOROBIPHENYL	1000		1670	60	41 - 111
4165-60-0	NITROBENZENE-D5	841		1670	50	32 - 110
1718-51-0	TERPHENYL-D14	1290		1670	77	23 - 159

Data Package ID: *SV1308503-1*

GC/MS Semi-volatiles

Method SW8270 Revision D

Sample Results

Lab Name: ALS Environmental -- FC
Work Order Number: 1308503
Client Name: Stewart Environmental Consultants
ClientProject ID:

Field ID: 238-0950
Lab ID: 1308503-1

Sample Matrix: SOIL
% Moisture: 10.9
Date Collected: 22-Aug-13
Date Extracted: 30-Aug-13
Date Analyzed: 09-Sep-13
Prep Method: SW3540 Rev C

Prep Batch: EX130830-8
QCBatchID: EX130830-8-1
Run ID: SV130909-1
Cleanup: SW3640
Basis: Dry Weight
File Name: N8353

Analyst: Joe Kostelnik
Sample Aliquot: 30.11 G
Final Volume: 1 ML
Result Units: UG/KG
Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	Result Qualifier	EPA Qualifier
91-20-3	NAPHTHALENE	1	370	370	U	
91-57-6	2-METHYLNAPHTHALENE	1	370	370	U	
208-96-8	ACENAPHTHYLENE	1	370	370	U	
83-32-9	ACENAPHTHENE	1	370	370	U	
86-73-7	FLUORENE	1	370	370	U	
85-01-8	PHENANTHRENE	1	370	370	U	
120-12-7	ANTHRACENE	1	370	370	U	
206-44-0	FLUORANTHENE	1	370	370	U	
129-00-0	PYRENE	1	370	370	U	
56-55-3	BENZO(A)ANTHRACENE	1	370	370	U	
218-01-9	CHRYSENE	1	370	370	U	
205-99-2	BENZO(B)FLUORANTHENE	1	370	370	U	
207-08-9	BENZO(K)FLUORANTHENE	1	370	370	U	
50-32-8	BENZO(A)PYRENE	1	370	370	U	
193-39-5	INDENO(1,2,3-CD)PYRENE	1	370	370	U	
53-70-3	DIBENZO(A,H)ANTHRACENE	1	370	370	U	
191-24-2	BENZO(G,H,I)PERYLENE	1	370	370	U	

Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
321-60-8	2-FLUOROBIPHENYL	1160		1860	62	41 - 111
4165-60-0	NITROBENZENE-D5	971		1860	52	32 - 110
1718-51-0	TERPHENYL-D14	1340		1860	72	23 - 159

Data Package ID: *SV1308503-1*

GC/MS Semi-volatiles

Method SW8270D

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1308503

Client Name: Stewart Environmental Consultants

ClientProject ID:

Lab ID: EX130830-8LCS

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/30/2013
Date Analyzed: 09/09/2013
Prep Method: SW3540C

Prep Batch: EX130830-8
QCBatchID: EX130830-8-1
Run ID: SV130909-1
Cleanup: SW3640
Basis: N/A
File Name: N8349

Sample Aliquot: 30 g
Final Volume: 1 ml
Result Units: UG/KG
Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
91-20-3	NAPHTHALENE	2000	1230	333		62	47 - 97%
91-57-6	2-METHYLNAPHTHALENE	2000	1270	333		64	51 - 99%
208-96-8	ACENAPHTHYLENE	2000	1560	333		78	60 - 109%
83-32-9	ACENAPHTHENE	2000	1330	333		67	47 - 110%
86-73-7	FLUORENE	2000	1660	333		83	65 - 106%
85-01-8	PHENANTHRENE	2000	1550	333		77	66 - 107%
120-12-7	ANTHRACENE	2000	1400	333		70	65 - 108%
206-44-0	FLUORANTHENE	2000	1680	333		84	64 - 109%
129-00-0	PYRENE	2000	1610	333		81	48 - 118%
56-55-3	BENZO(A)ANTHRACENE	2000	1680	333		84	64 - 107%
218-01-9	CHRYSENE	2000	1660	333		83	65 - 108%
205-99-2	BENZO(B)FLUORANTHENE	2000	1810	333		91	60 - 111%
207-08-9	BENZO(K)FLUORANTHENE	2000	1720	333		86	62 - 111%
50-32-8	BENZO(A)PYRENE	2000	1720	333		86	63 - 109%
193-39-5	INDENO(1,2,3-CD)PYRENE	2000	1460	333		73	55 - 117%
53-70-3	DIBENZO(A,H)ANTHRACENE	2000	1510	333		76	55 - 120%
191-24-2	BENZO(G,H,I)PERYLENE	2000	1320	333		66	37 - 123%

