2018 Annual Groundwater Monitoring and Corrective Action Report

Sutherland Generating Station
3001 E Main Street Road
Marshalltown, Iowa 50158

Prepared for:

Alliant Energy

Interstate Power and Light Company
4902 N. Biltmore Lane
Madison, Wisconsin 53718

SCS ENGINEERS

25219076.00 | August 1, 2019

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

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Appendix A – Analytical Laboratory Reports

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1.0 INTRODUCTION

This 2018 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" published by the U.S. Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities;* Final Rule, dated April 17, 2015 (USEPA, 2015) and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e) and 40 CFR 257.100 for inactive CCR surface impoundments. The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2018 Annual Groundwater Monitoring and Corrective Action Report for the CCR unit.

This report covers the period of groundwater monitoring from January 1, 2018, through December 31, 2018. March 26, 2018, is the date of the first background sampling round. All future annual reports will cover the period from January 1 through December 31 of the previous year.

The groundwater monitoring network at Sutherland Generating Station (SGS) is a multiunit system that includes the following inactive CCR units:

- SGS North Primary Pond (inactive surface impoundment)
- SGS South Primary Pond (inactive surface impoundment)
- SGS Main Pond (inactive surface impoundment)
- SGS Polishing Pond (inactive surface impoundment)

The system is designed to detect monitored constituents at the waste boundary of the SGS CCR units as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two upgradient and four downgradient monitoring wells.

2.0 257.100(E)(5) GROUNDWATER MONITORING AND CORRECTIVE ACTION FOR INACTIVE CCR SURFACE IMPOUNDMENTS

The owner or operator of the inactive CCR surface impoundments must: (i) No later than April 17, 2019, comply with groundwater monitoring requirements set forth in §§ 257.90(b) and 257.94(b); and (ii) No later than August 1, 2019, prepare the initial groundwater monitoring and corrective action report as set forth in § 257.90(e).

This report is submitted to fulfill the initial report requirement.

3.0 §257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

3.1 §257.90(E)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A map showing the CCR units as well as the background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as Figure 2.

3.2 §257.90(E)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

Upgradient monitoring wells MW-301 and MW-302 and downgradient monitoring wells MW-303, MW-304, MW-305, and MW-306 were installed at SGS on November 20 to 21, 2017, to establish the monitoring system.

3.3 §257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Six groundwater samples were collected from each CCR monitoring well in 2018 for the establishment of background. Background sampling began in March 2018. Background samples were analyzed for both Appendix III and Appendix IV constituents. A summary including the number of groundwater samples that were collected in 2018 for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs is included in Table 1. The results of the analytical laboratory analyses are provided in the laboratory reports in Appendix A1 through Appendix A6.

3.4 §257.90(E)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

There were no transitions between monitoring programs in 2018.

3.5 §257.90(E)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in *italics*, followed by applicable information relative to the 2018 Annual Groundwater Monitoring and Corrective Action Report for the CCR units.

3.5.1 §257.90(e) General Requirements

For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program. In 2018, the groundwater monitoring and corrective action program was in background monitoring.

Summary of Key Actions Completed. Collection of six rounds of background groundwater quality data was completed in 2018.

Description of Any Problems Encountered. No issues were encountered.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2019):

- Completion of background monitoring.
- Initiation of detection monitoring no later than April 17, 2019.
- Two semi-annual groundwater sampling and analysis events (April and October 2019).
- Statistical evaluation and determination of any statistically significant increases (SSIs) for the April 2019 (by 7/16/2019) and for the October 2019 monitoring event (by January 2020).
- If an SSI is determined, then within 90 days either:
  - Complete alternative source demonstration (if applicable), or
  - Establish an assessment monitoring program

3.5.2 §257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not Applicable. No alternative detection monitoring frequency has been proposed.

3.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not Applicable. No alternative source demonstration was completed in 2018.

3.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not Applicable. Assessment monitoring has not been initiated, and no alternative assessment monitoring frequency has been proposed.

3.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not Applicable. Assessment monitoring was not performed in 2018.

3.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not Applicable. Assessment monitoring has not been initiated, and no alternative source demonstration for assessment monitoring was completed in 2018.

3.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not Applicable. Corrective measures assessment has not been initiated.

Table 1

CCR Rule Groundwater Samples Summary

Table 1. CCR Rule Groundwater Samples Summary
Sutherland Generating Station / SCS Engineers Project #25219076.00

Sample Dates	Downgradient Wells				Background Wells	
	MW-303	MW-304	MW-305	MW-306	MW-301	MW-302
3/26-27/2018	B	B	B	B	B	B
5/23/2018	B	B	B	B	B	B
6/26/2018	B	B	B	B	B	B
7/26/2018	B	B	B	B	B	B
9/11/2018	B	B	B	B	B	B
11/28/2018	B	B	B	B	B	B
Total Samples	6	6	6	6	6	6

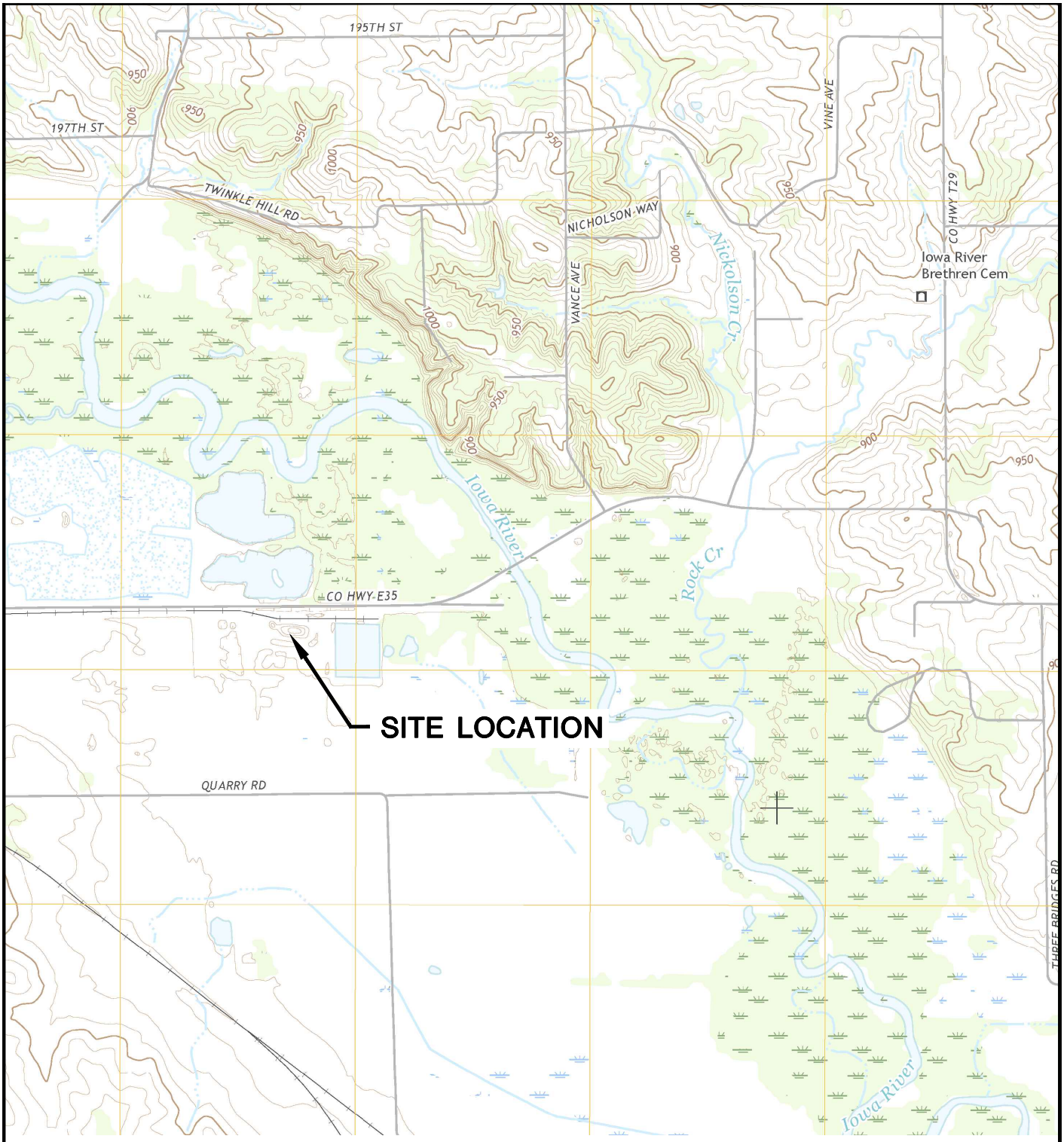
Abbreviations:
B = Background sampling event

Note: Detection monitoring will be initiated after completion of background monitoring.

Created by:	NDK	Date:	6/10/2019
Last revision by:	JR	Date:	6/12/2019
Checked by:	NDK	Date:	6/12/2019

I:\25219076.00\Deliverables\2018 Federal Annual Report-SGS\[Table 1 GW_Samples_Summary_Table.xlsx]GW Summary

Figures



N

LE GRAND QUADRANGLE
IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)
2015
SCALE: 1" = 2,000'

CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718	SITE	ALLIANT ENERGY SUTHERLAND GENERATING STATION CEDAR RAPIDS, IOWA

SITE LOCATION MAP

PROJECT NO.	25216149.00	DRAWN BY:	AHB
DRAWN:	04/27/17	CHECKED BY:	MDB
REVISED:	04/27/17	APPROVED BY:	TK 04/09/19

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
1

I:\25216149.00\Drawings\Site Location.dwg, 4/9/2019 1:07:04 PM

LEGEND

CCR MONITORING WELL

CCR UNITS

N

200 0 200

SCALE: 1" = 200'

PROJECT NO.	25219076.00	DRAWN BY:	BJM/BSS
DRAWN:	12/13/17	CHECKED BY:	JR
REVISED:	07/29/19	APPROVED BY:	

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT

ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718

SITE

ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MASHALLTOWN, IOWA

SITE PLAN AND WELL LOCATION MAP

FIGURE 1

I:\25219076.00\Drawings\190606 Monitoring Well Location Map.dwg, 8/1/2019 7:29:34 AM

Appendix A

Laboratory Reports

A1 Round 1 Background Sampling, Analytical Laboratory Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

April 09, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Trudy Gipson

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Kyle Kramer, SCS Engineers
Jeff Maxted, Alliant Energy

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60266915001	**MW-301**	Water	03/27/18 11:50	03/28/18 08:35
60266915002	**MW-302**	Water	03/27/18 12:45	03/28/18 08:35
60266915003	**MW-303**	Water	03/27/18 14:15	03/28/18 08:35
60266915004	**MW-304**	Water	03/26/18 15:30	03/28/18 08:35
60266915005	**MW-305**	Water	03/26/18 16:40	03/28/18 08:35
60266915006	**MW-306**	Water	03/27/18 15:00	03/28/18 08:35
60266915007	**FIELD BLANK**	Water	03/27/18 15:15	03/28/18 08:35

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SAMPLE ANALYTE COUNT

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60266915001	**MW-301**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K
60266915002	**MW-302**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K
60266915003	**MW-303**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K
60266915004	**MW-304**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K
60266915005	**MW-305**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K
60266915006	**MW-306**	EPA 6010	SMW	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K
60266915007	**FIELD BLANK**	EPA 6010	SMW	3	PASI-K

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JRS	1	PASI-K
		SM 2540C	OL	1	PASI-K
		EPA 9040	MJK	1	PASI-K
		EPA 9056	AGO	3	PASI-K

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: MW-301 **Lab ID: 60266915001** Collected: 03/27/18 11:50 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		03/27/18 11:50		
Field pH	**6.84**	Std. Units	0.10	0.050	1		03/27/18 11:50		
Field Temperature	**7.1**	deg C	0.50	0.25	1		03/27/18 11:50		
Field Specific Conductance	**645.7**	umhos/cm	1.0	1.0	1		03/27/18 11:50		
Field Oxidation Potential	**62.7**	mV			1		03/27/18 11:50		
Oxygen, Dissolved	**0.32**	mg/L			1		03/27/18 11:50	7782-44-7	
Turbidity	**11.6**	NTU	1.0	1.0	1		03/27/18 11:50		
Groundwater Elevation	**855.23**	feet			1		03/27/18 11:50		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**246**	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:29	7440-42-8	
Calcium	**71.2**	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:29	7440-70-2	
Lithium	**6.5J**	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:29	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.13J**	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:01	7440-36-0	
Arsenic	**0.45J**	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:01	7440-38-2	
Barium	**98.0**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:01	7440-39-3	
Beryllium	**0.014J**	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:01	7440-41-7	
Cadmium	**0.037J**	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:01	7440-43-9	
Chromium	**2.2**	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:01	7440-47-3	
Cobalt	**0.43J**	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:01	7440-48-4	
Lead	**0.33J**	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:01	7439-92-1	
Molybdenum	**4.4**	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:01	7439-98-7	
Selenium	**2.7**	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:01	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:01	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**399**	mg/L	5.0	5.0	1		04/01/18 09:33		
9040 pH	Analytical Method: EPA 9040								
pH	**7.0**	Std. Units	0.10	0.10	1		04/03/18 12:20		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**15.5**	mg/L	1.0	0.46	1		04/04/18 15:24	16887-00-6	
Fluoride	**0.15J**	mg/L	0.20	0.063	1		04/04/18 15:24	16984-48-8	
Sulfate	**79.0**	mg/L	10.0	2.4	10		04/04/18 15:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: MW-302 **Lab ID: 60266915002** Collected: 03/27/18 12:45 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		03/27/18 12:45		
Field pH	**7.20**	Std. Units	0.10	0.050	1		03/27/18 12:45		
Field Temperature	**7.4**	deg C	0.50	0.25	1		03/27/18 12:45		
Field Specific Conductance	**546.5**	umhos/cm	1.0	1.0	1		03/27/18 12:45		
Field Oxidation Potential	**79.3**	mV			1		03/27/18 12:45		
Oxygen, Dissolved	**2.39**	mg/L			1		03/27/18 12:45	7782-44-7	
Turbidity	**5.90**	NTU	1.0	1.0	1		03/27/18 12:45		
Groundwater Elevation	**855.97**	feet			1		03/27/18 12:45		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**58.4J**	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:37	7440-42-8	
Calcium	**67.4**	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:37	7440-70-2	
Lithium	**5.2J**	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:37	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.41J**	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:05	7440-36-0	
Arsenic	**1.4**	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:05	7440-38-2	
Barium	**93.6**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:05	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:05	7440-41-7	
Cadmium	**0.028J**	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:05	7440-43-9	
Chromium	**0.35J**	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:05	7440-47-3	
Cobalt	**1.8**	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:05	7440-48-4	
Lead	**0.19J**	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:05	7439-92-1	
Molybdenum	**1.2**	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:05	7439-98-7	
Selenium	**8.0**	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:05	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:05	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**309**	mg/L	5.0	5.0	1		04/01/18 09:33		
9040 pH	Analytical Method: EPA 9040								
pH	**7.4**	Std. Units	0.10	0.10	1		04/03/18 12:22		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**14.0**	mg/L	1.0	0.46	1		04/04/18 15:51	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.063	1		04/04/18 15:51	16984-48-8	
Sulfate	**68.5**	mg/L	10.0	2.4	10		04/04/18 16:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: MW-303 **Lab ID: 60266915003** Collected: 03/27/18 14:15 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		03/27/18 14:15		
Field pH	**7.19**	Std. Units	0.10	0.050	1		03/27/18 14:15		
Field Temperature	**7.2**	deg C	0.50	0.25	1		03/27/18 14:15		
Field Specific Conductance	**1806**	umhos/cm	1.0	1.0	1		03/27/18 14:15		
Field Oxidation Potential	**81.4**	mV			1		03/27/18 14:15		
Oxygen, Dissolved	**0.39**	mg/L			1		03/27/18 14:15	7782-44-7	
Turbidity	**3.27**	NTU	1.0	1.0	1		03/27/18 14:15		
Groundwater Elevation	**854.35**	feet			1		03/27/18 14:15		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**619**	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:45	7440-42-8	
Calcium	**265**	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:45	7440-70-2	
Lithium	**38.4**	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:45	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.072J**	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:17	7440-36-0	
Arsenic	**0.11J**	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:17	7440-38-2	
Barium	**66.9**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:17	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:17	7440-41-7	
Cadmium	**0.14J**	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:17	7440-43-9	
Chromium	**0.086J**	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:17	7440-47-3	
Cobalt	**0.54J**	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:17	7440-48-4	
Lead	**0.10J**	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:17	7439-92-1	
Molybdenum	**12.9**	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:17	7439-98-7	
Selenium	**1.6**	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:17	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:17	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1360**	mg/L	5.0	5.0	1		04/01/18 09:34		
9040 pH	Analytical Method: EPA 9040								
pH	**7.1**	Std. Units	0.10	0.10	1		04/03/18 12:23		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**22.8**	mg/L	2.0	0.92	2		04/04/18 17:24	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	0.063	1		04/04/18 17:11	16984-48-8	
Sulfate	**745**	mg/L	100	23.6	100		04/04/18 17:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: MW-304 **Lab ID: 60266915004** Collected: 03/26/18 15:30 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		03/26/18 15:30		
Field pH	**7.08**	Std. Units	0.10	0.050	1		03/26/18 15:30		
Field Temperature	**8.5**	deg C	0.50	0.25	1		03/26/18 15:30		
Field Specific Conductance	**1166**	umhos/cm	1.0	1.0	1		03/26/18 15:30		
Field Oxidation Potential	**114.3**	mV			1		03/26/18 15:30		
Oxygen, Dissolved	**0.47**	mg/L			1		03/26/18 15:30	7782-44-7	
Turbidity	**6.71**	NTU	1.0	1.0	1		03/26/18 15:30		
Groundwater Elevation	**853.79**	feet			1		03/26/18 15:30		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**575**	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:48	7440-42-8	
Calcium	**155**	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:48	7440-70-2	
Lithium	**10.1**	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:48	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.041J**	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:21	7440-36-0	
Arsenic	ND	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:21	7440-38-2	
Barium	**21.3**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:21	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:21	7440-41-7	
Cadmium	**0.080J**	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:21	7440-43-9	
Chromium	**0.28J**	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:21	7440-47-3	
Cobalt	**0.093J**	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:21	7440-48-4	
Lead	**0.094J**	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:21	7439-92-1	
Molybdenum	**1.6**	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:21	7439-98-7	
Selenium	**0.18J**	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:21	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**820**	mg/L	5.0	5.0	1		04/01/18 09:32		
9040 pH	Analytical Method: EPA 9040								
pH	**7.1**	Std. Units	0.10	0.10	1		04/03/18 12:18		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**30.8**	mg/L	5.0	2.3	5		04/04/18 18:05	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	0.063	1		04/04/18 17:51	16984-48-8	
Sulfate	**371**	mg/L	50.0	11.8	50		04/04/18 18:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: MW-305 **Lab ID: 60266915005** Collected: 03/26/18 16:40 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		03/26/18 16:40		
Field pH	**6.99**	Std. Units	0.10	0.050	1		03/26/18 16:40		
Field Temperature	**9.7**	deg C	0.50	0.25	1		03/26/18 16:40		
Field Specific Conductance	**1262**	umhos/cm	1.0	1.0	1		03/26/18 16:40		
Field Oxidation Potential	**11.9**	mV			1		03/26/18 16:40		
Oxygen, Dissolved	**0.10**	mg/L			1		03/26/18 16:40	7782-44-7	
Turbidity	**11.12**	NTU	1.0	1.0	1		03/26/18 16:40		
Groundwater Elevation	**853.64**	feet			1		03/26/18 16:40		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**815**	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:50	7440-42-8	
Calcium	**173**	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:50	7440-70-2	
Lithium	**21.3**	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:50	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.075J**	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:25	7440-36-0	
Arsenic	**5.9**	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:25	7440-38-2	
Barium	**34.8**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:25	7440-39-3	
Beryllium	**0.012J**	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:25	7440-41-7	
Cadmium	**0.071J**	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:25	7440-43-9	
Chromium	**0.69J**	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:25	7440-47-3	
Cobalt	**2.7**	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:25	7440-48-4	
Lead	**0.39J**	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:25	7439-92-1	
Molybdenum	**25.8**	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:25	7439-98-7	
Selenium	**0.34J**	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:25	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**893**	mg/L	5.0	5.0	1		04/01/18 09:32		
9040 pH	Analytical Method: EPA 9040								
pH	**7.0**	Std. Units	0.10	0.10	1		04/03/18 12:19		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**21.9**	mg/L	2.0	0.92	2		04/04/18 18:45	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	0.063	1		04/04/18 18:31	16984-48-8	
Sulfate	**495**	mg/L	50.0	11.8	50		04/04/18 18:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: MW-306 **Lab ID: 60266915006** Collected: 03/27/18 15:00 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		03/27/18 15:00		
Field pH	**7.94**	Std. Units	0.10	0.050	1		03/27/18 15:00		
Field Temperature	**10.3**	deg C	0.50	0.25	1		03/27/18 15:00		
Field Specific Conductance	**1509**	umhos/cm	1.0	1.0	1		03/27/18 15:00		
Field Oxidation Potential	**0.3**	mV			1		03/27/18 15:00		
Oxygen, Dissolved	**0.10**	mg/L			1		03/27/18 15:00	7782-44-7	
Turbidity	**1.09**	NTU	1.0	1.0	1		03/27/18 15:00		
Groundwater Elevation	**853.49**	feet			1		03/27/18 15:00		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**1100**	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:53	7440-42-8	
Calcium	**213**	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:53	7440-70-2	
Lithium	**37.1**	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:53	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.056J**	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:29	7440-36-0	
Arsenic	**3.6**	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:29	7440-38-2	
Barium	**91.7**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:29	7440-39-3	
Beryllium	ND	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:29	7440-41-7	
Cadmium	**0.027J**	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:29	7440-43-9	
Chromium	**0.10J**	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:29	7440-47-3	
Cobalt	**0.66J**	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:29	7440-48-4	
Lead	**0.063J**	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:29	7439-92-1	
Molybdenum	**35.8**	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:29	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:29	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1160**	mg/L	5.0	5.0	1		04/01/18 09:35		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		04/03/18 12:24		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**30.8**	mg/L	5.0	2.3	5		04/05/18 15:03	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.063	1		04/05/18 15:17	16984-48-8	
Sulfate	**622**	mg/L	100	23.6	100		04/05/18 14:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Sample: FIELD BLANK **Lab ID: 60266915007** Collected: 03/27/18 15:15 Received: 03/28/18 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	ND	ug/L	100	12.5	1	03/30/18 15:40	04/05/18 16:56	7440-42-8	
Calcium	ND	mg/L	0.20	0.054	1	03/30/18 15:40	04/05/18 16:56	7440-70-2	
Lithium	ND	ug/L	10.0	4.6	1	03/30/18 15:40	04/05/18 16:56	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	ND	ug/L	1.0	0.026	1	03/30/18 15:40	04/03/18 13:40	7440-36-0	
Arsenic	ND	ug/L	1.0	0.052	1	03/30/18 15:40	04/03/18 13:40	7440-38-2	
Barium	**0.10J**	ug/L	1.0	0.095	1	03/30/18 15:40	04/03/18 13:40	7440-39-3	B
Beryllium	ND	ug/L	0.50	0.012	1	03/30/18 15:40	04/03/18 13:40	7440-41-7	
Cadmium	ND	ug/L	0.50	0.018	1	03/30/18 15:40	04/03/18 13:40	7440-43-9	
Chromium	ND	ug/L	1.0	0.054	1	03/30/18 15:40	04/03/18 13:40	7440-47-3	
Cobalt	ND	ug/L	1.0	0.014	1	03/30/18 15:40	04/03/18 13:40	7440-48-4	
Lead	ND	ug/L	1.0	0.033	1	03/30/18 15:40	04/03/18 13:40	7439-92-1	
Molybdenum	ND	ug/L	1.0	0.058	1	03/30/18 15:40	04/03/18 13:40	7439-98-7	
Selenium	ND	ug/L	1.0	0.086	1	03/30/18 15:40	04/03/18 13:40	7782-49-2	
Thallium	ND	ug/L	1.0	0.036	1	03/30/18 15:40	04/03/18 13:40	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.090	1	04/03/18 10:55	04/03/18 14:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	ND	mg/L	5.0	5.0	1		04/01/18 09:35		
9040 pH	Analytical Method: EPA 9040								
pH	**6.0**	Std. Units	0.10	0.10	1		04/03/18 12:28		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	ND	mg/L	1.0	0.46	1		04/05/18 15:30	16887-00-6	
Fluoride	ND	mg/L	0.20	0.063	1		04/05/18 15:30	16984-48-8	
Sulfate	ND	mg/L	1.0	0.24	1		04/05/18 15:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

QC Batch: 520241 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

METHOD BLANK: 2129203 Matrix: Water
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	0.090	04/03/18 14:18	

LABORATORY CONTROL SAMPLE: 2129204

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2129205 2129206

Parameter	Units	60267031004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	5.0	95	100	75-125	5	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

QC Batch: 519933 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

METHOD BLANK: 2128123 Matrix: Water
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	ND	100	12.5	04/05/18 16:26	
Calcium	mg/L	ND	0.20	0.054	04/05/18 16:26	
Lithium	ug/L	ND	10.0	4.6	04/05/18 16:26	

LABORATORY CONTROL SAMPLE: 2128124

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	80-120	
Calcium	mg/L	10	9.9	99	80-120	
Lithium	ug/L	1000	1020	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2128125 2128126

Parameter	Units	60266915001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	246	1000	1000	1240	1230	99	99	75-125	0	20	
Calcium	mg/L	71.2	10	10	81.2	80.2	99	89	75-125	1	20	
Lithium	ug/L	6.5J	1000	1000	987	989	98	98	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

QC Batch: 519940 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

METHOD BLANK: 2128134 Matrix: Water
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	0.026	04/03/18 12:54	
Arsenic	ug/L	ND	1.0	0.052	04/03/18 12:54	
Barium	ug/L	0.36J	1.0	0.095	04/03/18 12:54	
Beryllium	ug/L	ND	0.50	0.012	04/03/18 12:54	
Cadmium	ug/L	ND	0.50	0.018	04/03/18 12:54	
Chromium	ug/L	ND	1.0	0.054	04/03/18 12:54	
Cobalt	ug/L	ND	1.0	0.014	04/03/18 12:54	
Lead	ug/L	ND	1.0	0.033	04/03/18 12:54	
Molybdenum	ug/L	ND	1.0	0.058	04/03/18 12:54	
Selenium	ug/L	ND	1.0	0.086	04/03/18 12:54	
Thallium	ug/L	ND	1.0	0.036	04/03/18 12:54	

LABORATORY CONTROL SAMPLE: 2128135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.7	102	80-120	
Arsenic	ug/L	40	40.3	101	80-120	
Barium	ug/L	40	39.4	98	80-120	
Beryllium	ug/L	40	41.0	103	80-120	
Cadmium	ug/L	40	40.7	102	80-120	
Chromium	ug/L	40	39.1	98	80-120	
Cobalt	ug/L	40	38.1	95	80-120	
Lead	ug/L	40	41.6	104	80-120	
Molybdenum	ug/L	40	39.1	98	80-120	
Selenium	ug/L	40	40.4	101	80-120	
Thallium	ug/L	40	41.9	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2128136 2128137

