

June 24, 2013

Mr. Brad Shultz
Skelly and Loy, Inc.
449 Eisenhower Boulevard
Suite 300
Harrisburg, PA 17111

Certificate of Analysis

Project Name: R10-0471.012.0.0-Site 42	Workorder: 1029977
Purchase Order:	Workorder ID: R10-0471.012.0.0-Site 42

Dear Mr. Shultz,

Enclosed are the analytical results for samples received by the laboratory on Tuesday, June 04, 2013.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Susan Scherer (Project Coordinator) or Anna G Milliken (Technical Manager) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

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ALS York: 978 Loucks Mill Road, York, PA 17402 717-505-5280

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.


Anna G Milliken
Technical Manager

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SAMPLE SUMMARY

Workorder: 1029977 R10-0471.012.0.0-Site 42

Discard Date: 07/08/2013

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
1029977001	Raw AMD	Water	6/4/13 10:30	6/4/13 18:00	Brad Shultz
1029977002	VFW Outfall	Water	6/4/13 10:30	6/4/13 18:00	Brad Shultz
1029977003	Settling Pad Outfall	Water	6/4/13 11:30	6/4/13 18:00	Brad Shultz
1029977004	Final Outfall	Water	6/4/13 13:00	6/4/13 18:00	Brad Shultz
1029977005	Carbon Run Upstream	Water	6/4/13 12:15	6/4/13 18:00	Brad Shultz
1029977006	Carbon Run Downstream	Water	6/4/13 12:40	6/4/13 18:00	Brad Shultz

Workorder Comments:

Notes

- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 - Field Services Sampling Plan).
- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- The Chain of Custody document is included as part of this report.
- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are performed in the laboratory and are therefore analyzed out of hold time.

Standard Acronyms/Flags

J, B	Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
U	Indicates that the analyte was Not Detected (ND)
N	Indicates presumptive evidence of the presence of a compound
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
RDL	Reporting Detection Limit
ND	Not Detected - indicates that the analyte was Not Detected at the RDL
Cntr	Analysis was performed using this container
RegLmt	Regulatory Limit
LCS	Laboratory Control Sample
MS	Matrix Spike
MSD	Matrix Spike Duplicate
DUP	Sample Duplicate
%Rec	Percent Recovery
RPD	Relative Percent Difference

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ANALYTICAL RESULTS

Workorder: 1029977 R10-0471.012.0.0-Site 42

Lab ID: **1029977001**

Date Collected: 6/4/2013 10:30

Matrix: Water

Sample ID: **Raw AMD**

Date Received: 6/4/2013 18:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Acidity, Hot	-22.75 mg/L		mg/L	3	SM20-2310B			6/17/13 12:00	RPE	A
Alkalinity, Total	26		mg/L	5	SM20-2320 B			6/5/13 07:55	MSA	C
Chloride	ND		mg/L	2.0	EPA 300			6/5/13 12:10	FSC	A
Ferrous Iron	9.50		mg/L	1.00	SM20-3500FeD			6/5/13 01:20	MSA	A
Sulfate	83.5		mg/L	2.0	EPA 300			6/5/13 12:10	FSC	A
Total Carbon	15.7		mg/L	1.0	SM20-5310B			6/18/13 09:30	PAG	F
Total Inorganic Carbon	15.7		mg/L	1.0	SM 5310A			6/18/13 09:30	PAG	F
Total Organic Carbon (TOC)	ND		mg/L	1.0	SM20-5310B			6/7/13 11:39	LJF	H
METALS										
Aluminum, Total	0.11		mg/L	0.11	SW846 6010C	6/7/13	KMK	6/8/13 16:20	SRT	D1
Aluminum, Dissolved	ND		mg/L	0.10	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1
Calcium, Dissolved	24.0		mg/L	0.10	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1
Iron, Total	14.6		mg/L	0.067	SW846 6010C	6/7/13	KMK	6/8/13 16:20	SRT	D1
Iron, Dissolved	10.2		mg/L	0.060	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1
Magnesium, Dissolved	11.0		mg/L	0.10	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1
Manganese, Total	1.5		mg/L	0.0056	SW846 6010C	6/7/13	KMK	6/8/13 16:20	SRT	D1
Manganese, Dissolved	1.5		mg/L	0.0050	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1
Potassium, Dissolved	0.78		mg/L	0.50	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1
Sodium, Dissolved	1.8		mg/L	0.50	SW846 6010C	6/7/13	JWK	6/7/13 12:19	JWK	E1

Sample Comments:


Anna G Milliken
Technical Manager

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ANALYTICAL RESULTS

Workorder: 1029977 R10-0471.012.0.0-Site 42

Lab ID: **1029977002**

Date Collected: 6/4/2013 10:30

Matrix: Water

Sample ID: **VFW Outfall**

Date Received: 6/4/2013 18:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Acidity, Hot	-122.7 mg/L		mg/L	3	SM20-2310B			6/17/13 12:00	RPE	A
Alkalinity, Total	117		mg/L	5	SM20-2320 B			6/5/13 08:03	MSA	C
Chloride	ND		mg/L	2.0	EPA 300			6/5/13 12:24	FSC	A
Ferrous Iron	8.00		mg/L	1.00	SM20-3500FeD			6/5/13 01:20	MSA	A
Sulfate	74.3		mg/L	2.0	EPA 300			6/5/13 12:24	FSC	A
Total Carbon	31.5		mg/L	25.0	SM20-5310B			6/18/13 09:30	PAG	F
Total Inorganic Carbon	30.3		mg/L	1.0	SM 5310A			6/18/13 09:30	PAG	F
Total Organic Carbon (TOC)	1.2		mg/L	1.0	SM20-5310B			6/7/13 11:39	LJF	H
METALS										
Aluminum, Total	ND		mg/L	0.11	SW846 6010C	6/7/13	KMK	6/8/13 16:24	SRT	D1
Aluminum, Dissolved	ND		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1
Calcium, Dissolved	56.4		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1
Iron, Total	10.3		mg/L	0.067	SW846 6010C	6/7/13	KMK	6/8/13 16:24	SRT	D1
Iron, Dissolved	8.1		mg/L	0.060	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1
Magnesium, Dissolved	11.9		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1
Manganese, Total	1.0		mg/L	0.0056	SW846 6010C	6/7/13	KMK	6/8/13 16:24	SRT	D1
Manganese, Dissolved	0.97		mg/L	0.0050	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1
Potassium, Dissolved	1.2		mg/L	0.50	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1
Sodium, Dissolved	2.1		mg/L	0.50	SW846 6010C	6/11/13	JWK	6/11/13 11:59	JWK	E1

Sample Comments:


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ANALYTICAL RESULTS

Workorder: 1029977 R10-0471.012.0.0-Site 42

Lab ID: **1029977003**
Sample ID: **Settling Pad Outfall**

Date Collected: 6/4/2013 11:30 Matrix: Water
Date Received: 6/4/2013 18:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Acidity, Hot	-31.6 mg/L		mg/L	3	SM20-2310B			6/17/13 12:00	RPE	A
Alkalinity, Total	34		mg/L	5	SM20-2320 B			6/5/13 08:39	MSA	B
Sulfate	80.5		mg/L	2.0	EPA 300			6/5/13 12:38	FSC	A
METALS										
Aluminum, Total	ND		mg/L	0.11	SW846 6010C	6/7/13	KMK	6/8/13 16:37	SRT	C1
Aluminum, Dissolved	ND		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 12:03	JWK	D1
Iron, Total	6.3		mg/L	0.067	SW846 6010C	6/7/13	KMK	6/8/13 16:37	SRT	C1
Iron, Dissolved	ND		mg/L	0.060	SW846 6010C	6/11/13	JWK	6/11/13 12:03	JWK	D1
Manganese, Total	1.5		mg/L	0.0056	SW846 6010C	6/7/13	KMK	6/8/13 16:37	SRT	C1
Manganese, Dissolved	1.5		mg/L	0.0050	SW846 6010C	6/11/13	JWK	6/11/13 12:03	JWK	D1

Sample Comments:


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ANALYTICAL RESULTS

Workorder: 1029977 R10-0471.012.0.0-Site 42

Lab ID: **1029977004**

Date Collected: 6/4/2013 13:00

Matrix: Water

Sample ID: **Final Outfall**

Date Received: 6/4/2013 18:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Acidity, Hot	-27.05 mg/L		mg/L	3	SM20-2310B			6/17/13 12:00	RPE	A
Alkalinity, Total	34		mg/L	5	SM20-2320 B			6/5/13 08:47	MSA	B
Sulfate	86.5		mg/L	5.0	EPA 300			6/5/13 12:52	FSC	A
METALS										
Aluminum, Total	ND		mg/L	0.11	SW846 6010C	6/7/13	KMK	6/8/13 16:49	SRT	C1
Aluminum, Dissolved	ND		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 12:06	JWK	D1
Iron, Total	1.3		mg/L	0.067	SW846 6010C	6/7/13	KMK	6/8/13 16:49	SRT	C1
Iron, Dissolved	ND		mg/L	0.060	SW846 6010C	6/11/13	JWK	6/11/13 12:06	JWK	D1
Manganese, Total	1.1		mg/L	0.0056	SW846 6010C	6/7/13	KMK	6/8/13 16:49	SRT	C1
Manganese, Dissolved	0.98		mg/L	0.0050	SW846 6010C	6/11/13	JWK	6/11/13 12:06	JWK	D1

Sample Comments:


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ANALYTICAL RESULTS

Workorder: 1029977 R10-0471.012.0.0-Site 42

Lab ID: **1029977005**
Sample ID: **Carbon Run Upstream**

Date Collected: 6/4/2013 12:15
Date Received: 6/4/2013 18:00

Matrix: Water

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Acidity, Hot	-10.8 mg/L		mg/L	3	SM20-2310B			6/17/13 12:00	RPE	A
Alkalinity, Total	10		mg/L	5	SM20-2320 B			6/5/13 08:55	MSA	B
Sulfate	36.7		mg/L	2.0	EPA 300			6/5/13 13:06	FSC	A
METALS										
Aluminum, Total	ND		mg/L	0.11	SW846 6010C	6/7/13	KMK	6/8/13 16:53	SRT	C1
Aluminum, Dissolved	ND		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 12:10	JWK	D1
Iron, Total	0.67		mg/L	0.067	SW846 6010C	6/7/13	KMK	6/8/13 16:53	SRT	C1
Iron, Dissolved	0.27		mg/L	0.060	SW846 6010C	6/11/13	JWK	6/11/13 12:10	JWK	D1
Manganese, Total	0.50		mg/L	0.0056	SW846 6010C	6/7/13	KMK	6/8/13 16:53	SRT	C1
Manganese, Dissolved	0.45		mg/L	0.0050	SW846 6010C	6/11/13	JWK	6/11/13 12:10	JWK	D1

Sample Comments:


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ANALYTICAL RESULTS

Workorder: 1029977 R10-0471.012.0.0-Site 42

Lab ID: **1029977006**

Date Collected: 6/4/2013 12:40

Matrix: Water

Sample ID: **Carbon Run Downstream**

Date Received: 6/4/2013 18:00

Parameters	Results	Flag	Units	RDL	Method	Prepared	By	Analyzed	By	Cntr
WET CHEMISTRY										
Acidity, Hot	-20.75 mg/L		mg/L	3	SM20-2310B			6/17/13 12:00	RPE	A
Alkalinity, Total	31		mg/L	5	SM20-2320 B			6/5/13 09:03	MSA	B
Sulfate	59.7		mg/L	2.0	EPA 300			6/5/13 13:20	FSC	A
METALS										
Aluminum, Total	ND		mg/L	0.11	SW846 6010C	6/7/13	KMK	6/8/13 16:57	SRT	C1
Aluminum, Dissolved	ND		mg/L	0.10	SW846 6010C	6/11/13	JWK	6/11/13 12:13	JWK	D1
Iron, Total	0.91		mg/L	0.067	SW846 6010C	6/7/13	KMK	6/8/13 16:57	SRT	C1
Iron, Dissolved	ND		mg/L	0.060	SW846 6010C	6/11/13	JWK	6/11/13 12:13	JWK	D1
Manganese, Total	0.65		mg/L	0.0056	SW846 6010C	6/7/13	KMK	6/8/13 16:57	SRT	C1
Manganese, Dissolved	0.57		mg/L	0.0050	SW846 6010C	6/11/13	JWK	6/11/13 12:13	JWK	D1

Sample Comments:


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Technical Manager

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ALS Environmental



34 Dogwood Lane ■ Middletown, PA 17057 ■ Phone: 717-944-5541 ■ Fax: 717-944-1430 ■ www.alsglobal.com

NELAP Certifications: NJ PA010, NY 11759, PA 22-293 DoD ELAP: A2LA 0818.01
State Certifications: CT PH-0224, DE ID 11, GA 914, MA PA0102, MD 128, LA 04162, VA 421, WY EPA Region 8, WV 343

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS
ALL STATED AREAS MUST BE COMPLETED BY THE CLIENT. SAMPLER INSTRUCTIONS ON THE BACK

Page 1 of 1
Courier: ALS
Tracking #: 1029977

Co. Name: Skully and Loy
Contact (Report to): Brad Skultz
Address: 449 Eisenhower Blvd, Suite 300
Harrisburg, PA 17111

Phone: 717-232-0593

Ship to: 34 Dogwood Lane ■ Middletown, PA 17057 ■ 717-944-5541 ■ Fax: 717-944-1430

PO#: _____

Project Name#: R10-0471.012.0.0 - Site 42 System ALS Quote #:

TAT: ☒ Normal Standard TAT is 10 business days.
☐ Rush-Subject to ALS approval and surcharges.

Date Required: _____
Approved By: _____

Email: X-17 bskultz@skullyloy.com
Fax: _____

Sample Description/Location: _____
COC Comments: _____

Sample	Description/Location	Sample Date	Military Time	Matrix	Enter Number of Containers Per Analysis	Hot Acidity, Sulfate	Alkalinity	Ferrous Iron	Total Fe, Mn, Al	(Total Filtered) Dissolved Fe, Mn, Al	(Total Filtered) Dissolved Fe, Mn, Al, Ca, Mg, K	Total Carbon	Total Organic Carbon	Chloride (lose or a blank sample)
1	Raw AMD	6/14/13	1030	G	1	1	1	1	1	1	1	1	1	1
2	VFW Outfall		1030	G	1	1	1	1	1	1	1	1	1	
3	Settling Pond Outfall		1130	G	1	1	1	1	1	1	1	1	1	
4	Final Outfall		1300	G	1	1	1	1	1	1	1	1	1	
5	Carbon Run Upstream		1215	G	1	1	1	1	1	1	1	1	1	
6	Carbon Run Downstream		1240	G	1	1	1	1	1	1	1	1	1	
7														
8														

SAMPLED BY (Please Print): Brad Skultz
LOGGED BY (Signature): [Signature]
REVIEWED BY (Signature): [Signature]

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
<u>Brad Skully</u>	<u>6/14/13</u>	<u>2</u>	<u>SK</u>	<u>6/13/13</u>	<u>1800</u>

ALS FIELD SERVICES:
☐ Pickup
☐ Labor
☐ Composite Sampling
☐ Rental Equipment
☐ Other: _____

Container in good condition? ☒ Yes ☐ No
COC Labels complete/accurate? ☒ Yes ☐ No
Received on ice? ☒ Yes ☐ No
(If present) Seals intact? ☒ Yes ☐ No
Custody seals present? ☒ Yes ☐ No

Correct containers? ☒ Yes ☐ No
Correct sample volume? ☒ Yes ☐ No
Correct preservation? ☒ Yes ☐ No
Headspace/Volatilize? ☒ Yes ☐ No
Circle appropriate Y or N.

No. of Coolers: _____
Therm. ID: 1725
Cooler Temp: _____
Notes: _____

ANALYSIS METHOD REQUESTED:
Hot Acidity, Sulfate
Alkalinity
Ferrous Iron
Total Fe, Mn, Al
(Total Filtered) Dissolved Fe, Mn, Al
(Total Filtered) Dissolved Fe, Mn, Al, Ca, Mg, K
Total Carbon
Total Organic Carbon
Chloride (lose or a blank sample)

COO Criteria Required? ☐ Yes ☐ No
EDS: ☐ Yes ☐ No
If yes, format type: _____

SWA: ☐ Standard ☐ CLP-like ☐ NJ-Reduced ☐ NJ-Full ☐ Other: _____
Form: ☐ Yes ☐ No

Strat Samples Collected in? ☐ MD ☐ NJ ☐ NY ☐ PA

Copies: WHITE - ORIGINAL CANARY - CUSTOMER COPY

Releasable: ☐ Yes ☐ No

Matrix: ☐ G-Glass, C-Composite
Container Type: ☐ AG-Ambor Glass, ☐ CG-Clear Glass, ☐ PL-Plastic, ☐ Container Size: 250ml, 500ml, 1L, 2oz., etc. Preservative: HCl, HNO3, NaOH, etc.

Rev 6/2011

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