Data Package ID: *SV1308503-1*

GC/MS Semi-volatiles

Method SW8270D

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1308503
Client Name: Stewart Environmental Consultants
ClientProject ID:

Lab ID: EX130830-8LCSD

Sample Matrix: SOIL
% Moisture: N/A
Date Collected: N/A
Date Extracted: 08/30/2013
Date Analyzed: 09/09/2013
Prep Method: SW3540C

Prep Batch: EX130830-8
QCBatchID: EX130830-8-1
Run ID: SV130909-1
Cleanup: SW3640
Basis: N/A
File Name: N8350

Sample Aliquot: 30 g
Final Volume: 1 ml
Result Units: UG/KG
Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
91-20-3	NAPHTHALENE	2000	1200	333		60	30	3
91-57-6	2-METHYLNAPHTHALENE	2000	1220	333		61	30	4
208-96-8	ACENAPHTHYLENE	2000	1500	333		75	30	4
83-32-9	ACENAPHTHENE	2000	1290	333		65	30	3
86-73-7	FLUORENE	2000	1610	333		81	30	3
85-01-8	PHENANTHRENE	2000	1510	333		76	30	3
120-12-7	ANTHRACENE	2000	1390	333		69	30	1
206-44-0	FLUORANTHENE	2000	1600	333		80	30	5
129-00-0	PYRENE	2000	1550	333		77	30	4
56-55-3	BENZO(A)ANTHRACENE	2000	1670	333		84	30	0
218-01-9	CHRYSENE	2000	1640	333		82	30	1
205-99-2	BENZO(B)FLUORANTHENE	2000	1740	333		87	30	4
207-08-9	BENZO(K)FLUORANTHENE	2000	1600	333		80	30	7
50-32-8	BENZO(A)PYRENE	2000	1630	333		81	30	6
193-39-5	INDENO(1,2,3-CD)PYRENE	2000	1340	333		67	30	8
53-70-3	DIBENZO(A,H)ANTHRACENE	2000	1370	333		68	30	10
191-24-2	BENZO(G,H,I)PERYLENE	2000	1180	333		59	30	11

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
321-60-8	2-FLUOROBIPHENYL	1670	69		66		41 - 111
4165-60-0	NITROBENZENE-D5	1670	56		55		32 - 110
1718-51-0	TERPHENYL-D14	1670	72		69		23 - 159

Data Package ID: *SV1308503-1*

GC/MS Semi-volatiles

Method SW8270D

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1308503
Client Name: Stewart Environmental Consultants
ClientProject ID:

Field ID: 238-0950
LabID: 1308503-1MS

Sample Matrix: SOIL
% Moisture: 10.9
Date Collected: 22-Aug-13
Date Extracted: 30-Aug-13
Date Analyzed: 09-Sep-13
Prep Method: SW3540 Rev C

Prep Batch: EX130830-8
QCBatchID: EX130830-8-1
Run ID: SV130909-1
Cleanup: SW3640
Basis: Dry Weight