Parameter	Units	60266915002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.41J	40	40	40.7	40.3	101	100	75-125	1	20	
Arsenic	ug/L	1.4	40	40	41.4	41.6	100	100	75-125	0	20	
Barium	ug/L	93.6	40	40	131	131	94	93	75-125	0	20	
Beryllium	ug/L	ND	40	40	38.6	38.3	97	96	75-125	1	20	
Cadmium	ug/L	0.028J	40	40	39.2	39.1	98	98	75-125	0	20	
Chromium	ug/L	0.35J	40	40	38.5	38.3	95	95	75-125	1	20	
Cobalt	ug/L	1.8	40	40	38.2	38.5	91	92	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2128136 2128137

Parameter	Units	60266915002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.19J	40	40	40.0	41.2	100	103	75-125	3	20	
Molybdenum	ug/L	1.2	40	40	41.2	41.1	100	100	75-125	0	20	
Selenium	ug/L	8.0	40	40	46.8	47.5	97	99	75-125	2	20	
Thallium	ug/L	ND	40	40	40.7	42.2	102	106	75-125	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

QC Batch: 519979 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

METHOD BLANK: 2128425 Matrix: Water
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	5.0	5.0	04/01/18 09:24	

LABORATORY CONTROL SAMPLE: 2128426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	983	98	80-120	

SAMPLE DUPLICATE: 2128427

Parameter	Units	60266758002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	477	498	4	10	

SAMPLE DUPLICATE: 2128428

Parameter	Units	60266759002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	478	504	5	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

QC Batch: 520007 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

SAMPLE DUPLICATE: 2128538

Parameter	Units	60267071001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.1	7.2	0	10	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

QC Batch: 520452 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

METHOD BLANK: 2130188 Matrix: Water
Associated Lab Samples: 60266915001, 60266915002, 60266915003, 60266915004, 60266915005, 60266915006, 60266915007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.46	04/04/18 09:50	
Fluoride	mg/L	ND	0.20	0.063	04/04/18 09:50	
Sulfate	mg/L	ND	1.0	0.24	04/04/18 09:50	

LABORATORY CONTROL SAMPLE: 2130189

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	4.6	92	80-120	

SAMPLE DUPLICATE: 2130190

Parameter	Units	60266915002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	14.0	14.0	0	15	
Fluoride	mg/L	0.24	0.24	1	15	
Sulfate	mg/L	68.5	67.1	2	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALIFIERS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
H6	Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60266915001	**MW-301**		520939		
60266915002	**MW-302**		520939		
60266915003	**MW-303**		520939		
60266915004	**MW-304**		520939		
60266915005	**MW-305**		520939		
60266915006	**MW-306**		520939		
60266915001	**MW-301**	EPA 3010	519933	EPA 6010	519955
60266915002	**MW-302**	EPA 3010	519933	EPA 6010	519955
60266915003	**MW-303**	EPA 3010	519933	EPA 6010	519955
60266915004	**MW-304**	EPA 3010	519933	EPA 6010	519955
60266915005	**MW-305**	EPA 3010	519933	EPA 6010	519955
60266915006	**MW-306**	EPA 3010	519933	EPA 6010	519955
60266915007	**FIELD BLANK**	EPA 3010	519933	EPA 6010	519955
60266915001	**MW-301**	EPA 3010	519940	EPA 6020	519954
60266915002	**MW-302**	EPA 3010	519940	EPA 6020	519954
60266915003	**MW-303**	EPA 3010	519940	EPA 6020	519954
60266915004	**MW-304**	EPA 3010	519940	EPA 6020	519954
60266915005	**MW-305**	EPA 3010	519940	EPA 6020	519954
60266915006	**MW-306**	EPA 3010	519940	EPA 6020	519954
60266915007	**FIELD BLANK**	EPA 3010	519940	EPA 6020	519954
60266915001	**MW-301**	EPA 7470	520241	EPA 7470	520262
60266915002	**MW-302**	EPA 7470	520241	EPA 7470	520262
60266915003	**MW-303**	EPA 7470	520241	EPA 7470	520262
60266915004	**MW-304**	EPA 7470	520241	EPA 7470	520262
60266915005	**MW-305**	EPA 7470	520241	EPA 7470	520262
60266915006	**MW-306**	EPA 7470	520241	EPA 7470	520262
60266915007	**FIELD BLANK**	EPA 7470	520241	EPA 7470	520262
60266915001	**MW-301**	SM 2540C	519979		
60266915002	**MW-302**	SM 2540C	519979		
60266915003	**MW-303**	SM 2540C	519979		
60266915004	**MW-304**	SM 2540C	519979		
60266915005	**MW-305**	SM 2540C	519979		
60266915006	**MW-306**	SM 2540C	519979		
60266915007	**FIELD BLANK**	SM 2540C	519979		
60266915001	**MW-301**	EPA 9040	520007		
60266915002	**MW-302**	EPA 9040	520007		
60266915003	**MW-303**	EPA 9040	520007		
60266915004	**MW-304**	EPA 9040	520007		
60266915005	**MW-305**	EPA 9040	520007		
60266915006	**MW-306**	EPA 9040	520007		
60266915007	**FIELD BLANK**	EPA 9040	520007		
60266915001	**MW-301**	EPA 9056	520452		
60266915002	**MW-302**	EPA 9056	520452		
60266915003	**MW-303**	EPA 9056	520452		
60266915004	**MW-304**	EPA 9056	520452		
60266915005	**MW-305**	EPA 9056	520452		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266915

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60266915006	**MW-306**	EPA 9056	520452		
60266915007	**FIELD BLANK**	EPA 9056	520452		

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Sample Condition Upon Receipt

WO# : 60266915

60266915

Client Name: SCS

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4122 4944 4181 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: 266 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.6 **Corr. Factor** +0.2 **Corrected** 3.8

Date and initials of person examining contents: AB 3/28/13

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☒No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☒No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / (N) Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK for TDG ✓ Date: 3/28/2013

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Page: of

Section A Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone: 608-216-7362	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00*

Section C Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B Ca Li	6020 Total Metals *	7470 Total Mercury	9056 Chloride-Fluoride-Sulfate	9040 pH	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N						
1	MW-301	WT	G	xxx	xxx	3-27-18	1150	7.1	3	1		2							X	X	X	X	X	X		60266945 01
2	MW-302	WT	G	xxx	xxx	3-27-18	1245	7.4	3	1		2							X	X	X	X	X	X		02
3	MW-303	WT	G	xxx	xxx	3-27-18	1415	7.2	3	1		2							X	X	X	X	X	X		03
4	MW-304	WT	G	xxx	xxx	3-26-18	1530	8.5	3	1		2							X	X	X	X	X	X		04
5	MW-305	WT	G	xxx	xxx	3-26-18	1640	9.7	3	1		2							X	X	X	X	X	X		05
6	MW-306	WT	G	xxx	xxx	3-27-18	1500	10.3	3	1		2							X	X	X	X	X	X		06
7	FIELD BLANK	WT	G	xxx	xxx	3-27-18	1515		3	1		2							X	X	X	X	X	X		07
8																										
9																										
10																										
11																										
12																										

BP1U 2BP3N

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Nate Harms SCS	3/27/18	1630	Alexia Cooley pasl	3/28/18	0835	3.8	4	4	4
* As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nate Harms

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 3/27/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

April 19, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Trudy Gipson

Trudy Gipson
trudy.gipson@pacelabs.com
1(913)563-1405
Project Manager

Enclosures

cc: Tom Karwaski, SCS Engineers
Kyle Kramer, SCS Engineers
Jeff Maxted, Alliant Energy

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60266935001	**MW-301**	Water	03/27/18 11:58	03/28/18 08:35
60266935002	**MW-302**	Water	03/27/18 12:45	03/28/18 08:35
60266935003	**MW-303**	Water	03/27/18 14:15	03/28/18 08:35
60266935004	**MW-304**	Water	03/26/18 15:30	03/28/18 08:35
60266935005	**MW-305**	Water	03/26/18 16:40	03/28/18 08:35
60266935006	**MW-306**	Water	03/27/18 15:00	03/28/18 08:35
60266935007	**FIELD BLANK**	Water	03/27/18 15:15	03/28/18 08:35

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SAMPLE ANALYTE COUNT

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60266935001	**MW-301**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60266935002	**MW-302**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60266935003	**MW-303**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60266935004	**MW-304**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60266935005	**MW-305**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60266935006	**MW-306**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60266935007	**FIELD BLANK**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: MW-301 **Lab ID: 60266935001** Collected: 03/27/18 11:58 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.171 ± 0.530 (1.21) C:NA T:86%**	pCi/L	04/13/18 18:50	13982-63-3	
Radium-228	EPA 904.0	**0.180 ± 0.378 (0.835) C:69% T:82%**	pCi/L	04/12/18 15:30	15262-20-1	
Total Radium	Total Radium Calculation	**0.180 ± 0.908 (2.05)**	pCi/L	04/19/18 11:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: MW-302 **Lab ID: 60266935002** Collected: 03/27/18 12:45 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.438 (0.950) C:NA T:90%**	pCi/L	04/13/18 18:39	13982-63-3	
Radium-228	EPA 904.0	**0.304 ± 0.321 (0.663) C:71% T:88%**	pCi/L	04/12/18 15:30	15262-20-1	
Total Radium	Total Radium Calculation	**0.304 ± 0.759 (1.61)**	pCi/L	04/19/18 11:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: MW-303 **Lab ID: 60266935003** Collected: 03/27/18 14:15 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0803 ± 0.472 (0.964) C:NA T:93%**	pCi/L	04/13/18 18:53	13982-63-3	
Radium-228	EPA 904.0	**0.538 ± 0.340 (0.622) C:69% T:89%**	pCi/L	04/12/18 15:31	15262-20-1	
Total Radium	Total Radium Calculation	**0.618 ± 0.812 (1.59)**	pCi/L	04/19/18 11:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: MW-304 **Lab ID: 60266935004** Collected: 03/26/18 15:30 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.516 (1.12) C:NA T:77%**	pCi/L	04/13/18 18:53	13982-63-3	
Radium-228	EPA 904.0	**0.480 ± 0.409 (0.820) C:69% T:80%**	pCi/L	04/12/18 15:31	15262-20-1	
Total Radium	Total Radium Calculation	**0.480 ± 0.925 (1.94)**	pCi/L	04/19/18 11:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: MW-305 **Lab ID: 60266935005** Collected: 03/26/18 16:40 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.344 ± 0.479 (1.21) C:NA T:88%**	pCi/L	04/13/18 18:53	13982-63-3	
Radium-228	EPA 904.0	**0.00870 ± 0.344 (0.801) C:75% T:79%**	pCi/L	04/12/18 15:31	15262-20-1	
Total Radium	Total Radium Calculation	**0.00870 ± 0.823 (2.01)**	pCi/L	04/19/18 11:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: MW-306 **Lab ID: 60266935006** Collected: 03/27/18 15:00 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.074 ± 0.434 (0.968) C:NA T:96%**	pCi/L	04/13/18 18:53	13982-63-3	
Radium-228	EPA 904.0	**0.996 ± 0.457 (0.741) C:67% T:84%**	pCi/L	04/12/18 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.996 ± 0.891 (1.71)**	pCi/L	04/19/18 11:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Sample: FIELD BLANK **Lab ID: 60266935007** Collected: 03/27/18 15:15 Received: 03/28/18 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0964 ± 0.567 (1.16) C:NA T:85%**	pCi/L	04/13/18 18:53	13982-63-3	
Radium-228	EPA 904.0	**0.186 ± 0.303 (0.659) C:71% T:84%**	pCi/L	04/12/18 15:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.282 ± 0.870 (1.82)**	pCi/L	04/19/18 11:02	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

QC Batch: 293325 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60266935001, 60266935002, 60266935003, 60266935004, 60266935005, 60266935006, 60266935007

METHOD BLANK: 1435498 Matrix: Water
Associated Lab Samples: 60266935001, 60266935002, 60266935003, 60266935004, 60266935005, 60266935006, 60266935007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.171 ± 0.390 (0.628) C:NA T:88%	pCi/L	04/13/18 18:39	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

QC Batch: 293328 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60266935001, 60266935002, 60266935003, 60266935004, 60266935005, 60266935006, 60266935007

METHOD BLANK: 1435513 Matrix: Water
Associated Lab Samples: 60266935001, 60266935002, 60266935003, 60266935004, 60266935005, 60266935006, 60266935007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.487 ± 0.445 (0.874) C:79% T:82%	pCi/L	04/12/18 15:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland Gen Sta/25218062.00
Pace Project No.: 60266935

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60266935001	**MW-301**	EPA 903.1	293325		
60266935002	**MW-302**	EPA 903.1	293325		
60266935003	**MW-303**	EPA 903.1	293325		
60266935004	**MW-304**	EPA 903.1	293325		
60266935005	**MW-305**	EPA 903.1	293325		
60266935006	**MW-306**	EPA 903.1	293325		
60266935007	**FIELD BLANK**	EPA 903.1	293325		
60266935001	**MW-301**	EPA 904.0	293328		
60266935002	**MW-302**	EPA 904.0	293328		
60266935003	**MW-303**	EPA 904.0	293328		
60266935004	**MW-304**	EPA 904.0	293328		
60266935005	**MW-305**	EPA 904.0	293328		
60266935006	**MW-306**	EPA 904.0	293328		
60266935007	**FIELD BLANK**	EPA 904.0	293328		
60266935001	**MW-301**	Total Radium Calculation	295020		
60266935002	**MW-302**	Total Radium Calculation	295020		
60266935003	**MW-303**	Total Radium Calculation	295020		
60266935004	**MW-304**	Total Radium Calculation	295020		
60266935005	**MW-305**	Total Radium Calculation	295020		
60266935006	**MW-306**	Total Radium Calculation	295020		
60266935007	**FIELD BLANK**	Total Radium Calculation	295020		

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Sample Condition Upon Receipt

WO# : 60266935

60266935

Client Name: SCS

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4122 4444 4230 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: 266 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.8 **Corr. Factor** +0.2 **Corrected** 5.0

Date and initials of person examining contents: KB 3/28

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☒N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK for TDG Date: 3/29/2013

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Meghan Blodgett	Attention:	Meghan Blodgett/Jess Valcheff
Address:	2830 Dairy Drive	Copy To:	Tom Karwaski	Company Name:	SCS Engineers
	Madison WI 53718			Address:	
Email To:	mblodgett@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	608-216-7362 Fax:	Project Name:	Sutherland Generating Station	Pace Project Manager:	Trudy Gipson 913-563-1405
Requested Due Date/TAT:		Project Number:	25218062.00*	Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IA

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
MW-301	WT	G	xxx	xxx	3-27-18	1150	7.1	2			2							X	X	X		60266935
MW-302	WT	G	xxx	xxx	3-27-18	1215	7.4	2			2							X	X	X		
MW-303	WT	G	xxx	xxx	3-27-18	1415	7.2	2			2							X	X	X		
MW-304	WT	G	xxx	xxx	3-26-18	1530	8.5	2			2							X	X	X		
MW-305	WT	G	xxx	xxx	3-26-18	1640	9.7	2			2							X	X	X		
MW-306	WT	G	xxx	xxx	3-27-18	1520	10.3	2			2							X	X	X		
FIELD BLANK	WT	G	xxx	xxx	3-27-18	1575		2			2							X	X	X		

(2) BP1N 250

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Nate Harris SCS	3/27/18	1630		3/28	0835	5.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Nate Harris

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 3/27/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

08/30/2019 - Classification: Internal - ECRM6700180

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: IA

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Workorder: 60266935 **Workorder Name:** SUTHERLAND GENERATING STATION **Owner Received Date:** 3/28/2018 **Results Requested By:** 4/19/2018

Report To

Trudy Gipson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1405

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

WO# : 30247796

30247796

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3						903.1 Radium-226	904.0 Radium-228	Total Radium											LAB USE ONLY
1	MW-301	PS	3/27/2018 11:58	60266935001	Water	2						X	X	X											001
2	MW-302	PS	3/27/2018 12:45	60266935002	Water	2						X	X	X											002
3	MW-303	PS	3/27/2018 14:15	60266935003	Water	2						X	X	X											003
4	MW-304	PS	3/26/2018 15:30	60266935004	Water	2						X	X	X											004
5	MW-305	PS	3/26/2018 16:40	60266935005	Water	2						X	X	X											005
6	MW-306	PS	3/27/2018 15:00	60266935006	Water	2						X	X	X											006
7	FIELD BLANK	PS	3/27/2018 15:15	60266935007	Water	2						X	X	X											007

Transfers	Released By	Date/Time	Received By	Date/Time
1		3/29 1700		3/30/18 0950
2				
3				

Comments

J-Flag required, auto J-Flag on, evaluate down to the MDL

Cooler Temperature on Receipt N/A °C | Custody Seal Y or (N) | Received on Ice Y or (N) | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Pace KS Project # 30247796

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label 7t
LIMS Login 7t

Tracking #: 412749456038

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# LOT1071 / Date and Initials of person examining contents: 7t 3/30/18
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓ ✓			16. DH2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed 7t / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: 7t / Date: 3/30/18

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A2 Round 2 Background Sampling, Analytical Laboratory Report

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

June 18, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on May 24, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271153001	**MW-301**	Water	05/23/18 15:42	05/24/18 08:50
60271153002	**MW-302**	Water	05/23/18 09:44	05/24/18 08:50
60271153003	**MW-303**	Water	05/23/18 14:39	05/24/18 08:50
60271153004	**MW-304**	Water	05/23/18 11:09	05/24/18 08:50
60271153005	**MW-305**	Water	05/23/18 12:19	05/24/18 08:50
60271153006	**MW-306**	Water	05/23/18 13:43	05/24/18 08:50
60271153007	**FIELD BLANK**	Water	05/23/18 15:15	05/24/18 08:50

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271153001	**MW-301**	EPA 6010	AGO	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60271153002	**MW-302**	EPA 6010	AGO	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60271153003	**MW-303**	EPA 6010	AGO	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60271153004	**MW-304**	EPA 6010	AGO	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60271153005	**MW-305**	EPA 6010	AGO	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60271153006	**MW-306**	EPA 6010	AGO	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60271153007	**FIELD BLANK**	EPA 6010	AGO	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K

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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: MW-301 **Lab ID: 60271153001** Collected: 05/23/18 15:42 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		05/23/18 15:42		
Field pH	**7.62**	Std. Units	0.10	0.050	1		05/23/18 15:42		
Field Temperature	**10.8**	deg C	0.50	0.25	1		05/23/18 15:42		
Field Specific Conductance	**738**	umhos/cm	1.0	1.0	1		05/23/18 15:42		
Field Oxidation Potential	**185**	mV			1		05/23/18 15:42		
Oxygen, Dissolved	**.57**	mg/L			1		05/23/18 15:42	7782-44-7	
Turbidity	**73.98**	NTU	1.0	1.0	1		05/23/18 15:42		
Groundwater Elevation	**855.45**	feet			1		05/23/18 15:42		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**189**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:12	7440-42-8	
Calcium	**85.9**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:12	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:12	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.18J**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:27	7440-36-0	
Arsenic	**2.4**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:27	7440-38-2	
Barium	**254**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:27	7440-39-3	
Beryllium	**0.30J**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:27	7440-41-7	
Cadmium	**0.11J**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:27	7440-43-9	
Chromium	**3.5**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:27	7440-47-3	
Cobalt	**3.8**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:27	7440-48-4	
Lead	**2.5**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:27	7439-92-1	
Molybdenum	**1.4**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:27	7439-98-7	
Selenium	**3.3**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:27	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:27	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 13:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**489**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**6.8**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**46.2**	mg/L	5.0	2.3	5		06/03/18 13:20	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.063	1		06/03/18 02:34	16984-48-8	
Sulfate	**78.1**	mg/L	5.0	1.2	5		06/03/18 13:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: MW-302 **Lab ID: 60271153002** Collected: 05/23/18 09:44 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		05/23/18 15:42		
Field pH	**7.31**	Std. Units	0.10	0.050	1		05/23/18 15:42		
Field Temperature	**9.9**	deg C	0.50	0.25	1		05/23/18 15:42		
Field Specific Conductance	**527**	umhos/cm	1.0	1.0	1		05/23/18 15:42		
Field Oxidation Potential	**-89**	mV			1		05/23/18 15:42		
Oxygen, Dissolved	**.10**	mg/L			1		05/23/18 15:42	7782-44-7	
Turbidity	**17.12**	NTU	1.0	1.0	1		05/23/18 15:42		
Groundwater Elevation	**855.32**	feet			1		05/23/18 15:42		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**53.7J**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:15	7440-42-8	
Calcium	**67.3**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:15	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:15	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**2.8**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:29	7440-36-0	
Arsenic	**5.8**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:29	7440-38-2	
Barium	**105**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:29	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:29	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:29	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:29	7440-47-3	
Cobalt	**3.5**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:29	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:29	7439-92-1	
Molybdenum	**1.2**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:29	7439-98-7	
Selenium	**1.0**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:29	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 14:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**322**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**7.5**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**9.4**	mg/L	1.0	0.46	1		06/03/18 02:49	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.063	1		06/03/18 02:49	16984-48-8	
Sulfate	**41.3**	mg/L	5.0	1.2	5		06/03/18 14:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: MW-303 **Lab ID: 60271153003** Collected: 05/23/18 14:39 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		05/23/18 14:39		
Field pH	**8.92**	Std. Units	0.10	0.050	1		05/23/18 14:39		
Field Temperature	**11.9**	deg C	0.50	0.25	1		05/23/18 14:39		
Field Specific Conductance	**923**	umhos/cm	1.0	1.0	1		05/23/18 14:39		
Field Oxidation Potential	**24**	mV			1		05/23/18 14:39		
Oxygen, Dissolved	**.05**	mg/L			1		05/23/18 14:39	7782-44-7	
Turbidity	**3.19**	NTU	1.0	1.0	1		05/23/18 14:39		
Groundwater Elevation	**854.07**	feet			1		05/23/18 14:39		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**799**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:17	7440-42-8	
Calcium	**116**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:17	7440-70-2	
Lithium	**35.9**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:17	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:31	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:31	7440-38-2	
Barium	**31.7**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:31	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:31	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:31	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:31	7440-47-3	
Cobalt	**0.42J**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:31	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:31	7439-92-1	
Molybdenum	**32.7**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:31	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:31	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 14:12	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**658**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**25.5**	mg/L	2.0	0.92	2		06/03/18 14:28	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	0.063	1		06/03/18 03:04	16984-48-8	
Sulfate	**208**	mg/L	20.0	4.7	20		06/03/18 14:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: MW-304 **Lab ID: 60271153004** Collected: 05/23/18 11:09 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		05/23/18 11:09		
Field pH	**7.64**	Std. Units	0.10	0.050	1		05/23/18 11:09		
Field Temperature	**10.5**	deg C	0.50	0.25	1		05/23/18 11:09		
Field Specific Conductance	**1084**	umhos/cm	1.0	1.0	1		05/23/18 11:09		
Field Oxidation Potential	**107**	mV			1		05/23/18 11:09		
Oxygen, Dissolved	**.10**	mg/L			1		05/23/18 11:09	7782-44-7	
Turbidity	**.60**	NTU	1.0	1.0	1		05/23/18 11:09		
Groundwater Elevation	**853.92**	feet			1		05/23/18 11:09		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**604**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:19	7440-42-8	
Calcium	**145**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:19	7440-70-2	
Lithium	**6.9J**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:19	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:34	7440-36-0	
Arsenic	**0.23J**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:34	7440-38-2	
Barium	**18.7**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:34	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:34	7440-41-7	
Cadmium	**0.14J**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:34	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:34	7440-47-3	
Cobalt	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:34	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:34	7439-92-1	
Molybdenum	**2.0**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:34	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:34	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:34	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 14:14	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**785**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**7.2**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**35.1**	mg/L	2.0	0.92	2		06/03/18 14:55	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.063	1		06/03/18 03:19	16984-48-8	
Sulfate	**366**	mg/L	50.0	11.8	50		06/03/18 15:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: MW-305 **Lab ID: 60271153005** Collected: 05/23/18 12:19 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		05/23/18 12:19		
Field pH	**7.93**	Std. Units	0.10	0.050	1		05/23/18 12:19		
Field Temperature	**11**	deg C	0.50	0.25	1		05/23/18 12:19		
Field Specific Conductance	**1012**	umhos/cm	1.0	1.0	1		05/23/18 12:19		
Field Oxidation Potential	**-134**	mV			1		05/23/18 12:19		
Oxygen, Dissolved	**.08**	mg/L			1		05/23/18 12:19	7782-44-7	
Turbidity	**14.96**	NTU	1.0	1.0	1		05/23/18 12:19		
Groundwater Elevation	**853.99**	feet			1		05/23/18 12:19		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**741**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:21	7440-42-8	
Calcium	**124**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:21	7440-70-2	
Lithium	**14.2**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:21	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:36	7440-36-0	
Arsenic	**8.6**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:36	7440-38-2	
Barium	**32.2**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:36	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:36	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:36	7440-43-9	
Chromium	**0.62J**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:36	7440-47-3	
Cobalt	**1.4**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:36	7440-48-4	
Lead	**0.43J**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:36	7439-92-1	
Molybdenum	**32.5**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:36	7439-98-7	
Selenium	**0.30J**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:36	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 14:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**742**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**7.4**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**31.5**	mg/L	2.0	0.92	2		06/03/18 15:22	16887-00-6	
Fluoride	**0.63**	mg/L	0.20	0.063	1		06/03/18 03:34	16984-48-8	
Sulfate	**365**	mg/L	50.0	11.8	50		06/03/18 15:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: MW-306 **Lab ID: 60271153006** Collected: 05/23/18 13:43 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		05/23/18 13:43		
Field pH	**9.46**	Std. Units	0.10	0.050	1		05/23/18 13:43		
Field Temperature	**11.9**	deg C	0.50	0.25	1		05/23/18 13:43		
Field Specific Conductance	**1432**	umhos/cm	1.0	1.0	1		05/23/18 13:43		
Field Oxidation Potential	**-17**	mV			1		05/23/18 13:43		
Oxygen, Dissolved	**.06**	mg/L			1		05/23/18 13:43	7782-44-7	
Turbidity	**1.82**	NTU	1.0	1.0	1		05/23/18 13:43		
Groundwater Elevation	**854.11**	feet			1		05/23/18 13:43		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**1790**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:24	7440-42-8	
Calcium	**201**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:24	7440-70-2	
Lithium	**28.6**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:24	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:38	7440-36-0	
Arsenic	**3.1**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:38	7440-38-2	
Barium	**93.4**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:38	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:38	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:38	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:38	7440-47-3	
Cobalt	**0.81J**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:38	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:38	7439-92-1	
Molybdenum	**36.4**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:38	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:38	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 14:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1160**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**7.8**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**35.1**	mg/L	2.0	0.92	2		06/03/18 15:50	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	0.063	1		06/03/18 03:49	16984-48-8	
Sulfate	**709**	mg/L	50.0	11.8	50		06/03/18 16:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Sample: FIELD BLANK **Lab ID: 60271153007** Collected: 05/23/18 15:15 Received: 05/24/18 08:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**<12.5**	ug/L	100	12.5	1	05/30/18 11:20	05/30/18 19:26	7440-42-8	
Calcium	**<0.054**	mg/L	0.20	0.054	1	05/30/18 11:20	05/30/18 19:26	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	05/30/18 11:20	05/30/18 19:26	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:25	7440-36-0	
Arsenic	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:25	7440-38-2	
Barium	**<0.34**	ug/L	1.0	0.34	1	05/30/18 11:20	06/15/18 13:25	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	05/30/18 11:20	06/15/18 13:25	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	05/30/18 11:20	06/15/18 13:25	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	05/30/18 11:20	06/15/18 13:25	7440-47-3	
Cobalt	**<0.15**	ug/L	1.0	0.15	1	05/30/18 11:20	06/15/18 13:25	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	05/30/18 11:20	06/15/18 13:25	7439-92-1	
Molybdenum	**<0.13**	ug/L	1.0	0.13	1	05/30/18 11:20	06/15/18 13:25	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	05/30/18 11:20	06/15/18 13:25	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	05/30/18 11:20	06/15/18 13:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	06/04/18 17:17	06/05/18 14:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		05/29/18 15:26		
9040 pH	Analytical Method: EPA 9040								
pH	**5.8**	Std. Units	0.10	0.10	1		05/29/18 13:35		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**<0.46**	mg/L	1.0	0.46	1		06/03/18 16:45	16887-00-6	
Fluoride	**<0.063**	mg/L	0.20	0.063	1		06/03/18 16:45	16984-48-8	
Sulfate	**<0.24**	mg/L	1.0	0.24	1		06/03/18 16:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 528550 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

METHOD BLANK: 2165189 Matrix: Water
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	06/05/18 13:55	

LABORATORY CONTROL SAMPLE: 2165190

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2165191 2165192

Parameter	Units	60271153001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	4.6	4.9	93	98	75-125	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 527865 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

METHOD BLANK: 2162509 Matrix: Water
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	05/30/18 18:46	
Calcium	mg/L	<0.054	0.20	0.054	05/30/18 18:46	
Lithium	ug/L	<4.6	10.0	4.6	05/30/18 18:46	

LABORATORY CONTROL SAMPLE: 2162510

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	907	91	80-120	
Calcium	mg/L	10	9.9	99	80-120	
Lithium	ug/L	1000	996	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2162511 2162512

Parameter	Units	60271138001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	12500	1000	1000	13500	13600	93	108	75-125	1	20	
Calcium	mg/L	123	10	10	132	134	92	106	75-125	1	20	
Lithium	ug/L	<4.6	1000	1000	1020	1030	102	103	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 527867 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

METHOD BLANK: 2162518 Matrix: Water
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	0.15	06/15/18 12:55	
Arsenic	ug/L	<0.15	1.0	0.15	06/15/18 12:55	
Barium	ug/L	<0.34	1.0	0.34	06/15/18 12:55	
Beryllium	ug/L	<0.12	0.50	0.12	06/15/18 12:55	
Cadmium	ug/L	<0.070	0.50	0.070	06/15/18 12:55	
Chromium	ug/L	<0.19	1.0	0.19	06/15/18 12:55	
Cobalt	ug/L	<0.15	1.0	0.15	06/15/18 12:55	
Lead	ug/L	<0.12	1.0	0.12	06/15/18 12:55	
Molybdenum	ug/L	<0.13	1.0	0.13	06/15/18 12:55	
Selenium	ug/L	<0.16	1.0	0.16	06/15/18 12:55	
Thallium	ug/L	<0.14	1.0	0.14	06/15/18 12:55	

LABORATORY CONTROL SAMPLE: 2162519

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	42.0	105	80-120	
Arsenic	ug/L	40	41.0	103	80-120	
Barium	ug/L	40	40.7	102	80-120	
Beryllium	ug/L	40	41.2	103	80-120	
Cadmium	ug/L	40	41.4	104	80-120	
Chromium	ug/L	40	40.7	102	80-120	
Cobalt	ug/L	40	39.3	98	80-120	
Lead	ug/L	40	39.5	99	80-120	
Molybdenum	ug/L	40	40.9	102	80-120	
Selenium	ug/L	40	39.8	99	80-120	
Thallium	ug/L	40	37.5	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2162520 2162521

Parameter	Units	60271138002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.33J	40	40	41.7	41.8	103	104	75-125	0	20	
Arsenic	ug/L	8.8	40	40	49.0	48.7	100	100	75-125	1	20	
Barium	ug/L	60.4	40	40	101	100	101	99	75-125	1	20	
Beryllium	ug/L	<0.12	40	40	40.6	40.3	101	101	75-125	1	20	
Cadmium	ug/L	0.12J	40	40	40.2	40.4	100	101	75-125	0	20	
Chromium	ug/L	1.4	40	40	40.9	40.8	99	98	75-125	0	20	
Cobalt	ug/L	0.46J	40	40	39.1	39.2	97	97	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2162520 2162521

Parameter	Units	60271138002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.60J	40	40	38.2	38.3	94	94	75-125	0	20	
Molybdenum	ug/L	235	40	40	278	274	108	99	75-125	1	20	
Selenium	ug/L	6.7	40	40	43.4	43.0	92	91	75-125	1	20	
Thallium	ug/L	<0.14	40	40	36.2	35.9	90	90	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 527618 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

METHOD BLANK: 2161671 Matrix: Water
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/29/18 15:24	

LABORATORY CONTROL SAMPLE: 2161672

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	80-120	

SAMPLE DUPLICATE: 2161673

Parameter	Units	60271146005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1080	1080	1	10	

SAMPLE DUPLICATE: 2161674

Parameter	Units	60271152005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	ND	<5.0		10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 527614 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

SAMPLE DUPLICATE: 2161666

Parameter	Units	60271238001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.7	7.8	1	10	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 528369 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006

METHOD BLANK: 2164566 Matrix: Water
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	06/02/18 22:21	
Fluoride	mg/L	<0.063	0.20	0.063	06/02/18 22:21	

LABORATORY CONTROL SAMPLE: 2164567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2164568 2164569

Parameter	Units	60271138001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.25	2.5	2.5	2.9	3.1	104	113	80-120	7	15	

SAMPLE DUPLICATE: 2164570

Parameter	Units	60271138002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	17.6	17.7	1	15	
Fluoride	mg/L	0.39	0.39	0	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

QC Batch: 528383 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

METHOD BLANK: 2164741 Matrix: Water
Associated Lab Samples: 60271153001, 60271153002, 60271153003, 60271153004, 60271153005, 60271153006, 60271153007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	06/03/18 09:10	
Fluoride	mg/L	<0.063	0.20	0.063	06/03/18 09:10	
Sulfate	mg/L	<0.24	1.0	0.24	06/03/18 09:10	

LABORATORY CONTROL SAMPLE: 2164742

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	5.1	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2164743 2164744

Parameter	Units	60271138002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	199	100	100	301	300	102	101	80-120	0	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271153001	**MW-301**		528706		
60271153002	**MW-302**		528706		
60271153003	**MW-303**		528706		
60271153004	**MW-304**		528706		
60271153005	**MW-305**		528706		
60271153006	**MW-306**		528706		
60271153001	**MW-301**	EPA 3010	527865	EPA 6010	527895
60271153002	**MW-302**	EPA 3010	527865	EPA 6010	527895
60271153003	**MW-303**	EPA 3010	527865	EPA 6010	527895
60271153004	**MW-304**	EPA 3010	527865	EPA 6010	527895
60271153005	**MW-305**	EPA 3010	527865	EPA 6010	527895
60271153006	**MW-306**	EPA 3010	527865	EPA 6010	527895
60271153007	**FIELD BLANK**	EPA 3010	527865	EPA 6010	527895
60271153001	**MW-301**	EPA 3010	527867	EPA 6020	527896
60271153002	**MW-302**	EPA 3010	527867	EPA 6020	527896
60271153003	**MW-303**	EPA 3010	527867	EPA 6020	527896
60271153004	**MW-304**	EPA 3010	527867	EPA 6020	527896
60271153005	**MW-305**	EPA 3010	527867	EPA 6020	527896
60271153006	**MW-306**	EPA 3010	527867	EPA 6020	527896
60271153007	**FIELD BLANK**	EPA 3010	527867	EPA 6020	527896
60271153001	**MW-301**	EPA 7470	528550	EPA 7470	528638
60271153002	**MW-302**	EPA 7470	528550	EPA 7470	528638
60271153003	**MW-303**	EPA 7470	528550	EPA 7470	528638
60271153004	**MW-304**	EPA 7470	528550	EPA 7470	528638
60271153005	**MW-305**	EPA 7470	528550	EPA 7470	528638
60271153006	**MW-306**	EPA 7470	528550	EPA 7470	528638
60271153007	**FIELD BLANK**	EPA 7470	528550	EPA 7470	528638
60271153001	**MW-301**	SM 2540C	527618		
60271153002	**MW-302**	SM 2540C	527618		
60271153003	**MW-303**	SM 2540C	527618		
60271153004	**MW-304**	SM 2540C	527618		
60271153005	**MW-305**	SM 2540C	527618		
60271153006	**MW-306**	SM 2540C	527618		
60271153007	**FIELD BLANK**	SM 2540C	527618		
60271153001	**MW-301**	EPA 9040	527614		
60271153002	**MW-302**	EPA 9040	527614		
60271153003	**MW-303**	EPA 9040	527614		
60271153004	**MW-304**	EPA 9040	527614		
60271153005	**MW-305**	EPA 9040	527614		
60271153006	**MW-306**	EPA 9040	527614		
60271153007	**FIELD BLANK**	EPA 9040	527614		
60271153001	**MW-301**	EPA 9056	528369		
60271153001	**MW-301**	EPA 9056	528383		
60271153002	**MW-302**	EPA 9056	528369		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271153

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271153002	**MW-302**	EPA 9056	528383		
60271153003	**MW-303**	EPA 9056	528369		
60271153003	**MW-303**	EPA 9056	528383		
60271153004	**MW-304**	EPA 9056	528369		
60271153004	**MW-304**	EPA 9056	528383		
60271153005	**MW-305**	EPA 9056	528369		
60271153005	**MW-305**	EPA 9056	528383		
60271153006	**MW-306**	EPA 9056	528369		
60271153006	**MW-306**	EPA 9056	528383		
60271153007	**FIELD BLANK**	EPA 9056	528383		

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Sample Condition Upon Receipt

WO#: 60271153

60271153

Client Name: SCS Engineers

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 453687244479 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ Zplc

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.3 **Corr. Factor** +1.2 **Corrected** 5.5

Date and initials of person examining contents: 5/24/18 WZ

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A 5/24	pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK Date: 5-24-2018

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A
Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone:	608-216-7362 Fax:
Requested Due Date/TAT:	Standard

Section B
Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C
Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IA

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N): 6010 Total Metals: N; 6020 Total Metals: N

Pace Project No./Lab I.D.: 60271153

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Mercury	9056 Chloride-Fluoride-Sulfate	9040 pH	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./Lab I.D.
1	MW-301	WT	G	xxx	xxx	5/23/18	1542	10.8	3	1		2						X	X	X	X	X	X	BP1U, 2BP3N	01
2	MW-302	WT	G	xxx	xxx	5/23/18	0944	9.9	3	1		2						X	X	X	X	X	X		02
3	MW-303	WT	G	xxx	xxx	5/23/18	1439	11.9	3	1		2						X	X	X	X	X	X		03
4	MW-304	WT	G	xxx	xxx	5/23/18	1109	10.5	3	1		2						X	X	X	X	X	X		04
5	MW-305	WT	G	xxx	xxx	5/23/18	1219	11.0	3	1		2						X	X	X	X	X	X		05
6	MW-306	WT	G	xxx	xxx	5/23/18	1343	11.9	3	1		2						X	X	X	X	X	X		06
7	FIELD BLANK	WT	G	xxx	xxx	5/23/18	1515		3	1		2						X	X	X	X	X	X		07
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Chasea [illegible] / SCS	5/23/18	1700	KZ: PF / PASI	5/24/18	0850	4.3	Y	Y	Y
* As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

June 15, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on May 24, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271175001	**MW-301**	Water	05/23/18 15:42	05/24/18 08:50
60271175002	**MW-302**	Water	05/23/18 09:44	05/24/18 08:50
60271175003	**MW-303**	Water	05/23/18 14:39	05/24/18 08:50
60271175004	**MW-304**	Water	05/23/18 11:09	05/24/18 08:50
60271175005	**MW-305**	Water	05/23/18 12:19	05/24/18 08:50
60271175006	**MW-306**	Water	05/23/18 13:43	05/24/18 08:50
60271175007	**FIELD BLANK**	Water	05/23/18 15:15	05/24/18 08:50

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271175001	**MW-301**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271175002	**MW-302**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271175003	**MW-303**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271175004	**MW-304**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271175005	**MW-305**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271175006	**MW-306**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271175007	**FIELD BLANK**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: MW-301 **Lab ID: 60271175001** Collected: 05/23/18 15:42 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.480 (1.08) C:NA T:55%**	pCi/L	06/14/18 21:12	13982-63-3	
Radium-228	EPA 904.0	**0.429 ± 0.617 (1.33) C:76% T:72%**	pCi/L	06/14/18 18:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.429 ± 1.10 (2.41)**	pCi/L	06/15/18 11:33	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: MW-302 **Lab ID: 60271175002** Collected: 05/23/18 09:44 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.392 ± 0.446 (0.704) C:NA T:89%**	pCi/L	06/14/18 21:12	13982-63-3	
Radium-228	EPA 904.0	**0.534 ± 0.581 (1.21) C:76% T:82%**	pCi/L	06/14/18 18:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.926 ± 1.03 (1.91)**	pCi/L	06/15/18 11:33	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: MW-303 **Lab ID: 60271175003** Collected: 05/23/18 14:39 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.115 ± 0.318 (0.618) C:NA T:96%**	pCi/L	06/14/18 21:12	13982-63-3	
Radium-228	EPA 904.0	**0.584 ± 0.745 (1.59) C:76% T:80%**	pCi/L	06/14/18 19:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.699 ± 1.06 (2.21)**	pCi/L	06/15/18 11:33	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: MW-304 **Lab ID: 60271175004** Collected: 05/23/18 11:09 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.174 ± 0.341 (0.623) C:NA T:91%**	pCi/L	06/14/18 21:12	13982-63-3	
Radium-228	EPA 904.0	**0.349 ± 0.611 (1.33) C:75% T:85%**	pCi/L	06/14/18 19:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.523 ± 0.952 (1.95)**	pCi/L	06/15/18 11:33	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: MW-305 **Lab ID: 60271175005** Collected: 05/23/18 12:19 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.590 ± 0.505 (0.685) C:NA T:79%**	pCi/L	06/14/18 21:12	13982-63-3	
Radium-228	EPA 904.0	**0.458 ± 0.675 (1.46) C:75% T:86%**	pCi/L	06/14/18 19:05	15262-20-1	
Total Radium	Total Radium Calculation	**1.05 ± 1.18 (2.15)**	pCi/L	06/15/18 11:33	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: MW-306 **Lab ID: 60271175006** Collected: 05/23/18 13:43 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0586 ± 0.267 (0.544) C:NA T:91%**	pCi/L	06/14/18 21:12	13982-63-3	
Radium-228	EPA 904.0	**-0.195 ± 0.715 (1.67) C:75% T:77%**	pCi/L	06/14/18 19:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.0586 ± 0.982 (2.21)**	pCi/L	06/15/18 11:33	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Sample: FIELD BLANK **Lab ID: 60271175007** Collected: 05/23/18 15:15 Received: 05/24/18 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.235 ± 0.327 (0.546) C:NA T:93%**	pCi/L	06/14/18 21:26	13982-63-3	
Radium-228	EPA 904.0	**-1.14 ± 0.735 (1.81) C:76% T:79%**	pCi/L	06/14/18 19:05	15262-20-1	
Total Radium	Total Radium Calculation	**0.235 ± 1.06 (2.36)**	pCi/L	06/15/18 11:33	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

QC Batch: 300530 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60271175001, 60271175002, 60271175003, 60271175004, 60271175005, 60271175006, 60271175007

METHOD BLANK: 1470779 Matrix: Water
Associated Lab Samples: 60271175001, 60271175002, 60271175003, 60271175004, 60271175005, 60271175006, 60271175007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.125 ± 0.286 (0.170) C:NA T:90%	pCi/L	06/14/18 20:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

QC Batch: 300553 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60271175001, 60271175002, 60271175003, 60271175004, 60271175005, 60271175006, 60271175007

METHOD BLANK: 1470874 Matrix: Water
Associated Lab Samples: 60271175001, 60271175002, 60271175003, 60271175004, 60271175005, 60271175006, 60271175007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.382 ± 0.364 (0.743) C:76% T:82%	pCi/L	06/14/18 15:46	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60271175

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271175001	**MW-301**	EPA 903.1	300530		
60271175002	**MW-302**	EPA 903.1	300530		
60271175003	**MW-303**	EPA 903.1	300530		
60271175004	**MW-304**	EPA 903.1	300530		
60271175005	**MW-305**	EPA 903.1	300530		
60271175006	**MW-306**	EPA 903.1	300530		
60271175007	**FIELD BLANK**	EPA 903.1	300530		
60271175001	**MW-301**	EPA 904.0	300553		
60271175002	**MW-302**	EPA 904.0	300553		
60271175003	**MW-303**	EPA 904.0	300553		
60271175004	**MW-304**	EPA 904.0	300553		
60271175005	**MW-305**	EPA 904.0	300553		
60271175006	**MW-306**	EPA 904.0	300553		
60271175007	**FIELD BLANK**	EPA 904.0	300553		
60271175001	**MW-301**	Total Radium Calculation	302326		
60271175002	**MW-302**	Total Radium Calculation	302326		
60271175003	**MW-303**	Total Radium Calculation	302326		
60271175004	**MW-304**	Total Radium Calculation	302326		
60271175005	**MW-305**	Total Radium Calculation	302326		
60271175006	**MW-306**	Total Radium Calculation	302326		
60271175007	**FIELD BLANK**	Total Radium Calculation	302326		

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Sample Condition Upon Receipt

WO# : 60271175

60271175

Client Name: SCS

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4368 7274 4424 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ ZPLC

Thermometer Used: T-298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 3.5 Corr. Factor +1.1 Corrected 4.6

Date and initials of person examining contents: SDG 5-24-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone: 608-216-7362	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Trudy Gipson 913-563-1405
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IA

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analysis Test: 903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N	N			
1	MW-301	WT	G	xxx	xxx	5/23/18	1542	10.8	2			2						X	X	X	BP1U(2)		60271175 001
2	MW-302	WT	G	xxx	xxx	5/23/18	0944	9.9	2			2						X	X	X			002
3	MW-303	WT	G	xxx	xxx	5/23/18	1439	11.9	2			2						X	X	X			003
4	MW-304	WT	G	xxx	xxx	5/23/18	1109	10.5	2			2						X	X	X			004
5	MW-305	WT	G	xxx	xxx	5/23/18	1219	11.0	2			2						X	X	X			005
6	MW-306	WT	G	xxx	xxx	5/23/18	1343	11.9	2			2						X	X	X			006
7	FIELD BLANK	WT	G	xxx	xxx	5/23/18	1515		2			2						X	X	X			007
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charles [illegible] SCS	3/23/18	1700	[illegible] PACE	5-24-18	0850	4.6	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

A3 Round 3 Background Sampling, Analytical Laboratory Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

July 19, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland Generating Station
Pace Project No.: 60273577

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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(913)599-5665

CERTIFICATIONS

Project:	Sutherland Generating Station
Pace Project No.:	60273577

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60273577001	**MW-301**	Water	06/26/18 13:39	06/27/18 08:30
60273577002	**MW-302**	Water	06/26/18 12:31	06/27/18 08:30
60273577003	**MW-303**	Water	06/26/18 11:46	06/27/18 08:30
60273577004	**MW-304**	Water	06/26/18 09:54	06/27/18 08:30
60273577005	**MW-305**	Water	06/26/18 09:06	06/27/18 08:30
60273577006	**MW-306**	Water	06/26/18 10:59	06/27/18 08:30
60273577007	**Field Blank**	Water	06/26/18 12:20	06/27/18 08:30

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SAMPLE ANALYTE COUNT

Project: Sutherland Generating Station
Pace Project No.: 60273577

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60273577001	**MW-301**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60273577002	**MW-302**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60273577003	**MW-303**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60273577004	**MW-304**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60273577005	**MW-305**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60273577006	**MW-306**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60273577007	**Field Blank**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: MW-301 **Lab ID: 60273577001** Collected: 06/26/18 13:39 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.342 ± 0.412 (0.629) C:NA T:91%**	pCi/L	07/13/18 10:51	13982-63-3	
Radium-228	EPA 904.0	**0.295 ± 0.397 (0.846) C:72% T:80%**	pCi/L	07/17/18 16:35	15262-20-1	
Total Radium	Total Radium Calculation	**0.637 ± 0.809 (1.48)**	pCi/L	07/19/18 14:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: MW-302 **Lab ID: 60273577002** Collected: 06/26/18 12:31 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.084 ± 0.437 (1.01) C:NA T:88%**	pCi/L	07/13/18 10:51	13982-63-3	
Radium-228	EPA 904.0	**0.680 ± 0.524 (1.06) C:75% T:87%**	pCi/L	07/17/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.680 ± 0.961 (2.07)**	pCi/L	07/19/18 14:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: MW-303 **Lab ID: 60273577003** Collected: 06/26/18 11:46 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.381 ± 0.530 (0.885) C:NA T:78%**	pCi/L	07/13/18 10:51	13982-63-3	
Radium-228	EPA 904.0	**0.560 ± 0.481 (0.979) C:74% T:85%**	pCi/L	07/17/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.941 ± 1.01 (1.86)**	pCi/L	07/19/18 14:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: MW-304 **Lab ID: 60273577004** Collected: 06/26/18 09:54 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0806 ± 0.368 (0.748) C:NA T:92%**	pCi/L	07/13/18 11:07	13982-63-3	
Radium-228	EPA 904.0	**0.385 ± 0.522 (1.12) C:73% T:73%**	pCi/L	07/17/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.466 ± 0.890 (1.87)**	pCi/L	07/19/18 14:28	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: MW-305 **Lab ID: 60273577005** Collected: 06/26/18 09:06 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.430 (0.931) C:NA T:93%**	pCi/L	07/13/18 10:51	13982-63-3	
Radium-228	EPA 904.0	**-0.116 ± 0.553 (1.28) C:72% T:83%**	pCi/L	07/17/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.983 (2.21)**	pCi/L	07/19/18 14:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: MW-306 **Lab ID: 60273577006** Collected: 06/26/18 10:59 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.351 ± 0.424 (0.647) C:NA T:88%**	pCi/L	07/13/18 11:07	13982-63-3	
Radium-228	EPA 904.0	**0.509 ± 0.459 (0.945) C:74% T:94%**	pCi/L	07/17/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.860 ± 0.883 (1.59)**	pCi/L	07/19/18 14:28	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

Sample: Field Blank **Lab ID: 60273577007** Collected: 06/26/18 12:20 Received: 06/27/18 08:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.181 ± 0.413 (0.665) C:NA T:80%**	pCi/L	07/13/18 11:07	13982-63-3	
Radium-228	EPA 904.0	**-0.575 ± 0.513 (1.25) C:75% T:81%**	pCi/L	07/17/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.181 ± 0.926 (1.92)**	pCi/L	07/19/18 14:28	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

QC Batch: 304664 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60273577001, 60273577002, 60273577003, 60273577004, 60273577005, 60273577006, 60273577007

METHOD BLANK: 1490530 Matrix: Water
Associated Lab Samples: 60273577001, 60273577002, 60273577003, 60273577004, 60273577005, 60273577006, 60273577007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.093 ± 0.426 (1.00) C:NA T:91%	pCi/L	07/13/18 10:24	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60273577

QC Batch: 304672 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60273577001, 60273577002, 60273577003, 60273577004, 60273577005, 60273577006, 60273577007

METHOD BLANK: 1490538 Matrix: Water
Associated Lab Samples: 60273577001, 60273577002, 60273577003, 60273577004, 60273577005, 60273577006, 60273577007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.971 ± 0.409 (0.623) C:77% T:76%	pCi/L	07/17/18 13:04	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Sutherland Generating Station
Pace Project No.: 60273577

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland Generating Station
Pace Project No.: 60273577

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273577001	**MW-301**	EPA 903.1	304664		
60273577002	**MW-302**	EPA 903.1	304664		
60273577003	**MW-303**	EPA 903.1	304664		
60273577004	**MW-304**	EPA 903.1	304664		
60273577005	**MW-305**	EPA 903.1	304664		
60273577006	**MW-306**	EPA 903.1	304664		
60273577007	**Field Blank**	EPA 903.1	304664		
60273577001	**MW-301**	EPA 904.0	304672		
60273577002	**MW-302**	EPA 904.0	304672		
60273577003	**MW-303**	EPA 904.0	304672		
60273577004	**MW-304**	EPA 904.0	304672		
60273577005	**MW-305**	EPA 904.0	304672		
60273577006	**MW-306**	EPA 904.0	304672		
60273577007	**Field Blank**	EPA 904.0	304672		
60273577001	**MW-301**	Total Radium Calculation	306465		
60273577002	**MW-302**	Total Radium Calculation	306465		
60273577003	**MW-303**	Total Radium Calculation	306465		
60273577004	**MW-304**	Total Radium Calculation	306465		
60273577005	**MW-305**	Total Radium Calculation	306465		
60273577006	**MW-306**	Total Radium Calculation	306465		
60273577007	**Field Blank**	Total Radium Calculation	306465		

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Sample Condition Upon Receipt

WO# : 60273577

60273577

Client Name: SCS Engineers

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4368 7277 1873 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-297 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.9 **Corr. Factor** +0.9 **Corrected** 4.8

Date and initials of person examining contents: HE 6/29

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☒No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☒No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK Date: 6-27-2018

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:

- Company: SCS Engineers
- Address: 2830 Dairy Drive, Madison WI 53718
- Email To: mblodgett@scsengineers.com
- Phone: 608-216-7362 Fax:
- Requested Due Date/TAT:

Section B Required Project Information:

- Report To: Meghan Blodgett
- Copy To: Tom Karwaski
- Purchase Order No.:
- Project Name: Sutherland Generating Station
- Project Number: 25218062.00.

Section C Invoice Information:

- Attention: Meghan Blodgett/Jess Valcheff
- Company Name: SCS Engineers
- Address:
- Pace Quote Reference:
- Pace Project Manager: Hank Kapka 913-563-1404
- Pace Profile #: 6696 Line 2

Page: of

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ____

Site Location STATE: IA

Section D Required Client Information

Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	[redacted]	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	[redacted] (N)	[redacted] (N)	[redacted]	[redacted]	[redacted]	[redacted]	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60273577
1	MW-301	WT	G	xxx	xxx	6/26/18	1339		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		2BPIN
2	MW-302	WT	G	xxx	xxx	6/26/18	1231		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		↓
3	MW-303	WT	G	xxx	xxx	6/26/18	1146		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		↓
4	MW-304	WT	G	xxx	xxx	6/26/18	0954		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		↓
5	MW-305	WT	G	xxx	xxx	6/26/18	0906		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		↓
6	MW-306	WT	G	xxx	xxx	6/26/18	1059		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		↓
7	FIELD BLANK	WT	G	xxx	xxx	6/26/18	1220		[redacted]	[redacted]		2							[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	X	X	X		↓
8																													
9																													
10																													
11																													
12																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charles [illegible] SCS	6/26/18	1800	[illegible] Doty PASI	4/27/18	18:30	4.8	Y	Y	Y
As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
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(913)599-5665

July 17, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60273590001	**MW-301**	Water	06/26/18 13:39	06/27/18 08:30
60273590002	**MW-302**	Water	06/26/18 12:31	06/27/18 08:30
60273590003	**MW-303**	Water	06/26/18 11:46	06/27/18 08:30
60273590004	**MW-304**	Water	06/26/18 09:54	06/27/18 08:30
60273590005	**MW-305**	Water	06/26/18 09:06	06/27/18 08:30
60273590006	**MW-306**	Water	06/26/18 10:59	06/27/18 08:30
60273590007	**FIELD BLANK**	Water	06/26/18 12:20	06/27/18 08:30

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60273590001	MW-301	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60273590002	MW-302	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60273590003	MW-303	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60273590004	MW-304	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60273590005	MW-305	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60273590006	MW-306	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K
60273590007	FIELD BLANK	EPA 6010	TDS	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	CMS	1	PASI-K
		EPA 9056	OL	3	PASI-K

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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: MW-301 **Lab ID: 60273590001** Collected: 06/26/18 13:39 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		06/26/18 13:39		
Field pH	**7.50**	Std. Units	0.10	0.050	1		06/26/18 13:39		
Field Temperature	**14.6**	deg C	0.50	0.25	1		06/26/18 13:39		
Field Specific Conductance	**518**	umhos/cm	1.0	1.0	1		06/26/18 13:39		
Field Oxidation Potential	**227**	mV			1		06/26/18 13:39		
Oxygen, Dissolved	**3.07**	mg/L			1		06/26/18 13:39	7782-44-7	
Turbidity	**35.03**	NTU	1.0	1.0	1		06/26/18 13:39		
Groundwater Elevation	**856.24**	feet			1		06/26/18 13:39		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**274**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:27	7440-42-8	
Calcium	**59.5**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:27	7440-70-2	
Lithium	**6.2J**	ug/L	10.0	4.6	1	06/28/18 10:40	07/12/18 23:07	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.27J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 14:54	7440-36-0	
Arsenic	**1.6**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 14:54	7440-38-2	
Barium	**137**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 14:54	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 14:54	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 14:54	7440-43-9	
Chromium	**2.6**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 14:54	7440-47-3	
Cobalt	**1.6**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 14:54	7440-48-4	
Lead	**1.5**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 14:54	7439-92-1	
Molybdenum	**8.5**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 14:54	7439-98-7	
Selenium	**2.3**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 14:54	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 14:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 11:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**326**	mg/L	5.0	5.0	1		06/28/18 11:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.4**	Std. Units	0.10	0.10	1		07/02/18 16:01		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**6.0**	mg/L	1.0	0.46	1		07/07/18 11:43	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	0.063	1		07/07/18 11:43	16984-48-8	
Sulfate	**46.9**	mg/L	5.0	1.2	5		07/08/18 13:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: MW-302 **Lab ID: 60273590002** Collected: 06/26/18 12:31 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		06/26/18 12:31		
Field pH	**7.30**	Std. Units	0.10	0.050	1		06/26/18 12:31		
Field Temperature	**11.8**	deg C	0.50	0.25	1		06/26/18 12:31		
Field Specific Conductance	**603**	umhos/cm	1.0	1.0	1		06/26/18 12:31		
Field Oxidation Potential	**-51**	mV			1		06/26/18 12:31		
Oxygen, Dissolved	**.30**	mg/L			1		06/26/18 12:31	7782-44-7	
Turbidity	**2.85**	NTU	1.0	1.0	1		06/26/18 12:31		
Groundwater Elevation	**856.55**	feet			1		06/26/18 12:31		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**65.3J**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:37	7440-42-8	
Calcium	**69.9**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:37	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	06/28/18 10:40	07/13/18 19:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.68J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 14:56	7440-36-0	
Arsenic	**8.5**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 14:56	7440-38-2	
Barium	**124**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 14:56	7440-39-3	
Beryllium	**0.19J**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 14:56	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 14:56	7440-43-9	
Chromium	**0.26J**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 14:56	7440-47-3	
Cobalt	**5.7**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 14:56	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 14:56	7439-92-1	
Molybdenum	**0.68J**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 14:56	7439-98-7	
Selenium	**3.9**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 14:56	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 14:56	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 11:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**352**	mg/L	5.0	5.0	1		06/28/18 11:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.5**	Std. Units	0.10	0.10	1		07/02/18 15:59		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**12.4**	mg/L	1.0	0.46	1		07/07/18 11:56	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	0.063	1		07/07/18 11:56	16984-48-8	
Sulfate	**56.0**	mg/L	5.0	1.2	5		07/08/18 14:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: MW-303 **Lab ID: 60273590003** Collected: 06/26/18 11:46 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		06/26/18 11:46		
Field pH	**7.89**	Std. Units	0.10	0.050	1		06/26/18 11:46		
Field Temperature	**13.1**	deg C	0.50	0.25	1		06/26/18 11:46		
Field Specific Conductance	**921**	umhos/cm	1.0	1.0	1		06/26/18 11:46		
Field Oxidation Potential	**74**	mV			1		06/26/18 11:46		
Oxygen, Dissolved	**0.24**	mg/L			1		06/26/18 11:46	7782-44-7	
Turbidity	**3.04**	NTU	1.0	1.0	1		06/26/18 11:46		
Groundwater Elevation	**854.97**	feet			1		06/26/18 11:46		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**989**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:39	7440-42-8	
Calcium	**106**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:39	7440-70-2	
Lithium	**37.9**	ug/L	10.0	4.6	1	06/28/18 10:40	07/13/18 19:07	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:04	7440-36-0	
Arsenic	**2.5**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:04	7440-38-2	
Barium	**32.6**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 15:04	7440-39-3	
Beryllium	**0.83**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 15:04	7440-41-7	
Cadmium	**0.073J**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 15:04	7440-43-9	
Chromium	**0.23J**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 15:04	7440-47-3	
Cobalt	**0.48J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:04	7440-48-4	
Lead	**0.13J**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 15:04	7439-92-1	
Molybdenum	**22.6**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 15:04	7439-98-7	
Selenium	**0.61J**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 15:04	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 15:04	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 11:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**658**	mg/L	5.0	5.0	1		06/28/18 11:36		
9040 pH	Analytical Method: EPA 9040								
pH	**8.1**	Std. Units	0.10	0.10	1		07/02/18 15:55		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**24.0**	mg/L	2.0	0.92	2		07/08/18 14:20	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.063	1		07/07/18 12:09	16984-48-8	
Sulfate	**185**	mg/L	20.0	4.7	20		07/08/18 14:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: MW-304 **Lab ID: 60273590004** Collected: 06/26/18 09:54 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		06/26/18 09:54		
Field pH	**7.24**	Std. Units	0.10	0.050	1		06/26/18 09:54		
Field Temperature	**11.2**	deg C	0.50	0.25	1		06/26/18 09:54		
Field Specific Conductance	**1076**	umhos/cm	1.0	1.0	1		06/26/18 09:54		
Field Oxidation Potential	**121**	mV			1		06/26/18 09:54		
Oxygen, Dissolved	**0.17**	mg/L			1		06/26/18 09:54	7782-44-7	
Turbidity	**3.68**	NTU	1.0	1.0	1		06/26/18 09:54		
Groundwater Elevation	**854.64**	feet			1		06/26/18 09:54		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**736**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:41	7440-42-8	
Calcium	**121**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:41	7440-70-2	
Lithium	**15.6**	ug/L	10.0	4.6	1	06/28/18 10:40	07/13/18 19:09	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:06	7440-36-0	
Arsenic	**0.37J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:06	7440-38-2	
Barium	**24.3**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 15:06	7440-39-3	
Beryllium	**0.69**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 15:06	7440-41-7	
Cadmium	**0.19J**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 15:06	7440-43-9	
Chromium	**0.60J**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 15:06	7440-47-3	
Cobalt	**0.22J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:06	7440-48-4	
Lead	**0.35J**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 15:06	7439-92-1	
Molybdenum	**17.2**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 15:06	7439-98-7	
Selenium	**0.50J**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 15:06	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 15:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 11:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**782**	mg/L	5.0	5.0	1		06/28/18 11:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.5**	Std. Units	0.10	0.10	1		07/02/18 15:52		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**32.1**	mg/L	5.0	2.3	5		07/08/18 14:45	16887-00-6	
Fluoride	**0.62**	mg/L	0.20	0.063	1		07/07/18 12:21	16984-48-8	
Sulfate	**339**	mg/L	50.0	11.8	50		07/08/18 14:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: MW-305 **Lab ID: 60273590005** Collected: 06/26/18 09:06 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		06/26/18 09:06		
Field pH	**7.61**	Std. Units	0.10	0.050	1		06/26/18 09:06		
Field Temperature	**12.1**	deg C	0.50	0.25	1		06/26/18 09:06		
Field Specific Conductance	**939**	umhos/cm	1.0	1.0	1		06/26/18 09:06		
Field Oxidation Potential	**-102**	mV			1		06/26/18 09:06		
Oxygen, Dissolved	**0.21**	mg/L			1		06/26/18 09:06	7782-44-7	
Turbidity	**4.69**	NTU	1.0	1.0	1		06/26/18 09:06		
Groundwater Elevation	**854.55**	feet			1		06/26/18 09:06		
6010 MET ICP	Analytical Method: EPA 6010	Preparation Method: EPA 3010							
Boron	**1110**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:44	7440-42-8	
Calcium	**96.4**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:44	7440-70-2	
Lithium	**21.8**	ug/L	10.0	4.6	1	06/28/18 10:40	07/13/18 19:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020	Preparation Method: EPA 3010							
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:09	7440-36-0	
Arsenic	**6.9**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:09	7440-38-2	
Barium	**36.1**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 15:09	7440-39-3	
Beryllium	**0.78**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 15:09	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 15:09	7440-43-9	
Chromium	**0.45J**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 15:09	7440-47-3	
Cobalt	**0.74J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:09	7440-48-4	
Lead	**0.19J**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 15:09	7439-92-1	
Molybdenum	**29.3**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 15:09	7439-98-7	
Selenium	**0.59J**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 15:09	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 15:09	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470	Preparation Method: EPA 7470							
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 11:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**667**	mg/L	5.0	5.0	1		06/28/18 11:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		07/02/18 15:49		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**29.5**	mg/L	5.0	2.3	5		07/08/18 15:11	16887-00-6	
Fluoride	**0.64**	mg/L	0.20	0.063	1		07/07/18 12:34	16984-48-8	
Sulfate	**317**	mg/L	50.0	11.8	50		07/08/18 15:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: MW-306 **Lab ID: 60273590006** Collected: 06/26/18 10:59 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		06/26/18 10:59		
Field pH	**7.74**	Std. Units	0.10	0.050	1		06/26/18 10:59		
Field Temperature	**12.9**	deg C	0.50	0.25	1		06/26/18 10:59		
Field Specific Conductance	**1395**	umhos/cm	1.0	1.0	1		06/26/18 10:59		
Field Oxidation Potential	**5**	mV			1		06/26/18 10:59		
Oxygen, Dissolved	**0.08**	mg/L			1		06/26/18 10:59	7782-44-7	
Turbidity	**0.72**	NTU	1.0	1.0	1		06/26/18 10:59		
Groundwater Elevation	**854.57**	feet			1		06/26/18 10:59		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**2090**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:46	7440-42-8	
Calcium	**172**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:46	7440-70-2	
Lithium	**29.9**	ug/L	10.0	4.6	1	06/28/18 10:40	07/13/18 19:13	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:11	7440-36-0	
Arsenic	**3.3**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:11	7440-38-2	
Barium	**88.6**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 15:11	7440-39-3	
Beryllium	**0.49J**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 15:11	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 15:11	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 15:11	7440-47-3	
Cobalt	**0.60J**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:11	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 15:11	7439-92-1	
Molybdenum	**36.1**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 15:11	7439-98-7	
Selenium	**0.38J**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 15:11	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 15:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 12:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1110**	mg/L	5.0	5.0	1		06/28/18 11:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.8**	Std. Units	0.10	0.10	1		07/02/18 15:54		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**30.2**	mg/L	5.0	2.3	5		07/08/18 15:37	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	0.063	1		07/07/18 12:47	16984-48-8	
Sulfate	**639**	mg/L	50.0	11.8	50		07/08/18 16:15	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Sample: FIELD BLANK **Lab ID: 60273590007** Collected: 06/26/18 12:20 Received: 06/27/18 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**<12.5**	ug/L	100	12.5	1	06/28/18 10:40	07/10/18 22:48	7440-42-8	
Calcium	**<0.054**	mg/L	0.20	0.054	1	06/28/18 10:40	07/10/18 22:48	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	06/28/18 10:40	07/13/18 19:15	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:19	7440-36-0	
Arsenic	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:19	7440-38-2	
Barium	**<0.34**	ug/L	1.0	0.34	1	06/28/18 10:40	07/10/18 15:19	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	06/28/18 10:40	07/10/18 15:19	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	06/28/18 10:40	07/10/18 15:19	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	06/28/18 10:40	07/10/18 15:19	7440-47-3	
Cobalt	**<0.15**	ug/L	1.0	0.15	1	06/28/18 10:40	07/10/18 15:19	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	06/28/18 10:40	07/10/18 15:19	7439-92-1	
Molybdenum	**<0.13**	ug/L	1.0	0.13	1	06/28/18 10:40	07/10/18 15:19	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	06/28/18 10:40	07/10/18 15:19	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/28/18 10:40	07/10/18 15:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	07/09/18 12:15	07/10/18 12:07	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		06/29/18 13:24		
9040 pH	Analytical Method: EPA 9040								
pH	**6.1**	Std. Units	0.10	0.10	1		07/02/18 15:57		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**<0.46**	mg/L	1.0	0.46	1		07/07/18 11:31	16887-00-6	
Fluoride	**<0.063**	mg/L	0.20	0.063	1		07/07/18 11:31	16984-48-8	
Sulfate	**<0.24**	mg/L	1.0	0.24	1		07/07/18 11:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 533442 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

METHOD BLANK: 2184861 Matrix: Water
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	07/10/18 11:44	

LABORATORY CONTROL SAMPLE: 2184862

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.3	85	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2184863 2184864

Parameter	Units	60273590007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	1.8	1.8	35	36	75-125	2	20	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 532103 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

METHOD BLANK: 2179113 Matrix: Water
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	07/10/18 22:25	
Calcium	mg/L	<0.054	0.20	0.054	07/10/18 22:25	
Lithium	ug/L	<4.6	10.0	4.6	07/12/18 23:05	

LABORATORY CONTROL SAMPLE: 2179114

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1060	106	80-120	
Calcium	mg/L	10	9.3	93	80-120	
Lithium	ug/L	1000	1090	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2179115 2179116

Parameter	Units	60273590001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	274	1000	1000	1340	1340	106	106	75-125	0	20	
Calcium	mg/L	59.5	10	10	69.3	69.4	98	99	75-125	0	20	
Lithium	ug/L	6.2J	1000	1000	1130	1040	112	103	75-125	8	20	

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 532104 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

METHOD BLANK: 2179117 Matrix: Water
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	0.15	07/10/18 14:49	
Arsenic	ug/L	<0.15	1.0	0.15	07/10/18 14:49	
Barium	ug/L	<0.34	1.0	0.34	07/10/18 14:49	
Beryllium	ug/L	<0.12	0.50	0.12	07/10/18 14:49	
Cadmium	ug/L	<0.070	0.50	0.070	07/10/18 14:49	
Chromium	ug/L	<0.19	1.0	0.19	07/10/18 14:49	
Cobalt	ug/L	<0.15	1.0	0.15	07/10/18 14:49	
Lead	ug/L	<0.12	1.0	0.12	07/10/18 14:49	
Molybdenum	ug/L	<0.13	1.0	0.13	07/10/18 14:49	
Selenium	ug/L	<0.16	1.0	0.16	07/10/18 14:49	
Thallium	ug/L	<0.14	1.0	0.14	07/10/18 14:49	

LABORATORY CONTROL SAMPLE: 2179118

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.4	101	80-120	
Arsenic	ug/L	40	37.6	94	80-120	
Barium	ug/L	40	41.4	104	80-120	
Beryllium	ug/L	40	39.1	98	80-120	
Cadmium	ug/L	40	38.5	96	80-120	
Chromium	ug/L	40	40.0	100	80-120	
Cobalt	ug/L	40	37.7	94	80-120	
Lead	ug/L	40	41.0	103	80-120	
Molybdenum	ug/L	40	36.9	92	80-120	
Selenium	ug/L	40	39.3	98	80-120	
Thallium	ug/L	40	38.4	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2179119 2179120

Parameter	Units	60273590002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.68J	40	40	40.6	40.2	100	99	75-125	1	20	
Arsenic	ug/L	8.5	40	40	46.2	45.9	94	93	75-125	1	20	
Barium	ug/L	124	40	40	169	169	110	112	75-125	0	20	
Beryllium	ug/L	0.19J	40	40	36.6	36.6	91	91	75-125	0	20	
Cadmium	ug/L	<0.070	40	40	36.4	36.2	91	90	75-125	1	20	
Chromium	ug/L	0.26J	40	40	39.6	39.7	98	99	75-125	0	20	
Cobalt	ug/L	5.7	40	40	41.7	41.6	90	90	75-125	0	20	

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2179119 2179120

Parameter	Units	60273590002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	<0.12	40	40	37.9	38.3	94	95	75-125	1	20	
Molybdenum	ug/L	0.68J	40	40	37.6	37.3	92	92	75-125	1	20	
Selenium	ug/L	3.9	40	40	41.5	41.3	94	94	75-125	0	20	
Thallium	ug/L	<0.14	40	40	36.9	36.9	92	92	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 532115 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006

METHOD BLANK: 2179147 Matrix: Water
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	06/28/18 11:35	

LABORATORY CONTROL SAMPLE: 2179148

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2179149

Parameter	Units	60273643001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	8090	7910	2	10	

SAMPLE DUPLICATE: 2179150

Parameter	Units	60273530003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	815	817	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 532300 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60273590007

METHOD BLANK: 2180073 Matrix: Water
Associated Lab Samples: 60273590007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	06/29/18 13:24	

LABORATORY CONTROL SAMPLE: 2180074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	998	100	80-120	

SAMPLE DUPLICATE: 2180075

Parameter	Units	60273534001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	756	755	0	10	

SAMPLE DUPLICATE: 2180076

Parameter	Units	60273664002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	519	523	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 532487 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

SAMPLE DUPLICATE: 2181274

Parameter	Units	60273590005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.7	7.8	0	10	H6

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 533311 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

METHOD BLANK: 2184280 Matrix: Water
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006, 60273590007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	07/07/18 08:48	
Fluoride	mg/L	<0.063	0.20	0.063	07/07/18 08:48	
Sulfate	mg/L	<0.24	1.0	0.24	07/07/18 08:48	

LABORATORY CONTROL SAMPLE: 2184281

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	80-120	
Fluoride	mg/L	2.5	2.4	97	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

QC Batch: 533334 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006

METHOD BLANK: 2184573 Matrix: Water
Associated Lab Samples: 60273590001, 60273590002, 60273590003, 60273590004, 60273590005, 60273590006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	07/08/18 11:08	
Sulfate	mg/L	<0.24	1.0	0.24	07/08/18 11:08	

LABORATORY CONTROL SAMPLE: 2184574

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2184575 2184576

Parameter	Units	60273534001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	7.0	5	5	12.1	12.2	102	103	80-120	1	15	
Sulfate	mg/L	1.2	5	5	6.2	6.2	100	100	80-120	1	15	

SAMPLE DUPLICATE: 2184577

Parameter	Units	60273534002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	ND	<23.1		15	
Sulfate	mg/L	693	691	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

WORKORDER QUALIFIERS

WO: 60273590

[1]	Rev. 1 7/17/2018
[2]	Lab error- manual data entry error
[3]	Corrected groundwater elevation value on MW-301

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273590001	**MW-301**		532341		
60273590002	**MW-302**		532341		
60273590003	**MW-303**		532341		
60273590004	**MW-304**		532341		
60273590005	**MW-305**		532341		
60273590006	**MW-306**		532341		
60273590001	**MW-301**	EPA 3010	532103	EPA 6010	532167
60273590002	**MW-302**	EPA 3010	532103	EPA 6010	532167
60273590003	**MW-303**	EPA 3010	532103	EPA 6010	532167
60273590004	**MW-304**	EPA 3010	532103	EPA 6010	532167
60273590005	**MW-305**	EPA 3010	532103	EPA 6010	532167
60273590006	**MW-306**	EPA 3010	532103	EPA 6010	532167
60273590007	**FIELD BLANK**	EPA 3010	532103	EPA 6010	532167
60273590001	**MW-301**	EPA 3010	532104	EPA 6020	532168
60273590002	**MW-302**	EPA 3010	532104	EPA 6020	532168
60273590003	**MW-303**	EPA 3010	532104	EPA 6020	532168
60273590004	**MW-304**	EPA 3010	532104	EPA 6020	532168
60273590005	**MW-305**	EPA 3010	532104	EPA 6020	532168
60273590006	**MW-306**	EPA 3010	532104	EPA 6020	532168
60273590007	**FIELD BLANK**	EPA 3010	532104	EPA 6020	532168
60273590001	**MW-301**	EPA 7470	533442	EPA 7470	533444
60273590002	**MW-302**	EPA 7470	533442	EPA 7470	533444
60273590003	**MW-303**	EPA 7470	533442	EPA 7470	533444
60273590004	**MW-304**	EPA 7470	533442	EPA 7470	533444
60273590005	**MW-305**	EPA 7470	533442	EPA 7470	533444
60273590006	**MW-306**	EPA 7470	533442	EPA 7470	533444
60273590007	**FIELD BLANK**	EPA 7470	533442	EPA 7470	533444
60273590001	**MW-301**	SM 2540C	532115		
60273590002	**MW-302**	SM 2540C	532115		
60273590003	**MW-303**	SM 2540C	532115		
60273590004	**MW-304**	SM 2540C	532115		
60273590005	**MW-305**	SM 2540C	532115		
60273590006	**MW-306**	SM 2540C	532115		
60273590007	**FIELD BLANK**	SM 2540C	532300		
60273590001	**MW-301**	EPA 9040	532487		
60273590002	**MW-302**	EPA 9040	532487		
60273590003	**MW-303**	EPA 9040	532487		
60273590004	**MW-304**	EPA 9040	532487		
60273590005	**MW-305**	EPA 9040	532487		
60273590006	**MW-306**	EPA 9040	532487		
60273590007	**FIELD BLANK**	EPA 9040	532487		
60273590001	**MW-301**	EPA 9056	533311		
60273590001	**MW-301**	EPA 9056	533334		
60273590002	**MW-302**	EPA 9056	533311		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60273590

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60273590002	**MW-302**	EPA 9056	533334		
60273590003	**MW-303**	EPA 9056	533311		
60273590003	**MW-303**	EPA 9056	533334		
60273590004	**MW-304**	EPA 9056	533311		
60273590004	**MW-304**	EPA 9056	533334		
60273590005	**MW-305**	EPA 9056	533311		
60273590005	**MW-305**	EPA 9056	533334		
60273590006	**MW-306**	EPA 9056	533311		
60273590006	**MW-306**	EPA 9056	533334		
60273590007	**FIELD BLANK**	EPA 9056	533311		

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Sample Condition Upon Receipt

WO# : 60273590

60273590

Client Name: SCS

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4368 7277 1884 Pace Shipping Label Used? Yes ☐ No ☐

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: 301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 3.8 Corr. Factor +0 Corrected 4.3

Date and initials of person examining contents: HK 6/26/27

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☒N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: HWK Date: 6-28-2018

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A
Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone:	608-216-7362 Fax:
Requested Due Date/TAT:	

Section B
Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C
Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Hank Kapka 913-563-1404
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

- ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
- ☐ UST ☐ RCRA ☐ OTHER ______

Site Location STATE: IA

Section D
Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N): N N

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Mercury	9056 Chloride-Fluoride-Sulfate	9040 pH	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60273590
1	MW-301	WT	G	xxx	xxx	6/26/18	1339		3	1		2							X	X	X	X	X	X		BPIU (2) BP3N 001
2	MW-302	WT	G	xxx	xxx	6/26/18	1231		3	1		2							X	X	X	X	X	X		002
3	MW-303	WT	G	xxx	xxx	6/26/18	1146		3	1		2							X	X	X	X	X	X		003
4	MW-304	WT	G	xxx	xxx	6/26/18	0954		3	1		2							X	X	X	X	X	X		004
5	MW-305	WT	G	xxx	xxx	6/26/18	0906		3	1		2							X	X	X	X	X	X		005
6	MW-306	WT	G	xxx	xxx	6/26/18	1059		3	1		2							X	X	X	X	X	X		006
7	FIELD BLANK	WT	G	xxx	xxx	6/26/18	1220		3	1		2							X	X	X	X	X	X		007
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charleston SCS	6/26/18	1800	[signature]	6/27	0830	4.8	Y	Y	Y
* As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

A4 Round 4 Background Sampling, Analytical Laboratory Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 10, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on July 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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CERTIFICATIONS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60276003001	**MW-301**	Water	07/26/18 10:34	07/27/18 09:15
60276003002	**MW-302**	Water	07/26/18 09:26	07/27/18 09:15
60276003003	**MW-303**	Water	07/26/18 08:24	07/27/18 09:15
60276003004	**MW-304**	Water	07/26/18 13:24	07/27/18 09:15
60276003005	**MW-305**	Water	07/26/18 12:14	07/27/18 09:15
60276003006	**MW-306**	Water	07/26/18 11:29	07/27/18 09:15
60276003007	**FIELD BLANK**	Water	07/26/18 09:12	07/27/18 09:15

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SAMPLE ANALYTE COUNT

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60276003001	MW-301	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL, WNM	3	PASI-K
60276003002	MW-302	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60276003003	MW-303	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60276003004	MW-304	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL, WNM	3	PASI-K
60276003005	MW-305	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL, WNM	3	PASI-K
60276003006	MW-306	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL, WNM	3	PASI-K
60276003007	FIELD BLANK	EPA 6010	TDS	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	WNM	3	PASI-K

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ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: MW-301 **Lab ID: 60276003001** Collected: 07/26/18 10:34 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		07/26/17 10:34		
Field pH	**6.46**	Std. Units	0.10	0.050	1		07/26/17 10:34		
Field Temperature	**14.9**	deg C	0.50	0.25	1		07/26/17 10:34		
Field Specific Conductance	**673**	umhos/cm	1.0	1.0	1		07/26/17 10:34		
Field Oxidation Potential	**159**	mV			1		07/26/17 10:34		
Oxygen, Dissolved	**0.29**	mg/L			1		07/26/17 10:34	7782-44-7	
Turbidity	**240.20**	NTU	1.0	1.0	1		07/26/17 10:34		
Groundwater Elevation	**855.96**	feet			1		07/26/17 10:34		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**212**	ug/L	100	12.5	1	08/02/18 11:30	08/07/18 23:38	7440-42-8	
Calcium	**83.1**	mg/L	0.20	0.054	1	08/02/18 11:30	08/07/18 23:38	7440-70-2	
Lithium	**11.4**	ug/L	10.0	4.6	1	08/02/18 11:30	08/07/18 23:38	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:48	7440-36-0	
Arsenic	**1.4**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:48	7440-38-2	
Barium	**324**	ug/L	1.0	0.34	1	07/27/18 16:23	08/06/18 14:48	7440-39-3	
Beryllium	**0.48J**	ug/L	0.50	0.12	1	07/27/18 16:23	08/06/18 14:48	7440-41-7	
Cadmium	**0.28J**	ug/L	0.50	0.070	1	07/27/18 16:23	08/06/18 14:48	7440-43-9	
Chromium	**1.7**	ug/L	1.0	0.19	1	07/27/18 16:23	08/06/18 14:48	7440-47-3	B
Cobalt	**3.5**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:48	7440-48-4	
Lead	**1.6**	ug/L	1.0	0.12	1	07/27/18 16:23	08/06/18 14:48	7439-92-1	
Molybdenum	**0.44J**	ug/L	1.0	0.13	1	07/27/18 16:23	08/06/18 14:48	7439-98-7	
Selenium	**5.8**	ug/L	1.0	0.16	1	07/27/18 16:23	08/06/18 14:48	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/27/18 16:23	08/06/18 14:48	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**433**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**6.8**	Std. Units	0.10	0.10	1		07/30/18 14:06		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**58.6**	mg/L	10.0	4.6	10		08/04/18 10:43	16887-00-6	
Fluoride	**0.27**	mg/L	0.20	0.063	1		08/01/18 21:23	16984-48-8	
Sulfate	**73.4**	mg/L	10.0	2.4	10		08/04/18 10:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: MW-302 **Lab ID: 60276003002** Collected: 07/26/18 09:26 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		07/26/18 09:26		
Field pH	**6.99**	Std. Units	0.10	0.050	1		07/26/18 09:26		
Field Temperature	**12.4**	deg C	0.50	0.25	1		07/26/18 09:26		
Field Specific Conductance	**623**	umhos/cm	1.0	1.0	1		07/26/18 09:26		
Field Oxidation Potential	**-102**	mV			1		07/26/18 09:26		
Oxygen, Dissolved	**0.16**	mg/L			1		07/26/18 09:26	7782-44-7	
Turbidity	**10.83**	NTU	1.0	1.0	1		07/26/18 09:26		
Groundwater Elevation	**855.75**	feet			1		07/26/18 09:26		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**53.8J**	ug/L	100	12.5	1	08/02/18 11:30	08/07/18 23:44	7440-42-8	B
Calcium	**80.3**	mg/L	0.20	0.054	1	08/02/18 11:30	08/07/18 23:44	7440-70-2	
Lithium	**7.8J**	ug/L	10.0	4.6	1	08/02/18 11:30	08/07/18 23:44	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.29J**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:51	7440-36-0	
Arsenic	**10.2**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:51	7440-38-2	
Barium	**132**	ug/L	1.0	0.34	1	07/27/18 16:23	08/06/18 14:51	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	07/27/18 16:23	08/06/18 14:51	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	07/27/18 16:23	08/06/18 14:51	7440-43-9	
Chromium	**0.25J**	ug/L	1.0	0.19	1	07/27/18 16:23	08/06/18 14:51	7440-47-3	B
Cobalt	**3.4**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:51	7440-48-4	
Lead	**0.15J**	ug/L	1.0	0.12	1	07/27/18 16:23	08/06/18 14:51	7439-92-1	
Molybdenum	**1.0**	ug/L	1.0	0.13	1	07/27/18 16:23	08/06/18 14:51	7439-98-7	
Selenium	**0.56J**	ug/L	1.0	0.16	1	07/27/18 16:23	08/06/18 14:51	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/27/18 16:23	08/06/18 14:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**360**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.1**	Std. Units	0.10	0.10	1		07/30/18 14:01		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**10.7**	mg/L	1.0	0.46	1		08/01/18 21:51	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.063	1		08/01/18 21:51	16984-48-8	
Sulfate	**58.7**	mg/L	5.0	1.2	5		08/01/18 22:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: MW-303 **Lab ID: 60276003003** Collected: 07/26/18 08:24 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		07/26/18 08:24		
Field pH	**7.33**	Std. Units	0.10	0.050	1		07/26/18 08:24		
Field Temperature	**13.8**	deg C	0.50	0.25	1		07/26/18 08:24		
Field Specific Conductance	**914**	umhos/cm	1.0	1.0	1		07/26/18 08:24		
Field Oxidation Potential	**15**	mV			1		07/26/18 08:24		
Oxygen, Dissolved	**0.21**	mg/L			1		07/26/18 08:24	7782-44-7	
Turbidity	**0.51**	NTU	1.0	1.0	1		07/26/18 08:24		
Groundwater Elevation	**854.14**	feet			1		07/26/18 08:24		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**852**	ug/L	100	12.5	1	08/02/18 11:30	08/07/18 23:51	7440-42-8	
Calcium	**113**	mg/L	0.20	0.054	1	08/02/18 11:30	08/07/18 23:51	7440-70-2	
Lithium	**37.3**	ug/L	10.0	4.6	1	08/02/18 11:30	08/07/18 23:51	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:54	7440-36-0	
Arsenic	**2.0**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:54	7440-38-2	
Barium	**37.4**	ug/L	1.0	0.34	1	07/27/18 16:23	08/06/18 14:54	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	07/27/18 16:23	08/06/18 14:54	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	07/27/18 16:23	08/06/18 14:54	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	07/27/18 16:23	08/06/18 14:54	7440-47-3	
Cobalt	**0.65J**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:54	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	07/27/18 16:23	08/06/18 14:54	7439-92-1	
Molybdenum	**30.8**	ug/L	1.0	0.13	1	07/27/18 16:23	08/06/18 14:54	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	07/27/18 16:23	08/06/18 14:54	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/27/18 16:23	08/06/18 14:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**597**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		07/30/18 13:57		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**29.6**	mg/L	5.0	2.3	5		08/01/18 23:17	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.063	1		08/01/18 23:02	16984-48-8	
Sulfate	**474**	mg/L	50.0	11.8	50		08/01/18 23:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: MW-304 **Lab ID: 60276003004** Collected: 07/26/18 13:24 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		07/26/18 13:24		
Field pH	**7.60**	Std. Units	0.10	0.050	1		07/26/18 13:24		
Field Temperature	**14.0**	deg C	0.50	0.25	1		07/26/18 13:24		
Field Specific Conductance	**1131**	umhos/cm	1.0	1.0	1		07/26/18 13:24		
Field Oxidation Potential	**98**	mV			1		07/26/18 13:24		
Oxygen, Dissolved	**0.15**	mg/L			1		07/26/18 13:24	7782-44-7	
Turbidity	**3.62**	NTU	1.0	1.0	1		07/26/18 13:24		
Groundwater Elevation	**853.86**	feet			1		07/26/18 13:24		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**795**	ug/L	100	12.5	1	08/02/18 11:30	08/07/18 23:53	7440-42-8	
Calcium	**138**	mg/L	0.20	0.054	1	08/02/18 11:30	08/07/18 23:53	7440-70-2	
Lithium	**11.0**	ug/L	10.0	4.6	1	08/02/18 11:30	08/07/18 23:53	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:57	7440-36-0	
Arsenic	**0.39J**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:57	7440-38-2	
Barium	**24.5**	ug/L	1.0	0.34	1	07/27/18 16:23	08/06/18 14:57	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	07/27/18 16:23	08/06/18 14:57	7440-41-7	
Cadmium	**0.10J**	ug/L	0.50	0.070	1	07/27/18 16:23	08/06/18 14:57	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	07/27/18 16:23	08/06/18 14:57	7440-47-3	
Cobalt	**<0.15**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 14:57	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	07/27/18 16:23	08/06/18 14:57	7439-92-1	
Molybdenum	**7.8**	ug/L	1.0	0.13	1	07/27/18 16:23	08/06/18 14:57	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	07/27/18 16:23	08/06/18 14:57	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/27/18 16:23	08/06/18 14:57	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**791**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.1**	Std. Units	0.10	0.10	1		07/30/18 14:11		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**31.2**	mg/L	5.0	2.3	5		08/04/18 12:14	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.063	1		08/01/18 23:45	16984-48-8	
Sulfate	**363**	mg/L	20.0	4.7	20		08/02/18 00:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: MW-305 **Lab ID: 60276003005** Collected: 07/26/18 12:14 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		07/26/18 12:14		
Field pH	**7.22**	Std. Units	0.10	0.050	1		07/26/18 12:14		
Field Temperature	**13.3**	deg C	0.50	0.25	1		07/26/18 12:14		
Field Specific Conductance	**935**	umhos/cm	1.0	1.0	1		07/26/18 12:14		
Field Oxidation Potential	**-116**	mV			1		07/26/18 12:14		
Oxygen, Dissolved	**0.12**	mg/L			1		07/26/18 12:14	7782-44-7	
Turbidity	**8.39**	NTU	1.0	1.0	1		07/26/18 12:14		
Groundwater Elevation	**854.00**	feet			1		07/26/18 12:14		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**1200**	ug/L	100	12.5	1	08/02/18 11:30	08/07/18 23:55	7440-42-8	
Calcium	**108**	mg/L	0.20	0.054	1	08/02/18 11:30	08/07/18 23:55	7440-70-2	
Lithium	**17.8**	ug/L	10.0	4.6	1	08/02/18 11:30	08/07/18 23:55	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 15:00	7440-36-0	
Arsenic	**8.6**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 15:00	7440-38-2	
Barium	**35.7**	ug/L	1.0	0.34	1	07/27/18 16:23	08/06/18 15:00	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	07/27/18 16:23	08/06/18 15:00	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	07/27/18 16:23	08/06/18 15:00	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	07/27/18 16:23	08/06/18 15:00	7440-47-3	
Cobalt	**0.83J**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 15:00	7440-48-4	
Lead	**0.16J**	ug/L	1.0	0.12	1	07/27/18 16:23	08/06/18 15:00	7439-92-1	
Molybdenum	**38.0**	ug/L	1.0	0.13	1	07/27/18 16:23	08/06/18 15:00	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	07/27/18 16:23	08/06/18 15:00	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/27/18 16:23	08/06/18 15:00	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**647**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.3**	Std. Units	0.10	0.10	1		07/30/18 14:09		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**26.9**	mg/L	5.0	2.3	5		08/04/18 12:28	16887-00-6	
Fluoride	**0.74**	mg/L	0.20	0.063	1		08/02/18 00:28	16984-48-8	
Sulfate	**315**	mg/L	20.0	4.7	20		08/04/18 12:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: MW-306 **Lab ID: 60276003006** Collected: 07/26/18 11:29 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		07/26/17 11:29		
Field pH	**7.38**	Std. Units	0.10	0.050	1		07/26/17 11:29		
Field Temperature	**14.0**	deg C	0.50	0.25	1		07/26/17 11:29		
Field Specific Conductance	**1468**	umhos/cm	1.0	1.0	1		07/26/17 11:29		
Field Oxidation Potential	**12**	mV			1		07/26/17 11:29		
Oxygen, Dissolved	**0.05**	mg/L			1		07/26/17 11:29	7782-44-7	
Turbidity	**3.29**	NTU	1.0	1.0	1		07/26/17 11:29		
Groundwater Elevation	**853.94**	feet			1		07/26/17 11:29		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**2120**	ug/L	100	12.5	1	08/02/18 11:30	08/07/18 23:58	7440-42-8	
Calcium	**199**	mg/L	0.20	0.054	1	08/02/18 11:30	08/07/18 23:58	7440-70-2	
Lithium	**32.2**	ug/L	10.0	4.6	1	08/02/18 11:30	08/07/18 23:58	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 15:03	7440-36-0	
Arsenic	**3.4**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 15:03	7440-38-2	
Barium	**95.9**	ug/L	1.0	0.34	1	07/27/18 16:23	08/06/18 15:03	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	07/27/18 16:23	08/06/18 15:03	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	07/27/18 16:23	08/06/18 15:03	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	07/27/18 16:23	08/06/18 15:03	7440-47-3	
Cobalt	**0.64J**	ug/L	1.0	0.15	1	07/27/18 16:23	08/06/18 15:03	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	07/27/18 16:23	08/06/18 15:03	7439-92-1	
Molybdenum	**44.5**	ug/L	1.0	0.13	1	07/27/18 16:23	08/06/18 15:03	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	07/27/18 16:23	08/06/18 15:03	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/27/18 16:23	08/06/18 15:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1160**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**7.6**	Std. Units	0.10	0.10	1		07/30/18 14:08		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**32.0**	mg/L	5.0	2.3	5		08/02/18 01:39	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.063	1		08/02/18 00:56	16984-48-8	
Sulfate	**824**	mg/L	50.0	11.8	50		08/04/18 12:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Sample: FIELD BLANK **Lab ID: 60276003007** Collected: 07/26/18 09:12 Received: 07/27/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**<12.5**	ug/L	100	12.5	1	08/02/18 11:30	08/08/18 00:00	7440-42-8	
Calcium	**0.13J**	mg/L	0.20	0.054	1	08/02/18 11:30	08/08/18 00:00	7440-70-2	B
Lithium	**<4.6**	ug/L	10.0	4.6	1	08/02/18 11:30	08/08/18 00:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/03/18 14:00	08/08/18 16:26	7440-36-0	
Arsenic	**<0.15**	ug/L	1.0	0.15	1	08/03/18 14:00	08/08/18 16:26	7440-38-2	
Barium	**<0.34**	ug/L	1.0	0.34	1	08/03/18 14:00	08/08/18 16:26	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	08/03/18 14:00	08/08/18 16:26	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	08/03/18 14:00	08/08/18 16:26	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	08/03/18 14:00	08/08/18 16:26	7440-47-3	
Cobalt	**<0.15**	ug/L	1.0	0.15	1	08/03/18 14:00	08/08/18 16:26	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	08/03/18 14:00	08/08/18 16:26	7439-92-1	
Molybdenum	**<0.13**	ug/L	1.0	0.13	1	08/03/18 14:00	08/08/18 16:26	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	08/03/18 14:00	08/08/18 16:26	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/03/18 14:00	08/08/18 16:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	08/02/18 15:45	08/06/18 09:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		08/01/18 08:36		
9040 pH	Analytical Method: EPA 9040								
pH	**5.6**	Std. Units	0.10	0.10	1		07/30/18 13:59		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**<0.46**	mg/L	1.0	0.46	1		08/02/18 02:08	16887-00-6	
Fluoride	**<0.063**	mg/L	0.20	0.063	1		08/02/18 02:08	16984-48-8	
Sulfate	**<0.24**	mg/L	1.0	0.24	1		08/02/18 02:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537541 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

METHOD BLANK: 2201957 Matrix: Water
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	08/06/18 09:29	

LABORATORY CONTROL SAMPLE: 2201958

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2201959 2201960

Parameter	Units	60275635001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	4.5	4.6	91	91	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537525 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

METHOD BLANK: 2201891 Matrix: Water
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	18.6J	100	12.5	08/07/18 23:36	
Calcium	mg/L	0.19J	0.20	0.054	08/07/18 23:36	
Lithium	ug/L	<4.6	10.0	4.6	08/07/18 23:36	

LABORATORY CONTROL SAMPLE: 2201892

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1080	108	80-120	
Calcium	mg/L	10	10.1	101	80-120	
Lithium	ug/L	1000	953	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2201893 2201894

Parameter	Units	60276003002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	53.8J	1000	1000	1130	1120	108	107	75-125	1	20	
Calcium	mg/L	80.3	10	10	90.0	89.6	96	93	75-125	0	20	
Lithium	ug/L	7.8J	1000	1000	990	991	98	98	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 536704 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006

METHOD BLANK: 2198659 Matrix: Water
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	0.15	08/06/18 13:45	
Arsenic	ug/L	<0.15	1.0	0.15	08/06/18 13:45	
Barium	ug/L	<0.34	1.0	0.34	08/06/18 13:45	
Beryllium	ug/L	<0.12	0.50	0.12	08/06/18 13:45	
Cadmium	ug/L	<0.070	0.50	0.070	08/06/18 13:45	
Chromium	ug/L	0.27J	1.0	0.19	08/06/18 13:45	
Cobalt	ug/L	<0.15	1.0	0.15	08/06/18 13:45	
Lead	ug/L	<0.12	1.0	0.12	08/06/18 13:45	
Molybdenum	ug/L	<0.13	1.0	0.13	08/06/18 13:45	
Selenium	ug/L	<0.16	1.0	0.16	08/06/18 13:45	
Thallium	ug/L	<0.14	1.0	0.14	08/06/18 13:45	

LABORATORY CONTROL SAMPLE: 2198660

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	38.7	97	80-120	
Arsenic	ug/L	40	38.9	97	80-120	
Barium	ug/L	40	39.6	99	80-120	
Beryllium	ug/L	40	38.4	96	80-120	
Cadmium	ug/L	40	38.5	96	80-120	
Chromium	ug/L	40	37.6	94	80-120	
Cobalt	ug/L	40	37.3	93	80-120	
Lead	ug/L	40	39.1	98	80-120	
Molybdenum	ug/L	40	39.6	99	80-120	
Selenium	ug/L	40	39.1	98	80-120	
Thallium	ug/L	40	36.7	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2198661 2198662

Parameter	Units	60275876001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.21J	40	40	38.8	37.4	96	93	75-125	4	20	
Arsenic	ug/L	1.0J	40	40	39.5	38.5	96	94	75-125	3	20	
Barium	ug/L	193	40	40	236	234	107	104	75-125	1	20	
Beryllium	ug/L	0.13J	40	40	37.2	35.6	93	89	75-125	4	20	
Cadmium	ug/L	0.16J	40	40	36.8	35.4	92	88	75-125	4	20	
Chromium	ug/L	0.30J	40	40	38.7	37.5	96	93	75-125	3	20	
Cobalt	ug/L	0.29J	40	40	37.1	35.9	92	89	75-125	3	20	

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2198661 2198662

Parameter	Units	60275876001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.28J	40	40	36.3	34.9	90	87	75-125	4	20	
Molybdenum	ug/L	31.1	40	40	74.7	72.8	109	104	75-125	3	20	
Selenium	ug/L	0.23J	40	40	36.9	36.1	92	90	75-125	2	20	
Thallium	ug/L	0.19J	40	40	35.0	33.7	87	84	75-125	4	20	

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537713 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60276003007

METHOD BLANK: 2202912 Matrix: Water
Associated Lab Samples: 60276003007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	0.15	08/08/18 16:07	
Arsenic	ug/L	<0.15	1.0	0.15	08/08/18 16:07	
Barium	ug/L	<0.34	1.0	0.34	08/08/18 16:07	
Beryllium	ug/L	<0.12	0.50	0.12	08/08/18 16:07	
Cadmium	ug/L	<0.070	0.50	0.070	08/08/18 16:07	
Chromium	ug/L	<0.19	1.0	0.19	08/08/18 16:07	
Cobalt	ug/L	<0.15	1.0	0.15	08/08/18 16:07	
Lead	ug/L	<0.12	1.0	0.12	08/08/18 16:07	
Molybdenum	ug/L	<0.13	1.0	0.13	08/08/18 16:07	
Selenium	ug/L	<0.16	1.0	0.16	08/08/18 16:07	
Thallium	ug/L	<0.14	1.0	0.14	08/08/18 16:07	

LABORATORY CONTROL SAMPLE: 2202913

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	39.2	98	80-120	
Arsenic	ug/L	40	38.0	95	80-120	
Barium	ug/L	40	38.7	97	80-120	
Beryllium	ug/L	40	36.8	92	80-120	
Cadmium	ug/L	40	38.8	97	80-120	
Chromium	ug/L	40	35.2	88	80-120	
Cobalt	ug/L	40	36.7	92	80-120	
Lead	ug/L	40	38.7	97	80-120	
Molybdenum	ug/L	40	40.5	101	80-120	
Selenium	ug/L	40	39.3	98	80-120	
Thallium	ug/L	40	36.3	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2202914 2202915

Parameter	Units	60276038001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	38.3	38.0	95	94	75-125	1	20	
Arsenic	ug/L	ND	40	40	38.7	38.7	95	95	75-125	0	20	
Barium	ug/L	139	40	40	178	176	97	93	75-125	1	20	
Beryllium	ug/L	ND	40	40	37.2	37.4	93	93	75-125	1	20	
Cadmium	ug/L	3.6	40	40	39.3	39.2	89	89	75-125	0	20	
Chromium	ug/L	1.5	40	40	37.2	36.9	89	88	75-125	1	20	
Cobalt	ug/L	ND	40	40	37.4	37.2	92	92	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2202914 2202915

Parameter	Units	60276038001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.016 mg/L	40	40	53.4	53.3	93	93	75-125	0	20	
Molybdenum	ug/L	ND	40	40	44.7	44.8	110	110	75-125	0	20	
Selenium	ug/L	ND	40	40	37.6	37.7	93	94	75-125	0	20	
Thallium	ug/L	ND	40	40	36.2	36.2	90	91	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537164 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60276003001

METHOD BLANK: 2200425 Matrix: Water
Associated Lab Samples: 60276003001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	08/01/18 08:36	

LABORATORY CONTROL SAMPLE: 2200426

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	998	100	80-120	

SAMPLE DUPLICATE: 2200427

Parameter	Units	60276013001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	579	578	0	10	

SAMPLE DUPLICATE: 2200428

Parameter	Units	60276049003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	638	637	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537166 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

METHOD BLANK: 2200433 Matrix: Water
Associated Lab Samples: 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	08/01/18 08:36	

LABORATORY CONTROL SAMPLE: 2200434

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2200435

Parameter	Units	60276003002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	360	366	2	10	

SAMPLE DUPLICATE: 2200436

Parameter	Units	60276013005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	459	455	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 536935 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

SAMPLE DUPLICATE: 2199648

Parameter	Units	60275876007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.0	5.6	7	10	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537316 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

METHOD BLANK: 2200931 Matrix: Water
Associated Lab Samples: 60276003001, 60276003002, 60276003003, 60276003004, 60276003005, 60276003006, 60276003007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	08/01/18 18:17	
Fluoride	mg/L	<0.063	0.20	0.063	08/01/18 18:17	
Sulfate	mg/L	<0.24	1.0	0.24	08/01/18 18:17	

LABORATORY CONTROL SAMPLE: 2200932

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Fluoride	mg/L	2.5	2.6	103	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2200933 2200934

Parameter	Units	60275876003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	23.9	10	10	34.9	35.3	110	114	80-120	1	15	

SAMPLE DUPLICATE: 2200935

Parameter	Units	60275876004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	28.7	28.9	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

QC Batch: 537783 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60276003001, 60276003004, 60276003005, 60276003006

METHOD BLANK: 2203374 Matrix: Water
Associated Lab Samples: 60276003001, 60276003004, 60276003005, 60276003006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.46	1.0	0.46	08/04/18 08:43	
Sulfate	mg/L	<0.24	1.0	0.24	08/04/18 08:43	

LABORATORY CONTROL SAMPLE: 2203375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Sulfate	mg/L	5	4.8	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2203376 2203377

Parameter	Units	60275741001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	87.8	250	250	330	324	97	95	80-120	2	15	
Sulfate	mg/L	422	250	250	731	696	124	110	80-120	5	15	M1

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

WORKORDER QUALIFIERS

WO: 60276003

[1]	Revision 1 8/10/2018
[2]	Ammended report to correct typo in lab entered field data

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60276003001	**MW-301**		538049		
60276003002	**MW-302**		538049		
60276003003	**MW-303**		538049		
60276003004	**MW-304**		538049		
60276003005	**MW-305**		538049		
60276003006	**MW-306**		538049		
60276003001	**MW-301**	EPA 3010	537525	EPA 6010	537636
60276003002	**MW-302**	EPA 3010	537525	EPA 6010	537636
60276003003	**MW-303**	EPA 3010	537525	EPA 6010	537636
60276003004	**MW-304**	EPA 3010	537525	EPA 6010	537636
60276003005	**MW-305**	EPA 3010	537525	EPA 6010	537636
60276003006	**MW-306**	EPA 3010	537525	EPA 6010	537636
60276003007	**FIELD BLANK**	EPA 3010	537525	EPA 6010	537636
60276003001	**MW-301**	EPA 3010	536704	EPA 6020	536774
60276003002	**MW-302**	EPA 3010	536704	EPA 6020	536774
60276003003	**MW-303**	EPA 3010	536704	EPA 6020	536774
60276003004	**MW-304**	EPA 3010	536704	EPA 6020	536774
60276003005	**MW-305**	EPA 3010	536704	EPA 6020	536774
60276003006	**MW-306**	EPA 3010	536704	EPA 6020	536774
60276003007	**FIELD BLANK**	EPA 3010	537713	EPA 6020	537849
60276003001	**MW-301**	EPA 7470	537541	EPA 7470	537615
60276003002	**MW-302**	EPA 7470	537541	EPA 7470	537615
60276003003	**MW-303**	EPA 7470	537541	EPA 7470	537615
60276003004	**MW-304**	EPA 7470	537541	EPA 7470	537615
60276003005	**MW-305**	EPA 7470	537541	EPA 7470	537615
60276003006	**MW-306**	EPA 7470	537541	EPA 7470	537615
60276003007	**FIELD BLANK**	EPA 7470	537541	EPA 7470	537615
60276003001	**MW-301**	SM 2540C	537164		
60276003002	**MW-302**	SM 2540C	537166		
60276003003	**MW-303**	SM 2540C	537166		
60276003004	**MW-304**	SM 2540C	537166		
60276003005	**MW-305**	SM 2540C	537166		
60276003006	**MW-306**	SM 2540C	537166		
60276003007	**FIELD BLANK**	SM 2540C	537166		
60276003001	**MW-301**	EPA 9040	536935		
60276003002	**MW-302**	EPA 9040	536935		
60276003003	**MW-303**	EPA 9040	536935		
60276003004	**MW-304**	EPA 9040	536935		
60276003005	**MW-305**	EPA 9040	536935		
60276003006	**MW-306**	EPA 9040	536935		
60276003007	**FIELD BLANK**	EPA 9040	536935		
60276003001	**MW-301**	EPA 9056	537316		
60276003001	**MW-301**	EPA 9056	537783		
60276003002	**MW-302**	EPA 9056	537316		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25218062.00. Sutherland Gen.
Pace Project No.: 60276003

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60276003003	**MW-303**	EPA 9056	537316		
60276003004	**MW-304**	EPA 9056	537316		
60276003004	**MW-304**	EPA 9056	537783		
60276003005	**MW-305**	EPA 9056	537316		
60276003005	**MW-305**	EPA 9056	537783		
60276003006	**MW-306**	EPA 9056	537316		
60276003006	**MW-306**	EPA 9056	537783		
60276003007	**FIELD BLANK**	EPA 9056	537316		

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Sample Condition Upon Receipt

WO# : 60276003

60276003

Client Name: SCS

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4368 7278 6394 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑

Thermometer Used: T299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.4 **Corr. Factor** +1.0 **Corrected** 0.6

Date and initials of person examining contents: JAK 7-27-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WP	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK Date: 7-27-2018

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive, Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone:	608-216-7362
Fax:	
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Hank Kapka 913-563-1404
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IA

Section D Required Client Information

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): 6010 Total Metals: N; 6020 Total Metals: N

Pace Project No./ Lab I.D.: 60276003

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Mercury	9056 Chloride-Fluoride-Sulfate	9040 pH	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-301	WT	G	xxx	xxx	7/26/18	1034	14.9	3	1		2							X	X	X	X	X	X		001
2	MW-302	WT	G	xxx	xxx	7/26/18	0926	12.4	3	1		2							X	X	X	X	X	X		002
3	MW-303	WT	G	xxx	xxx	7/26/18	0824	13.8	3	1		2							X	X	X	X	X	X		003
4	MW-304	WT	G	xxx	xxx	7/26/18	1324	14.0	3	1		2							X	X	X	X	X	X		004
5	MW-305	WT	G	xxx	xxx	7/26/18	1214	13.3	3	1		2							X	X	X	X	X	X		005
6	MW-306	WT	G	xxx	xxx	7/26/18	1129	14.0	3	1		2							X	X	X	X	X	X		006
7	FIELD BLANK	WT	G	xxx	xxx	7/26/18	0912		3	1		2							X	X	X	X	X	X		007
8																										
9																										
10																										
11																										
12																										

Handwritten annotation across rows 1–7: BP1U, BP3N(2)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charles [illegible] / SCS	7/26/18	1700	[signature] PACE	7-27-18	0915	0.6	Y	Y	Y
* As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

August 14, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on July 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60276007001	**MW-301**	Water	07/26/18 10:34	07/27/18 09:15
60276007002	**MW-302**	Water	07/26/18 09:26	07/27/18 09:15
60276007003	**MW-303**	Water	07/26/18 08:24	07/27/18 09:15
60276007004	**MW-304**	Water	07/26/18 13:24	07/27/18 09:15
60276007005	**MW-305**	Water	07/26/18 12:14	07/27/18 09:15
60276007006	**MW-306**	Water	07/26/18 11:29	07/27/18 09:15
60276007007	**FIELD BLANK**	Water	07/26/18 09:12	07/27/18 09:15

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60276007001	**MW-301**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276007002	**MW-302**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276007003	**MW-303**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276007004	**MW-304**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276007005	**MW-305**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276007006	**MW-306**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276007007	**FIELD BLANK**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: MW-301 **Lab ID: 60276007001** Collected: 07/26/18 10:34 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.713 ± 0.703 (1.07) C:NA T:81%**	pCi/L	08/10/18 20:05	13982-63-3	
Radium-228	EPA 904.0	**2.61 ± 0.959 (1.43) C:60% T:61%**	pCi/L	08/10/18 15:41	15262-20-1	
Total Radium	Total Radium Calculation	**3.32 ± 1.66 (2.50)**	pCi/L	08/14/18 15:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: MW-302 **Lab ID: 60276007002** Collected: 07/26/18 09:26 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.341 ± 0.580 (1.02) C:NA T:81%**	pCi/L	08/10/18 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.515 ± 0.514 (1.06) C:65% T:77%**	pCi/L	08/10/18 15:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.856 ± 1.09 (2.08)**	pCi/L	08/14/18 15:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: MW-303 **Lab ID: 60276007003** Collected: 07/26/18 08:24 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.316 ± 0.548 (0.979) C:NA T:72%**	pCi/L	08/10/18 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.428 ± 0.423 (0.869) C:64% T:84%**	pCi/L	08/10/18 15:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.744 ± 0.971 (1.85)**	pCi/L	08/14/18 15:50	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: MW-304 **Lab ID: 60276007004** Collected: 07/26/18 13:24 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.165 ± 0.561 (1.08) C:NA T:83%**	pCi/L	08/10/18 20:05	13982-63-3	
Radium-228	EPA 904.0	**0.391 ± 0.451 (0.946) C:64% T:80%**	pCi/L	08/10/18 15:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.556 ± 1.01 (2.03)**	pCi/L	08/14/18 15:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: MW-305 **Lab ID: 60276007005** Collected: 07/26/18 12:14 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.942 ± 0.649 (0.693) C:NA T:80%**	pCi/L	08/10/18 20:19	13982-63-3	
Radium-228	EPA 904.0	**0.330 ± 0.471 (1.01) C:64% T:80%**	pCi/L	08/10/18 15:39	15262-20-1	
Total Radium	Total Radium Calculation	**1.27 ± 1.12 (1.70)**	pCi/L	08/14/18 15:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: MW-306 **Lab ID: 60276007006** Collected: 07/26/18 11:29 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.573 (1.21) C:NA T:86%**	pCi/L	08/10/18 20:19	13982-63-3	
Radium-228	EPA 904.0	**-0.435 ± 0.412 (1.06) C:62% T:79%**	pCi/L	08/10/18 15:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.985 (2.27)**	pCi/L	08/14/18 15:50	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Sample: FIELD BLANK **Lab ID: 60276007007** Collected: 07/26/18 09:12 Received: 07/27/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.000 ± 0.427 (0.689) C:NA T:75%**	pCi/L	08/10/18 20:19	13982-63-3	
Radium-228	EPA 904.0	**-0.0836 ± 0.319 (0.765) C:75% T:85%**	pCi/L	08/13/18 16:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.000 ± 0.746 (1.45)**	pCi/L	08/14/18 15:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

QC Batch: 308184 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60276007007

METHOD BLANK: 1506271 Matrix: Water
Associated Lab Samples: 60276007007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.532 ± 0.361 (0.676) C:77% T:79%	pCi/L	08/13/18 16:38	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

QC Batch: 308174 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60276007001, 60276007002, 60276007003, 60276007004, 60276007005, 60276007006, 60276007007

METHOD BLANK: 1506242 Matrix: Water
Associated Lab Samples: 60276007001, 60276007002, 60276007003, 60276007004, 60276007005, 60276007006, 60276007007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.349 (0.563) C:NA T:85%	pCi/L	08/10/18 19:36	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

QC Batch: 308183 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60276007001, 60276007002, 60276007003, 60276007004, 60276007005, 60276007006

METHOD BLANK: 1506263 Matrix: Water
Associated Lab Samples: 60276007001, 60276007002, 60276007003, 60276007004, 60276007005, 60276007006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.784 ± 0.398 (0.700) C:77% T:91%	pCi/L	08/10/18 12:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60276007

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60276007001	**MW-301**	EPA 903.1	308174		
60276007002	**MW-302**	EPA 903.1	308174		
60276007003	**MW-303**	EPA 903.1	308174		
60276007004	**MW-304**	EPA 903.1	308174		
60276007005	**MW-305**	EPA 903.1	308174		
60276007006	**MW-306**	EPA 903.1	308174		
60276007007	**FIELD BLANK**	EPA 903.1	308174		
60276007001	**MW-301**	EPA 904.0	308183		
60276007002	**MW-302**	EPA 904.0	308183		
60276007003	**MW-303**	EPA 904.0	308183		
60276007004	**MW-304**	EPA 904.0	308183		
60276007005	**MW-305**	EPA 904.0	308183		
60276007006	**MW-306**	EPA 904.0	308183		
60276007007	**FIELD BLANK**	EPA 904.0	308184		
60276007001	**MW-301**	Total Radium Calculation	309563		
60276007002	**MW-302**	Total Radium Calculation	309563		
60276007003	**MW-303**	Total Radium Calculation	309563		
60276007004	**MW-304**	Total Radium Calculation	309563		
60276007005	**MW-305**	Total Radium Calculation	309563		
60276007006	**MW-306**	Total Radium Calculation	309563		
60276007007	**FIELD BLANK**	Total Radium Calculation	309563		

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Sample Condition Upon Receipt

WO# : 60276007

60276007

HWK

Client Name: SCS

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4368 7278 6340 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑

Thermometer Used: T299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 7.4 **Corr. Factor** +1.0 **Corrected** 8.4

Date and initials of person examining contents: SK 7-27-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK Date: 7-30-2018

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical
www.pacelabs.com

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A — **Required** Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone:	608-216-7362 Fax:
Requested Due Date/TAT:	

Section B — **Required** Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C — Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Hank Kapka 913-563-1404
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: IA

Section D — **Required** Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium												Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
				Requested Analysis Filtered (Y/N)																																
1	MW-301	WT	G	xxx	xxx	7/26/18	1034	14.9	2			2							X	X	X	BTEX(2)													001
2	MW-302	WT	G	xxx	xxx	7/26/18	0926	12.4	2			2							X	X	X															002
3	MW-303	WT	G	xxx	xxx	7/26/18	0824	13.8	2			2							X	X	X															003
4	MW-304	WT	G	xxx	xxx	7/26/18	1324	14.0	2			2							X	X	X															004
5	MW-305	WT	G	xxx	xxx	7/26/18	1214	13.3	2			2							X	X	X															005
6	MW-306	WT	G	xxx	xxx	7/26/18	1124	14.0	2			2							X	X	X															006
7	FIELD BLANK	WT	G	xxx	xxx	7/26/18	0912		2			2							X	X	X															007
8																																			
9																																			
10																																			
11																																			
12																																			

60276007

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charles Ann / SCS	7/26/18	1700	PACE	7-27-18	0915	8.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

08/30/2019 - Classification: Internal - ECRM67001809

Chain of Custody

Pace Analytical® www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: IA

Workorder: 60276007 **Workorder Name:** SUTHERLAND GENERATING STATION **Owner Received Date:** 7/27/2018 **Results Requested By:** 8/17/2018

Report To	Subcontract To
Hank Kapka Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#: 30260894

30260894

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Requested Analysis: Ra 226/ Ra 228	Requested Analysis: Total Ra	LAB USE ONLY
1	MW-301	PS	7/26/2018 10:34	60276007001	Water	1	X	X	001
2	MW-302	PS	7/26/2018 09:26	60276007002	Water	1	X	X	002
3	MW-303	PS	7/26/2018 08:24	60276007003	Water	1	X	X	003
4	MW-304	PS	7/26/2018 13:24	60276007004	Water	1	X	X	004
5	MW-305	PS	7/26/2018 12:14	60276007005	Water	1	X	X	005
6	MW-306	PS	7/26/2018 11:29	60276007006	Water	1	X	X	006
7	FIELD BLANK	PS	7/26/2018 09:12	60276007007	Water	1	X	X	007

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PASI	7/31/18 1700	[signature]	8-1-18 940
2				
3				

Comments

Cooler Temperature on Receipt N/A °C Custody Seal (Y) or N Received on Ice Y or (N) Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: PACE LS

Project # 30260894

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET

LIMS Login BXH

Tracking #: 4542 2779 0401

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 100367I

Date and Initials of person examining contents: ET 8-1-18

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. pH<2 Initial when completed ET Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present: Trip Blank Custody Seals Present		✓	✓	18.
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ET Date: 8-1-18

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A5 Round 5 Background Sampling, Analytical Laboratory Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

September 27, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on September 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather M. Wilson

Heather Wilson for
Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Accounts Payable, SCS Engineers
Jess Valcheff, SCS Engeineers

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60280434001	**MW-301**	Water	09/11/18 09:49	09/13/18 09:15
60280434002	**MW-302**	Water	09/11/18 08:36	09/13/18 09:15
60280434003	**MW-303**	Water	09/11/18 15:14	09/13/18 09:15
60280434004	**MW-304**	Water	09/11/18 11:19	09/13/18 09:15
60280434005	**MW-305**	Water	09/11/18 12:34	09/13/18 09:15
60280434006	**MW-306**	Water	09/11/18 14:14	09/13/18 09:15
60280434007	**FIELD BLANK**	Water	09/11/18 08:10	09/13/18 09:15

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60280434001	**MW-301**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60280434002	**MW-302**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60280434003	**MW-303**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60280434004	**MW-304**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60280434005	**MW-305**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60280434006	**MW-306**	EPA 6010	TDS	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K
60280434007	**FIELD BLANK**	EPA 6010	TDS	3	PASI-K

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(913)599-5665

SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	OL	3	PASI-K

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: MW-301 **Lab ID: 60280434001** Collected: 09/11/18 09:49 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		09/11/18 09:49		
Collected Date	**09/11/2018**				1		09/11/18 09:49		
Collected Time	**09:49**				1		09/11/18 09:49		
Field pH	**6.82**	Std. Units	0.10	0.050	1		09/11/18 09:49		
Field Temperature	**19.2**	deg C	0.50	0.25	1		09/11/18 09:49		
Field Specific Conductance	**688**	umhos/cm	1.0	1.0	1		09/11/18 09:49		
Oxygen, Dissolved	**0.24**	mg/L			1		09/11/18 09:49	7782-44-7	
REDOX	**117.4**	mV			1		09/11/18 09:49		
Turbidity	**410.3**	NTU	1.0	1.0	1		09/11/18 09:49		
Groundwater Elevation	**857.41**	feet			1		09/11/18 09:49		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**234**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 17:58	7440-42-8	
Calcium	**89.8**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 17:58	7440-70-2	
Lithium	**12.6**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 17:58	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.78J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:07	7440-36-0	
Arsenic	**16.2**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:07	7440-38-2	
Barium	**1110**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 15:07	7440-39-3	
Beryllium	**1.3**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 15:07	7440-41-7	
Cadmium	**0.60**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 15:07	7440-43-9	
Chromium	**20.8**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 15:07	7440-47-3	
Cobalt	**21.7**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:07	7440-48-4	
Lead	**19.1**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 15:07	7439-92-1	
Molybdenum	**13.6**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 15:07	7439-98-7	
Selenium	**8.3**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 15:07	7782-49-2	
Thallium	**0.43J**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 15:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**439**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**6.7**	Std. Units	0.10	0.10	1		09/17/18 09:39		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**38.2**	mg/L	5.0	1.4	5		09/23/18 09:41	16887-00-6	
Fluoride	**0.20J**	mg/L	0.20	0.063	1		09/22/18 19:49	16984-48-8	
Sulfate	**71.9**	mg/L	5.0	1.2	5		09/23/18 09:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: MW-302 **Lab ID: 60280434002** Collected: 09/11/18 08:36 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		09/11/18 08:36		
Collected Date	**09/11/2018**				1		09/11/18 08:36		
Collected Time	**08:36**				1		09/11/18 08:36		
Field pH	**7.30**	Std. Units	0.10	0.050	1		09/11/18 08:36		
Field Temperature	**13.9**	deg C	0.50	0.25	1		09/11/18 08:36		
Field Specific Conductance	**593**	umhos/cm	1.0	1.0	1		09/11/18 08:36		
Oxygen, Dissolved	**0.26**	mg/L			1		09/11/18 08:36	7782-44-7	
REDOX	**-58.3**	mV			1		09/11/18 08:36		
Turbidity	**3.03**	NTU	1.0	1.0	1		09/11/18 08:36		
Groundwater Elevation	**857.06**	feet			1		09/11/18 08:36		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**22.4J**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 18:00	7440-42-8	
Calcium	**77.9**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 18:00	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 18:00	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.31J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:09	7440-36-0	
Arsenic	**8.5**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:09	7440-38-2	
Barium	**117**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 15:09	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 15:09	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 15:09	7440-43-9	
Chromium	**0.26J**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 15:09	7440-47-3	
Cobalt	**4.2**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:09	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 15:09	7439-92-1	
Molybdenum	**1.2**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 15:09	7439-98-7	
Selenium	**0.58J**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 15:09	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 15:09	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**356**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**6.9**	Std. Units	0.10	0.10	1		09/17/18 09:37		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**10.1**	mg/L	1.0	0.46	1		09/22/18 20:03	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.063	1		09/22/18 20:03	16984-48-8	
Sulfate	**52.5**	mg/L	5.0	1.2	5		09/23/18 09:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: MW-303 **Lab ID: 60280434003** Collected: 09/11/18 15:14 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		09/11/18 15:14		
Collected Date	**09/11/2018**				1		09/11/18 15:14		
Collected Time	**15:14**				1		09/11/18 15:14		
Field pH	**7.82**	Std. Units	0.10	0.050	1		09/11/18 15:14		
Field Temperature	**16.0**	deg C	0.50	0.25	1		09/11/18 15:14		
Field Specific Conductance	**921**	umhos/cm	1.0	1.0	1		09/11/18 15:14		
Oxygen, Dissolved	**0.24**	mg/L			1		09/11/18 15:14	7782-44-7	
REDOX	**106.5**	mV			1		09/11/18 15:14		
Turbidity	**1.77**	NTU	1.0	1.0	1		09/11/18 15:14		
Groundwater Elevation	**855.96**	feet			1		09/11/18 15:14		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**597**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 18:11	7440-42-8	
Calcium	**109**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 18:11	7440-70-2	
Lithium	**35.3**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 18:11	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.18J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:12	7440-36-0	
Arsenic	**2.2**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:12	7440-38-2	
Barium	**33.9**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 15:12	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 15:12	7440-41-7	
Cadmium	**0.093J**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 15:12	7440-43-9	
Chromium	**0.29J**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 15:12	7440-47-3	
Cobalt	**0.58J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:12	7440-48-4	
Lead	**0.22J**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 15:12	7439-92-1	
Molybdenum	**26.3**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 15:12	7439-98-7	
Selenium	**0.18J**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 15:12	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 15:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**628**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		09/17/18 09:47		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**32.9**	mg/L	5.0	1.4	5		09/23/18 11:03	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	0.063	1		09/22/18 20:18	16984-48-8	
Sulfate	**195**	mg/L	20.0	4.8	20		09/23/18 11:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: MW-304 **Lab ID: 60280434004** Collected: 09/11/18 11:19 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		09/11/18 11:19		
Collected Date	**09/11/2018**				1		09/11/18 11:19		
Collected Time	**11:19**				1		09/11/18 11:19		
Field pH	**7.04**	Std. Units	0.10	0.050	1		09/11/18 11:19		
Field Temperature	**16.3**	deg C	0.50	0.25	1		09/11/18 11:19		
Field Specific Conductance	**1,175**	umhos/cm	1.0	1.0	1		09/11/18 11:19		
Oxygen, Dissolved	**0.08**	mg/L			1		09/11/18 11:19	7782-44-7	
REDOX	**53.4**	mV			1		09/11/18 11:19		
Turbidity	**1.35**	NTU	1.0	1.0	1		09/11/18 11:19		
Groundwater Elevation	**855.66**	feet			1		09/11/18 11:19		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**715**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 18:13	7440-42-8	
Calcium	**151**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 18:13	7440-70-2	
Lithium	**10.9**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 18:13	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.28J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:18	7440-36-0	
Arsenic	**0.64J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:18	7440-38-2	
Barium	**24.1**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 15:18	7440-39-3	
Beryllium	**0.19J**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 15:18	7440-41-7	
Cadmium	**0.30J**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 15:18	7440-43-9	
Chromium	**0.36J**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 15:18	7440-47-3	
Cobalt	**0.35J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:18	7440-48-4	
Lead	**0.32J**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 15:18	7439-92-1	
Molybdenum	**6.6**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 15:18	7439-98-7	
Selenium	**0.32J**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 15:18	7782-49-2	
Thallium	**0.26J**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 15:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:35	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**860**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**6.9**	Std. Units	0.10	0.10	1		09/17/18 09:41		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**29.7**	mg/L	5.0	1.4	5		09/23/18 11:30	16887-00-6	
Fluoride	**0.55**	mg/L	0.20	0.063	1		09/22/18 20:32	16984-48-8	
Sulfate	**405**	mg/L	50.0	12.0	50		09/23/18 11:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: MW-305 **Lab ID: 60280434005** Collected: 09/11/18 12:34 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		09/11/18 12:34		
Collected Date	**09/11/2018**				1		09/11/18 12:34		
Collected Time	**12:34**				1		09/11/18 12:34		
Field pH	**7.10**	Std. Units	0.10	0.050	1		09/11/18 12:34		
Field Temperature	**17.9**	deg C	0.50	0.25	1		09/11/18 12:34		
Field Specific Conductance	**1,029**	umhos/cm	1.0	1.0	1		09/11/18 12:34		
Oxygen, Dissolved	**0.08**	mg/L			1		09/11/18 12:34	7782-44-7	
REDOX	**-77.2**	mV			1		09/11/18 12:34		
Turbidity	**15.83**	NTU	1.0	1.0	1		09/11/18 12:34		
Groundwater Elevation	**855.94**	feet			1		09/11/18 12:34		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**992**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 18:16	7440-42-8	
Calcium	**124**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 18:16	7440-70-2	
Lithium	**16.2**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 18:16	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:21	7440-36-0	
Arsenic	**9.1**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:21	7440-38-2	
Barium	**42.2**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 15:21	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 15:21	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 15:21	7440-43-9	
Chromium	**1.3**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 15:21	7440-47-3	
Cobalt	**1.6**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:21	7440-48-4	
Lead	**0.76J**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 15:21	7439-92-1	
Molybdenum	**35.3**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 15:21	7439-98-7	
Selenium	**1.1**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 15:21	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 15:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**734**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**6.9**	Std. Units	0.10	0.10	1		09/17/18 09:43		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**25.3**	mg/L	5.0	1.4	5		09/23/18 11:58	16887-00-6	
Fluoride	**0.72**	mg/L	0.20	0.063	1		09/22/18 21:15	16984-48-8	
Sulfate	**407**	mg/L	50.0	12.0	50		09/23/18 12:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: MW-306 **Lab ID: 60280434006** Collected: 09/11/18 14:14 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		09/11/18 14:14		
Collected Date	**09/11/2018**				1		09/11/18 14:14		
Collected Time	**14:14**				1		09/11/18 14:14		
Field pH	**7.68**	Std. Units	0.10	0.050	1		09/11/18 14:14		
Field Temperature	**15.7**	deg C	0.50	0.25	1		09/11/18 14:14		
Field Specific Conductance	**1,469**	umhos/cm	1.0	1.0	1		09/11/18 14:14		
Oxygen, Dissolved	**0.03**	mg/L			1		09/11/18 14:14	7782-44-7	
REDOX	**-172.7**	mV			1		09/11/18 14:14		
Turbidity	**1.00**	NTU	1.0	1.0	1		09/11/18 14:14		
Groundwater Elevation	**856.48**	feet			1		09/11/18 14:14		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**2160**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 18:18	7440-42-8	
Calcium	**201**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 18:18	7440-70-2	
Lithium	**31.5**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 18:18	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:23	7440-36-0	
Arsenic	**3.8**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:23	7440-38-2	
Barium	**87.4**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 15:23	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 15:23	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 15:23	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 15:23	7440-47-3	
Cobalt	**0.57J**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 15:23	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 15:23	7439-92-1	
Molybdenum	**38.2**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 15:23	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 15:23	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 15:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1170**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**7.4**	Std. Units	0.10	0.10	1		09/17/18 09:45		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**29.7**	mg/L	5.0	1.4	5		09/23/18 12:25	16887-00-6	
Fluoride	**0.63**	mg/L	0.20	0.063	1		09/22/18 21:29	16984-48-8	
Sulfate	**736**	mg/L	50.0	12.0	50		09/23/18 12:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Sample: FIELD BLANK **Lab ID: 60280434007** Collected: 09/11/18 08:10 Received: 09/13/18 09:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**<12.5**	ug/L	100	12.5	1	09/13/18 16:00	09/21/18 18:20	7440-42-8	
Calcium	**0.13J**	mg/L	0.20	0.054	1	09/13/18 16:00	09/21/18 18:20	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	09/13/18 16:00	09/21/18 18:20	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 16:37	7440-36-0	
Arsenic	**<0.15**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 16:37	7440-38-2	
Barium	**<0.34**	ug/L	1.0	0.34	1	09/13/18 16:00	09/20/18 16:37	7440-39-3	
Beryllium	**<0.12**	ug/L	0.50	0.12	1	09/13/18 16:00	09/20/18 16:37	7440-41-7	
Cadmium	**<0.070**	ug/L	0.50	0.070	1	09/13/18 16:00	09/20/18 16:37	7440-43-9	
Chromium	**<0.19**	ug/L	1.0	0.19	1	09/13/18 16:00	09/20/18 16:37	7440-47-3	
Cobalt	**<0.15**	ug/L	1.0	0.15	1	09/13/18 16:00	09/20/18 16:37	7440-48-4	
Lead	**<0.12**	ug/L	1.0	0.12	1	09/13/18 16:00	09/20/18 16:37	7439-92-1	
Molybdenum	**<0.13**	ug/L	1.0	0.13	1	09/13/18 16:00	09/20/18 16:37	7439-98-7	
Selenium	**<0.16**	ug/L	1.0	0.16	1	09/13/18 16:00	09/20/18 16:37	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/13/18 16:00	09/20/18 16:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	09/14/18 11:30	09/14/18 17:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**6.7**	mg/L	5.0	5.0	1		09/17/18 10:19		
9040 pH	Analytical Method: EPA 9040								
pH	**5.8**	Std. Units	0.10	0.10	1		09/17/18 09:33		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**<0.46**	mg/L	1.0	0.46	1		09/22/18 21:43	16887-00-6	
Fluoride	**<0.063**	mg/L	0.20	0.063	1		09/22/18 21:43	16984-48-8	
Sulfate	**0.77J**	mg/L	1.0	0.24	1		09/22/18 21:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 544625 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

METHOD BLANK: 2231656 Matrix: Water
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	09/14/18 17:15	

LABORATORY CONTROL SAMPLE: 2231657

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2231658 2231659

Parameter	Units	60280434001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.090	5	5	5.1	5.1	101	102	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 544483 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

METHOD BLANK: 2230862 Matrix: Water
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	09/21/18 17:56	
Calcium	mg/L	<0.054	0.20	0.054	09/21/18 17:56	
Lithium	ug/L	<4.6	10.0	4.6	09/21/18 17:56	

LABORATORY CONTROL SAMPLE: 2230863

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	931	93	80-120	
Calcium	mg/L	10	9.8	98	80-120	
Lithium	ug/L	1000	944	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2230864 2230865

Parameter	Units	60280434002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	22.4J	1000	1000	992	1000	97	98	75-125	1	20	
Calcium	mg/L	77.9	10	10	86.9	86.9	91	91	75-125	0	20	
Lithium	ug/L	<4.6	1000	1000	966	969	96	97	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 544482 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

METHOD BLANK: 2230858 Matrix: Water
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	0.15	09/20/18 15:03	
Arsenic	ug/L	<0.15	1.0	0.15	09/20/18 15:03	
Barium	ug/L	<0.34	1.0	0.34	09/20/18 15:03	
Beryllium	ug/L	<0.12	0.50	0.12	09/20/18 15:03	
Cadmium	ug/L	<0.070	0.50	0.070	09/20/18 15:03	
Chromium	ug/L	<0.19	1.0	0.19	09/20/18 15:03	
Cobalt	ug/L	<0.15	1.0	0.15	09/20/18 15:03	
Lead	ug/L	<0.12	1.0	0.12	09/20/18 15:03	
Molybdenum	ug/L	<0.13	1.0	0.13	09/20/18 15:03	
Selenium	ug/L	<0.16	1.0	0.16	09/20/18 15:03	
Thallium	ug/L	<0.14	1.0	0.14	09/20/18 15:03	

LABORATORY CONTROL SAMPLE: 2230859

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	40.3	101	80-120	
Arsenic	ug/L	40	39.2	98	80-120	
Barium	ug/L	40	38.5	96	80-120	
Beryllium	ug/L	40	38.5	96	80-120	
Cadmium	ug/L	40	39.5	99	80-120	
Chromium	ug/L	40	39.1	98	80-120	
Cobalt	ug/L	40	38.1	95	80-120	
Lead	ug/L	40	39.0	98	80-120	
Molybdenum	ug/L	40	39.5	99	80-120	
Selenium	ug/L	40	38.0	95	80-120	
Thallium	ug/L	40	38.3	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2230860 2230861

Parameter	Units	60280434003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.18J	40	40	40.5	40.6	101	101	75-125	0	20	
Arsenic	ug/L	2.2	40	40	41.7	41.6	99	99	75-125	0	20	
Barium	ug/L	33.9	40	40	70.3	70.3	91	91	75-125	0	20	
Beryllium	ug/L	<0.12	40	40	37.0	37.8	92	94	75-125	2	20	
Cadmium	ug/L	0.093J	40	40	38.2	38.2	95	95	75-125	0	20	
Chromium	ug/L	0.29J	40	40	38.7	38.6	96	96	75-125	0	20	
Cobalt	ug/L	0.58J	40	40	36.9	36.8	91	90	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2230860 2230861

Parameter	Units	60280434003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.22J	40	40	39.7	39.8	99	99	75-125	0	20	
Molybdenum	ug/L	26.3	40	40	66.7	67.0	101	102	75-125	0	20	
Selenium	ug/L	0.18J	40	40	36.7	36.4	91	91	75-125	1	20	
Thallium	ug/L	<0.14	40	40	38.8	39.4	97	98	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 544790 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

METHOD BLANK: 2232779 Matrix: Water
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	09/17/18 10:19	

LABORATORY CONTROL SAMPLE: 2232780

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2232781

Parameter	Units	60280382001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	7620	7420	3	10	

SAMPLE DUPLICATE: 2232782

Parameter	Units	60280434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	439	427	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 544780 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

SAMPLE DUPLICATE: 2232762

Parameter	Units	60280434007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	5.8	5.5	6	10	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 545821 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

METHOD BLANK: 2237208 Matrix: Water
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006, 60280434007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	09/22/18 16:30	
Fluoride	mg/L	<0.19	0.20	0.19	09/22/18 16:30	
Sulfate	mg/L	<0.24	1.0	0.24	09/22/18 16:30	

LABORATORY CONTROL SAMPLE: 2237209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Fluoride	mg/L	2.5	2.4	96	80-120	
Sulfate	mg/L	5	4.9	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2237210 2237211

Parameter	Units	2083613001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	112	50	50	173	166	123	109	80-120	4	15	M1
Fluoride	mg/L	<2.0	25	25	27.1	27.4	106	107	80-120	1	15	
Sulfate	mg/L	8500	2500	2500	11000	11200	101	107	80-120	1	15	E

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

QC Batch: 545851 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006

METHOD BLANK: 2237824 Matrix: Water
Associated Lab Samples: 60280434001, 60280434002, 60280434003, 60280434004, 60280434005, 60280434006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	09/23/18 07:50	
Sulfate	mg/L	<0.24	1.0	0.24	09/23/18 07:50	

LABORATORY CONTROL SAMPLE: 2237825

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	80-120	
Sulfate	mg/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2237827 2237828

Parameter	Units	60280434002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	52.5	25	25	80.6	80.9	113	113	80-120	0	15	

SAMPLE DUPLICATE: 2237826

Parameter	Units	2083613002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	8.1	9.2	13	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60280434001	**MW-301**		545662		
60280434002	**MW-302**		545662		
60280434003	**MW-303**		545662		
60280434004	**MW-304**		545662		
60280434005	**MW-305**		545662		
60280434006	**MW-306**		545662		
60280434001	**MW-301**	EPA 3010	544483	EPA 6010	544528
60280434002	**MW-302**	EPA 3010	544483	EPA 6010	544528
60280434003	**MW-303**	EPA 3010	544483	EPA 6010	544528
60280434004	**MW-304**	EPA 3010	544483	EPA 6010	544528
60280434005	**MW-305**	EPA 3010	544483	EPA 6010	544528
60280434006	**MW-306**	EPA 3010	544483	EPA 6010	544528
60280434007	**FIELD BLANK**	EPA 3010	544483	EPA 6010	544528
60280434001	**MW-301**	EPA 3010	544482	EPA 6020	544529
60280434002	**MW-302**	EPA 3010	544482	EPA 6020	544529
60280434003	**MW-303**	EPA 3010	544482	EPA 6020	544529
60280434004	**MW-304**	EPA 3010	544482	EPA 6020	544529
60280434005	**MW-305**	EPA 3010	544482	EPA 6020	544529
60280434006	**MW-306**	EPA 3010	544482	EPA 6020	544529
60280434007	**FIELD BLANK**	EPA 3010	544482	EPA 6020	544529
60280434001	**MW-301**	EPA 7470	544625	EPA 7470	544683
60280434002	**MW-302**	EPA 7470	544625	EPA 7470	544683
60280434003	**MW-303**	EPA 7470	544625	EPA 7470	544683
60280434004	**MW-304**	EPA 7470	544625	EPA 7470	544683
60280434005	**MW-305**	EPA 7470	544625	EPA 7470	544683
60280434006	**MW-306**	EPA 7470	544625	EPA 7470	544683
60280434007	**FIELD BLANK**	EPA 7470	544625	EPA 7470	544683
60280434001	**MW-301**	SM 2540C	544790		
60280434002	**MW-302**	SM 2540C	544790		
60280434003	**MW-303**	SM 2540C	544790		
60280434004	**MW-304**	SM 2540C	544790		
60280434005	**MW-305**	SM 2540C	544790		
60280434006	**MW-306**	SM 2540C	544790		
60280434007	**FIELD BLANK**	SM 2540C	544790		
60280434001	**MW-301**	EPA 9040	544780		
60280434002	**MW-302**	EPA 9040	544780		
60280434003	**MW-303**	EPA 9040	544780		
60280434004	**MW-304**	EPA 9040	544780		
60280434005	**MW-305**	EPA 9040	544780		
60280434006	**MW-306**	EPA 9040	544780		
60280434007	**FIELD BLANK**	EPA 9040	544780		
60280434001	**MW-301**	EPA 9056	545821		
60280434001	**MW-301**	EPA 9056	545851		
60280434002	**MW-302**	EPA 9056	545821		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280434

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60280434002	**MW-302**	EPA 9056	545851		
60280434003	**MW-303**	EPA 9056	545821		
60280434003	**MW-303**	EPA 9056	545851		
60280434004	**MW-304**	EPA 9056	545821		
60280434004	**MW-304**	EPA 9056	545851		
60280434005	**MW-305**	EPA 9056	545821		
60280434005	**MW-305**	EPA 9056	545851		
60280434006	**MW-306**	EPA 9056	545821		
60280434006	**MW-306**	EPA 9056	545851		
60280434007	**FIELD BLANK**	EPA 9056	545821		

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Sample Condition Upon Receipt

WO# : 60280434

60280434

Client Name: SCS

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4542 2781 3005 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑

Thermometer Used: T-298 **Type of Ice:** (Wet) Blue None

HK

Date and initials of person examining contents: JDK, 9-13-18

Cooler Temperature (°C): **As-read** 5.0 **Corr. Factor** 0.0 **Corrected** 5.0

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ REVIEWED By Hank Kapka at 2:14 pm, 9/13/18 Date: _____

F-KS-C-003-Rev.11, February 28, 2018

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Page: of

Section A Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone:	608-216-7362
Fax:	
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Hank Kapka 913-563-1404
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IA

08/30/2019 - Classification: Internal - ECRM6709180

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Mercury	9056 Chloride-Fluoride-Sulfate	9040 pH	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60280434
																		N	N							
1	MW-301	WT	G	xxx	xxx	9/11/18	0949		3	1		2							X	X	X	X	X	X			001
2	MW-302	WT	G	xxx	xxx		0836		3	1		2							X	X	X	X	X	X			002
3	MW-303	WT	G	xxx	xxx		1514		3	1		2							X	X	X	X	X	X			003
4	MW-304	WT	G	xxx	xxx		1119		3	1		2							X	X	X	X	X	X			004
5	MW-305	WT	G	xxx	xxx		1234		3	1		2							X	X	X	X	X	X			005
6	MW-306	WT	G	xxx	xxx		1414		3	1		2							X	X	X	X	X	X			006
7	FIELD BLANK	WT	G	xxx	xxx		0810		3	1		2							X	X	X	X	X	X			007
8																											
9																											
10																											
11																											
12																											

3P1U, 3P3U(2)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charles A Bills SCS	9/11/18	1700	Pace	9-13-18	0915	5.0	Y	Y	Y
* As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Charles A Bills

SIGNATURE of SAMPLER: Charles A Bills DATE Signed (MM/DD/YY): 9/11/18

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

September 27, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on September 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60280458001	**MW-301**	Water	09/11/18 09:49	09/13/18 09:15
60280458002	**MW-302**	Water	09/11/18 08:36	09/13/18 09:15
60280458003	**MW-303**	Water	09/11/18 15:14	09/13/18 09:15
60280458004	**MW-304**	Water	09/11/18 11:19	09/13/18 09:15
60280458005	**MW-305**	Water	09/11/18 12:34	09/13/18 09:15
60280458006	**MW-306**	Water	09/11/18 14:14	09/13/18 09:15
60280458007	**FIELD BLANK**	Water	09/11/18 08:10	09/13/18 09:15

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60280458001	**MW-301**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280458002	**MW-302**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280458003	**MW-303**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280458004	**MW-304**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280458005	**MW-305**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280458006	**MW-306**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280458007	**FIELD BLANK**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: MW-301 **Lab ID: 60280458001** Collected: 09/11/18 09:49 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.58 ± 0.899 (1.09) C:NA T:75%**	pCi/L	09/26/18 20:06	13982-63-3	
Radium-228	EPA 904.0	**0.949 ± 0.531 (0.941) C:72% T:61%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**2.53 ± 1.43 (2.03)**	pCi/L	09/27/18 14:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: MW-302 **Lab ID: 60280458002** Collected: 09/11/18 08:36 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.758 ± 0.595 (0.827) C:NA T:80%**	pCi/L	09/26/18 20:21	13982-63-3	
Radium-228	EPA 904.0	**0.829 ± 0.994 (2.10) C:68% T:38%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**1.59 ± 1.59 (2.93)**	pCi/L	09/27/18 14:44	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: MW-303 **Lab ID: 60280458003** Collected: 09/11/18 15:14 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0751 ± 0.442 (0.902) C:NA T:70%**	pCi/L	09/26/18 20:21	13982-63-3	
Radium-228	EPA 904.0	**0.242 ± 0.368 (0.795) C:71% T:82%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**0.317 ± 0.810 (1.70)**	pCi/L	09/27/18 14:44	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: MW-304 **Lab ID: 60280458004** Collected: 09/11/18 11:19 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.125 ± 0.387 (0.750) C:NA T:90%**	pCi/L	09/26/18 20:21	13982-63-3	
Radium-228	EPA 904.0	**0.0761 ± 0.365 (0.831) C:72% T:83%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**0.201 ± 0.752 (1.58)**	pCi/L	09/27/18 14:44	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: MW-305 **Lab ID: 60280458005** Collected: 09/11/18 12:34 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.638 ± 0.611 (0.930) C:NA T:81%**	pCi/L	09/26/18 20:21	13982-63-3	
Radium-228	EPA 904.0	**0.516 ± 0.503 (1.03) C:60% T:70%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**1.15 ± 1.11 (1.96)**	pCi/L	09/27/18 14:44	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: MW-306 **Lab ID: 60280458006** Collected: 09/11/18 14:14 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.361 ± 0.375 (0.558) C:NA T:91%**	pCi/L	09/26/18 20:21	13982-63-3	
Radium-228	EPA 904.0	**0.621 ± 0.405 (0.761) C:74% T:78%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**0.982 ± 0.780 (1.32)**	pCi/L	09/27/18 14:44	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Sample: FIELD BLANK **Lab ID: 60280458007** Collected: 09/11/18 08:10 Received: 09/13/18 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.561 ± 0.476 (0.590) C:NA T:73%**	pCi/L	09/26/18 20:21	13982-63-3	
Radium-228	EPA 904.0	**0.285 ± 0.382 (0.815) C:70% T:80%**	pCi/L	09/25/18 14:23	15262-20-1	
Total Radium	Total Radium Calculation	**0.846 ± 0.858 (1.41)**	pCi/L	09/27/18 14:44	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

QC Batch: 313268 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60280458001, 60280458002, 60280458003, 60280458004, 60280458005, 60280458006, 60280458007

METHOD BLANK: 1529600 Matrix: Water
Associated Lab Samples: 60280458001, 60280458002, 60280458003, 60280458004, 60280458005, 60280458006, 60280458007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.329 ± 0.343 (0.484) C:NA T:86%	pCi/L	09/26/18 20:06	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

QC Batch: 313162 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60280458001, 60280458002, 60280458003, 60280458004, 60280458005, 60280458006, 60280458007

METHOD BLANK: 1529371 Matrix: Water
Associated Lab Samples: 60280458001, 60280458002, 60280458003, 60280458004, 60280458005, 60280458006, 60280458007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0582 ± 0.371 (0.851) C:74% T:75%	pCi/L	09/25/18 14:22	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60280458

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60280458001	**MW-301**	EPA 903.1	313268		
60280458002	**MW-302**	EPA 903.1	313268		
60280458003	**MW-303**	EPA 903.1	313268		
60280458004	**MW-304**	EPA 903.1	313268		
60280458005	**MW-305**	EPA 903.1	313268		
60280458006	**MW-306**	EPA 903.1	313268		
60280458007	**FIELD BLANK**	EPA 903.1	313268		
60280458001	**MW-301**	EPA 904.0	313162		
60280458002	**MW-302**	EPA 904.0	313162		
60280458003	**MW-303**	EPA 904.0	313162		
60280458004	**MW-304**	EPA 904.0	313162		
60280458005	**MW-305**	EPA 904.0	313162		
60280458006	**MW-306**	EPA 904.0	313162		
60280458007	**FIELD BLANK**	EPA 904.0	313162		
60280458001	**MW-301**	Total Radium Calculation	314658		
60280458002	**MW-302**	Total Radium Calculation	314658		
60280458003	**MW-303**	Total Radium Calculation	314658		
60280458004	**MW-304**	Total Radium Calculation	314658		
60280458005	**MW-305**	Total Radium Calculation	314658		
60280458006	**MW-306**	Total Radium Calculation	314658		
60280458007	**FIELD BLANK**	Total Radium Calculation	314658		

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60280458

60280458

Client Name: SCS Engineers

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4542 2781 3010 Pace Shipping Label Used? Yes ☑ No ☐

Custody Seal on Cooler/Box Present: Yes ☑ No ☐ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑ XPIC

Thermometer Used: T299 Type of Ice: ☑ Wet Blue None

Cooler Temperature (°C): As-read 1.2 Corr. Factor +0.1 Corrected 1.3

Date and initials of person examining contents: 9·13·18 HF

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☑No ☐N/A	
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☑No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK Date: 9-13-2018

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A — Required Client Information:

Company:	SCS Engineers
Address:	2830 Dairy Drive
	Madison WI 53718
Email To:	mblodgett@scsengineers.com
Phone:	608-216-7362 Fax:
Requested Due Date/TAT:	

Section B — Required Project Information:

Report To:	Meghan Blodgett
Copy To:	Tom Karwaski
Purchase Order No.:	
Project Name:	Sutherland Generating Station
Project Number:	25218062.00.

Section C — Invoice Information:

Attention:	Meghan Blodgett/Jess Valcheff
Company Name:	SCS Engineers
Address:	
Pace Quote Reference:	
Pace Project Manager:	Hank Kapka 913-563-1404
Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: IA

08/30/2019 - Classification: Internal - ECRM67000180

Section D — Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-301	WT	G	xxx	xxx	9/11/18	0949		2			2						X	X	X	2BPIN			60280458 001
2	MW-302	WT	G	xxx	xxx		0836		2			2						X	X	X				002
3	MW-303	WT	G	xxx	xxx		1514		2			2						X	X	X				003
4	MW-304	WT	G	xxx	xxx		1119		2			2						X	X	X				004
5	MW-305	WT	G	xxx	xxx		1234		2			2						X	X	X				005
6	MW-306	WT	G	xxx	xxx		1414		2			2						X	X	X				006
7	FIELD BLANK	WT	G	xxx	xxx		0810		2			2						X	X	X				007
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Charles A Bills SCS	9/11/18	1700	Holly Fowler PASI	9-13-18	0915	1.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Charles A Bills

SIGNATURE of SAMPLER: Charles A Bills

DATE Signed (MM/DD/YY): 9/11/18

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

Pace Analytical® www.pacelabs.com

Workorder: 60280458 **Workorder Name:** SUTHERLAND GENERATING STATION

State Of Origin: IA
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 9/13/2018 **Results Requested By:** 10/4/2018

Report To	Subcontract To
Hank Kapka Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#: 30265129

30265129

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Combined Ra	Radium 226/228	LAB USE ONLY
1	MW-301	PS	9/11/2018 09:49	60280458001	Water	2	X	X	001
2	MW-302	PS	9/11/2018 08:36	60280458002	Water	2	X	X	002
3	MW-303	PS	9/11/2018 15:14	60280458003	Water	2	X	X	003
4	MW-304	PS	9/11/2018 11:19	60280458004	Water	2	X	X	004
5	MW-305	PS	9/11/2018 12:34	60280458005	Water	2	X	X	005
6	MW-306	PS	9/11/2018 14:14	60280458006	Water	2	X	X	006
7	FIELD BLANK	PS	9/11/2018 08:10	60280458007	Water	2	X	X	007

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PASI	9/13/18 1700	[signature]	9-14-18 1000
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | Custody Seal (Y) or N | Received on Ice Y or (N) | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Pace KS

Project # 30265129

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label BAH

LIMS Login BAH

Tracking #: 4542 2781 8740

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used N/A Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# 10D4e-11

Date and Initials of person examining contents: ET 9-14-18

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. pH<2 Initial when completed: ET Date/time of preservation: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr			✓	Initial when completed: ET Date: 9-14-18

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

A6 Round 6 Background Sampling, Analytical Laboratory Report

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

December 13, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland Generating Station
Pace Project No.: 60288195

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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CERTIFICATIONS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116 / E10426
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: Sutherland Generating Station
Pace Project No.: 60288195

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60288195001	**MW-301**	Water	11/28/18 17:46	11/30/18 09:50
60288195002	**MW-302**	Water	11/28/18 16:25	11/30/18 09:50
60288195003	**MW-303**	Water	11/28/18 13:15	11/30/18 09:50
60288195004	**MW-304**	Water	11/28/18 14:27	11/30/18 09:50
60288195005	**MW-305**	Water	11/28/18 15:09	11/30/18 09:50
60288195006	**MW-306**	Water	11/28/18 12:30	11/30/18 09:50
60288195007	**FIELD BLANK**	Water	11/28/18 15:00	11/30/18 09:50

Pace Analytical Services, LLC
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Lenexa, KS 66219
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SAMPLE ANALYTE COUNT

Project: Sutherland Generating Station
Pace Project No.: 60288195

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60288195001	**MW-301**	EPA 6010	JGP	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60288195002	**MW-302**	EPA 6010	JGP	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60288195003	**MW-303**	EPA 6010	JGP	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60288195004	**MW-304**	EPA 6010	JGP	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60288195005	**MW-305**	EPA 6010	JGP	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60288195006	**MW-306**	EPA 6010	JGP	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K
60288195007	**FIELD BLANK**	EPA 6010	JGP	3	PASI-K

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SAMPLE ANALYTE COUNT

Project: Sutherland Generating Station
Pace Project No.: 60288195

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	JDE	1	PASI-K
		SM 2540C	RLG	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	WNM	3	PASI-K

Pace Analytical Services, LLC
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Lenexa, KS 66219
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ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: MW-301 **Lab ID: 60288195001** Collected: 11/28/18 17:46 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		11/28/18 17:46		
Collected Date	**11/28/2018**				1		11/28/18 17:46		
Collected Time	**17:46**				1		11/28/18 17:46		
Field pH	**6.60**	Std. Units	0.10	0.050	1		11/28/18 17:46		
Field Temperature	**13.61**	deg C	0.50	0.25	1		11/28/18 17:46		
Field Specific Conductance	**459**	umhos/cm	1.0	1.0	1		11/28/18 17:46		
Oxygen, Dissolved	**0.37**	mg/L			1		11/28/18 17:46	7782-44-7	
REDOX	**-76.2**	mV			1		11/28/18 17:46		
Turbidity	**112**	NTU	1.0	1.0	1		11/28/18 17:46		
Groundwater Elevation	**856.99**	feet			1		11/28/18 17:46		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**188**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 17:55	7440-42-8	
Calcium	**78.8**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 17:55	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 17:55	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:23	7440-36-0	
Arsenic	**0.84J**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:23	7440-38-2	
Barium	**140**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:23	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 13:23	7440-41-7	
Cadmium	**0.053J**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:23	7440-43-9	
Chromium	**0.50J**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:23	7440-47-3	
Cobalt	**1.1**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:23	7440-48-4	
Lead	**0.58J**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:23	7439-92-1	
Molybdenum	**<0.57**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:23	7439-98-7	
Selenium	**1.8**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:23	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:23	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**426**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**7.0**	Std. Units	0.10	0.10	1		12/11/18 15:23		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**37.5**	mg/L	5.0	1.4	5		12/10/18 15:18	16887-00-6	
Fluoride	**0.20**	mg/L	0.20	0.19	1		12/10/18 15:00	16984-48-8	
Sulfate	**61.9**	mg/L	5.0	1.2	5		12/10/18 15:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: MW-302 **Lab ID: 60288195002** Collected: 11/28/18 16:25 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		11/28/18 16:25		
Collected Date	**11/28/2018**				1		11/28/18 16:25		
Collected Time	**16:25**				1		11/28/18 16:25		
Field pH	**7.20**	Std. Units	0.10	0.050	1		11/28/18 16:25		
Field Temperature	**11.96**	deg C	0.50	0.25	1		11/28/18 16:25		
Field Specific Conductance	**319**	umhos/cm	1.0	1.0	1		11/28/18 16:25		
Oxygen, Dissolved	**0.21**	mg/L			1		11/28/18 16:25	7782-44-7	
REDOX	**-98.0**	mV			1		11/28/18 16:25		
Turbidity	**31.7**	NTU	1.0	1.0	1		11/28/18 16:25		
Groundwater Elevation	**856.74**	feet			1		11/28/18 16:25		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**36.6J**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 17:57	7440-42-8	
Calcium	**65.0**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 17:57	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 17:57	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.26J**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:25	7440-36-0	
Arsenic	**5.9**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:25	7440-38-2	
Barium	**112**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:25	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 13:25	7440-41-7	
Cadmium	**<0.033**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:25	7440-43-9	
Chromium	**0.22J**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:25	7440-47-3	
Cobalt	**8.4**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:25	7440-48-4	
Lead	**0.34J**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:25	7439-92-1	
Molybdenum	**<0.57**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:25	7439-98-7	
Selenium	**0.73J**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:25	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**272**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**7.6**	Std. Units	0.10	0.10	1		12/11/18 15:22		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**5.5**	mg/L	1.0	0.29	1		12/10/18 16:59	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.19	1		12/10/18 16:59	16984-48-8	
Sulfate	**25.5**	mg/L	5.0	1.2	5		12/10/18 17:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: MW-303 **Lab ID: 60288195003** Collected: 11/28/18 13:15 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		11/28/18 13:15		
Collected Date	**11/28/2018**				1		11/28/18 13:15		
Collected Time	**13:15**				1		11/28/18 13:15		
Field pH	**7.20**	Std. Units	0.10	0.050	1		11/28/18 13:15		
Field Temperature	**11.38**	deg C	0.50	0.25	1		11/28/18 13:15		
Field Specific Conductance	**710**	umhos/cm	1.0	1.0	1		11/28/18 13:15		
Oxygen, Dissolved	**0.28**	mg/L			1		11/28/18 13:15	7782-44-7	
REDOX	**12.9**	mV			1		11/28/18 13:15		
Turbidity	**1.16**	NTU	1.0	1.0	1		11/28/18 13:15		
Groundwater Elevation	**855.01**	feet			1		11/28/18 13:15		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**696**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 17:59	7440-42-8	
Calcium	**134**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 17:59	7440-70-2	
Lithium	**30.7**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 17:59	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:27	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:27	7440-38-2	
Barium	**48.4**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:27	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 13:27	7440-41-7	
Cadmium	**<0.033**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:27	7440-43-9	
Chromium	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:27	7440-47-3	
Cobalt	**0.89J**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:27	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:27	7439-92-1	
Molybdenum	**32.6**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:27	7439-98-7	
Selenium	**<0.085**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:27	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:27	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**797**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**6.8**	Std. Units	0.10	0.10	1		12/11/18 15:14		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**29.2**	mg/L	5.0	1.4	5		12/10/18 18:46	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	0.19	1		12/10/18 18:28	16984-48-8	
Sulfate	**348**	mg/L	50.0	12.0	50		12/10/18 19:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: MW-304 **Lab ID: 60288195004** Collected: 11/28/18 14:27 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		11/28/18 14:27		
Collected Date	**11/28/2018**				1		11/28/18 14:27		
Collected Time	**14:27**				1		11/28/18 14:27		
Field pH	**6.60**	Std. Units	0.10	0.050	1		11/28/18 14:27		
Field Temperature	**11.28**	deg C	0.50	0.25	1		11/28/18 14:27		
Field Specific Conductance	**731**	umhos/cm	1.0	1.0	1		11/28/18 14:27		
Oxygen, Dissolved	**0.37**	mg/L			1		11/28/18 14:27	7782-44-7	
REDOX	**-39.3**	mV			1		11/28/18 14:27		
Turbidity	**22.7**	NTU	1.0	1.0	1		11/28/18 14:27		
Groundwater Elevation	**854.79**	feet			1		11/28/18 14:27		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**751**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 18:02	7440-42-8	
Calcium	**149**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 18:02	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 18:02	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:33	7440-36-0	
Arsenic	**0.46J**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:33	7440-38-2	
Barium	**29.0**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:33	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 13:33	7440-41-7	
Cadmium	**0.085J**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:33	7440-43-9	
Chromium	**0.11J**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:33	7440-47-3	
Cobalt	**0.45J**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:33	7440-48-4	
Lead	**0.17J**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:33	7439-92-1	
Molybdenum	**1.2**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:33	7439-98-7	
Selenium	**<0.085**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:33	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**853**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		12/11/18 15:17		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**27.4**	mg/L	10.0	2.9	10		12/10/18 19:40	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	0.19	1		12/10/18 19:22	16984-48-8	
Sulfate	**375**	mg/L	20.0	4.8	20		12/10/18 19:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: MW-305 **Lab ID: 60288195005** Collected: 11/28/18 15:09 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		11/28/18 15:09		
Collected Date	**11/28/2018**				1		11/28/18 15:09		
Collected Time	**15:09**				1		11/28/18 15:09		
Field pH	**6.63**	Std. Units	0.10	0.050	1		11/28/18 15:09		
Field Temperature	**12.24**	deg C	0.50	0.25	1		11/28/18 15:09		
Field Specific Conductance	**773**	umhos/cm	1.0	1.0	1		11/28/18 15:09		
Oxygen, Dissolved	**0.23**	mg/L			1		11/28/18 15:09	7782-44-7	
REDOX	**-117.7**	mV			1		11/28/18 15:09		
Turbidity	**119**	NTU	1.0	1.0	1		11/28/18 15:09		
Groundwater Elevation	**854.87**	feet			1		11/28/18 15:09		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**920**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 18:04	7440-42-8	
Calcium	**152**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 18:04	7440-70-2	
Lithium	**16.9**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 18:04	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.27J**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:36	7440-36-0	
Arsenic	**65.9**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:36	7440-38-2	
Barium	**167**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:36	7440-39-3	
Beryllium	**0.10J**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 13:36	7440-41-7	
Cadmium	**0.10J**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:36	7440-43-9	
Chromium	**0.25J**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:36	7440-47-3	
Cobalt	**2.8**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:36	7440-48-4	
Lead	**0.58J**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:36	7439-92-1	
Molybdenum	**21.5**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:36	7439-98-7	
Selenium	**0.44J**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:36	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:36	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**935**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**7.0**	Std. Units	0.10	0.10	1		12/11/18 15:20		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**17.4**	mg/L	1.0	0.29	1		12/10/18 20:15	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.19	1		12/10/18 20:15	16984-48-8	
Sulfate	**445**	mg/L	50.0	12.0	50		12/12/18 12:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: MW-306 **Lab ID: 60288195006** Collected: 11/28/18 12:30 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		11/28/18 12:30		
Collected Date	**11/28/2018**				1		11/28/18 12:30		
Collected Time	**12:30**				1		11/28/18 12:30		
Field pH	**7.41**	Std. Units	0.10	0.050	1		11/28/18 12:30		
Field Temperature	**12.53**	deg C	0.50	0.25	1		11/28/18 12:30		
Field Specific Conductance	**814**	umhos/cm	1.0	1.0	1		11/28/18 12:30		
Oxygen, Dissolved	**0.32**	mg/L			1		11/28/18 12:30	7782-44-7	
REDOX	**2.1**	mV			1		11/28/18 12:30		
Turbidity	**1.75**	NTU	1.0	1.0	1		11/28/18 12:30		
Groundwater Elevation	**854.91**	feet			1		11/28/18 12:30		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**2990**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 18:06	7440-42-8	
Calcium	**166**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 18:06	7440-70-2	
Lithium	**36.8**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 18:06	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:38	7440-36-0	
Arsenic	**5.2**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:38	7440-38-2	
Barium	**78.3**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:38	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 13:38	7440-41-7	
Cadmium	**0.041J**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:38	7440-43-9	
Chromium	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:38	7440-47-3	
Cobalt	**0.57J**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:38	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:38	7439-92-1	
Molybdenum	**45.6**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:38	7439-98-7	
Selenium	**<0.085**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:38	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**955**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**6.7**	Std. Units	0.10	0.10	1		12/11/18 15:12		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**14.1**	mg/L	1.0	0.29	1		12/10/18 20:51	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	0.19	1		12/10/18 20:51	16984-48-8	
Sulfate	**87.4**	mg/L	5.0	1.2	5		12/10/18 21:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: Sutherland Generating Station
Pace Project No.: 60288195

Sample: FIELD BLANK **Lab ID: 60288195007** Collected: 11/28/18 15:00 Received: 11/30/18 09:50 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**<12.5**	ug/L	100	12.5	1	12/06/18 11:52	12/06/18 17:53	7440-42-8	
Calcium	**0.054J**	mg/L	0.20	0.054	1	12/06/18 11:52	12/06/18 17:53	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	12/06/18 11:52	12/06/18 17:53	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:44	7440-36-0	
Arsenic	**<0.065**	ug/L	1.0	0.065	1	12/07/18 15:45	12/10/18 13:44	7440-38-2	
Barium	**0.30J**	ug/L	1.0	0.28	1	12/07/18 15:45	12/10/18 13:44	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	12/07/18 15:45	12/10/18 14:50	7440-41-7	
Cadmium	**<0.033**	ug/L	0.50	0.033	1	12/07/18 15:45	12/10/18 13:44	7440-43-9	
Chromium	**<0.078**	ug/L	1.0	0.078	1	12/07/18 15:45	12/10/18 13:44	7440-47-3	
Cobalt	**<0.062**	ug/L	1.0	0.062	1	12/07/18 15:45	12/10/18 13:44	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	12/07/18 15:45	12/10/18 13:44	7439-92-1	
Molybdenum	**<0.57**	ug/L	1.0	0.57	1	12/07/18 15:45	12/10/18 13:44	7439-98-7	
Selenium	**<0.085**	ug/L	1.0	0.085	1	12/07/18 15:45	12/10/18 13:44	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	12/07/18 15:45	12/10/18 13:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	12/07/18 13:52	12/10/18 12:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		12/04/18 09:20		
9040 pH	Analytical Method: EPA 9040								
pH	**6.9**	Std. Units	0.10	0.10	1		12/11/18 15:19		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**0.50J**	mg/L	1.0	0.29	1		12/10/18 22:20	16887-00-6	
Fluoride	**<0.19**	mg/L	0.20	0.19	1		12/10/18 22:20	16984-48-8	
Sulfate	**<0.24**	mg/L	1.0	0.24	1		12/10/18 22:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 558997 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

METHOD BLANK: 2293769 Matrix: Water
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	12/10/18 12:03	

LABORATORY CONTROL SAMPLE: 2293770

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2293771 2293772

Parameter	Units	60287953001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.9	5.0	95	98	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 558709 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

METHOD BLANK: 2292392 Matrix: Water
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	12/06/18 17:26	
Calcium	mg/L	<0.054	0.20	0.054	12/06/18 17:26	
Lithium	ug/L	<4.6	10.0	4.6	12/06/18 17:26	

LABORATORY CONTROL SAMPLE: 2292393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	991	99	80-120	
Calcium	mg/L	10	9.6	96	80-120	
Lithium	ug/L	1000	972	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2292394 2292395

Parameter	Units	60288012001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	749	1000	1000	1740	1740	99	100	75-125	0	20	
Calcium	mg/L	230000 ug/L	10	10	240	239	102	90	75-125	1	20	
Lithium	ug/L	57.4	1000	1000	1040	1040	98	98	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 558904 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

METHOD BLANK: 2293324 Matrix: Water
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.078	1.0	0.078	12/10/18 13:01	
Arsenic	ug/L	<0.065	1.0	0.065	12/10/18 13:01	
Barium	ug/L	<0.28	1.0	0.28	12/10/18 13:01	
Beryllium	ug/L	<0.089	0.50	0.089	12/10/18 13:01	
Cadmium	ug/L	<0.033	0.50	0.033	12/10/18 13:01	
Chromium	ug/L	<0.078	1.0	0.078	12/10/18 13:01	
Cobalt	ug/L	<0.062	1.0	0.062	12/10/18 13:01	
Lead	ug/L	<0.13	1.0	0.13	12/10/18 13:01	
Molybdenum	ug/L	<0.57	1.0	0.57	12/10/18 13:01	
Selenium	ug/L	<0.085	1.0	0.085	12/10/18 13:01	
Thallium	ug/L	<0.099	1.0	0.099	12/10/18 13:01	

LABORATORY CONTROL SAMPLE: 2293325

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	41.9	105	80-120	
Arsenic	ug/L	40	41.2	103	80-120	
Barium	ug/L	40	39.7	99	80-120	
Beryllium	ug/L	40	40.1	100	80-120	
Cadmium	ug/L	40	40.9	102	80-120	
Chromium	ug/L	40	39.3	98	80-120	
Cobalt	ug/L	40	41.0	103	80-120	
Lead	ug/L	40	38.9	97	80-120	
Molybdenum	ug/L	40	41.9	105	80-120	
Selenium	ug/L	40	41.4	104	80-120	
Thallium	ug/L	40	37.4	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2293326 2293327

Parameter	Units	60288195003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.078	40	40	42.3	42.2	106	106	75-125	0	20	
Arsenic	ug/L	1.3	40	40	43.4	43.3	105	105	75-125	0	20	
Barium	ug/L	48.4	40	40	89.9	88.3	104	100	75-125	2	20	
Beryllium	ug/L	<0.089	40	40	38.7	37.7	97	94	75-125	3	20	
Cadmium	ug/L	<0.033	40	40	41.7	41.8	104	104	75-125	0	20	
Chromium	ug/L	<0.078	40	40	40.3	40.6	101	102	75-125	1	20	
Cobalt	ug/L	0.89J	40	40	40.4	41.0	99	100	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2293326 2293327

Parameter	Units	60288195003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	<0.13	40	40	37.9	37.7	95	94	75-125	0	20	
Molybdenum	ug/L	32.6	40	40	75.8	76.5	108	110	75-125	1	20	
Selenium	ug/L	<0.085	40	40	40.9	41.3	102	103	75-125	1	20	
Thallium	ug/L	<0.099	40	40	37.0	37.0	92	93	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 558160 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

METHOD BLANK: 2289969 Matrix: Water
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	12/04/18 09:20	

LABORATORY CONTROL SAMPLE: 2289970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1040	104	80-120	

SAMPLE DUPLICATE: 2289971

Parameter	Units	60288131001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	126	132	5	10	

SAMPLE DUPLICATE: 2289974

Parameter	Units	60288231003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2000	2030	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 559427 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

SAMPLE DUPLICATE: 2295867

Parameter	Units	60288245007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	6.6	6.6	0	10	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 559268 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

METHOD BLANK: 2295312 Matrix: Water
Associated Lab Samples: 60288195001, 60288195002, 60288195003, 60288195004, 60288195005, 60288195006, 60288195007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	12/10/18 10:05	
Fluoride	mg/L	<0.19	0.20	0.19	12/10/18 10:05	
Sulfate	mg/L	<0.24	1.0	0.24	12/10/18 10:05	

LABORATORY CONTROL SAMPLE: 2295313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	80-120	
Fluoride	mg/L	2.5	2.3	91	80-120	
Sulfate	mg/L	5	4.5	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2295314 2295315

Parameter	Units	60288054001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	55.5	50	50	105	105	98	99	80-120	0	15	
Fluoride	mg/L	ND	25	25	23.7	23.5	91	90	80-120	1	15	
Sulfate	mg/L	95.0	50	50	143	142	96	93	80-120	1	15	

SAMPLE DUPLICATE: 2295316

Parameter	Units	60288054002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	52.9	52.2	1	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland Generating Station
Pace Project No.: 60288195

QC Batch: 559546 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60288195005

METHOD BLANK: 2296214 Matrix: Water
Associated Lab Samples: 60288195005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.24	1.0	0.24	12/12/18 13:32	

LABORATORY CONTROL SAMPLE: 2296215

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.1	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2296216 2296217

Parameter	Units	60288195005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	445	250	250	715	708	108	105	80-120	1	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: Sutherland Generating Station
Pace Project No.: 60288195

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland Generating Station
Pace Project No.: 60288195

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60288195001	**MW-301**		558346		
60288195002	**MW-302**		558346		
60288195003	**MW-303**		558346		
60288195004	**MW-304**		558346		
60288195005	**MW-305**		558346		
60288195006	**MW-306**		558346		
60288195001	**MW-301**	EPA 3010	558709	EPA 6010	558766
60288195002	**MW-302**	EPA 3010	558709	EPA 6010	558766
60288195003	**MW-303**	EPA 3010	558709	EPA 6010	558766
60288195004	**MW-304**	EPA 3010	558709	EPA 6010	558766
60288195005	**MW-305**	EPA 3010	558709	EPA 6010	558766
60288195006	**MW-306**	EPA 3010	558709	EPA 6010	558766
60288195007	**FIELD BLANK**	EPA 3010	558709	EPA 6010	558766
60288195001	**MW-301**	EPA 3010	558904	EPA 6020	559067
60288195002	**MW-302**	EPA 3010	558904	EPA 6020	559067
60288195003	**MW-303**	EPA 3010	558904	EPA 6020	559067
60288195004	**MW-304**	EPA 3010	558904	EPA 6020	559067
60288195005	**MW-305**	EPA 3010	558904	EPA 6020	559067
60288195006	**MW-306**	EPA 3010	558904	EPA 6020	559067
60288195007	**FIELD BLANK**	EPA 3010	558904	EPA 6020	559067
60288195001	**MW-301**	EPA 7470	558997	EPA 7470	559161
60288195002	**MW-302**	EPA 7470	558997	EPA 7470	559161
60288195003	**MW-303**	EPA 7470	558997	EPA 7470	559161
60288195004	**MW-304**	EPA 7470	558997	EPA 7470	559161
60288195005	**MW-305**	EPA 7470	558997	EPA 7470	559161
60288195006	**MW-306**	EPA 7470	558997	EPA 7470	559161
60288195007	**FIELD BLANK**	EPA 7470	558997	EPA 7470	559161
60288195001	**MW-301**	SM 2540C	558160		
60288195002	**MW-302**	SM 2540C	558160		
60288195003	**MW-303**	SM 2540C	558160		
60288195004	**MW-304**	SM 2540C	558160		
60288195005	**MW-305**	SM 2540C	558160		
60288195006	**MW-306**	SM 2540C	558160		
60288195007	**FIELD BLANK**	SM 2540C	558160		
60288195001	**MW-301**	EPA 9040	559427		
60288195002	**MW-302**	EPA 9040	559427		
60288195003	**MW-303**	EPA 9040	559427		
60288195004	**MW-304**	EPA 9040	559427		
60288195005	**MW-305**	EPA 9040	559427		
60288195006	**MW-306**	EPA 9040	559427		
60288195007	**FIELD BLANK**	EPA 9040	559427		
60288195001	**MW-301**	EPA 9056	559268		
60288195002	**MW-302**	EPA 9056	559268		
60288195003	**MW-303**	EPA 9056	559268		
60288195004	**MW-304**	EPA 9056	559268		
60288195005	**MW-305**	EPA 9056	559268		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland Generating Station
Pace Project No.: 60288195

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60288195005	**MW-305**	EPA 9056	559546		
60288195006	**MW-306**	EPA 9056	559268		
60288195007	**FIELD BLANK**	EPA 9056	559268		

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Sample Condition Upon Receipt

HwK

WO# : 60288195

60288195

Client Name: SCS Engineers

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4542 2786 4201 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 5.8 **Corr. Factor** +0.0 **Corrected** 5.8

Date and initials of person examining contents: 12/4 I

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact: **	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☒No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☒No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HwK Date: 12-3-2018

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Meghan Blodgett	Attention:	Meghan Blodgett/Jess Valcheff
Address:	2830 Dairy Drive	Copy To:	Tom Karwaski	Company Name:	SCS Engineers
	Madison WI 53718			Address:	
Email To:	mblodgett@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	608-216-7362 Fax:	Project Name:	Sutherland Generating Station	Pace Project Manager:	Hank Kapka 913-563-1404
Requested Due Date/TAT:		Project Number:	25218062.00.	Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: IA

08/30/2019 - Classification: Internal - ECRM6700180

Section D Required Client Information	Valid Matrix Codes: MATRIX / CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6010 Total Metals: B-Ca-Li	6020 Total Metals *	7470 Total Mercury	9056 Chloride-Fluoride-Sulfate	9040 pH	2540C TDS							Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE			DATE	TIME	DATE	TIME											Analysis Test Y/N	N	N												60288195
1	MW-301	WT	G	xxx	xxx	112818	1746		3	1		2							X	X	X	X	X	X	BP1U/BP3N							001
2	MW-302	WT	G	xxx	xxx	112818	1625		3	1		2							X	X	X	X	X	X								002
3	MW-303	WT	G	xxx	xxx	112818	1315		3	1		2							X	X	X	X	X	X								003
4	MW-304	WT	G	xxx	xxx	112818	1427		3	1		2							X	X	X	X	X	X								004
5	MW-305	WT	G	xxx	xxx	112818	1509		3	1		2							X	X	X	X	X	X								005
6	MW-306	WT	G	xxx	xxx	112818	1230		3	1		2							X	X	X	X	X	X								006
7	FIELD BLANK	WT	G	xxx	xxx	112818	1500		3	1		2							X	X	X	X	X	X	↓						↓	007
8																															
9																															
10																															
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Nick Schemmel / SCS Engineers	112918	16:00							
* As-Ba-Be-Cd-Cr-Co-Pb-Mo-Sb-Se-Tl										

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

December 21, 2018

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on November 30, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Tom Karwaski, SCS Engineers
Nicole Kron, SCS Engineers
Jeff Maxted, Alliant Energy
Jess Valcheff, SCS Engeineers

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60288196001	**MW-301**	Water	11/28/18 17:46	11/30/18 09:50
60288196002	**MW-302**	Water	11/28/18 16:25	11/30/18 09:50
60288196003	**MW-303**	Water	11/28/18 13:15	11/30/18 09:50
60288196004	**MW-304**	Water	11/28/18 14:27	11/30/18 09:50
60288196005	**MW-305**	Water	11/28/18 15:09	11/30/18 09:50
60288196006	**MW-306**	Water	11/28/18 12:30	11/30/18 09:50
60288196007	**FIELD BLANK**	Water	11/28/18 15:00	11/30/18 09:50

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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60288196001	**MW-301**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60288196002	**MW-302**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60288196003	**MW-303**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60288196004	**MW-304**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60288196005	**MW-305**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60288196006	**MW-306**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60288196007	**FIELD BLANK**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: MW-301 **Lab ID: 60288196001** Collected: 11/28/18 17:46 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.510 ± 0.475 (0.626) C:NA T:97%**	pCi/L	12/21/18 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.365 ± 0.419 (0.881) C:81% T:78%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.875 ± 0.894 (1.51)**	pCi/L	12/21/18 13:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: MW-302 **Lab ID: 60288196002** Collected: 11/28/18 16:25 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.03 ± 0.806 (1.12) C:NA T:78%**	pCi/L	12/21/18 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.436 ± 0.367 (0.737) C:81% T:86%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**1.47 ± 1.17 (1.86)**	pCi/L	12/21/18 13:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: MW-303 **Lab ID: 60288196003** Collected: 11/28/18 13:15 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.389 ± 0.630 (1.10) C:NA T:94%**	pCi/L	12/21/18 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.532 ± 0.394 (0.770) C:83% T:79%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.921 ± 1.02 (1.87)**	pCi/L	12/21/18 13:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: MW-304 **Lab ID: 60288196004** Collected: 11/28/18 14:27 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.570 ± 0.531 (0.699) C:NA T:84%**	pCi/L	12/21/18 10:32	13982-63-3	
Radium-228	EPA 904.0	**0.993 ± 0.460 (0.790) C:80% T:87%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**1.56 ± 0.991 (1.49)**	pCi/L	12/21/18 13:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: MW-305 **Lab ID: 60288196005** Collected: 11/28/18 15:09 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.08 ± 0.758 (0.999) C:NA T:93%**	pCi/L	12/21/18 11:10	13982-63-3	
Radium-228	EPA 904.0	**1.15 ± 0.494 (0.814) C:81% T:81%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**2.23 ± 1.25 (1.81)**	pCi/L	12/21/18 13:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: MW-306 **Lab ID: 60288196006** Collected: 11/28/18 12:30 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.515 ± 0.536 (0.797) C:NA T:87%**	pCi/L	12/21/18 11:10	13982-63-3	
Radium-228	EPA 904.0	**0.605 ± 0.396 (0.757) C:81% T:85%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.932 (1.55)**	pCi/L	12/21/18 14:53	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Sample: FIELD BLANK **Lab ID: 60288196007** Collected: 11/28/18 15:00 Received: 11/30/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.409 ± 0.483 (0.759) C:NA T:95%**	pCi/L	12/21/18 11:10	13982-63-3	
Radium-228	EPA 904.0	**0.563 ± 0.432 (0.854) C:83% T:74%**	pCi/L	12/20/18 17:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.972 ± 0.915 (1.61)**	pCi/L	12/21/18 14:53	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

QC Batch: 322944 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60288196004, 60288196005, 60288196006, 60288196007

METHOD BLANK: 1573835 Matrix: Water
Associated Lab Samples: 60288196004, 60288196005, 60288196006, 60288196007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.339 ± 0.409 (0.625) C:NA T:86%	pCi/L	12/21/18 10:32	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

QC Batch: 322943 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60288196001, 60288196002, 60288196003

METHOD BLANK: 1573832 Matrix: Water
Associated Lab Samples: 60288196001, 60288196002, 60288196003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0908 ± 0.414 (0.843) C:NA T:87%	pCi/L	12/21/18 09:52	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

QC Batch: 322938 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60288196001, 60288196002, 60288196003, 60288196004, 60288196005, 60288196006, 60288196007

METHOD BLANK: 1573825 Matrix: Water
Associated Lab Samples: 60288196001, 60288196002, 60288196003, 60288196004, 60288196005, 60288196006, 60288196007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.328 ± 0.318 (0.652) C:86% T:80%	pCi/L	12/20/18 14:38	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60288196

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60288196001	**MW-301**	EPA 903.1	322943		
60288196002	**MW-302**	EPA 903.1	322943		
60288196003	**MW-303**	EPA 903.1	322943		
60288196004	**MW-304**	EPA 903.1	322944		
60288196005	**MW-305**	EPA 903.1	322944		
60288196006	**MW-306**	EPA 903.1	322944		
60288196007	**FIELD BLANK**	EPA 903.1	322944		
60288196001	**MW-301**	EPA 904.0	322938		
60288196002	**MW-302**	EPA 904.0	322938		
60288196003	**MW-303**	EPA 904.0	322938		
60288196004	**MW-304**	EPA 904.0	322938		
60288196005	**MW-305**	EPA 904.0	322938		
60288196006	**MW-306**	EPA 904.0	322938		
60288196007	**FIELD BLANK**	EPA 904.0	322938		
60288196001	**MW-301**	Total Radium Calculation	324852		
60288196002	**MW-302**	Total Radium Calculation	324852		
60288196003	**MW-303**	Total Radium Calculation	324852		
60288196004	**MW-304**	Total Radium Calculation	324852		
60288196005	**MW-305**	Total Radium Calculation	324852		
60288196006	**MW-306**	Total Radium Calculation	324899		
60288196007	**FIELD BLANK**	Total Radium Calculation	324899		

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Sample Condition Upon Receipt

WO# : 60288196

60288196

Client Name: SCS Engineers

Courier: FedEx ☒ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 4542 2781 4131 Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: Yes ☒ No ☐ Seals intact: Yes ☒ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.9 **Corr. Factor** +0.0 **Corrected** 4.9

Date and initials of person examining contents: AC 12/1

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☒No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☒No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: HWK Date: 12-3-2013

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Pace Analytical
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Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS Engineers	Report To:	Meghan Blodgett	Attention:	Meghan Blodgett/Jess Valcheff
Address:	2830 Dairy Drive	Copy To:	Tom Karwaski	Company Name:	SCS Engineers
	Madison WI 53718			Address:	
Email To:	mblodgett@scsengineers.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	608-216-7362 Fax:	Project Name:	Sutherland Generating Station	Pace Project Manager:	Hank Kapka 913-563-1404
Requested Due Date/TAT:		Project Number:	25218062.00.	Pace Profile #:	6696 Line 2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: IA

08/30/2019 - Classification: Internal - ECRM6700180

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	903.1 Radium-226	904.0 Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-301	WT	G	xxx	xxx	112818	1746		2			2							X	X	X		001
2	MW-302	WT	G	xxx	xxx	112818	1625		2			2							X	X	X		002
3	MW-303	WT	G	xxx	xxx	112818	1315		2			2							X	X	X		003
4	MW-304	WT	G	xxx	xxx	112818	1427		2			2							X	X	X		004
5	MW-305	WT	G	xxx	xxx	112818	1509		2			2							X	X	X		005
6	MW-306	WT	G	xxx	xxx	112818	1230		2			2							X	X	X		006
7	FIELD BLANK	WT	G	xxx	xxx	112818	1500		2			2							X	X	X		007
8																							
9																							
10																							
11																							
12																							

Requested Analysis Filtered (Y/N)

2BPIN

60288196

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	Nick Schammel / SCS Engineers	112918	16:00	[signature] / Pace	11.30.18	09:50	4.9	4	4	4

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Chain of Custody

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: IA
Cert. Needed: ☐ Yes ☐ No

Workorder: 60288196 **Workorder Name:** SUTHERLAND GENERATING STATION **Owner Received Date:** 11/30/2018 **Results Requested By:** 12/21/2018

Report To	Subcontract To
Hank Kapka Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#: 30273256

30273256

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Requested Analysis: Combined Ra	Requested Analysis: Ra 226/228	LAB USE ONLY
1	MW-301	PS	11/28/2018 17:46	60288196001	Water	2	X	X	001
2	MW-302	PS	11/28/2018 16:25	60288196002	Water	2	X	X	002
3	MW-303	PS	11/28/2018 13:15	60288196003	Water	2	X	X	003
4	MW-304	PS	11/28/2018 14:27	60288196004	Water	2	X	X	004
5	MW-305	PS	11/28/2018 15:09	60288196005	Water	2	X	X	005
6	MW-306	PS	11/28/2018 12:30	60288196006	Water	2	X	X	006
7	FIELD BLANK	PS	11/28/2018 15:00	60288196007	Water	2	X	X	007

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible signature]	12-3-18 1600	[illegible signature] PACE	12/4/18 1000
2				
3				

Comments:

Cooler Temperature on Receipt ____ °C | Custody Seal Y or (N) | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Pace KS

Project # 30273256

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label BATH
LIMS Login BATH

Tracking #: 4746 8737 9860

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Thermometer Used NA Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2981 Date and Initials of person examining contents: 12/4/18 JLB

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed JLB Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: JLB Date: 12/4/18

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.