Sample Aliquot: 30.36 g
Final Volume: 1 ml
Result Units: UG/KG
File Name: N8354

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
91-20-3	NAPHTHALENE	370	U	1460		370	2220	66	47 - 97%
91-57-6	2-METHYLNAPHTHALENE	370	U	1530		370	2220	69	51 - 99%
208-96-8	ACENAPHTHYLENE	370	U	1750		370	2220	79	60 - 109%
83-32-9	ACENAPHTHENE	370	U	1550		370	2220	70	47 - 110%
86-73-7	FLUORENE	370	U	1840		370	2220	83	65 - 106%
85-01-8	PHENANTHRENE	370	U	1730		370	2220	78	66 - 107%
120-12-7	ANTHRACENE	370	U	1580		370	2220	71	65 - 108%
206-44-0	FLUORANTHENE	370	U	1710		370	2220	77	64 - 109%
129-00-0	PYRENE	370	U	2520		370	2220	114	48 - 118%
56-55-3	BENZO(A)ANTHRACENE	370	U	1760		370	2220	80	64 - 107%
218-01-9	CHRYSENE	370	U	1730		370	2220	78	65 - 108%
205-99-2	BENZO(B)FLUORANTHENE	370	U	2180		370	2220	98	60 - 111%
207-08-9	BENZO(K)FLUORANTHENE	370	U	2030		370	2220	91	62 - 111%
50-32-8	BENZO(A)PYRENE	370	U	1760		370	2220	79	63 - 109%
193-39-5	INDENO(1,2,3-CD)PYRENE	370	U	1330		370	2220	60	55 - 117%
53-70-3	DIBENZO(A,H)ANTHRACENE	370	U	1300		370	2220	59	55 - 120%
191-24-2	BENZO(G,H,I)PERYLENE	370	U	1140		370	2220	51	37 - 123%

Data Package ID: *SV1308503-1*

GC/MS Semi-volatiles

Method SW8270D

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC
Work Order Number: 1308503
Client Name: Stewart Environmental Consultants
ClientProject ID:

Field ID: 238-0950
LabID: 1308503-1MSD

Sample Matrix: SOIL
% Moisture: 10.9
Date Collected: 22-Aug-13
Date Extracted: 30-Aug-13
Date Analyzed: 09-Sep-13
Prep Method: SW3540 Rev C

Prep Batch: EX130830-8
QCBatchID: EX130830-8-1
Run ID: SV130909-1
Cleanup: SW3640
Basis: Dry Weight

Sample Aliquot: 30 g
Final Volume: 1 ml
Result Units: UG/KG
File Name: N8355

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
91-20-3	NAPHTHALENE	1070		2240	48	374	30	30
91-57-6	2-METHYLNAPHTHALENE	1110	*+	2240	50	374	30	32
208-96-8	ACENAPHTHYLENE	1290	*	2240	58	374	30	30
83-32-9	ACENAPHTHENE	1110	+	2240	50	374	30	33
86-73-7	FLUORENE	1330	*+	2240	59	374	30	32
85-01-8	PHENANTHRENE	1270	*+	2240	57	374	30	31
120-12-7	ANTHRACENE	1180	*	2240	52	374	30	29
206-44-0	FLUORANTHENE	1340	*	2240	60	374	30	24
129-00-0	PYRENE	1900		2240	85	374	30	28
56-55-3	BENZO(A)ANTHRACENE	1300	*	2240	58	374	30	30
218-01-9	CHRYSENE	1250	*+	2240	56	374	30	32
205-99-2	BENZO(B)FLUORANTHENE	1390	+	2240	62	374	30	44
207-08-9	BENZO(K)FLUORANTHENE	1420	+	2240	63	374	30	35
50-32-8	BENZO(A)PYRENE	1300	*	2240	58	374	30	30
193-39-5	INDENO(1,2,3-CD)PYRENE	1080	*	2240	48	374	30	21
53-70-3	DIBENZO(A,H)ANTHRACENE	1060	*	2240	47	374	30	20
191-24-2	BENZO(G,H,I)PERYLENE	965		2240	43	374	30	16

Surrogate Recovery MS/MSD

CASNO	Target Analyte	Spike Added	MS % Rec.	MS Flag	MSD % Rec.	MSD Flag	Control Limits
321-60-8	2-FLUOROBIPHENYL	1850	74		53		41 - 111
4165-60-0	NITROBENZENE-D5	1850	62		44		32 - 110
1718-51-0	TERPHENYL-D14	1850	107		77		23 - 159

Data Package ID: *SV1308503-1*

CHAIN OF CUSTODY RECORD

STEWART ENVIRONMENTAL CONSULTANTS, LLC.
3801 Automation Way, Suite 200, Fort Collins, CO 80525
Telephone: (970) 226-5500
Facsimile: (970) 226-4946

Batch:

Client No.	CLIENT:							SAMPLER
4264.001(15)	Pagoda Pure Water							Print: Paul Stone
Sample No.	SAMPLE COLLECTION INFO			SAMPLE IDENTIFICATION	Matrix Type	QC Report Needed	Total No. of Cont.	Signature:
S13-212	Date	Time	Grab / Comp					Analyses Requested
1155	7/26/2013	1200	~~Comp~~ ~~Grab~~	Bare Area NW of Pit	S		2	SAR, pH, Sodium, Chloride, Sulfate, Magnesium, Calcium
1157	7/26/2013	1300	Grab	Robson-Wyman 14-16	S		2	Table 910-1 Parameters: BTEX, TVPH, TEPH, Elec Conductivity, SAR, pH,
								Metals - As, Ba, B, Cd, Cr (III) & (VI), Cu, Pb, Ni, Se, Ag, Zn

Notes:

Relinquished by	Date / Time	Received by	Date / Time	REQUESTED COMPLETION DATE	REPORT TO:	
	7/31/13 0930		7/31/13 2:30			FAX:
Relinquished by	Date / Time	Received by	Date / Time	MATRIX TYPE	CLIENT:	
Relinquished by	Date / Time	Received by	Date / Time	WW = waste water DW = drinking water L = liquid W = water S = soil SL = sludge A = Air SD = Solid	ADDRESS:	
					CITY, STATE ZIP:	
				____CDPHE REPORT REQUIRED	INVOICE TO:	
Database Entry By		Date			ADDRESS:	
LS		8/1/13		PWSID #	CITY, STATE ZIP:	

CHAIN OF CUSTODY RECORD

STEWART ENVIRONMENTAL CONSULTANTS, LLC.
3801 Automation Way, Suite 200, Fort Collins, CO 80525
Telephone: (970) 226-5500
Facsimile: (970) 226-4946

Batch:

Client No.: 4264.001(15)

CLIENT: **Pagoda Pure Water**

SAMPLER
Print: Paul Stone
Signature:

Sample No.	SAMPLE COLLECTION INFO			SAMPLE IDENTIFICATION	Matrix Type	QC Report Needed	Total No. of Cont.	Analyses Requested
S13-	Date	Time	Grab / Comp					
0950	8/22/2013	0900	Grab	Pagoda Unit 33-34P	S		2	Table 910-1 Parameters: BTEX, TVPH, TEPH, PAHs, Elec Conductivity, SAR, pH, Metals - As, Ba, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn

Notes:

Relinquished by	Date / Time	Received by	Date / Time
	8/23/13 1500		8/23/13 1500
Relinquished by	Date / Time	Received by	Date / Time
Relinquished by	Date / Time	Received by	Date / Time
Database Entry By		Date 8/26	

REQUESTED COMPLETION DATE

MATRIX TYPE
WW = waste water
DW = drinking water
L = liquid W = water
S = soil SL = sludge
A = Air SD = Solid

____CDPHE REPORT REQUIRED

PWSID #

REPORT TO: PST
FAX:
CLIENT:
ADDRESS:
CITY, STATE ZIP:
INVOICE TO:
ADDRESS:
CITY, STATE ZIP: