2019 Annual Groundwater Monitoring and Corrective Action Report

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

Prepared for:

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

SCS ENGINEERS

25220076.00 | August 3, 2020

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

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1.0 INTRODUCTION

This 2019 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 257.100 and 40 CFR 257.90(e) for inactive CCR surface impoundments. The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2019 Annual Groundwater Monitoring and Corrective Action Report for the CCR unit.

This report covers the period of groundwater monitoring from January 1, 2019, through December 31, 2019.

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 – closed June 2020)
- SGS South Primary Pond (inactive surface impoundment– closed June 2020)
- SGS Main Pond (inactive surface impoundment– closed June 2020)
- SGS Polishing Pond (inactive surface impoundment– closed June 2020)

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 impoundment 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 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 of the location of the site is provided as **Figure 1**. A map showing the site layout and all 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;

No new monitoring wells were installed and no wells were decommissioned as part of the groundwater monitoring programs for the CCR unit in 2019.

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;

Five groundwater sampling events were completed for the SGS CCR units in 2019. Two background monitoring sampling events occurred in January and February 2019 to complete the eight rounds of required background sampling. The semiannual sampling program for the site was established and sampling occurred in April 2019 and October 2019. As described in **Section 3.4** and **Section 3.5**, the site transitioned to an assessment monitoring program in 2019. The first round of assessment monitoring sampling was completed in December 2019.

Groundwater samples collected in April and October 2019 were analyzed for Appendix III constituents. The groundwater samples collected in December 2019 were analyzed for both Appendix III and Appendix IV constituents. A summary including the number of groundwater samples that were collected, and whether the sample was required by the detection monitoring or assessment monitoring program is included in **Table 1**. The results of the analytical laboratory analyses are provided in the laboratory reports in **Appendix A1** through **Appendix A5.**

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);

Detection monitoring at SGS was initiated in April 2019. The statistical evaluation of the April 2019 detection monitoring results completed on July 15, 2019, identified statistically significant increases (SSIs) in detection monitoring constituents at the downgradient wells. SSIs were identified for boron, calcium, fluoride, field pH, sulfate and total dissolved solids at one or more wells based on the April 2019 detection monitoring event. Interstate Power and Light Company (IPL) collected the first round of assessment monitoring samples in December 2019 and established an assessment monitoring program on January 13, 2020, in accordance with §257.95(b).

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 2019 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. The groundwater monitoring and corrective action program is currently in assessment monitoring.

Summary of Key Actions Completed.

- Background monitoring program sampling events (January and February 2019).
- Statistical evaluation and determination of SSIs for the April 2019 monitoring event completed July 15, 2019.
- First annual groundwater monitoring and corrective action report completed on August 1, 2019.
- Two semiannual detection monitoring sampling and analysis events (April and October 2019).
- First assessment monitoring sampling and analysis event (December 2019).

Description of Any Problems Encountered. No problems were encountered in 2019.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2020):

- Transmittal of results for the October 2019 detection monitoring event and initial round of assessment monitoring sampling in December 2019 (January 13, 2020).
- Establishment of assessment monitoring program (January 13, 2020).
- Establishment of groundwater protection standards (April 2020).
- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the December 2019, February 2020, and April 2020 monitoring events (July 2020).

- If one or more Appendix IV constituents is detected at a statistically significant level about the GPS, then within 30 days IPL will prepare a notification in accordance with §257.95(g) and within 90 days complete an alternative source demonstration or initiate an assessment of corrective measures (§257.95(g)(3)). IPL will also characterize the release (§257.95(g)(1)) and notify property owners (§257.95(g)(2)).

- Two semiannual groundwater sampling and analysis events (April and October 2020).

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 frequency 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 2019.

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. 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. Although the first round of assessment monitoring samples was collected in December 2019, the complete results were received and the assessment monitoring program was established in January 2020. The requirements of §257.95(d)(1)-(2) must be met by April 15, 2020, and included in the 2020 annual groundwater monitoring and corrective action report.

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. No alternative source demonstration for assessment monitoring was completed in 2019.

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.

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Tables

Table 1. CCR Rule Groundwater Samples Summary
Sutherland Generating Station / SCS Engineers Project #25220076.00

Sample Dates	Downgradient Wells				Background Wells	
	MW-303	MW-304	MW-305	MW-306	MW-301	MW-302
1/9/2019	B	B	B	B	B	B
2/2/2019	B	B	B	B	B	B
4/2/2019	D	D	D	D	D	D
10/16/2019	D	D	D	D	D	D
12/11-12/2019	A	A	A	A	A	A
Total Samples	5	5	5	5	5	5

Abbreviations:
B = Background Monitoring program sampling event
D = Detection Monitoring Program sampling event
A = Assessment Monitoring Program sampling event

Created by:	NDK	Date:	6/10/2019
Last revision by:	LWJ	Date:	6/30/2020
Checked by:	NDK	Date:	7/5/2020

I:\25220076.00\Deliverables\2019 SGS Federal Annual Report\Tables\[Table 1 GW_Samples_Summary_Table_2019.xlsx]GW Summary

Table 2. Groundwater Protection Standards - CCR Program - Assessment Monitoring
Sutherland Generating Station / SCS Engineers Project #25220076.00

Parameter Name	GPS	Source
Antimony, ug/L	6	MCL
Arsenic, ug/L	39.95	UPL
Barium, ug/L	2,000	MCL
Beryllium, ug/L	4	MCL
Cadmium, ug/L	5	MCL
Chromium, ug/L	100	MCL
Cobalt, ug/L	8.82	UPL
Fluoride, mg/L	4	MCL
Lead, ug/L	15	40 CFR 257.95(h)(2)
Lithium, ug/L	40	40 CFR 257.95(h)(2)
Mercury, ug/L	2	MCL
Molybdenum, ug/L	100	40 CFR 257.95(h)(2)
Selenium, ug/L	50	MCL
Thallium, ug/L	2	MCL
Radium 226/228 Combined, pCI/L	5	MCL

Abbreviations:
GPS = Groundwater Protection Standard
MCL = Maximum Contaminant Level established under 40 CFR 141.62 and 141.66
UPL = Upper Prediction Limit, Calculated based on background monitoring well concentrations

Created by: NDK 6/30/2020
Checked by: MDB 7/1/2020

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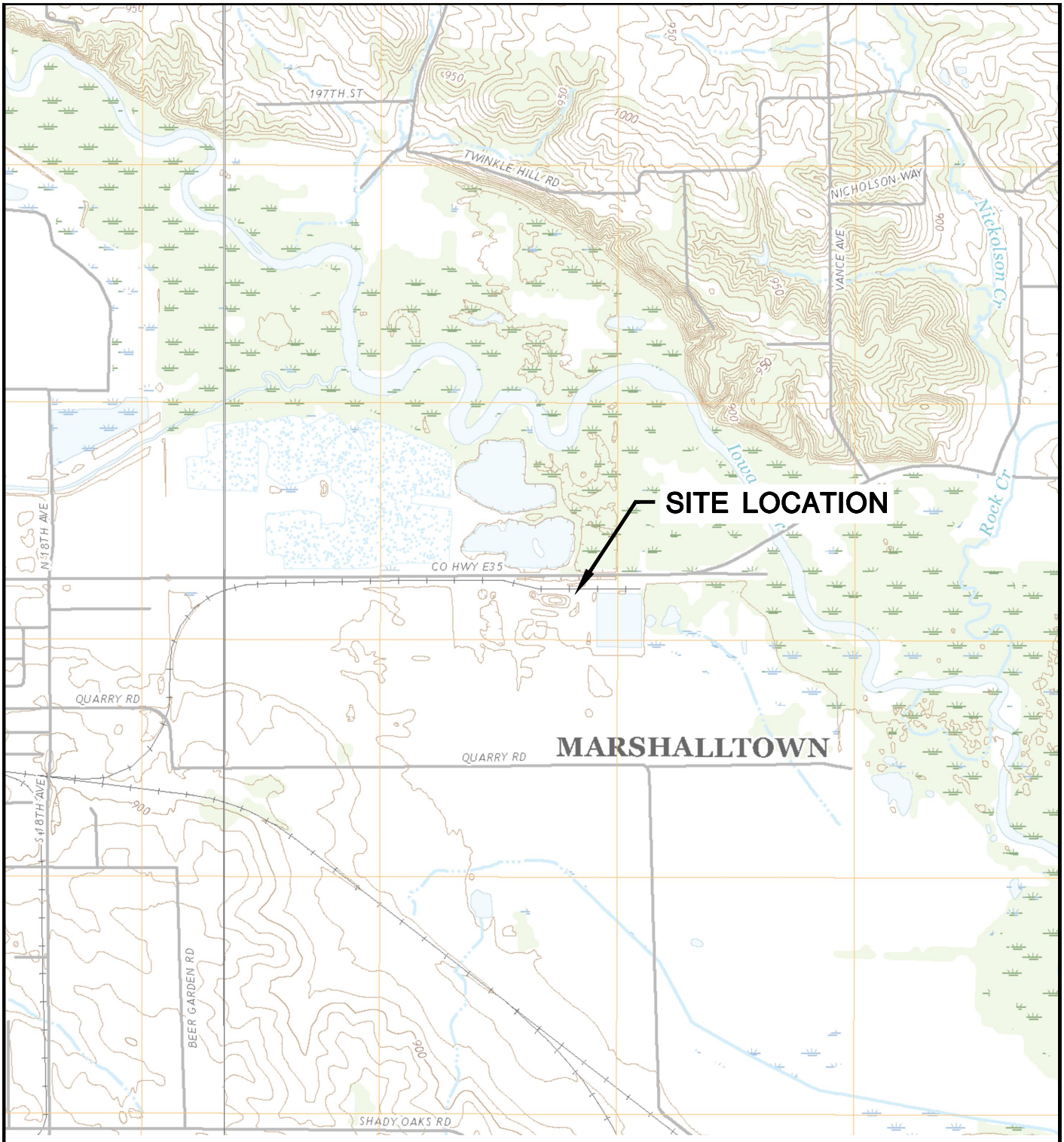
Figures



N

LE GRAND QUADRANGLE
IOWA–MARSHALL COUNTY
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

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

SITE LOCATION MAP

PROJECT NO.	25219076.00	DRAWN BY:	BSS
DRAWN:	11/15/2019	CHECKED BY:	MDB
REVISED:	01/14/2020	APPROVED BY:	

ENGINEER

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

FIGURE
1

I:\25219076.00\Drawings\CCR 2019 Annual Report\Site Location Map.dwg, 1/14/2020 1:50:24 PM

LEGEND

- CCR MONITORING WELL
- CCR UNIT

NOTES:

1. 2014 AERIAL PHOTOGRAPH SOURCES: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, USDA FSA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY.
2. MONITORING WELLS MW-301 THROUGH MW-306 WERE INSTALLED BY DIRECT PUSH ANALYTICAL NOVEMBER 20-21, 2017.
3. CCR UNIT LIMITS ARE APPROXIMATE.

N

200 0 200

SCALE: 1" = 200'

PROJECT NO.	25219076.00	DRAWN BY:	BSS
DRAWN:	11/14/2019	CHECKED BY:	MDB
REVISED:	01/14/2020	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 MONITORING WELL LOCATIONS

FIGURE 2

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Appendix A

Analytical Laboratory Reports

A1 January 2019 Background Monitoring

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

January 22, 2019

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on January 10, 2019. 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
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CERTIFICATIONS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Arkansas Drinking Water
Missouri Certification Number: 10090
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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60291585001	**MW-301**	Water	01/09/19 15:07	01/10/19 08:30
60291585002	**MW-302**	Water	01/09/19 13:44	01/10/19 08:30
60291585003	**MW-303**	Water	01/09/19 12:49	01/10/19 08:30
60291585004	**MW-304**	Water	01/09/19 11:50	01/10/19 08:30
60291585005	**MW-305**	Water	01/09/19 10:34	01/10/19 08:30
60291585006	**MW-306**	Water	01/09/19 09:38	01/10/19 08:30
60291585007	**FIELD BLANK**	Water	01/09/19 23:59	01/10/19 08:30

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

SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60291585001	MW-301	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60291585002	MW-302	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60291585003	MW-303	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60291585004	MW-304	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60291585005	MW-305	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60291585006	MW-306	EPA 6010	EMR	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60291585007	FIELD BLANK	EPA 6010	EMR	3	PASI-K

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		EPA 9040	RMT	1	PASI-K
		EPA 9056	MGS	3	PASI-K

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Sample: MW-301 **Lab ID: 60291585001** Collected: 01/09/19 15:07 Received: 01/10/19 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		01/09/19 15:07		
Field pH	**6.83**	Std. Units	0.10	0.050	1		01/09/19 15:07		
Field Temperature	**8.88**	deg C	0.50	0.25	1		01/09/19 15:07		
Field Specific Conductance	**417**	umhos/cm	1.0	1.0	1		01/09/19 15:07		
Field Oxidation Potential	**74.1**	mV			1		01/09/19 15:07		
Oxygen, Dissolved	**0.48**	mg/L			1		01/09/19 15:07	7782-44-7	
Turbidity	**172**	NTU	1.0	1.0	1		01/09/19 15:07		
Groundwater Elevation	**856.85**	feet			1		01/09/19 15:07		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**82.7J**	ug/L	100	12.5	1	01/11/19 08:52	01/14/19 13:52	7440-42-8	
Calcium	**88.7**	mg/L	0.20	0.054	1	01/11/19 08:52	01/14/19 13:52	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	01/11/19 08:52	01/14/19 13:52	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.33J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:27	7440-36-0	
Arsenic	**0.95J**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 14:27	7440-38-2	
Barium	**135**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 14:27	7440-39-3	
Beryllium	**0.17J**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 14:27	7440-41-7	
Cadmium	**0.11J**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 14:27	7440-43-9	
Chromium	**0.90J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:27	7440-47-3	B
Cobalt	**0.93J**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 14:27	7440-48-4	
Lead	**0.73J**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 14:27	7439-92-1	
Molybdenum	**0.99J**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 14:27	7439-98-7	
Selenium	**1.2**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 14:27	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 14:27	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**418**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**6.9**	Std. Units	0.10	0.10	1		01/14/19 10:08		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**51.4**	mg/L	5.0	1.4	5		01/15/19 13:52	16887-00-6	
Fluoride	**<0.19**	mg/L	0.20	0.19	1		01/15/19 13:09	16984-48-8	
Sulfate	**60.9**	mg/L	5.0	1.2	5		01/15/19 13:52	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.: 60291585

Sample: MW-302 **Lab ID: 60291585002** Collected: 01/09/19 13:44 Received: 01/10/19 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		01/09/19 13:44		
Field pH	**7.34**	Std. Units	0.10	0.050	1		01/09/19 13:44		
Field Temperature	**10.73**	deg C	0.50	0.25	1		01/09/19 13:44		
Field Specific Conductance	**302**	umhos/cm	1.0	1.0	1		01/09/19 13:44		
Field Oxidation Potential	**5.8**	mV			1		01/09/19 13:44		
Oxygen, Dissolved	**0.17**	mg/L			1		01/09/19 13:44	7782-44-7	
Turbidity	**22.5**	NTU	1.0	1.0	1		01/09/19 13:44		
Groundwater Elevation	**856.82**	feet			1		01/09/19 13:44		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**36.7J**	ug/L	100	12.5	1	01/11/19 08:52	01/14/19 13:55	7440-42-8	
Calcium	**65.4**	mg/L	0.20	0.054	1	01/11/19 08:52	01/14/19 13:55	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	01/11/19 08:52	01/14/19 13:55	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.59J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:29	7440-36-0	
Arsenic	**10.8**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 14:29	7440-38-2	
Barium	**108**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 14:29	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 14:29	7440-41-7	
Cadmium	**0.054J**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 14:29	7440-43-9	
Chromium	**0.45J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:29	7440-47-3	B
Cobalt	**5.0**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 14:29	7440-48-4	
Lead	**0.17J**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 14:29	7439-92-1	
Molybdenum	**1.3**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 14:29	7439-98-7	
Selenium	**0.88J**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 14:29	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 14:29	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**255**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**7.3**	Std. Units	0.10	0.10	1		01/14/19 10:05		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**4.5**	mg/L	1.0	0.29	1		01/15/19 15:03	16887-00-6	
Fluoride	**0.20**	mg/L	0.20	0.19	1		01/15/19 15:03	16984-48-8	
Sulfate	**21.9**	mg/L	5.0	1.2	5		01/15/19 15:31	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.: 60291585

Sample: MW-303 **Lab ID: 60291585003** Collected: 01/09/19 12:49 Received: 01/10/19 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		01/09/19 10:34		
Field pH	**6.96**	Std. Units	0.10	0.050	1		01/09/19 10:34		
Field Temperature	**8.11**	deg C	0.50	0.25	1		01/09/19 10:34		
Field Specific Conductance	**835**	umhos/cm	1.0	1.0	1		01/09/19 10:34		
Field Oxidation Potential	**66.1**	mV			1		01/09/19 10:34		
Oxygen, Dissolved	**0.61**	mg/L			1		01/09/19 10:34	7782-44-7	
Turbidity	**14.60**	NTU	1.0	1.0	1		01/09/19 10:34		
Groundwater Elevation	**855.11**	feet			1		01/09/19 10:34		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**609**	ug/L	100	12.5	1	01/11/19 08:52	01/14/19 13:57	7440-42-8	
Calcium	**206**	mg/L	0.20	0.054	1	01/11/19 08:52	01/14/19 13:57	7440-70-2	M1
Lithium	**28.2**	ug/L	10.0	4.6	1	01/11/19 08:52	01/14/19 13:57	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.16J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:35	7440-36-0	
Arsenic	**0.91J**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 14:35	7440-38-2	
Barium	**63.4**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 14:35	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 14:35	7440-41-7	
Cadmium	**0.084J**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 14:35	7440-43-9	
Chromium	**0.36J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:35	7440-47-3	B
Cobalt	**1.2**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 14:35	7440-48-4	
Lead	**0.32J**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 14:35	7439-92-1	
Molybdenum	**18.4**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 14:35	7439-98-7	
Selenium	**0.18J**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 14:35	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 14:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1080**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**7.0**	Std. Units	0.10	0.10	1		01/14/19 10:04		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**25.8**	mg/L	5.0	1.4	5		01/15/19 16:42	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	0.19	1		01/15/19 16:28	16984-48-8	
Sulfate	**482**	mg/L	50.0	12.0	50		01/15/19 16:57	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.: 60291585

Sample: MW-304 **Lab ID: 60291585004** Collected: 01/09/19 11:50 Received: 01/10/19 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		01/09/19 11:50		
Field pH	**6.71**	Std. Units	0.10	0.050	1		01/09/19 11:50		
Field Temperature	**8.65**	deg C	0.50	0.25	1		01/09/19 11:50		
Field Specific Conductance	**690**	umhos/cm	1.0	1.0	1		01/09/19 11:50		
Field Oxidation Potential	**76.0**	mV			1		01/09/19 11:50		
Oxygen, Dissolved	**0.43**	mg/L			1		01/09/19 11:50	7782-44-7	
Turbidity	**15.5**	NTU	1.0	1.0	1		01/09/19 11:50		
Groundwater Elevation	**854.93**	feet			1		01/09/19 11:50		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**665**	ug/L	100	12.5	1	01/11/19 08:52	01/14/19 14:03	7440-42-8	
Calcium	**164**	mg/L	0.20	0.054	1	01/11/19 08:52	01/14/19 14:03	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	01/11/19 08:52	01/14/19 14:03	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.13J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:37	7440-36-0	
Arsenic	**0.45J**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 14:37	7440-38-2	
Barium	**24.6**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 14:37	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 14:37	7440-41-7	
Cadmium	**0.12J**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 14:37	7440-43-9	
Chromium	**0.44J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:37	7440-47-3	B
Cobalt	**0.27J**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 14:37	7440-48-4	
Lead	**0.20J**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 14:37	7439-92-1	
Molybdenum	**1.0J**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 14:37	7439-98-7	
Selenium	**0.21J**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 14:37	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 14:37	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**841**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**6.7**	Std. Units	0.10	0.10	1		01/14/19 10:03		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**24.6**	mg/L	5.0	1.4	5		01/18/19 15:42	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.19	1		01/15/19 17:39	16984-48-8	
Sulfate	**372**	mg/L	20.0	4.8	20		01/15/19 18:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
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ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Sample: MW-305 **Lab ID: 60291585005** Collected: 01/09/19 10:34 Received: 01/10/19 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		01/09/19 12:49		
Field pH	**6.71**	Std. Units	0.10	0.050	1		01/09/19 12:49		
Field Temperature	**10.30**	deg C	0.50	0.25	1		01/09/19 12:49		
Field Specific Conductance	**817**	umhos/cm	1.0	1.0	1		01/09/19 12:49		
Field Oxidation Potential	**60.9**	mV			1		01/09/19 12:49		
Oxygen, Dissolved	**0.17**	mg/L			1		01/09/19 12:49	7782-44-7	
Turbidity	**3.64**	NTU	1.0	1.0	1		01/09/19 12:49		
Groundwater Elevation	**854.94**	feet			1		01/09/19 12:49		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**847**	ug/L	100	12.5	1	01/11/19 08:52	01/14/19 14:06	7440-42-8	
Calcium	**166**	mg/L	0.20	0.054	1	01/11/19 08:52	01/14/19 14:06	7440-70-2	
Lithium	**8.3J**	ug/L	10.0	4.6	1	01/11/19 08:52	01/14/19 14:06	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.13J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:39	7440-36-0	
Arsenic	**12.9**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 14:39	7440-38-2	
Barium	**49.0**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 14:39	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 14:39	7440-41-7	
Cadmium	**0.070J**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 14:39	7440-43-9	
Chromium	**0.32J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:39	7440-47-3	B
Cobalt	**2.2**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 14:39	7440-48-4	
Lead	**0.17J**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 14:39	7439-92-1	
Molybdenum	**23.8**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 14:39	7439-98-7	
Selenium	**0.24J**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 14:39	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 14:39	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**965**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**6.9**	Std. Units	0.10	0.10	1		01/14/19 10:01		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**17.5**	mg/L	1.0	0.29	1		01/15/19 18:22	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	0.19	1		01/15/19 18:22	16984-48-8	
Sulfate	**482**	mg/L	50.0	12.0	50		01/18/19 16:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Sample: MW-306 **Lab ID: 60291585006** Collected: 01/09/19 09:38 Received: 01/10/19 08:30 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**Client**				1		01/09/19 09:38		
Field pH	**7.44**	Std. Units	0.10	0.050	1		01/09/19 09:38		
Field Temperature	**10.73**	deg C	0.50	0.25	1		01/09/19 09:38		
Field Specific Conductance	**871**	umhos/cm	1.0	1.0	1		01/09/19 09:38		
Field Oxidation Potential	**39.8**	mV			1		01/09/19 09:38		
Oxygen, Dissolved	**0.29**	mg/L			1		01/09/19 09:38	7782-44-7	
Turbidity	**0.64**	NTU	1.0	1.0	1		01/09/19 09:38		
Groundwater Elevation	**854.94**	feet			1		01/09/19 09:38		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**3260**	ug/L	100	12.5	1	01/11/19 08:52	01/14/19 14:08	7440-42-8	
Calcium	**194**	mg/L	0.20	0.054	1	01/11/19 08:52	01/14/19 14:08	7440-70-2	
Lithium	**35.6**	ug/L	10.0	4.6	1	01/11/19 08:52	01/14/19 14:08	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.11J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:41	7440-36-0	
Arsenic	**4.7**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 14:41	7440-38-2	
Barium	**88.0**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 14:41	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 14:41	7440-41-7	
Cadmium	**0.056J**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 14:41	7440-43-9	
Chromium	**0.26J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 14:41	7440-47-3	B
Cobalt	**0.68J**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 14:41	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 14:41	7439-92-1	
Molybdenum	**39.6**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 14:41	7439-98-7	
Selenium	**0.13J**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 14:41	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 14:41	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1090**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		01/14/19 10:00		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**18.9**	mg/L	5.0	1.4	5		01/15/19 19:19	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	0.19	1		01/15/19 19:05	16984-48-8	
Sulfate	**533**	mg/L	50.0	12.0	50		01/18/19 17:02	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.: 60291585

Sample: FIELD BLANK **Lab ID: 60291585007** Collected: 01/09/19 23:59 Received: 01/10/19 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	01/11/19 08:52	01/15/19 16:21	7440-42-8	
Calcium	**<0.054**	mg/L	0.20	0.054	1	01/11/19 08:52	01/15/19 16:21	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	01/11/19 08:52	01/15/19 16:21	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.078**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 15:10	7440-36-0	
Arsenic	**<0.065**	ug/L	1.0	0.065	1	01/11/19 08:52	01/16/19 15:10	7440-38-2	
Barium	**<0.28**	ug/L	1.0	0.28	1	01/11/19 08:52	01/16/19 15:10	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	01/11/19 08:52	01/16/19 15:10	7440-41-7	
Cadmium	**<0.033**	ug/L	0.50	0.033	1	01/11/19 08:52	01/16/19 15:10	7440-43-9	
Chromium	**0.15J**	ug/L	1.0	0.078	1	01/11/19 08:52	01/16/19 15:10	7440-47-3	B
Cobalt	**<0.062**	ug/L	1.0	0.062	1	01/11/19 08:52	01/16/19 15:10	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	01/11/19 08:52	01/16/19 15:10	7439-92-1	
Molybdenum	**<0.57**	ug/L	1.0	0.57	1	01/11/19 08:52	01/16/19 15:10	7439-98-7	
Selenium	**<0.085**	ug/L	1.0	0.085	1	01/11/19 08:52	01/16/19 15:10	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	01/11/19 08:52	01/16/19 15:10	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.090**	ug/L	0.20	0.090	1	01/14/19 10:00	01/15/19 11:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**6.0**	mg/L	5.0	5.0	1		01/14/19 10:13		
9040 pH	Analytical Method: EPA 9040								
pH	**5.4**	Std. Units	0.10	0.10	1		01/14/19 10:10		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**<0.29**	mg/L	1.0	0.29	1		01/15/19 19:47	16887-00-6	
Fluoride	**<0.19**	mg/L	0.20	0.19	1		01/15/19 19:47	16984-48-8	
Sulfate	**<0.24**	mg/L	1.0	0.24	1		01/15/19 19:47	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

QC Batch: 564429 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

METHOD BLANK: 2315938 Matrix: Water
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.090	0.20	0.090	01/15/19 11:10	

LABORATORY CONTROL SAMPLE: 2315939

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	100	80-120	

SAMPLE DUPLICATE: 2317238

Parameter	Units	60291692003 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	ug/L	<0.090	<0.090		20	

SAMPLE DUPLICATE: 2317240

Parameter	Units	60291692003 Result	Dup Result	RPD	Max RPD	Qualifiers
Mercury	ug/L	<0.090	<0.18		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

QC Batch: 564236 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

METHOD BLANK: 2314999 Matrix: Water
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	01/14/19 13:48	
Calcium	mg/L	<0.054	0.20	0.054	01/14/19 13:48	
Lithium	ug/L	<4.6	10.0	4.6	01/14/19 13:48	

LABORATORY CONTROL SAMPLE: 2315000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	965	96	80-120	
Calcium	mg/L	10	10.0	100	80-120	
Lithium	ug/L	1000	977	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2315001 2315002

Parameter	Units	60291585003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	609	1000	1000	1580	1590	98	98	75-125	0	20	
Calcium	mg/L	206	10	10	214	212	77	59	75-125	1	20	M1
Lithium	ug/L	28.2	1000	1000	1040	1030	101	101	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.: 60291585

QC Batch: 564240 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

METHOD BLANK: 2315010 Matrix: Water
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	<0.078	1.0	0.078	01/16/19 14:24	
Arsenic	ug/L	<0.065	1.0	0.065	01/16/19 14:24	
Barium	ug/L	<0.28	1.0	0.28	01/16/19 14:24	
Beryllium	ug/L	<0.089	0.50	0.089	01/16/19 14:24	
Cadmium	ug/L	<0.033	0.50	0.033	01/16/19 14:24	
Chromium	ug/L	0.11J	1.0	0.078	01/16/19 14:24	
Cobalt	ug/L	<0.062	1.0	0.062	01/16/19 14:24	
Lead	ug/L	<0.13	1.0	0.13	01/16/19 14:24	
Molybdenum	ug/L	<0.57	1.0	0.57	01/16/19 14:24	
Selenium	ug/L	<0.085	1.0	0.085	01/16/19 14:24	
Thallium	ug/L	<0.099	1.0	0.099	01/16/19 14:24	

LABORATORY CONTROL SAMPLE: 2315011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	80	83.6	104	80-120	
Arsenic	ug/L	80	83.6	105	80-120	
Barium	ug/L	80	83.7	105	80-120	
Beryllium	ug/L	80	83.4	104	80-120	
Cadmium	ug/L	80	84.3	105	80-120	
Chromium	ug/L	80	84.6	106	80-120	
Cobalt	ug/L	80	86.3	108	80-120	
Lead	ug/L	80	85.3	107	80-120	
Molybdenum	ug/L	80	87.3	109	80-120	
Selenium	ug/L	80	79.0	99	80-120	
Thallium	ug/L	80	82.5	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2315012 2315013

Parameter	Units	60291585002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.59J	40	40	42.7	43.5	105	107	75-125	2	20	
Arsenic	ug/L	10.8	40	40	52.8	53.8	105	107	75-125	2	20	
Barium	ug/L	108	40	40	142	146	83	95	75-125	3	20	
Beryllium	ug/L	<0.089	40	40	41.6	42.5	104	106	75-125	2	20	
Cadmium	ug/L	0.054J	40	40	41.6	42.3	104	106	75-125	2	20	
Chromium	ug/L	0.45J	40	40	42.5	43.2	105	107	75-125	2	20	
Cobalt	ug/L	5.0	40	40	47.4	48.1	106	108	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2315012 2315013

Parameter	Units	60291585002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.17J	40	40	44.0	44.6	110	111	75-125	1	20	
Molybdenum	ug/L	1.3	40	40	45.0	45.3	109	110	75-125	1	20	
Selenium	ug/L	0.88J	40	40	38.8	39.5	95	97	75-125	2	20	
Thallium	ug/L	<0.099	40	40	42.7	43.5	106	109	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

QC Batch: 564464 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

METHOD BLANK: 2316031 Matrix: Water
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	01/14/19 10:13	

LABORATORY CONTROL SAMPLE: 2316032

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	100	80-120	

SAMPLE DUPLICATE: 2316033

Parameter	Units	60291346001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	228	240	5	10	

SAMPLE DUPLICATE: 2316034

Parameter	Units	60291534001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1720	1900	10	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

QC Batch: 564328 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

SAMPLE DUPLICATE: 2315296

Parameter	Units	60291215001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	8.4	8.4	0	10	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

QC Batch: 564494 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

METHOD BLANK: 2316127 Matrix: Water
Associated Lab Samples: 60291585001, 60291585002, 60291585003, 60291585004, 60291585005, 60291585006, 60291585007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	01/15/19 11:37	
Fluoride	mg/L	<0.19	0.20	0.19	01/15/19 11:37	
Sulfate	mg/L	<0.24	1.0	0.24	01/15/19 11:37	

LABORATORY CONTROL SAMPLE: 2316128

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	80-120	
Fluoride	mg/L	2.5	2.5	101	80-120	
Sulfate	mg/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2316129 2316130

Parameter	Units	60291585001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	51.4	25	25	77.3	78.4	103	108	80-120	2	15	
Fluoride	mg/L	<0.19	2.5	2.5	2.8	2.8	106	107	80-120	1	15	
Sulfate	mg/L	60.9	25	25	87.7	89.2	107	113	80-120	2	15	

SAMPLE DUPLICATE: 2316131

Parameter	Units	60291585002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	4.5	4.5	0	15	
Fluoride	mg/L	0.20	<0.19		15	
Sulfate	mg/L	21.9	21.5	2	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

QC Batch: 565285 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60291585004, 60291585005, 60291585006

METHOD BLANK: 2319405 Matrix: Water
Associated Lab Samples: 60291585004, 60291585005, 60291585006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	01/18/19 12:54	
Sulfate	mg/L	<0.24	1.0	0.24	01/18/19 12:54	

LABORATORY CONTROL SAMPLE: 2319406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	80-120	
Sulfate	mg/L	5	4.9	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2319407 2319408

Parameter	Units	60291585004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	24.6	25	25	52.5	50.7	112	105	80-120	3	15	

SAMPLE DUPLICATE: 2319409

Parameter	Units	60291585005 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	482	454	6	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

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

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: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60291585001	MW-301		565395		
60291585002	MW-302		565395		
60291585003	MW-303		565395		
60291585004	MW-304		565395		
60291585005	MW-305		565395		
60291585006	MW-306		565395		
60291585001	MW-301	EPA 3010	564236	EPA 6010	564299
60291585002	MW-302	EPA 3010	564236	EPA 6010	564299
60291585003	MW-303	EPA 3010	564236	EPA 6010	564299
60291585004	MW-304	EPA 3010	564236	EPA 6010	564299
60291585005	MW-305	EPA 3010	564236	EPA 6010	564299
60291585006	MW-306	EPA 3010	564236	EPA 6010	564299
60291585007	FIELD BLANK	EPA 3010	564236	EPA 6010	564299
60291585001	MW-301	EPA 3010	564240	EPA 6020	564300
60291585002	MW-302	EPA 3010	564240	EPA 6020	564300
60291585003	MW-303	EPA 3010	564240	EPA 6020	564300
60291585004	MW-304	EPA 3010	564240	EPA 6020	564300
60291585005	MW-305	EPA 3010	564240	EPA 6020	564300
60291585006	MW-306	EPA 3010	564240	EPA 6020	564300
60291585007	FIELD BLANK	EPA 3010	564240	EPA 6020	564300
60291585001	MW-301	EPA 7470	564429	EPA 7470	564479
60291585002	MW-302	EPA 7470	564429	EPA 7470	564479
60291585003	MW-303	EPA 7470	564429	EPA 7470	564479
60291585004	MW-304	EPA 7470	564429	EPA 7470	564479
60291585005	MW-305	EPA 7470	564429	EPA 7470	564479
60291585006	MW-306	EPA 7470	564429	EPA 7470	564479
60291585007	FIELD BLANK	EPA 7470	564429	EPA 7470	564479
60291585001	MW-301	SM 2540C	564464		
60291585002	MW-302	SM 2540C	564464		
60291585003	MW-303	SM 2540C	564464		
60291585004	MW-304	SM 2540C	564464		
60291585005	MW-305	SM 2540C	564464		
60291585006	MW-306	SM 2540C	564464		
60291585007	FIELD BLANK	SM 2540C	564464		
60291585001	MW-301	EPA 9040	564328		
60291585002	MW-302	EPA 9040	564328		
60291585003	MW-303	EPA 9040	564328		
60291585004	MW-304	EPA 9040	564328		
60291585005	MW-305	EPA 9040	564328		
60291585006	MW-306	EPA 9040	564328		
60291585007	FIELD BLANK	EPA 9040	564328		
60291585001	MW-301	EPA 9056	564494		
60291585002	MW-302	EPA 9056	564494		
60291585003	MW-303	EPA 9056	564494		
60291585004	MW-304	EPA 9056	564494		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: SUTHERLAND GENERATING STATION
Pace Project No.: 60291585

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60291585004	**MW-304**	EPA 9056	565285		
60291585005	**MW-305**	EPA 9056	564494		
60291585005	**MW-305**	EPA 9056	565285		
60291585006	**MW-306**	EPA 9056	564494		
60291585006	**MW-306**	EPA 9056	565285		
60291585007	**FIELD BLANK**	EPA 9056	564494		

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Sample Condition Upon Receipt

HNK
WO# : 60291585

60291585

Client Name: SCS Engineers

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

Tracking #: 474682395433 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 0.5 Corr. Factor 0.0 Corrected 0.5

Date and initials of person examining contents: 1/10/19 HK

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: _____

Hank
03:34 pm,Jan 10,2019
Kapka

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:		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

Requested Analysis Filtered (Y/N)

ITEM #	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	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.
																				N	N											
1	MW-301		WT	G	xxx	xxx	1-9-19	1507		3	1		2							X	X	X	X	X	X	BP1U	BP3N(2)					40291585 001
2	MW-302		WT	G	xxx	xxx	1-9-19	1344		3	1		2							X	X	X	X	X	X							002
3	MW-303		WT	G	xxx	xxx	1-9-19	1249		3	1		2							X	X	X	X	X	X							003
4	MW-304		WT	G	xxx	xxx	1-9-19	1150		3	1		2							X	X	X	X	X	X							004
5	MW-305		WT	G	xxx	xxx	1-9-19	1034		3	1		2							X	X	X	X	X	X							005
6	MW-306		WT	G	xxx	xxx	1-9-19	0938		3	1		2							X	X	X	X	X	X							006
7	FIELD BLANK		WT	G	xxx	xxx	1-9-19	2354		3	1		2							X	X	X	X	X	X	BP1U	BP3N(2)					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	SCS	1/9/19			1/10/19	0830	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.

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

January 29, 2019

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland Generating Station
Pace Project No.: 60291579

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on January 10, 2019. 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.: 60291579

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.: 60291579

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60291579001	**MW-301**	Water	01/09/19 15:07	01/10/19 08:30
60291579002	**MW-302**	Water	01/09/19 13:44	01/10/19 08:30
60291579003	**MW-303**	Water	01/09/19 12:49	01/10/19 08:30
60291579004	**MW-304**	Water	01/09/19 11:50	01/10/19 08:30
60291579005	**MW-305**	Water	01/09/19 10:34	01/10/19 08:30
60291579006	**MW-306**	Water	01/09/19 09:38	01/10/19 08:30
60291579007	**FIELD BLANK**	Water	01/09/19 23:59	01/10/19 08:30

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SAMPLE ANALYTE COUNT

Project: Sutherland Generating Station
Pace Project No.: 60291579

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60291579001	**MW-301**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60291579002	**MW-302**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60291579003	**MW-303**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60291579004	**MW-304**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60291579005	**MW-305**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60291579006	**MW-306**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60291579007	**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.: 60291579

Sample: MW-301 **Lab ID: 60291579001** Collected: 01/09/19 15:07 Received: 01/10/19 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	**0.915 ± 0.630 (0.860) C:NA T:78%**	pCi/L	01/24/19 21:15	13982-63-3	
Radium-228	EPA 904.0	**0.876 ± 0.424 (0.731) C:76% T:83%**	pCi/L	01/17/19 12:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.79 ± 1.05 (1.59)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

Sample: MW-302 **Lab ID: 60291579002** Collected: 01/09/19 13:44 Received: 01/10/19 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	**0.926 ± 0.551 (0.524) C:NA T:74%**	pCi/L	01/24/19 21:15	13982-63-3	
Radium-228	EPA 904.0	**1.03 ± 0.413 (0.645) C:75% T:93%**	pCi/L	01/17/19 12:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.96 ± 0.964 (1.17)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

Sample: MW-303 **Lab ID: 60291579003** Collected: 01/09/19 12:49 Received: 01/10/19 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	**0.459 ± 0.424 (0.618) C:NA T:83%**	pCi/L	01/24/19 21:15	13982-63-3	
Radium-228	EPA 904.0	**0.788 ± 0.421 (0.755) C:74% T:83%**	pCi/L	01/17/19 12:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.25 ± 0.845 (1.37)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

Sample: MW-304 **Lab ID: 60291579004** Collected: 01/09/19 11:50 Received: 01/10/19 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	**0.461 ± 0.395 (0.535) C:NA T:86%**	pCi/L	01/24/19 21:15	13982-63-3	
Radium-228	EPA 904.0	**0.706 ± 0.483 (0.936) C:70% T:75%**	pCi/L	01/17/19 12:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.17 ± 0.878 (1.47)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

Sample: MW-305 **Lab ID: 60291579005** Collected: 01/09/19 10:34 Received: 01/10/19 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	**0.564 ± 0.355 (0.153) C:NA T:91%**	pCi/L	01/24/19 21:30	13982-63-3	
Radium-228	EPA 904.0	**0.764 ± 0.424 (0.778) C:77% T:84%**	pCi/L	01/17/19 12:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.33 ± 0.779 (0.931)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

Sample: MW-306 **Lab ID: 60291579006** Collected: 01/09/19 09:38 Received: 01/10/19 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	**0.324 ± 0.422 (0.697) C:NA T:78%**	pCi/L	01/24/19 21:30	13982-63-3	
Radium-228	EPA 904.0	**1.08 ± 0.464 (0.760) C:75% T:83%**	pCi/L	01/17/19 12:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.40 ± 0.886 (1.46)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

Sample: FIELD BLANK **Lab ID: 60291579007** Collected: 01/09/19 23:59 Received: 01/10/19 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	**0.494 ± 0.361 (0.404) C:NA T:89%**	pCi/L	01/24/19 21:30	13982-63-3	
Radium-228	EPA 904.0	**0.0326 ± 0.329 (0.759) C:81% T:82%**	pCi/L	01/17/19 16:04	15262-20-1	
Total Radium	Total Radium Calculation	**0.527 ± 0.690 (1.16)**	pCi/L	01/28/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

QC Batch: 326851 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60291579001, 60291579002, 60291579003, 60291579004, 60291579005, 60291579006, 60291579007

METHOD BLANK: 1591736 Matrix: Water
Associated Lab Samples: 60291579001, 60291579002, 60291579003, 60291579004, 60291579005, 60291579006, 60291579007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.348 ± 0.295 (0.366) C:NA T:96%	pCi/L	01/24/19 21:15	

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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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland Generating Station
Pace Project No.: 60291579

QC Batch: 326764 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60291579001, 60291579002, 60291579003, 60291579004, 60291579005, 60291579006, 60291579007

METHOD BLANK: 1591540 Matrix: Water
Associated Lab Samples: 60291579001, 60291579002, 60291579003, 60291579004, 60291579005, 60291579006, 60291579007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.254 ± 0.288 (0.601) C:79% T:85%	pCi/L	01/17/19 11:06	

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

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QUALIFIERS

Project: Sutherland Generating Station
Pace Project No.: 60291579

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.: 60291579

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60291579001	**MW-301**	EPA 903.1	326851		
60291579002	**MW-302**	EPA 903.1	326851		
60291579003	**MW-303**	EPA 903.1	326851		
60291579004	**MW-304**	EPA 903.1	326851		
60291579005	**MW-305**	EPA 903.1	326851		
60291579006	**MW-306**	EPA 903.1	326851		
60291579007	**FIELD BLANK**	EPA 903.1	326851		
60291579001	**MW-301**	EPA 904.0	326764		
60291579002	**MW-302**	EPA 904.0	326764		
60291579003	**MW-303**	EPA 904.0	326764		
60291579004	**MW-304**	EPA 904.0	326764		
60291579005	**MW-305**	EPA 904.0	326764		
60291579006	**MW-306**	EPA 904.0	326764		
60291579007	**FIELD BLANK**	EPA 904.0	326764		
60291579001	**MW-301**	Total Radium Calculation	328299		
60291579002	**MW-302**	Total Radium Calculation	328299		
60291579003	**MW-303**	Total Radium Calculation	328299		
60291579004	**MW-304**	Total Radium Calculation	328299		
60291579005	**MW-305**	Total Radium Calculation	328299		
60291579006	**MW-306**	Total Radium Calculation	328299		
60291579007	**FIELD BLANK**	Total Radium Calculation	328299		

HWK

WO# : 60291579

60291579

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

Client Name: SCS Engineers

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

Tracking #: 474687395411 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 ☒ Zip

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

Cooler Temperature (°C): As-read 2.1 Corr. Factor +0.2 Corrected 2.3

Date and initials of person examining contents: 1·10·19 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	
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, H2SO4, 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: _____

Hank
03:28 pm,Jan 10,2019
Kapka

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

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

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	1.9.19	1607		2			2						X	X	X	2BP(N)		60291579-001
2	MW-302	WT	G	xxx	xxx	1.9.19	1344		2			2						X	X	X			002
3	MW-303	WT	G	xxx	xxx	1.9.19	1249		2			2						X	X	X			003
4	MW-304	WT	G	xxx	xxx	1.9.19	1150		2			2						X	X	X			004
5	MW-305	WT	G	xxx	xxx	1.9.19	1034		2			2						X	X	X			005
6	MW-306	WT	G	xxx	xxx	1.9.19	0938		2			2						X	X	X			006
7	FIELD BLANK	WT	G	xxx	xxx	1.9.19	2359		2			2						X	X	X			007
8																							
9																							
10																							
11																							
12																							

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Ship To: 9608 Loiret Boulevard, Lenexa, KS 66219	SCS	1/9/19		Wright Exp.	1.10.19	0830	2-3	Y	N	Y
							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:

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.

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: IA
Cert. Needed: ☐ Yes ☐ No

Workorder: 60291579 **Workorder Name:** SUTHERLAND GENERATING STATION **Owner Received Date:** 1/10/2019 **Results Requested By:** 1/31/2019

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Requested Analysis: Ra 226	Ra 228 + combined Ra	LAB USE ONLY
1	MW-301	PS	1/9/2019 15:07	60291579001	Water	2	X	X	001
2	MW-302	PS	1/9/2019 13:44	60291579002	Water	2	X	X	002
3	MW-303	PS	1/9/2019 12:49	60291579003	Water	2	X	X	003
4	MW-304	PS	1/9/2019 11:50	60291579004	Water	2	X	X	004
5	MW-305	PS	1/9/2019 10:34	60291579005	Water	2	X	X	005
6	MW-306	PS	1/9/2019 09:38	60291579006	Water	2	X	X	006
7	FIELD BLANK	PS	1/9/2019 23:59	60291579007	Water	2	X	X	007

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[signature]	1-10-19 [initials]	[signature]	1-11-19 0940	
2					
3					

Cooler Temperature on Receipt NA °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.

WO#: 30276572

30276572

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS Project # 30276572

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

Label MJS
LIMS Login MJS

Tracking #: 4746 8739 9483

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# 10D3581 Date and Initials of person examining contents: MJS 1-11-19

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 MJS 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: MJS Date: 1-11-19

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 February 2019 Background Monitoring

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

February 27, 2019

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on February 15, 2019. 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
(913)599-5665

CERTIFICATIONS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60294514001	**MW-301**	Water	02/12/19 19:45	02/15/19 08:20
60294514002	**MW-302**	Water	02/12/19 17:45	02/15/19 08:20
60294514003	**MW-303**	Water	02/12/19 15:55	02/15/19 08:20
60294514004	**MW-304**	Water	02/12/19 12:55	02/15/19 08:20
60294514005	**MW-305**	Water	02/12/19 14:15	02/15/19 08:20
60294514006	**MW-306**	Water	02/12/19 10:05	02/15/19 08:20
60294514007	**Field Blank**	Water	02/12/19 16:20	02/15/19 08:20

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60294514001	MW-301	EPA 6010	JDE	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	JES	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60294514002	MW-302	EPA 6010	JDE	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	JES	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60294514003	MW-303	EPA 6010	JDE	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	JES	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60294514004	MW-304	EPA 6010	JDE	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	JES	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60294514005	MW-305	EPA 6010	JDE	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	JES	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60294514006	MW-306	EPA 6010	JDE	3	PASI-K
		EPA 6020	JGP	11	PASI-K
		EPA 7470	HKC	1	PASI-K
		SM 2540C	JES	1	PASI-K
		EPA 9040	ZMH	1	PASI-K
		EPA 9056	MGS	3	PASI-K
60294514007	Field Blank	EPA 6010	JDE	3	PASI-K

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

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

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

ANALYTICAL RESULTS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Sample: MW-301 **Lab ID: 60294514001** Collected: 02/12/19 19:45 Received: 02/15/19 08:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		02/12/19 19:45		
Collected Date	**02/12/2019**				1		02/12/19 19:45		
Collected Time	**19:45**				1		02/12/19 19:45		
Field pH	**6.85**	Std. Units	0.10	0.050	1		02/12/19 19:45		
Field Temperature	**5.80**	deg C	0.50	0.25	1		02/12/19 19:45		
Field Specific Conductance	**601**	umhos/cm	1.0	1.0	1		02/12/19 19:45		
Field Oxidation Potential	**75.8**	mV			1		02/12/19 19:45		
Oxygen, Dissolved	**0.37**	mg/L			1		02/12/19 19:45	7782-44-7	
Turbidity	**56.09**	NTU	1.0	1.0	1		02/12/19 19:45		
Groundwater Elevation	**856.59**	feet			1		02/12/19 19:45		
6010 MET ICP	Analytical Method: EPA 6010	Preparation Method: EPA 3010							
Boron	**97.3J**	ug/L	100	12.5	1	02/21/19 10:01	02/21/19 16:36	7440-42-8	
Calcium	**84.2**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 16:36	7440-70-2	
Lithium	**7.7J**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 16:36	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020	Preparation Method: EPA 3010							
Antimony	**0.20J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:08	7440-36-0	B
Arsenic	**1.6**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:08	7440-38-2	
Barium	**132**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:08	7440-39-3	
Beryllium	**0.16J**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:08	7440-41-7	
Cadmium	**0.11J**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:08	7440-43-9	
Chromium	**2.0**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:08	7440-47-3	
Cobalt	**2.6**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:08	7440-48-4	
Lead	**2.0**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:08	7439-92-1	
Molybdenum	**3.6**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 12:08	7439-98-7	
Selenium	**0.81J**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:08	7782-49-2	
Thallium	**0.11J**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:08	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470	Preparation Method: EPA 7470							
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**420**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**7.2**	Std. Units	0.10	0.10	1		02/19/19 10:19		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**42.1**	mg/L	20.0	5.8	20		02/27/19 02:59	16887-00-6	
Fluoride	**<0.19**	mg/L	0.20	0.19	1		02/25/19 11:25	16984-48-8	
Sulfate	**63.0**	mg/L	5.0	1.2	5		02/25/19 14:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Sample: MW-302 **Lab ID: 60294514002** Collected: 02/12/19 17:45 Received: 02/15/19 08:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		02/12/19 17:45		
Collected Date	**02/12/2019**				1		02/12/19 17:45		
Collected Time	**17:45**				1		02/12/19 17:45		
Field pH	**7.21**	Std. Units	0.10	0.050	1		02/12/19 17:45		
Field Temperature	**9.70**	deg C	0.50	0.25	1		02/12/19 17:45		
Field Specific Conductance	**393.6**	umhos/cm	1.0	1.0	1		02/12/19 17:45		
Field Oxidation Potential	**-42.7**	mV			1		02/12/19 17:45		
Oxygen, Dissolved	**0.13**	mg/L			1		02/12/19 17:45	7782-44-7	
Turbidity	**4.7**	NTU	1.0	1.0	1		02/12/19 17:45		
Groundwater Elevation	**856.43**	feet			1		02/12/19 17:45		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**31.5J**	ug/L	100	12.5	1	02/21/19 10:01	02/21/19 16:45	7440-42-8	
Calcium	**61.7**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 16:45	7440-70-2	
Lithium	**7.5J**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 16:45	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.22J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:10	7440-36-0	B
Arsenic	**2.8**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:10	7440-38-2	
Barium	**83.7**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:10	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:10	7440-41-7	
Cadmium	**<0.033**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:10	7440-43-9	
Chromium	**0.14J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:10	7440-47-3	
Cobalt	**6.2**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:10	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:10	7439-92-1	
Molybdenum	**0.76J**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 12:10	7439-98-7	
Selenium	**0.67J**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:10	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:10	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**256**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**7.4**	Std. Units	0.10	0.10	1		02/19/19 10:15		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**5.3**	mg/L	1.0	0.29	1		02/25/19 14:38	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	0.19	1		02/25/19 14:38	16984-48-8	
Sulfate	**21.2**	mg/L	5.0	1.2	5		02/25/19 14:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Sample: MW-303 **Lab ID: 60294514003** Collected: 02/12/19 15:55 Received: 02/15/19 08:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		02/12/19 15:55		
Collected Date	**02/12/2019**				1		02/12/19 15:55		
Collected Time	**15:55**				1		02/12/19 15:55		
Field pH	**7.02**	Std. Units	0.10	0.050	1		02/12/19 15:55		
Field Temperature	**8.90**	deg C	0.50	0.25	1		02/12/19 15:55		
Field Specific Conductance	**1087**	umhos/cm	1.0	1.0	1		02/12/19 15:55		
Field Oxidation Potential	**39.2**	mV			1		02/12/19 15:55		
Oxygen, Dissolved	**0.11**	mg/L			1		02/12/19 15:55	7782-44-7	
Turbidity	**5.96**	NTU	1.0	1.0	1		02/12/19 15:55		
Groundwater Elevation	**854.58**	feet			1		02/12/19 15:55		
6010 MET ICP	Analytical Method: EPA 6010	Preparation Method: EPA 3010							
Boron	**737**	ug/L	100	12.5	1	02/21/19 10:01	02/21/19 16:48	7440-42-8	
Calcium	**160**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 16:48	7440-70-2	M1
Lithium	**36.5**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 16:48	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020	Preparation Method: EPA 3010							
Antimony	**0.10J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:12	7440-36-0	B
Arsenic	**1.1**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:12	7440-38-2	
Barium	**57.7**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:12	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:12	7440-41-7	
Cadmium	**0.037J**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:12	7440-43-9	
Chromium	**0.62J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:12	7440-47-3	
Cobalt	**1.4**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:12	7440-48-4	
Lead	**0.35J**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:12	7439-92-1	
Molybdenum	**20.9**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 12:12	7439-98-7	
Selenium	**0.097J**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:12	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470	Preparation Method: EPA 7470							
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**852**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**7.2**	Std. Units	0.10	0.10	1		02/19/19 10:07		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**28.0**	mg/L	10.0	2.9	10		02/25/19 15:31	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	0.19	1		02/25/19 15:18	16984-48-8	
Sulfate	**377**	mg/L	50.0	12.0	50		02/25/19 15:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Sample: MW-304 **Lab ID: 60294514004** Collected: 02/12/19 12:55 Received: 02/15/19 08:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		02/12/19 12:55		
Collected Date	**02/12/2019**				1		02/12/19 12:55		
Collected Time	**12:55**				1		02/12/19 12:55		
Field pH	**6.57**	Std. Units	0.10	0.050	1		02/12/19 12:55		
Field Temperature	**8.20**	deg C	0.50	0.25	1		02/12/19 12:55		
Field Specific Conductance	**1057**	umhos/cm	1.0	1.0	1		02/12/19 12:55		
Field Oxidation Potential	**59.5**	mV			1		02/12/19 12:55		
Oxygen, Dissolved	**0.14**	mg/L			1		02/12/19 12:55	7782-44-7	
Turbidity	**6.27**	NTU	1.0	1.0	1		02/12/19 12:55		
Groundwater Elevation	**854.41**	feet			1		02/12/19 12:55		
6010 MET ICP	Analytical Method: EPA 6010	Preparation Method: EPA 3010							
Boron	**649**	ug/L	100	12.5	1	02/21/19 10:01	02/21/19 16:54	7440-42-8	
Calcium	**174**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 16:54	7440-70-2	
Lithium	**5.7J**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 16:54	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020	Preparation Method: EPA 3010							
Antimony	**0.11J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:18	7440-36-0	B
Arsenic	**0.26J**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:18	7440-38-2	
Barium	**23.0**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:18	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:18	7440-41-7	
Cadmium	**0.078J**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:18	7440-43-9	
Chromium	**0.24J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:18	7440-47-3	
Cobalt	**0.23J**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:18	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:18	7439-92-1	
Molybdenum	**0.82J**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 12:18	7439-98-7	
Selenium	**0.12J**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:18	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:18	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470	Preparation Method: EPA 7470							
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:50	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**902**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**6.8**	Std. Units	0.10	0.10	1		02/19/19 10:01		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**28.3**	mg/L	10.0	2.9	10		02/25/19 16:11	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	0.19	1		02/25/19 15:58	16984-48-8	
Sulfate	**442**	mg/L	50.0	12.0	50		02/25/19 16:51	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 GS 25218062.00
Pace Project No.: 60294514

Sample: MW-305 **Lab ID: 60294514005** Collected: 02/12/19 14:15 Received: 02/15/19 08:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		02/12/19 14:15		
Collected Date	**02/12/2019**				1		02/12/19 14:15		
Collected Time	**14:15**				1		02/12/19 14:15		
Field pH	**6.82**	Std. Units	0.10	0.050	1		02/12/19 14:15		
Field Temperature	**9.40**	deg C	0.50	0.25	1		02/12/19 14:15		
Field Specific Conductance	**939**	umhos/cm	1.0	1.0	1		02/12/19 14:15		
Field Oxidation Potential	**23.6**	mV			1		02/12/19 14:15		
Oxygen, Dissolved	**0.08**	mg/L			1		02/12/19 14:15	7782-44-7	
Turbidity	**12.33**	NTU	1.0	1.0	1		02/12/19 14:15		
Groundwater Elevation	**854.56**	feet			1		02/12/19 14:15		
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Boron	**809**	ug/L	100	12.5	1	02/21/19 10:01	02/21/19 16:56	7440-42-8	
Calcium	**139**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 16:56	7440-70-2	
Lithium	**18.6**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 16:56	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.092J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:20	7440-36-0	B
Arsenic	**6.9**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:20	7440-38-2	
Barium	**27.9**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:20	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:20	7440-41-7	
Cadmium	**0.043J**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:20	7440-43-9	
Chromium	**0.52J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:20	7440-47-3	
Cobalt	**2.0**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:20	7440-48-4	
Lead	**0.35J**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:20	7439-92-1	
Molybdenum	**27.3**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 12:20	7439-98-7	
Selenium	**0.31J**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:20	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:20	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:52	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**777**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**7.0**	Std. Units	0.10	0.10	1		02/19/19 10:04		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**19.9**	mg/L	1.0	0.29	1		02/25/19 17:04	16887-00-6	
Fluoride	**0.60**	mg/L	0.20	0.19	1		02/25/19 17:04	16984-48-8	
Sulfate	**387**	mg/L	20.0	4.8	20		02/25/19 17:30	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 GS 25218062.00
Pace Project No.: 60294514

Sample: MW-306 **Lab ID: 60294514006** Collected: 02/12/19 10:05 Received: 02/15/19 08:20 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Collected By	**CLIENT**				1		02/12/19 10:05		
Collected Date	**02/12/2019**				1		02/12/19 10:05		
Collected Time	**10:05**				1		02/12/19 10:05		
Field pH	**7.61**	Std. Units	0.10	0.050	1		02/12/19 10:05		
Field Temperature	**10.70**	deg C	0.50	0.25	1		02/12/19 10:05		
Field Specific Conductance	**1140**	umhos/cm	1.0	1.0	1		02/12/19 10:05		
Field Oxidation Potential	**-113.1**	mV			1		02/12/19 10:05		
Oxygen, Dissolved	**0.08**	mg/L			1		02/12/19 10:05	7782-44-7	
Turbidity	**4.78**	NTU	1.0	1.0	1		02/12/19 10:05		
Groundwater Elevation	**854.75**	feet			1		02/12/19 10:05		
6010 MET ICP	Analytical Method: EPA 6010	Preparation Method: EPA 3010							
Boron	**3350**	ug/L	100	12.5	1	02/21/19 10:01	02/21/19 16:58	7440-42-8	
Calcium	**183**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 16:58	7440-70-2	
Lithium	**43.7**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 16:58	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020	Preparation Method: EPA 3010							
Antimony	**0.090J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:21	7440-36-0	B
Arsenic	**3.9**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:21	7440-38-2	
Barium	**75.0**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:21	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:21	7440-41-7	
Cadmium	**0.036J**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:21	7440-43-9	
Chromium	**0.23J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:21	7440-47-3	
Cobalt	**0.72J**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:21	7440-48-4	
Lead	**<0.13**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:21	7439-92-1	
Molybdenum	**40.6**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 12:21	7439-98-7	
Selenium	**<0.085**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:21	7782-49-2	
Thallium	**<0.099**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:21	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470	Preparation Method: EPA 7470							
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**1020**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.10	1		02/19/19 09:55		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**18.0**	mg/L	1.0	0.29	1		02/25/19 17:44	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	0.19	1		02/25/19 17:44	16984-48-8	
Sulfate	**597**	mg/L	50.0	12.0	50		02/25/19 18:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Sample: Field Blank **Lab ID: 60294514007** Collected: 02/12/19 16:20 Received: 02/15/19 08:20 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	02/21/19 10:01	02/21/19 17:01	7440-42-8	
Calcium	**0.11J**	mg/L	0.20	0.054	1	02/21/19 10:01	02/21/19 17:01	7440-70-2	
Lithium	**<4.6**	ug/L	10.0	4.6	1	02/21/19 10:01	02/21/19 17:01	7439-93-2	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**0.13J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:44	7440-36-0	B
Arsenic	**0.14J**	ug/L	1.0	0.065	1	02/25/19 09:04	02/27/19 12:44	7440-38-2	
Barium	**23.2**	ug/L	1.0	0.28	1	02/25/19 09:04	02/27/19 12:44	7440-39-3	
Beryllium	**<0.089**	ug/L	0.50	0.089	1	02/25/19 09:04	02/27/19 12:44	7440-41-7	
Cadmium	**0.069J**	ug/L	0.50	0.033	1	02/25/19 09:04	02/27/19 12:44	7440-43-9	
Chromium	**0.57J**	ug/L	1.0	0.078	1	02/25/19 09:04	02/27/19 12:44	7440-47-3	
Cobalt	**0.17J**	ug/L	1.0	0.062	1	02/25/19 09:04	02/27/19 12:44	7440-48-4	
Lead	**10.8**	ug/L	1.0	0.13	1	02/25/19 09:04	02/27/19 12:44	7439-92-1	
Molybdenum	**<0.57**	ug/L	1.0	0.57	1	02/25/19 09:04	02/27/19 14:36	7439-98-7	
Selenium	**0.13J**	ug/L	1.0	0.085	1	02/25/19 09:04	02/27/19 12:44	7782-49-2	
Thallium	**0.15J**	ug/L	1.0	0.099	1	02/25/19 09:04	02/27/19 12:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.037**	ug/L	0.20	0.037	1	02/19/19 14:12	02/21/19 09:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		02/18/19 14:23		
9040 pH	Analytical Method: EPA 9040								
pH	**5.4**	Std. Units	0.10	0.10	1		02/19/19 10:11		H6
9056 IC Anions	Analytical Method: EPA 9056								
Chloride	**<0.29**	mg/L	1.0	0.29	1		02/25/19 18:23	16887-00-6	
Fluoride	**<0.19**	mg/L	0.20	0.19	1		02/25/19 18:23	16984-48-8	
Sulfate	**<0.24**	mg/L	1.0	0.24	1		02/25/19 18:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

QC Batch: 569955 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

METHOD BLANK: 2337077 Matrix: Water
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	ug/L	<0.037	0.20	0.037	02/21/19 09:29	

LABORATORY CONTROL SAMPLE: 2337078

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: 2337079 2337080

Parameter	Units	60294514001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.037	5	5	5.0	4.9	101	98	75-125	3	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 GS 25218062.00
Pace Project No.: 60294514

QC Batch: 570263 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

METHOD BLANK: 2338303 Matrix: Water
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<12.5	100	12.5	02/21/19 16:34	
Calcium	mg/L	<0.054	0.20	0.054	02/21/19 16:34	
Lithium	ug/L	<4.6	10.0	4.6	02/21/19 16:34	

LABORATORY CONTROL SAMPLE: 2338304

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	990	99	80-120	
Calcium	mg/L	10	10.2	102	80-120	
Lithium	ug/L	1000	1000	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2338305 2338306

Parameter	Units	60294514003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	737	1000	1000	1730	1760	99	102	75-125	1	20	
Calcium	mg/L	160	10	10	166	167	63	71	75-125	0	20	M1
Lithium	ug/L	36.5	1000	1000	1030	1040	100	101	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

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QUALITY CONTROL DATA

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

QC Batch: 570357 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

METHOD BLANK: 2338631 Matrix: Water
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Antimony	ug/L	0.087J	1.0	0.078	02/27/19 12:04	
Arsenic	ug/L	<0.065	1.0	0.065	02/27/19 12:04	
Barium	ug/L	<0.28	1.0	0.28	02/27/19 12:04	
Beryllium	ug/L	<0.089	0.50	0.089	02/27/19 12:04	
Cadmium	ug/L	<0.033	0.50	0.033	02/27/19 12:04	
Chromium	ug/L	<0.078	1.0	0.078	02/27/19 12:04	
Cobalt	ug/L	<0.062	1.0	0.062	02/27/19 12:04	
Lead	ug/L	<0.13	1.0	0.13	02/27/19 12:04	
Molybdenum	ug/L	<0.57	1.0	0.57	02/27/19 12:04	
Selenium	ug/L	<0.085	1.0	0.085	02/27/19 12:04	
Thallium	ug/L	<0.099	1.0	0.099	02/27/19 12:04	

LABORATORY CONTROL SAMPLE: 2338632

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	37.9	95	80-120	
Arsenic	ug/L	40	37.4	94	80-120	
Barium	ug/L	40	37.6	94	80-120	
Beryllium	ug/L	40	37.1	93	80-120	
Cadmium	ug/L	40	37.3	93	80-120	
Chromium	ug/L	40	38.2	96	80-120	
Cobalt	ug/L	40	37.6	94	80-120	
Lead	ug/L	40	37.6	94	80-120	
Molybdenum	ug/L	40	40.9	102	80-120	
Selenium	ug/L	40	36.5	91	80-120	
Thallium	ug/L	40	36.0	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2338633 2338634

Parameter	Units	60294514003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.10J	40	40	37.5	37.4	93	93	75-125	0	20	
Arsenic	ug/L	1.1	40	40	38.9	38.7	95	94	75-125	1	20	
Barium	ug/L	57.7	40	40	94.1	94.5	91	92	75-125	0	20	
Beryllium	ug/L	<0.089	40	40	36.1	35.8	90	89	75-125	1	20	
Cadmium	ug/L	0.037J	40	40	36.3	36.2	91	90	75-125	0	20	
Chromium	ug/L	0.62J	40	40	38.6	38.5	95	95	75-125	0	20	
Cobalt	ug/L	1.4	40	40	36.7	36.7	88	88	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 GS 25218062.00
Pace Project No.: 60294514

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2338633 2338634

Parameter	Units	60294514003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	0.35J	40	40	36.0	35.6	89	88	75-125	1	20	
Molybdenum	ug/L	20.9	40	40	60.4	59.9	99	97	75-125	1	20	
Selenium	ug/L	0.097J	40	40	35.7	35.1	89	87	75-125	2	20	
Thallium	ug/L	<0.099	40	40	35.3	34.7	88	87	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

QC Batch: 569723 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

METHOD BLANK: 2336189 Matrix: Water
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	02/18/19 14:23	

LABORATORY CONTROL SAMPLE: 2336190

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

SAMPLE DUPLICATE: 2336191

Parameter	Units	60294514001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	420	422	0	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.

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QUALITY CONTROL DATA

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

QC Batch: 569836 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

SAMPLE DUPLICATE: 2336669

Parameter	Units	60294514006 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

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(913)599-5665

QUALITY CONTROL DATA

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

QC Batch: 570727 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

METHOD BLANK: 2340347 Matrix: Water
Associated Lab Samples: 60294514001, 60294514002, 60294514003, 60294514004, 60294514005, 60294514006, 60294514007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	02/25/19 08:57	
Fluoride	mg/L	<0.19	0.20	0.19	02/25/19 08:57	
Sulfate	mg/L	<0.24	1.0	0.24	02/25/19 08:57	

LABORATORY CONTROL SAMPLE: 2340348

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	2.6	102	80-120	
Sulfate	mg/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2340349 2340350

Parameter	Units	60294515006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	93.5			337	392				15	15	
Fluoride	mg/L	<0.19	2.5	2.5	2.6	2.6	100	100	80-120	0	15	
Sulfate	mg/L	457	250	250	726	751	108	118	80-120	3	15	

SAMPLE DUPLICATE: 2340351

Parameter	Units	60294515007 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	<0.29	<0.29		15	
Fluoride	mg/L	<0.19	<0.19		15	
Sulfate	mg/L	<0.24	<0.24		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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QUALITY CONTROL DATA

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

QC Batch: 571058
QC Batch Method: EPA 9056
Analysis Method: EPA 9056
Analysis Description: 9056 IC Anions
Associated Lab Samples: 60294514001

METHOD BLANK: 2341248
Matrix: Water
Associated Lab Samples: 60294514001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.29	1.0	0.29	02/27/19 01:56	

LABORATORY CONTROL SAMPLE: 2341249

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2341250 2341251

Parameter	Units	60294514001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	42.1	100	100	136	135	94	93	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

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

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.

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60294514001	MW-301		569724		
60294514002	MW-302		569724		
60294514003	MW-303		569724		
60294514004	MW-304		569724		
60294514005	MW-305		569724		
60294514006	MW-306		569724		
60294514001	MW-301	EPA 3010	570263	EPA 6010	570332
60294514002	MW-302	EPA 3010	570263	EPA 6010	570332
60294514003	MW-303	EPA 3010	570263	EPA 6010	570332
60294514004	MW-304	EPA 3010	570263	EPA 6010	570332
60294514005	MW-305	EPA 3010	570263	EPA 6010	570332
60294514006	MW-306	EPA 3010	570263	EPA 6010	570332
60294514007	Field Blank	EPA 3010	570263	EPA 6010	570332
60294514001	MW-301	EPA 3010	570357	EPA 6020	570714
60294514002	MW-302	EPA 3010	570357	EPA 6020	570714
60294514003	MW-303	EPA 3010	570357	EPA 6020	570714
60294514004	MW-304	EPA 3010	570357	EPA 6020	570714
60294514005	MW-305	EPA 3010	570357	EPA 6020	570714
60294514006	MW-306	EPA 3010	570357	EPA 6020	570714
60294514007	Field Blank	EPA 3010	570357	EPA 6020	570714
60294514001	MW-301	EPA 7470	569955	EPA 7470	570119
60294514002	MW-302	EPA 7470	569955	EPA 7470	570119
60294514003	MW-303	EPA 7470	569955	EPA 7470	570119
60294514004	MW-304	EPA 7470	569955	EPA 7470	570119
60294514005	MW-305	EPA 7470	569955	EPA 7470	570119
60294514006	MW-306	EPA 7470	569955	EPA 7470	570119
60294514007	Field Blank	EPA 7470	569955	EPA 7470	570119
60294514001	MW-301	SM 2540C	569723		
60294514002	MW-302	SM 2540C	569723		
60294514003	MW-303	SM 2540C	569723		
60294514004	MW-304	SM 2540C	569723		
60294514005	MW-305	SM 2540C	569723		
60294514006	MW-306	SM 2540C	569723		
60294514007	Field Blank	SM 2540C	569723		
60294514001	MW-301	EPA 9040	569836		
60294514002	MW-302	EPA 9040	569836		
60294514003	MW-303	EPA 9040	569836		
60294514004	MW-304	EPA 9040	569836		
60294514005	MW-305	EPA 9040	569836		
60294514006	MW-306	EPA 9040	569836		
60294514007	Field Blank	EPA 9040	569836		
60294514001	MW-301	EPA 9056	570727		
60294514001	MW-301	EPA 9056	571058		
60294514002	MW-302	EPA 9056	570727		
60294514003	MW-303	EPA 9056	570727		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland GS 25218062.00
Pace Project No.: 60294514

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60294514004	**MW-304**	EPA 9056	570727		
60294514005	**MW-305**	EPA 9056	570727		
60294514006	**MW-306**	EPA 9056	570727		
60294514007	**Field Blank**	EPA 9056	570727		

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Sample Condition Upon Receipt

WO# : 60294514

60294514

Client Name: SCS Engineers

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

Tracking #: 2774 6921 2735 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** 1.9 **Corr. Factor** -1.0 **Corrected** 0.9

Date and initials of person examining contents: 2/16/19 A

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: 2-18-19

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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

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

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.
																		Requested Analysis Filtered (Y/N)	N	N									
1	MW-301	WT	G	xxx	xxx	2-13-19	19:45	5.8	3	1		2							X	X	X	X	X	X	BP	N, BP	3	N	(2)	001
2	MW-302	WT	G	xxx	xxx		17:45	9.9	3	1		2							X	X	X	X	X	X						002
3	MW-303	WT	G	xxx	xxx		15:55	8.9	3	1		2							X	X	X	X	X	X						003
4	MW-304	WT	G	xxx	xxx		12:55	8.2	3	1		2							X	X	X	X	X	X						004
5	MW-305	WT	G	xxx	xxx		14:15	9.4	3	1		2							X	X	X	X	X	X						005
6	MW-306	WT	G	xxx	xxx		10:05	10.1	3	1		2							X	X	X	X	X	X						006
7	FIELD BLANK	WT	G	xxx	xxx		16:20	NR	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	Paul A. Brown	2-14-19	19:30	Andy Pew	2/15/19	0820	1.9	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):

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.

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

March 04, 2019

Meghan Blodgett
SCS Engineers
2830 Dairy Drive
Madison, WI 53718

RE: Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on February 15, 2019. 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

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

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 GS 25218062.00
Pace Project No.: 60294494

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60294494001	**MW-301**	Water	02/12/19 19:45	02/15/19 08:20
60294494002	**MW-302**	Water	02/12/19 17:45	02/15/19 08:20
60294494003	**MW-303**	Water	02/12/19 15:55	02/15/19 08:20
60294494004	**MW-304**	Water	02/12/19 12:55	02/15/19 08:20
60294494005	**MW-305**	Water	02/12/19 14:15	02/15/19 08:20
60294494006	**MW-306**	Water	02/12/19 10:05	02/15/19 08:20
60294494007	**FIELD BLANK**	Water	02/12/19 16:20	02/15/19 08:20

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SAMPLE ANALYTE COUNT

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60294494001	MW-301	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60294494002	MW-302	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60294494003	MW-303	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60294494004	MW-304	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60294494005	MW-305	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60294494006	MW-306	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60294494007	FIELD BLANK	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: MW-301 **Lab ID: 60294494001** Collected: 02/12/19 19:45 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.462 ± 0.324 (0.156) C:NA T:92%**	pCi/L	03/01/19 21:52	13982-63-3	
Radium-228	EPA 904.0	**0.638 ± 0.390 (0.716) C:65% T:86%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**1.10 ± 0.714 (0.872)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: MW-302 **Lab ID: 60294494002** Collected: 02/12/19 17:45 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.196 ± 0.462 (0.857) C:NA T:85%**	pCi/L	03/01/19 21:52	13982-63-3	
Radium-228	EPA 904.0	**0.747 ± 0.349 (0.568) C:76% T:86%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.943 ± 0.811 (1.43)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: MW-303 **Lab ID: 60294494003** Collected: 02/12/19 15:55 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.120 ± 0.287 (0.555) C:NA T:83%**	pCi/L	03/01/19 21:52	13982-63-3	
Radium-228	EPA 904.0	**1.07 ± 0.478 (0.786) C:73% T:77%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**1.19 ± 0.765 (1.34)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: MW-304 **Lab ID: 60294494004** Collected: 02/12/19 12:55 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.225 ± 0.349 (0.604) C:NA T:91%**	pCi/L	03/01/19 21:52	13982-63-3	
Radium-228	EPA 904.0	**0.179 ± 0.318 (0.695) C:73% T:79%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.404 ± 0.667 (1.30)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: MW-305 **Lab ID: 60294494005** Collected: 02/12/19 14:15 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.459 ± 0.360 (0.423) C:NA T:91%**	pCi/L	03/01/19 21:52	13982-63-3	
Radium-228	EPA 904.0	**0.393 ± 0.280 (0.530) C:75% T:91%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.852 ± 0.640 (0.953)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: MW-306 **Lab ID: 60294494006** Collected: 02/12/19 10:05 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.376 ± 0.462 (0.753) C:NA T:82%**	pCi/L	03/01/19 22:06	13982-63-3	
Radium-228	EPA 904.0	**0.590 ± 0.342 (0.609) C:77% T:79%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.966 ± 0.804 (1.36)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Sample: FIELD BLANK **Lab ID: 60294494007** Collected: 02/12/19 16:20 Received: 02/15/19 08:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.867 ± 0.635 (0.874) C:NA T:81%**	pCi/L	03/01/19 22:06	13982-63-3	
Radium-228	EPA 904.0	**0.143 ± 0.292 (0.645) C:79% T:85%**	pCi/L	02/27/19 14:27	15262-20-1	
Total Radium	Total Radium Calculation	**1.01 ± 0.927 (1.52)**	pCi/L	03/04/19 13:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

QC Batch: 330932 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60294494001, 60294494002, 60294494003, 60294494004, 60294494005, 60294494006, 60294494007

METHOD BLANK: 1610100 Matrix: Water
Associated Lab Samples: 60294494001, 60294494002, 60294494003, 60294494004, 60294494005, 60294494006, 60294494007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.143 ± 0.301 (0.736) C:74% T:85%	pCi/L	02/27/19 11:19	

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 GS 25218062.00
Pace Project No.: 60294494

QC Batch: 330963 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60294494001, 60294494002, 60294494003, 60294494004, 60294494005, 60294494006, 60294494007

METHOD BLANK: 1610263 Matrix: Water
Associated Lab Samples: 60294494001, 60294494002, 60294494003, 60294494004, 60294494005, 60294494006, 60294494007

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.108 ± 0.246 (0.146) C:NA T:93%	pCi/L	03/01/19 21:52	

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 GS 25218062.00
Pace Project No.: 60294494

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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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Sutherland GS 25218062.00
Pace Project No.: 60294494

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60294494001	**MW-301**	EPA 903.1	330963		
60294494002	**MW-302**	EPA 903.1	330963		
60294494003	**MW-303**	EPA 903.1	330963		
60294494004	**MW-304**	EPA 903.1	330963		
60294494005	**MW-305**	EPA 903.1	330963		
60294494006	**MW-306**	EPA 903.1	330963		
60294494007	**FIELD BLANK**	EPA 903.1	330963		
60294494001	**MW-301**	EPA 904.0	330932		
60294494002	**MW-302**	EPA 904.0	330932		
60294494003	**MW-303**	EPA 904.0	330932		
60294494004	**MW-304**	EPA 904.0	330932		
60294494005	**MW-305**	EPA 904.0	330932		
60294494006	**MW-306**	EPA 904.0	330932		
60294494007	**FIELD BLANK**	EPA 904.0	330932		
60294494001	**MW-301**	Total Radium Calculation	332094		
60294494002	**MW-302**	Total Radium Calculation	332094		
60294494003	**MW-303**	Total Radium Calculation	332094		
60294494004	**MW-304**	Total Radium Calculation	332094		
60294494005	**MW-305**	Total Radium Calculation	332094		
60294494006	**MW-306**	Total Radium Calculation	332094		
60294494007	**FIELD BLANK**	Total Radium Calculation	332094		

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Sample Condition Upon Receipt

WO# : 60294494

60294494

Client Name: SCS

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

Tracking #: 4746 8741 2680 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 15.6 Corr. Factor +0.4 Corrected 16.0

Date and initials of person examining contents: 2/15/19 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? (HNO3, H2SO4, 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: _____

Hank
10:04 am,Feb 18,2019
Kapka

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:	

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

Requested Analysis Filtered (Y/N)

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

Pace Project No./ Lab I.D.: 60294494

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	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	2/12/19	19:45	5.8	2			2						X	X	X	2BPIN		001
2	MW-302	WT	G	xxx	xxx	↓	17:45	9.7	2			2						X	X	X	↓		002
3	MW-303	WT	G	xxx	xxx		15:55	8.9	2			2						X	X	X			003
4	MW-304	WT	G	xxx	xxx		12:55	7.2	2			2						X	X	X			004
5	MW-305	WT	G	xxx	xxx		14:15	9.4	2			2						X	X	X			005
6	MW-306	WT	G	xxx	xxx		10:05	10.7	2			2						X	X	X			006
7	FIELD BLANK	WT	G	xxx	xxx		16:20	NR	2			2						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	Paul A. Groom	2-14-19	19:30	Holly Fowler PASI	2-15-19	0820	16.0	N	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

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: IA
Cert. Needed: ☐ Yes ☐ No

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Workorder: 60294494 **Workorder Name:** SUTHERLAND GENERATING STATION **Owner Received Date:** 2/15/2019 **Results Requested By:** 3/8/2019

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# : 30280735
30280735

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Requested Analysis: Combined Ra	Ra 226/228	LAB USE ONLY
1	MW-301	PS	2/12/2019 19:45	60294494001	Water	2	X	X	001
2	MW-302	PS	2/12/2019 17:45	60294494002	Water	2	X	X	002
3	MW-303	PS	2/12/2019 15:55	60294494003	Water	2	X	X	003
4	MW-304	PS	2/12/2019 12:55	60294494004	Water	2	X	X	004
5	MW-305	PS	2/12/2019 14:15	60294494005	Water	2	X	X	005
6	MW-306	PS	2/12/2019 10:05	60294494006	Water	2	X	X	006
7	FIELD BLANK	PS	2/12/2019 16:20	60294494007	Water	2	X	X	007

Transfers	Released By	Date/Time	Received By	Date/Time
1	EBrockett/Pace	2/18/19 1800	Emily Pfr	2-19-19 0950
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

Pace Analytical

Client Name: Paceks

Project # 30280735

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

Label ET
LIMS Login ET

Tracking #: 474687419490

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

Thermometer Used W1A 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: ET 2-19-19

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: 2-19-19

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.

A3 April 2019 Detection Monitoring

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-152493-1
Laboratory Sample Delivery Group: 25216062.18
Client Project/Site: Sutherland Site - 25216062.18
Revision: 2

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Sandie Fredrick

Authorized for release by:
5/23/2019 8:01:06 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Job ID: 310-152493-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-152493-1

Comments
REVISION: Client updated formatter.
REVISION: Client updated metals units to ug/L for all but Calcium

Receipt
The samples were received on 4/3/2019 5:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were -0.3º C and 0.6º C.

HPLC/IC
Method(s) 9056A: The following sample was diluted due to the nature of the sample matrix: MW 301 (310-152493-1). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Assest ID
310-152493-1	MW 301	Ground Water	04/02/19 15:34	04/03/19 17:05	
310-152493-2	MW 302	Ground Water	04/02/19 14:10	04/03/19 17:05	
310-152493-3	MW 303	Ground Water	04/02/19 13:17	04/03/19 17:05	
310-152493-4	MW 304	Ground Water	04/02/19 12:20	04/03/19 17:05	
310-152493-5	MW 305	Ground Water	04/02/19 11:37	04/03/19 17:05	
310-152493-6	MW 306	Ground Water	04/02/19 10:40	04/03/19 17:05	
310-152493-7	Field Blank	Water	04/02/19 13:25	04/03/19 17:05	

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 301 — Lab Sample ID: 310-152493-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	39		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.50		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	46		5.0	1.8	mg/L	5		9056A	Total/NA
Calcium	82		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	400		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Field Conductivity	618				mS/cm	1		Field Sampling	Total/NA
Field Dissolved Oxygen	1.48				mg/L	1		Field Sampling	Total/NA
Field pH	7.16				SU	1		Field Sampling	Total/NA
Field Temperature	4.89				Degrees C	1		Field Sampling	Total/NA
Field Turbidity	65				NTU	1		Field Sampling	Total/NA
Groundwater Elevation (ft MSL)	857.33				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	58.7				millivolts	1		Field Sampling	Total/NA

Client Sample ID: MW 302 — Lab Sample ID: 310-152493-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.6		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.60		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	20		5.0	1.8	mg/L	5		9056A	Total/NA
Calcium	63		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	270		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Field Conductivity	437				mS/cm	1		Field Sampling	Total/NA
Field Dissolved Oxygen	0.79				mg/L	1		Field Sampling	Total/NA
Field pH	7.50				SU	1		Field Sampling	Total/NA
Field Temperature	9.53				Degrees C	1		Field Sampling	Total/NA
Field Turbidity	12.9				NTU	1		Field Sampling	Total/NA
Groundwater Elevation (ft MSL)	857.12				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	10.0				millivolts	1		Field Sampling	Total/NA

Client Sample ID: MW 303 — Lab Sample ID: 310-152493-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	28		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.85		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	330		50	18	mg/L	50		9056A	Total/NA
Boron	730		200	110	ug/L	1		6020A	Total/NA
Calcium	140		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	800		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Field Conductivity	1077				mS/cm	1		Field Sampling	Total/NA
Field Dissolved Oxygen	0.78				mg/L	1		Field Sampling	Total/NA
Field pH	7.29				SU	1		Field Sampling	Total/NA
Field Temperature	10.57				Degrees C	1		Field Sampling	Total/NA
Field Turbidity	2.44				NTU	1		Field Sampling	Total/NA
Groundwater Elevation (ft MSL)	855.60				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	61.0				millivolts	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 304 — Lab Sample ID: 310-152493-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	29		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.67		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	450		50	18	mg/L	50		9056A	Total/NA
Boron	590		200	110	ug/L	1		6020A	Total/NA
Calcium	180		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	910		30	24	mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Field Conductivity	1170				mS/cm	1		Field Sampling	Total/NA
Field Dissolved Oxygen	1.35				mg/L	1		Field Sampling	Total/NA
Field pH	6.85				SU	1		Field Sampling	Total/NA
Field Temperature	7.59				Degrees C	1		Field Sampling	Total/NA
Field Turbidity	1.18				NTU	1		Field Sampling	Total/NA
Groundwater Elevation (ft MSL)	855.47				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	57.1				millivolts	1		Field Sampling	Total/NA

Client Sample ID: MW 305 — Lab Sample ID: 310-152493-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	1.4		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	490		20	7.0	mg/L	20		9056A	Total/NA
Boron	660		200	110	ug/L	1		6020A	Total/NA
Calcium	160		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	990		30	24	mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Field Conductivity	1168				mS/cm	1		Field Sampling	Total/NA
Field Dissolved Oxygen	0.96				mg/L	1		Field Sampling	Total/NA
Field pH	6.90				SU	1		Field Sampling	Total/NA
Field Temperature	8.49				Degrees C	1		Field Sampling	Total/NA
Field Turbidity	6.46				NTU	1		Field Sampling	Total/NA
Groundwater Elevation (ft MSL)	855.67				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	47.0				millivolts	1		Field Sampling	Total/NA

Client Sample ID: MW 306 — Lab Sample ID: 310-152493-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.93		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	220		5.0	1.8	mg/L	5		9056A	Total/NA
Boron	3200		200	110	ug/L	1		6020A	Total/NA
Calcium	130		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	750		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.9	HF	0.1		SU	1		SM 4500 H+ B	Total/NA
Field Conductivity	907				mS/cm	1		Field Sampling	Total/NA
Field Dissolved Oxygen	1.37				mg/L	1		Field Sampling	Total/NA
Field pH	7.81				SU	1		Field Sampling	Total/NA
Field Temperature	10.79				Degrees C	1		Field Sampling	Total/NA
Field Turbidity	0.78				NTU	1		Field Sampling	Total/NA
Groundwater Elevation (ft MSL)	855.96				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	25.7				millivolts	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: Field Blank

Lab Sample ID: 310-152493-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoride	0.053	J	0.10	0.045	mg/L	1		9056A	Total/NA
Total Dissolved Solids	42		30	24	mg/L	1		SM 2540C	Total/NA
pH	6.4	HF	0.1		SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 301

Date Collected: 04/02/19 15:34
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-1

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	39		5.0	1.5	mg/L			04/04/19 17:07	5
Fluoride	0.50		0.50	0.23	mg/L			04/04/19 17:07	5
Sulfate	46		5.0	1.8	mg/L			04/04/19 17:07	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		04/05/19 06:15	04/18/19 13:57	1
Calcium	82		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 13:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	400		30	24	mg/L			04/08/19 11:48	1
pH	7.1	HF	0.1		SU			04/03/19 23:25	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field Conductivity	618				mS/cm			04/02/19 15:34	1
Field Dissolved Oxygen	1.48				mg/L			04/02/19 15:34	1
Field pH	7.16				SU			04/02/19 15:34	1
Field Temperature	4.89				Degrees C			04/02/19 15:34	1
Field Turbidity	65				NTU			04/02/19 15:34	1
Groundwater Elevation (ft MSL)	857.33				ft			04/02/19 15:34	1
Oxidation Reduction Potential	58.7				millivolts			04/02/19 15:34	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 302

Date Collected: 04/02/19 14:10
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-2

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.6		5.0	1.5	mg/L			04/04/19 17:20	5
Fluoride	0.60		0.50	0.23	mg/L			04/04/19 17:20	5
Sulfate	20		5.0	1.8	mg/L			04/04/19 17:20	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		04/05/19 06:15	04/18/19 14:00	1
Calcium	63		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 14:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	270		30	24	mg/L			04/08/19 11:48	1
pH	7.5	HF	0.1		SU			04/03/19 23:30	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field Conductivity	437				mS/cm			04/02/19 14:10	1
Field Dissolved Oxygen	0.79				mg/L			04/02/19 14:10	1
Field pH	7.50				SU			04/02/19 14:10	1
Field Temperature	9.53				Degrees C			04/02/19 14:10	1
Field Turbidity	12.9				NTU			04/02/19 14:10	1
Groundwater Elevation (ft MSL)	857.12				ft			04/02/19 14:10	1
Oxidation Reduction Potential	10.0				millivolts			04/02/19 14:10	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 303

Date Collected: 04/02/19 13:17
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-3

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28		5.0	1.5	mg/L			04/04/19 17:33	5
Fluoride	0.85		0.50	0.23	mg/L			04/04/19 17:33	5
Sulfate	330		50	18	mg/L			04/04/19 18:10	50

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	730		200	110	ug/L		04/05/19 06:15	04/18/19 14:04	1
Calcium	140		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 14:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	800		30	24	mg/L			04/08/19 11:48	1
pH	7.3	HF	0.1		SU			04/03/19 23:31	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field Conductivity	1077				mS/cm			04/02/19 13:17	1
Field Dissolved Oxygen	0.78				mg/L			04/02/19 13:17	1
Field pH	7.29				SU			04/02/19 13:17	1
Field Temperature	10.57				Degrees C			04/02/19 13:17	1
Field Turbidity	2.44				NTU			04/02/19 13:17	1
Groundwater Elevation (ft MSL)	855.60				ft			04/02/19 13:17	1
Oxidation Reduction Potential	61.0				millivolts			04/02/19 13:17	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 304

Date Collected: 04/02/19 12:20
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-4

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	29		5.0	1.5	mg/L			04/04/19 18:23	5
Fluoride	0.67		0.50	0.23	mg/L			04/04/19 18:23	5
Sulfate	450		50	18	mg/L			04/04/19 18:37	50

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	590		200	110	ug/L		04/05/19 06:15	04/18/19 14:07	1
Calcium	180		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 14:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	910		30	24	mg/L			04/08/19 11:48	1
pH	6.8	HF	0.1		SU			04/03/19 23:33	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field Conductivity	1170				mS/cm			04/02/19 12:20	1
Field Dissolved Oxygen	1.35				mg/L			04/02/19 12:20	1
Field pH	6.85				SU			04/02/19 12:20	1
Field Temperature	7.59				Degrees C			04/02/19 12:20	1
Field Turbidity	1.18				NTU			04/02/19 12:20	1
Groundwater Elevation (ft MSL)	855.47				ft			04/02/19 12:20	1
Oxidation Reduction Potential	57.1				millivolts			04/02/19 12:20	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 305

Date Collected: 04/02/19 11:37
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-5

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	15		5.0	1.5	mg/L			04/04/19 18:50	5
Fluoride	1.4		0.50	0.23	mg/L			04/04/19 18:50	5
Sulfate	490		20	7.0	mg/L			04/04/19 19:02	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	660		200	110	ug/L		04/05/19 06:15	04/18/19 14:10	1
Calcium	160		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 14:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	990		30	24	mg/L			04/08/19 11:48	1
pH	6.9	HF	0.1		SU			04/03/19 23:35	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field Conductivity	1168				mS/cm			04/02/19 11:37	1
Field Dissolved Oxygen	0.96				mg/L			04/02/19 11:37	1
Field pH	6.90				SU			04/02/19 11:37	1
Field Temperature	8.49				Degrees C			04/02/19 11:37	1
Field Turbidity	6.46				NTU			04/02/19 11:37	1
Groundwater Elevation (ft MSL)	855.67				ft			04/02/19 11:37	1
Oxidation Reduction Potential	47.0				millivolts			04/02/19 11:37	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 306

Date Collected: 04/02/19 10:40
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-6

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16		5.0	1.5	mg/L			04/04/19 19:15	5
Fluoride	0.93		0.50	0.23	mg/L			04/04/19 19:15	5
Sulfate	220		5.0	1.8	mg/L			04/04/19 19:15	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	3200		200	110	ug/L		04/05/19 06:15	04/19/19 12:35	1
Calcium	130		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 14:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	750		30	24	mg/L			04/08/19 11:48	1
pH	7.9	HF	0.1		SU			04/03/19 23:37	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Field Conductivity	907				mS/cm			04/02/19 10:40	1
Field Dissolved Oxygen	1.37				mg/L			04/02/19 10:40	1
Field pH	7.81				SU			04/02/19 10:40	1
Field Temperature	10.79				Degrees C			04/02/19 10:40	1
Field Turbidity	0.78				NTU			04/02/19 10:40	1
Groundwater Elevation (ft MSL)	855.96				ft			04/02/19 10:40	1
Oxidation Reduction Potential	25.7				millivolts			04/02/19 10:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: Field Blank

Lab Sample ID: 310-152493-7

Date Collected: 04/02/19 13:25
Matrix: Water
Date Received: 04/03/19 17:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			04/04/19 19:40	1
Fluoride	**0.053**	**J**	0.10	0.045	mg/L			04/04/19 19:40	1
Sulfate	<0.35		1.0	0.35	mg/L			04/04/19 19:40	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		04/05/19 06:15	04/19/19 12:38	1
Calcium	<0.10		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 14:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**42**		30	24	mg/L			04/08/19 11:48	1
pH	**6.4**	**HF**	0.1		SU			04/03/19 23:45	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-234823/3
Matrix: Water
Analysis Batch: 234823

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			04/04/19 12:56	1
Fluoride	<0.045		0.10	0.045	mg/L			04/04/19 12:56	1
Sulfate	<0.35		1.0	0.35	mg/L			04/04/19 12:56	1

Lab Sample ID: LCS 310-234823/4
Matrix: Water
Analysis Batch: 234823

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.50	7.88		mg/L		105	90 - 110
Fluoride	1.50	1.58		mg/L		106	90 - 110
Sulfate	7.50	7.99		mg/L		106	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-234761/1-A
Matrix: Water
Analysis Batch: 236351

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 234761

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		04/05/19 06:15	04/18/19 13:21	1
Calcium	<0.10		0.50	0.10	mg/L		04/05/19 06:15	04/18/19 13:21	1

Lab Sample ID: LCS 310-234761/2-A
Matrix: Water
Analysis Batch: 236351

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 234761

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	880	888		ug/L		101	80 - 120
Calcium	2.00	1.97		mg/L		98	80 - 120

Lab Sample ID: 310-152493-7 DU
Matrix: Water
Analysis Batch: 236351

Client Sample ID: Field Blank
Prep Type: Total/NA
Prep Batch: 234761

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Boron	<110		<110		ug/L		NC	20
Calcium	<0.10		<0.10		mg/L		NC	20

Lab Sample ID: 310-152493-7 DU
Matrix: Water
Analysis Batch: 236545

Client Sample ID: Field Blank
Prep Type: Total/NA
Prep Batch: 234761

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Boron	<110		<110		ug/L		NC	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-234998/1
Matrix: Water
Analysis Batch: 234998

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			04/08/19 11:48	1

Lab Sample ID: LCS 310-234998/2
Matrix: Water
Analysis Batch: 234998

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1000	1006		mg/L		101	90 - 110		

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-234574/1
Matrix: Water
Analysis Batch: 234574

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Lab Sample ID: 310-152493-1 DU
Matrix: Ground Water
Analysis Batch: 234574

Client Sample ID: MW 301
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.1	HF		7.1		SU				0	20

HPLC/IC

Analysis Batch: 234823

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-1	MW 301	Total/NA	Ground Water	9056A	
310-152493-2	MW 302	Total/NA	Ground Water	9056A	
310-152493-3	MW 303	Total/NA	Ground Water	9056A	
310-152493-3	MW 303	Total/NA	Ground Water	9056A	
310-152493-4	MW 304	Total/NA	Ground Water	9056A	
310-152493-4	MW 304	Total/NA	Ground Water	9056A	
310-152493-5	MW 305	Total/NA	Ground Water	9056A	
310-152493-5	MW 305	Total/NA	Ground Water	9056A	
310-152493-6	MW 306	Total/NA	Ground Water	9056A	
310-152493-7	Field Blank	Total/NA	Water	9056A	
MB 310-234823/3	Method Blank	Total/NA	Water	9056A	
LCS 310-234823/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 234761

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-1	MW 301	Total/NA	Ground Water	3010A	
310-152493-2	MW 302	Total/NA	Ground Water	3010A	
310-152493-3	MW 303	Total/NA	Ground Water	3010A	
310-152493-4	MW 304	Total/NA	Ground Water	3010A	
310-152493-5	MW 305	Total/NA	Ground Water	3010A	
310-152493-6	MW 306	Total/NA	Ground Water	3010A	
310-152493-7	Field Blank	Total/NA	Water	3010A	
MB 310-234761/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-234761/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-152493-7 DU	Field Blank	Total/NA	Water	3010A	

Analysis Batch: 236351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-1	MW 301	Total/NA	Ground Water	6020A	234761
310-152493-2	MW 302	Total/NA	Ground Water	6020A	234761
310-152493-3	MW 303	Total/NA	Ground Water	6020A	234761
310-152493-4	MW 304	Total/NA	Ground Water	6020A	234761
310-152493-5	MW 305	Total/NA	Ground Water	6020A	234761
310-152493-6	MW 306	Total/NA	Ground Water	6020A	234761
310-152493-7	Field Blank	Total/NA	Water	6020A	234761
MB 310-234761/1-A	Method Blank	Total/NA	Water	6020A	234761
LCS 310-234761/2-A	Lab Control Sample	Total/NA	Water	6020A	234761
310-152493-7 DU	Field Blank	Total/NA	Water	6020A	234761

Analysis Batch: 236545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-6	MW 306	Total/NA	Ground Water	6020A	234761
310-152493-7	Field Blank	Total/NA	Water	6020A	234761
310-152493-7 DU	Field Blank	Total/NA	Water	6020A	234761

General Chemistry

Analysis Batch: 234574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-1	MW 301	Total/NA	Ground Water	SM 4500 H+ B	

General Chemistry (Continued)

Analysis Batch: 234574 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-2	MW 302	Total/NA	Ground Water	SM 4500 H+ B	
310-152493-3	MW 303	Total/NA	Ground Water	SM 4500 H+ B	
310-152493-4	MW 304	Total/NA	Ground Water	SM 4500 H+ B	
310-152493-5	MW 305	Total/NA	Ground Water	SM 4500 H+ B	
310-152493-6	MW 306	Total/NA	Ground Water	SM 4500 H+ B	
310-152493-7	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-234574/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-152493-1 DU	MW 301	Total/NA	Ground Water	SM 4500 H+ B	

Analysis Batch: 234998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-1	MW 301	Total/NA	Ground Water	SM 2540C	
310-152493-2	MW 302	Total/NA	Ground Water	SM 2540C	
310-152493-3	MW 303	Total/NA	Ground Water	SM 2540C	
310-152493-4	MW 304	Total/NA	Ground Water	SM 2540C	
310-152493-5	MW 305	Total/NA	Ground Water	SM 2540C	
310-152493-6	MW 306	Total/NA	Ground Water	SM 2540C	
310-152493-7	Field Blank	Total/NA	Water	SM 2540C	
MB 310-234998/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-234998/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 235149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-152493-1	MW 301	Total/NA	Ground Water	Field Sampling	
310-152493-2	MW 302	Total/NA	Ground Water	Field Sampling	
310-152493-3	MW 303	Total/NA	Ground Water	Field Sampling	
310-152493-4	MW 304	Total/NA	Ground Water	Field Sampling	
310-152493-5	MW 305	Total/NA	Ground Water	Field Sampling	
310-152493-6	MW 306	Total/NA	Ground Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 301
Date Collected: 04/02/19 15:34
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	234823	04/04/19 17:07	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 13:57	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:25	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	235149	04/02/19 15:34	ANO	TAL CF

Client Sample ID: MW 302
Date Collected: 04/02/19 14:10
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	234823	04/04/19 17:20	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 14:00	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:30	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	235149	04/02/19 14:10	ANO	TAL CF

Client Sample ID: MW 303
Date Collected: 04/02/19 13:17
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	234823	04/04/19 17:33	MLU	TAL CF
Total/NA	Analysis	9056A		50	234823	04/04/19 18:10	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 14:04	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:31	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	235149	04/02/19 13:17	ANO	TAL CF

Client Sample ID: MW 304
Date Collected: 04/02/19 12:20
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	234823	04/04/19 18:23	MLU	TAL CF
Total/NA	Analysis	9056A		50	234823	04/04/19 18:37	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 14:07	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:33	JMH	TAL CF

Lab Chronicle

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Client Sample ID: MW 304
Date Collected: 04/02/19 12:20
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Field Sampling		1	235149	04/02/19 12:20	ANO	TAL CF

Client Sample ID: MW 305
Date Collected: 04/02/19 11:37
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-5
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	234823	04/04/19 18:50	MLU	TAL CF
Total/NA	Analysis	9056A		20	234823	04/04/19 19:02	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 14:10	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:35	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	235149	04/02/19 11:37	ANO	TAL CF

Client Sample ID: MW 306
Date Collected: 04/02/19 10:40
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-6
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	234823	04/04/19 19:15	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 14:24	SAD	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236545	04/19/19 12:35	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:37	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	235149	04/02/19 10:40	ANO	TAL CF

Client Sample ID: Field Blank
Date Collected: 04/02/19 13:25
Date Received: 04/03/19 17:05

Lab Sample ID: 310-152493-7
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	234823	04/04/19 19:40	MLU	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236351	04/18/19 14:27	SAD	TAL CF
Total/NA	Prep	3010A			234761	04/05/19 06:15	HED	TAL CF
Total/NA	Analysis	6020A		1	236545	04/19/19 12:38	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	234998	04/08/19 11:48	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	234574	04/03/19 23:45	JMH	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Iowa	State Program	7	007	12-01-19

Method Summary

Client: SCS Engineers
Project/Site: Sutherland Site - 25216062.18

Job ID: 310-152493-1
SDG: 25216062.18

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-152493 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: SCS Engineers					
City/State: CITY Clive		STATE IA	Project: Sutherland Site		
Receipt Information					
Date/Time Received: DATE 4-3-19	TIME 1705		Received By: IAB		
Delivery Type: ☐ UPS	☐ FedEx	☐ FedEx Ground	☐ US Mail	☐ Spee-Dee	
☒ Lab Courier	☐ TA Field Services	☐ Client Drop-off	☐ Other:_____		
Condition of Cooler/Containers					
Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID: AA-80		
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 1 of 2		
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact?	☐ Yes	☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact?	☐ Yes	☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓		
Temperature Record					
Coolant: ☒ Wet ice	☐ Blue ice	☐ Dry ice	☐ Other:_____	☐ NONE	
Thermometer ID: N			Correction Factor (°C): +0.0		
• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature					
Uncorrected Temp (°C): -0.3			Corrected Temp (°C): -0.3		
• **Sample Container Temperature**					
Container type(s) used:	CONTAINER 1		CONTAINER 2		
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1	TEMP 2
Exceptions Noted					
1) If temperature exceeds criteria, was sample(s) received same day of sampling?				☐ Yes	☐ No
a) *If yes:* Is there evidence that the chilling process began?				☐ Yes	☐ No
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?)				☐ Yes	☐ No
NOTE: If yes, contact PM before proceeding. If no, proceed with login					
Additional Comments					

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Place COC scanning label here
214

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland Site

Receipt Information

Date/Time Received: DATE 4-3-19 TIME 1705 Received By: IAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID: AB-4

Multiple Coolers? ☒ Yes ☐ No *If yes:* Cooler # 2 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): +0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.6 Corrected Temp (°C): 0.6

• **Sample Container Temperature**

Container type(s) used:	CONTAINER 1		CONTAINER 2	
Uncorrected Temp (°C):	TEMP 1	TEMP 2	Corrected Temp (°C):	TEMP 1	TEMP 2

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

#38414

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Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

TestAmerica Des Moines SC
214

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: SCS Engineers Client #: _____
Address: 8450 Hickman Rd Suite 20 Project Name: Sutherland Site
City/State/Zip Code: Clive IA 50325 Project #: 25216062.18
Project Manager: _____ Site/Location ID: Marshalltown State: IA
Email Address: nschemmel@scsengineers.com Report To: _____
Telephone Number: _____ Fax: _____ Invoice To: _____
Sampler Name: (Print Name) Nick Schemmel Quote #: _____ PO#: _____
Sampler Signature: [signature]

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: _____
Fax Results: Y N
Email Results: Y N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: Metals	pH	TDS	Chloride/Fluoride/SO_4	Radium 226 + 228	REMARKS
MW 301	4.2.19	1534	G		GW	3					1		X	X	X	X	X	
MW 302		1410				3					1		X	X	X	X	X	
MW 303		1317				3					1		X	X	X	X	X	
MW 304		1220				3					1		X	X	X	X	X	
MW 305		1137				3					1		X	X	X	X	X	
MW 306		1040				3					1		X	X	X	X	X	
Field Blank		1325				3					1		X	X	X	X	X	

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

Special Instructions:

LABORATORY COMMENTS:

	Date:	Time:		Date:	Time:
Relinquished By: Nick Schemmel	4.2.19	18:00	Received By: [signature]	4-3-19	1705
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Page _____ of _____

5/23/2019 (Rev. 2)

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW 301	310-152493-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW 301	310-152493-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 301	310-152493-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 302	310-152493-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW 302	310-152493-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 302	310-152493-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 303	310-152493-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW 303	310-152493-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 303	310-152493-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 304	310-152493-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW 304	310-152493-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 304	310-152493-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 305	310-152493-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW 305	310-152493-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 305	310-152493-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 306	310-152493-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW 306	310-152493-C-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW 306	310-152493-D-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-152493-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-152493-C-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-152493-D-7	Plastic 1 liter - Nitric Acid	<2	_____	_____

#38414

TestAmerica

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Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

TestAmerica Des Moines SC
214

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: SCS Engineers
Client #: _____
Address: 8450 Hickman Rd Suite 20
City/State/Zip Code: Clive IA 50325
Project Manager: _____
Email Address: nschemmel@scsengineers.com
Telephone Number: _____ Fax: _____
Sampler Name: (Print Name) Nick Schemmel
Sampler Signature: [signature]

Project Name: Sutherland Site
Project #: 25216062.18
Site/Location ID: Marshalltown State: IA
Report To: _____
Invoice To: _____
Quote #: _____ PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: _____
Fax Results: Y N
Email Results: Y N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix (SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other)	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: Metals (Boron, Calcium)	pH	TDS	Chloride / Fluoride / SO_4	Radium 226 + Radium 228	REMARKS
MW 301	4.2.19	1534	G		GW	3					1		X	X	X	X	X	
MW 302		1410				3					1		X	X	X	X	X	
MW 303		1317				3					1		X	X	X	X	X	
MW 304		1220				3					1		X	X	X	X	X	
MW 305		1137				3					1		X	X	X	X	X	
MW 306		1040				3					1		X	X	X	X	X	
Field Blank		1325				3					1		X	X	X	X	X	

Revised 4/4/19 MDB

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

Special Instructions:

LABORATORY COMMENTS:

	Date:	Time:		Date:	Time:
Relinquished By: Nick Schemmel	4.2.19	18:00	Received By: [signature]	4-3-19	1705
Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Page _____ of _____

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25218062.00

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony	x	x	x	x	x	x	x	7
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium	x	x	x	x	x	x	x	7
	Cadmium	x	x	x	x	x	x	x	7
	Chromium	x	x	x	x	x	x	x	7
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury	x	x	x	x	x	x	x	7
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium	x	x	x	x	x	x	x	7
	Thallium	x	x	x	x	x	x	x	7
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		7
	Well Depth	x	x	x	x	x	x		7
	pH (field)	x	x	x	x	x	x		7
	Specific Conductance	x	x	x	x	x	x		7
	Dissolved Oxygen	x	x	x	x	x	x		7
	ORP	x	x	x	x	x	x		7
	Temperature	x	x	x	x	x	x		7
	Turbidity	x	x	x	x	x	x		7
	Color	x	x	x	x	x	x		7
	Odor	x	x	x	x	x	x		7

Notes:

I:\25218062.00\Data and Calculations\Tables\[IPL_Sutherland Generating Station_CCR_Rule_Sampling_1803.xls]Sheet1

Groundwater Monitoring Results - Field Parameters
Sutherland Generating Station / SCS Engineers Project #25219076.00
April 2019

Sample	Sample Date/Time	GW Elevation (feet amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (ms/cm)	ORP (mV)	Turbidity
MW-301	4/2/2019 1534	857.33	4.89	7.16	1.48	618	58.7	65
MW-302	4/2/2019 1410	857.12	9.53	7.50	0.79	437	10.0	12.9
MW-303	4/2/2019 1317	855.60	10.57	7.29	0.78	1077	61.0	2.44
MW-304	4/2/2019 1220	855.47	7.59	6.85	1.35	1170	57.1	1.18
MW-305	4/2/2019 1137	855.67	8.49	6.90	0.96	1168	47.0	6.46
MW-306	4/2/2019 1040	855.96	10.79	7.81	1.37	907	25.7	0.78

Abbreviations:
mg/L = milligrams per liter mV = millivolts amsl = above mean sea level

Notes:
None

Created by: LMH Date: 9/26/2018
Last revision by: NDK Date: 4/5/2019
Checked by: AJR Date: 4/8/2019

I:\25219076.00\Data and Calculations\Tables\[1904_Sutherland_CCR_Field.xlsx]GW Field Parameters

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-152493-1
SDG Number: 25216062.18

Login Number: 152493
List Number: 1
Creator: Patrick, Kathryn E

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

A4 October 2019 Detection Monitoring

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-167887-1
Client Project/Site: Sutherland Site 25219076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
10/28/2019 9:42:30 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Job ID: 310-167887-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-167887-1

Comments
No additional comments.

Receipt
The samples were received on 10/17/2019 5:30 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.4° C.

HPLC/IC
Method 9056A: The following samples were diluted due to the nature of the sample matrix: MW-301 (310-167887-1), MW-302 (310-167887-2) and MW-306 (310-167887-6). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-167887-1	MW-301	Water	10/16/19 14:10	10/17/19 17:30	
310-167887-2	MW-302	Water	10/16/19 12:45	10/17/19 17:30	
310-167887-3	MW-303	Water	10/16/19 09:45	10/17/19 17:30	
310-167887-4	MW-304	Water	10/16/19 11:40	10/17/19 17:30	
310-167887-5	MW-305	Water	10/16/19 10:55	10/17/19 17:30	
310-167887-6	MW-306	Water	10/16/19 08:45	10/17/19 17:30	
310-167887-7	Field Blank	Water	10/16/19 23:59	10/17/19 17:30	

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-301 — Lab Sample ID: 310-167887-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	37		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.27	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	28		5.0	1.8	mg/L	5		9056A	Total/NA
Boron	170	J	200	110	ug/L	1		6020A	Total/NA
Calcium	82		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	340		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	856.15				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	34.7				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.16				mg/L	1		Field Sampling	Total/NA
pH, Field	6.97				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	642				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	17.84				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	11.4				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302 — Lab Sample ID: 310-167887-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.5		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.28	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	19		5.0	1.8	mg/L	5		9056A	Total/NA
Calcium	57		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	200		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	855.30				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-32.9				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.24				mg/L	1		Field Sampling	Total/NA
pH, Field	7.22				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	431				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	12.80				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	4.9				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303 — Lab Sample ID: 310-167887-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.55		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	310		20	7.0	mg/L	20		9056A	Total/NA
Boron	740		200	110	ug/L	1		6020A	Total/NA
Calcium	120		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	660		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.90				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	35.0				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.24				mg/L	1		Field Sampling	Total/NA
pH, Field	6.97				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1037				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	15.23				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	3.16				NTU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-304 — Lab Sample ID: 310-167887-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	23		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.60		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	400		20	7.0	mg/L	20		9056A	Total/NA
Boron	840		200	110	ug/L	1		6020A	Total/NA
Calcium	170		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	840		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.78				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	39.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.87				mg/L	1		Field Sampling	Total/NA
pH, Field	6.72				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1158				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	14.12				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	1.58				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-305 — Lab Sample ID: 310-167887-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	23		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.77		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	410		20	7.0	mg/L	20		9056A	Total/NA
Boron	1100		200	110	ug/L	1		6020A	Total/NA
Calcium	140		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	790		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.99				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	24.7				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.40				mg/L	1		Field Sampling	Total/NA
pH, Field	6.94				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1061				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.81				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	2.17				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-306 — Lab Sample ID: 310-167887-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13		5.0	1.5	mg/L	5		9056A	Total/NA
Fluoride	0.38	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	460		20	7.0	mg/L	20		9056A	Total/NA
Boron	2500		200	110	ug/L	1		6020A	Total/NA
Calcium	200		0.50	0.10	mg/L	1		6020A	Total/NA
Total Dissolved Solids	1000		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	852.16				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	43.4				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.28				mg/L	1		Field Sampling	Total/NA
pH, Field	7.38				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1294				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.09				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	1.81				NTU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: Field Blank

Lab Sample ID: 310-167887-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH	6.4	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-301

Date Collected: 10/16/19 14:10
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	37		5.0	1.5	mg/L			10/23/19 07:17	5
Fluoride	0.27	J	0.50	0.23	mg/L			10/23/19 07:17	5
Sulfate	28		5.0	1.8	mg/L			10/23/19 07:17	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	170	J	200	110	ug/L		10/23/19 07:52	10/25/19 16:33	1
Calcium	82		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	340		60	48	mg/L			10/22/19 11:49	1
pH	7.2	HF	0.1	0.1	SU			10/17/19 21:24	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	856.15				ft			10/16/19 14:10	1
Oxidation Reduction Potential	34.7				millivolts			10/16/19 14:10	1
Oxygen, Dissolved, Client Supplied	0.16				mg/L			10/16/19 14:10	1
pH, Field	6.97				SU			10/16/19 14:10	1
Specific Conductance, Field	642				umhos/cm			10/16/19 14:10	1
Temperature, Field	17.84				Degrees C			10/16/19 14:10	1
Turbidity, Field	11.4				NTU			10/16/19 14:10	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-302

Date Collected: 10/16/19 12:45
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-2

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.5		5.0	1.5	mg/L			10/23/19 07:33	5
Fluoride	0.28	J	0.50	0.23	mg/L			10/23/19 07:33	5
Sulfate	19		5.0	1.8	mg/L			10/23/19 07:33	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		10/23/19 07:52	10/25/19 16:36	1
Calcium	57		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	200		60	48	mg/L			10/22/19 11:49	1
pH	7.6	HF	0.1	0.1	SU			10/17/19 21:27	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	855.30				ft			10/16/19 12:45	1
Oxidation Reduction Potential	-32.9				millivolts			10/16/19 12:45	1
Oxygen, Dissolved, Client Supplied	0.24				mg/L			10/16/19 12:45	1
pH, Field	7.22				SU			10/16/19 12:45	1
Specific Conductance, Field	431				umhos/cm			10/16/19 12:45	1
Temperature, Field	12.80				Degrees C			10/16/19 12:45	1
Turbidity, Field	4.9				NTU			10/16/19 12:45	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-303

Date Collected: 10/16/19 09:45
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		5.0	1.5	mg/L			10/23/19 07:50	5
Fluoride	0.55		0.50	0.23	mg/L			10/23/19 07:50	5
Sulfate	310		20	7.0	mg/L			10/23/19 10:21	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	740		200	110	ug/L		10/23/19 07:52	10/25/19 16:40	1
Calcium	120		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	660		60	48	mg/L			10/22/19 11:49	1
pH	7.2	HF	0.1	0.1	SU			10/17/19 21:29	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.90				ft			10/16/19 09:45	1
Oxidation Reduction Potential	35.0				millivolts			10/16/19 09:45	1
Oxygen, Dissolved, Client Supplied	0.24				mg/L			10/16/19 09:45	1
pH, Field	6.97				SU			10/16/19 09:45	1
Specific Conductance, Field	1037				umhos/cm			10/16/19 09:45	1
Temperature, Field	15.23				Degrees C			10/16/19 09:45	1
Turbidity, Field	3.16				NTU			10/16/19 09:45	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-304

Date Collected: 10/16/19 11:40
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23		5.0	1.5	mg/L			10/23/19 08:06	5
Fluoride	0.60		0.50	0.23	mg/L			10/23/19 08:06	5
Sulfate	400		20	7.0	mg/L			10/23/19 10:38	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	840		200	110	ug/L		10/23/19 07:52	10/25/19 16:53	1
Calcium	170		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	840		60	48	mg/L			10/22/19 11:49	1
pH	7.1	HF	0.1	0.1	SU			10/17/19 21:30	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.78				ft			10/16/19 11:40	1
Oxidation Reduction Potential	39.1				millivolts			10/16/19 11:40	1
Oxygen, Dissolved, Client Supplied	0.87				mg/L			10/16/19 11:40	1
pH, Field	6.72				SU			10/16/19 11:40	1
Specific Conductance, Field	1158				umhos/cm			10/16/19 11:40	1
Temperature, Field	14.12				Degrees C			10/16/19 11:40	1
Turbidity, Field	1.58				NTU			10/16/19 11:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-305

Date Collected: 10/16/19 10:55
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-5

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	23		5.0	1.5	mg/L			10/23/19 08:23	5
Fluoride	0.77		0.50	0.23	mg/L			10/23/19 08:23	5
Sulfate	410		20	7.0	mg/L			10/23/19 10:54	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	1100		200	110	ug/L		10/23/19 07:52	10/25/19 16:57	1
Calcium	140		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	790		60	48	mg/L			10/22/19 11:49	1
pH	7.2	HF	0.1	0.1	SU			10/17/19 21:32	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.99				ft			10/16/19 10:55	1
Oxidation Reduction Potential	24.7				millivolts			10/16/19 10:55	1
Oxygen, Dissolved, Client Supplied	0.40				mg/L			10/16/19 10:55	1
pH, Field	6.94				SU			10/16/19 10:55	1
Specific Conductance, Field	1061				umhos/cm			10/16/19 10:55	1
Temperature, Field	13.81				Degrees C			10/16/19 10:55	1
Turbidity, Field	2.17				NTU			10/16/19 10:55	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-306

Date Collected: 10/16/19 08:45
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-6

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13		5.0	1.5	mg/L			10/23/19 08:39	5
Fluoride	0.38	J	0.50	0.23	mg/L			10/23/19 08:39	5
Sulfate	460		20	7.0	mg/L			10/23/19 08:55	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	2500		200	110	ug/L		10/23/19 07:52	10/25/19 17:00	1
Calcium	200		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1000		60	48	mg/L			10/22/19 11:49	1
pH	7.9	HF	0.1	0.1	SU			10/17/19 21:34	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	852.16				ft			10/16/19 08:45	1
Oxidation Reduction Potential	43.4				millivolts			10/16/19 08:45	1
Oxygen, Dissolved, Client Supplied	0.28				mg/L			10/16/19 08:45	1
pH, Field	7.38				SU			10/16/19 08:45	1
Specific Conductance, Field	1294				umhos/cm			10/16/19 08:45	1
Temperature, Field	13.09				Degrees C			10/16/19 08:45	1
Turbidity, Field	1.81				NTU			10/16/19 08:45	1

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: Field Blank

Lab Sample ID: 310-167887-7

Date Collected: 10/16/19 23:59

Matrix: Water

Date Received: 10/17/19 17:30

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			10/23/19 09:12	1
Fluoride	<0.045		0.10	0.045	mg/L			10/23/19 09:12	1
Sulfate	<0.35		1.0	0.35	mg/L			10/23/19 09:12	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		10/23/19 07:52	10/25/19 17:03	1
Calcium	<0.10		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 16:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			10/23/19 12:25	1
pH	**6.4**	**HF**	0.1	0.1	SU			10/17/19 21:37	1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-258277/3
Matrix: Water
Analysis Batch: 258277

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			10/23/19 01:33	1
Fluoride	<0.045		0.10	0.045	mg/L			10/23/19 01:33	1
Sulfate	<0.35		1.0	0.35	mg/L			10/23/19 01:33	1

Lab Sample ID: LCS 310-258277/4
Matrix: Water
Analysis Batch: 258277

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.5		mg/L		105	90 - 110
Fluoride	2.00	2.14		mg/L		107	90 - 110
Sulfate	10.0	10.6		mg/L		106	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-257889/1-A
Matrix: Water
Analysis Batch: 258078

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257889

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.10		0.50	0.10	mg/L		10/23/19 07:52	10/23/19 15:43	1

Lab Sample ID: MB 310-257889/1-A
Matrix: Water
Analysis Batch: 258465

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 257889

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<110		200	110	ug/L		10/23/19 07:52	10/25/19 16:16	1

Lab Sample ID: LCS 310-257889/2-A
Matrix: Water
Analysis Batch: 258078

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257889

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	4.00	3.46		mg/L		86	80 - 120

Lab Sample ID: LCS 310-257889/2-A
Matrix: Water
Analysis Batch: 258465

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 257889

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	1760	1980		ug/L		113	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-257790/1
Matrix: Water
Analysis Batch: 257790

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			10/22/19 11:49	1

Lab Sample ID: LCS 310-257790/2
Matrix: Water
Analysis Batch: 257790

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	988		mg/L		99	90 - 110

Lab Sample ID: 310-167887-1 DU
Matrix: Water
Analysis Batch: 257790

Client Sample ID: MW-301
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	340		328		mg/L		2	24

Lab Sample ID: MB 310-257962/1
Matrix: Water
Analysis Batch: 257962

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			10/23/19 12:25	1

Lab Sample ID: LCS 310-257962/2
Matrix: Water
Analysis Batch: 257962

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	988		mg/L		99	90 - 110

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-257321/1
Matrix: Water
Analysis Batch: 257321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	98 - 102

Lab Sample ID: 310-167887-1 DU
Matrix: Water
Analysis Batch: 257321

Client Sample ID: MW-301
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.2	HF	7.1		SU		0.3	20

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

HPLC/IC

Analysis Batch: 258277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	9056A	
310-167887-2	MW-302	Total/NA	Water	9056A	
310-167887-3	MW-303	Total/NA	Water	9056A	
310-167887-3	MW-303	Total/NA	Water	9056A	
310-167887-4	MW-304	Total/NA	Water	9056A	
310-167887-4	MW-304	Total/NA	Water	9056A	
310-167887-5	MW-305	Total/NA	Water	9056A	
310-167887-5	MW-305	Total/NA	Water	9056A	
310-167887-6	MW-306	Total/NA	Water	9056A	
310-167887-6	MW-306	Total/NA	Water	9056A	
310-167887-7	Field Blank	Total/NA	Water	9056A	
MB 310-258277/3	Method Blank	Total/NA	Water	9056A	
LCS 310-258277/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 257889

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	3010A	
310-167887-2	MW-302	Total/NA	Water	3010A	
310-167887-3	MW-303	Total/NA	Water	3010A	
310-167887-4	MW-304	Total/NA	Water	3010A	
310-167887-5	MW-305	Total/NA	Water	3010A	
310-167887-6	MW-306	Total/NA	Water	3010A	
310-167887-7	Field Blank	Total/NA	Water	3010A	
MB 310-257889/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-257889/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 258078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	6020A	257889
310-167887-2	MW-302	Total/NA	Water	6020A	257889
310-167887-3	MW-303	Total/NA	Water	6020A	257889
310-167887-4	MW-304	Total/NA	Water	6020A	257889
310-167887-5	MW-305	Total/NA	Water	6020A	257889
310-167887-6	MW-306	Total/NA	Water	6020A	257889
310-167887-7	Field Blank	Total/NA	Water	6020A	257889
MB 310-257889/1-A	Method Blank	Total/NA	Water	6020A	257889
LCS 310-257889/2-A	Lab Control Sample	Total/NA	Water	6020A	257889

Analysis Batch: 258465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	6020A	257889
310-167887-2	MW-302	Total/NA	Water	6020A	257889
310-167887-3	MW-303	Total/NA	Water	6020A	257889
310-167887-4	MW-304	Total/NA	Water	6020A	257889
310-167887-5	MW-305	Total/NA	Water	6020A	257889
310-167887-6	MW-306	Total/NA	Water	6020A	257889
310-167887-7	Field Blank	Total/NA	Water	6020A	257889
MB 310-257889/1-A	Method Blank	Total/NA	Water	6020A	257889
LCS 310-257889/2-A	Lab Control Sample	Total/NA	Water	6020A	257889

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

General Chemistry

Analysis Batch: 257321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-167887-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-167887-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-167887-4	MW-304	Total/NA	Water	SM 4500 H+ B	
310-167887-5	MW-305	Total/NA	Water	SM 4500 H+ B	
310-167887-6	MW-306	Total/NA	Water	SM 4500 H+ B	
310-167887-7	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-257321/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-167887-1 DU	MW-301	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 257790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	SM 2540C	
310-167887-2	MW-302	Total/NA	Water	SM 2540C	
310-167887-3	MW-303	Total/NA	Water	SM 2540C	
310-167887-4	MW-304	Total/NA	Water	SM 2540C	
310-167887-5	MW-305	Total/NA	Water	SM 2540C	
310-167887-6	MW-306	Total/NA	Water	SM 2540C	
MB 310-257790/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-257790/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-167887-1 DU	MW-301	Total/NA	Water	SM 2540C	

Analysis Batch: 257962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-7	Field Blank	Total/NA	Water	SM 2540C	
MB 310-257962/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-257962/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 257782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-167887-1	MW-301	Total/NA	Water	Field Sampling	
310-167887-2	MW-302	Total/NA	Water	Field Sampling	
310-167887-3	MW-303	Total/NA	Water	Field Sampling	
310-167887-4	MW-304	Total/NA	Water	Field Sampling	
310-167887-5	MW-305	Total/NA	Water	Field Sampling	
310-167887-6	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-301
Date Collected: 10/16/19 14:10
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258277	10/23/19 07:17	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:20	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 16:33	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257790	10/22/19 11:49	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:24	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257782	10/16/19 14:10	EAR	TAL CF

Client Sample ID: MW-302
Date Collected: 10/16/19 12:45
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258277	10/23/19 07:33	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:24	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 16:36	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257790	10/22/19 11:49	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:27	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257782	10/16/19 12:45	EAR	TAL CF

Client Sample ID: MW-303
Date Collected: 10/16/19 09:45
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258277	10/23/19 07:50	CJT	TAL CF
Total/NA	Analysis	9056A		20	258277	10/23/19 10:21	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:27	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 16:40	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257790	10/22/19 11:49	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:29	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257782	10/16/19 09:45	EAR	TAL CF

Client Sample ID: MW-304
Date Collected: 10/16/19 11:40
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258277	10/23/19 08:06	CJT	TAL CF

Lab Chronicle

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: MW-304

Lab Sample ID: 310-167887-4
Date Collected: 10/16/19 11:40
Matrix: Water
Date Received: 10/17/19 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20	258277	10/23/19 10:38	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:30	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 16:53	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257790	10/22/19 11:49	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:30	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257782	10/16/19 11:40	EAR	TAL CF

Client Sample ID: MW-305

Lab Sample ID: 310-167887-5
Date Collected: 10/16/19 10:55
Matrix: Water
Date Received: 10/17/19 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258277	10/23/19 08:23	CJT	TAL CF
Total/NA	Analysis	9056A		20	258277	10/23/19 10:54	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:34	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 16:57	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257790	10/22/19 11:49	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:32	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257782	10/16/19 10:55	EAR	TAL CF

Client Sample ID: MW-306

Lab Sample ID: 310-167887-6
Date Collected: 10/16/19 08:45
Matrix: Water
Date Received: 10/17/19 17:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	258277	10/23/19 08:39	CJT	TAL CF
Total/NA	Analysis	9056A		20	258277	10/23/19 08:55	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:37	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 17:00	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257790	10/22/19 11:49	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:34	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	257782	10/16/19 08:45	EAR	TAL CF

Lab Chronicle

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Client Sample ID: Field Blank

Date Collected: 10/16/19 23:59
Date Received: 10/17/19 17:30

Lab Sample ID: 310-167887-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	258277	10/23/19 09:12	CJT	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258078	10/23/19 16:41	SAD	TAL CF
Total/NA	Prep	3010A			257889	10/23/19 07:52	HED	TAL CF
Total/NA	Analysis	6020A		1	258465	10/25/19 17:03	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	257962	10/23/19 12:25	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	257321	10/17/19 21:37	JMH	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-167887-1
Project/Site: Sutherland Site 25219076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State Program	007	12-01-19

Method Summary

Client: SCS Engineers
Project/Site: Sutherland Site 25219076

Job ID: 310-167887-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-167887 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 101719 TIME 1730 Received By: AES

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # _____ of _____
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): 0.0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.4 Corrected Temp (°C): 0.4

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing TestAmerica

43600

Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-43800-14093.1
Client Contact: Louise Jennings	Phone: 608 509 8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days): Standard			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland site 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020A - B/Ca	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N		
MW-301	10.16.19	1410	G	Water			X	X		
MW-302	10.16.19	1345		Water						
MW-303		0945		Water						
MW-304		1140		Water						
MW-305		1055		Water						
MW-306		0845		Water						
Field Blank		2359		Water						
				Water						

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10/16/19 1630	SCS	[signature]	10/16/19 - 14:35	DAL
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by: [signature]	Date/Time: 10/17/19 1730	Company ETA

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-167887-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-302	310-167887-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-303	310-167887-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-304	310-167887-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-305	310-167887-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-306	310-167887-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-167887-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-167887-1

Login Number: 167887
List Number: 1
Creator: Spoerre, Autumn R

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Groundwater Monitoring Results - Field Parameters
Sutherland Generating Station / SCS Engineers Project #25219076.00
April 2019

Sample	Sample Date/Time	GW Elevation (feet amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (ms/cm)	ORP (mV)	Turbidity
MW-301	10.16.19/1410	856.15	17.84	6.97	0.16	642	34.7	11.4
MW-302	10.16.19/1245	855.30	12.80	7.22	0.24	431	-32.9	4.9
MW-303	10.16.19/0945	854.90	15.23	6.97	0.24	1,037	35.0	3.16
MW-304	10.16.19/1140	854.78	14.12	6.72	0.87	1,158	39.1	1.58
MW-305	10.16.19/1055	854.99	13.81	6.94	0.40	1,061	24.7	2.17
MW-306	10.16.19/0845	852.16	13.09	7.38	0.28	1,294	43.4	1.81

Abbreviations:
mg/L = milligrams per liter mV = millivolts amsl = above mean sea level

Notes:
None

Created by: LMH Date: 9/26/2018
Last revision by: LWJ Date: 10/18/2019
Checked by: JSN Date: 10/21/2019

\\Mad-fs01\data\Projects\25219076.00\Data and Calculations\Tables\[1910_Sutherland_CCR_Field.xlsx]GW Field Parameters

A5 December 2019 Assessment Monitoring

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-172152-1
Client Project/Site: Sutherland Generating Station 25219076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
12/23/2019 3:42:42 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25219076

Job ID: 310-172152-1

Job ID: 310-172152-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-172152-1

Comments
No additional comments.

Receipt
The samples were received on 12/14/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.1° C.

HPLC/IC
Methods 300.0, 9056A: The following samples were diluted due to the nature of the sample matrix: MW-301 (310-172152-1), MW-302 (310-172152-2), MW-303 (310-172152-3), MW-304 (310-172152-4), MW-305 (310-172152-5) and MW-306 (310-172152-6). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-172152-1	MW-301	Water	12/11/19 16:30	12/14/19 09:20	
310-172152-2	MW-302	Water	12/12/19 08:00	12/14/19 09:20	
310-172152-3	MW-303	Water	12/12/19 09:15	12/14/19 09:20	
310-172152-4	MW-304	Water	12/12/19 11:25	12/14/19 09:20	
310-172152-5	MW-305	Water	12/12/19 12:50	12/14/19 09:20	
310-172152-6	MW-306	Water	12/12/19 10:20	12/14/19 09:20	
310-172152-7	Field Blank	Water	12/12/19 07:00	12/14/19 09:20	

Detection Summary

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-301 — Lab Sample ID: 310-172152-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	16		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	29		5.0	1.8	mg/L	5		9056A	Total/NA
Barium	130		2.0	0.84	ug/L	1		6020A	Total/NA
Cadmium	0.086	J	0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	75		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.99		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.46	J	0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	3.5	J	10	2.7	ug/L	1		6020A	Total/NA
Total Dissolved Solids	360		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	857.05				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	84.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.34				mg/L	1		Field Sampling	Total/NA
pH, Field	6.69				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	550				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	12.40				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	51.94				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302 — Lab Sample ID: 310-172152-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.7	J	5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	14		5.0	1.8	mg/L	5		9056A	Total/NA
Arsenic	6.1		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	81		2.0	0.84	ug/L	1		6020A	Total/NA
Calcium	58		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	1.3		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	2.8	J	10	2.7	ug/L	1		6020A	Total/NA
Total Dissolved Solids	240		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	856.11				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-45.9				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.46				mg/L	1		Field Sampling	Total/NA
pH, Field	6.98				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	394				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.00				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	5.12				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303 — Lab Sample ID: 310-172152-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	270		10	3.5	mg/L	10		9056A	Total/NA
Arsenic	0.82	J	2.0	0.75	ug/L	1		6020A	Total/NA
Barium	47		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	570		200	110	ug/L	1		6020A	Total/NA
Calcium	130		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.95		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	27		10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	19		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	740		30	24	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-303 (Continued)
Lab Sample ID: 310-172152-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ground Water Elevation	854.47				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	52.8				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.02				mg/L	1		Field Sampling	Total/NA
pH, Field	6.82				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1004				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	10.40				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	15.07				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-304
Lab Sample ID: 310-172152-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	360		10	3.5	mg/L	10		9056A	Total/NA
Barium	28		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	660		200	110	ug/L	1		6020A	Total/NA
Calcium	150		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.41	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	2.9	J	10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	1.3	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	840		30	24	mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.29				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	75.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.37				mg/L	1		Field Sampling	Total/NA
pH, Field	6.47				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1083				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	10.50				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.19				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-305
Lab Sample ID: 310-172152-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	450		20	7.0	mg/L	20		9056A	Total/NA
Arsenic	7.6		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	45		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	760		200	110	ug/L	1		6020A	Total/NA
Calcium	160		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	1.5		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.38	J	0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	16		10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	24		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	960		30	24	mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.33				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	50.5				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.27				mg/L	1		Field Sampling	Total/NA
pH, Field	6.52				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1178				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.40				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	78.41				NTU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-306
Lab Sample ID: 310-172152-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	11		5.0	1.5	mg/L	5		9056A	Total/NA
Sulfate	480		20	7.0	mg/L	20		9056A	Total/NA
Arsenic	4.3		2.0	0.75	ug/L	1		6020A	Total/NA
Barium	98		2.0	0.84	ug/L	1		6020A	Total/NA
Boron	2400		200	110	ug/L	1		6020A	Total/NA
Calcium	210		0.50	0.10	mg/L	1		6020A	Total/NA
Cobalt	0.75		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	40		10	2.7	ug/L	1		6020A	Total/NA
Molybdenum	40		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1100		60	48	mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.39				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	30.8				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.32				mg/L	1		Field Sampling	Total/NA
pH, Field	7.50				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1329				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.60				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.78				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank
Lab Sample ID: 310-172152-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1.3		0.50	0.27	ug/L	1		6020A	Total/NA
pH	6.4	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25219076

Job ID: 310-172152-1

Client Sample ID: MW-301

Date Collected: 12/11/19 16:30
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-1

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**16**		5.0	1.5	mg/L			12/19/19 08:49	5
Fluoride	<0.23	F1	0.50	0.23	mg/L			12/19/19 08:49	5
Sulfate	**29**		5.0	1.8	mg/L			12/19/19 08:49	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:22	1
Arsenic	<0.75		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:22	1
Barium	**130**		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:22	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:22	1
Boron	<110		200	110	ug/L		12/17/19 07:39	12/19/19 13:22	1
Cadmium	**0.086**	**J**	0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:22	1
Calcium	**75**		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:22	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:22	1
Cobalt	**0.99**		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:22	1
Lead	**0.46**	**J**	0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:22	1
Lithium	**3.5**	**J**	10	2.7	ug/L		12/17/19 07:39	12/19/19 13:22	1
Molybdenum	<1.1		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:22	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:22	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:22	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 11:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**360**		30	24	mg/L			12/17/19 13:28	1
pH	**7.0**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**857.05**				ft			12/11/19 16:30	1
Oxidation Reduction Potential	**84.1**				millivolts			12/11/19 16:30	1
Oxygen, Dissolved, Client Supplied	**0.34**				mg/L			12/11/19 16:30	1
pH, Field	**6.69**				SU			12/11/19 16:30	1
Specific Conductance, Field	**550**				umhos/cm			12/11/19 16:30	1
Temperature, Field	**12.40**				Degrees C			12/11/19 16:30	1
Turbidity, Field	**51.94**				NTU			12/11/19 16:30	1

Client Sample ID: MW-302
Date Collected: 12/12/19 08:00
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-2
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**4.7**	**J**	5.0	1.5	mg/L			12/19/19 09:36	5
Fluoride	<0.23		0.50	0.23	mg/L			12/19/19 09:36	5
Sulfate	**14**		5.0	1.8	mg/L			12/19/19 09:36	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:25	1
Arsenic	**6.1**		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:25	1
Barium	**81**		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:25	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:25	1
Boron	<110		200	110	ug/L		12/17/19 07:39	12/19/19 13:25	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:25	1
Calcium	**58**		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:25	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:25	1
Cobalt	**1.3**		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:25	1
Lead	<0.27		0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:25	1
Lithium	**2.8**	**J**	10	2.7	ug/L		12/17/19 07:39	12/19/19 13:25	1
Molybdenum	<1.1		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:25	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:25	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:25	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 11:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**240**		30	24	mg/L			12/17/19 13:28	1
pH	**7.5**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**856.11**				ft			12/12/19 08:00	1
Oxidation Reduction Potential	**-45.9**				millivolts			12/12/19 08:00	1
Oxygen, Dissolved, Client Supplied	**0.46**				mg/L			12/12/19 08:00	1
pH, Field	**6.98**				SU			12/12/19 08:00	1
Specific Conductance, Field	**394**				umhos/cm			12/12/19 08:00	1
Temperature, Field	**11.00**				Degrees C			12/12/19 08:00	1
Turbidity, Field	**5.12**				NTU			12/12/19 08:00	1

Client Sample ID: MW-303
Date Collected: 12/12/19 09:15
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-3
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15**		5.0	1.5	mg/L			12/19/19 09:52	5
Fluoride	<0.23		0.50	0.23	mg/L			12/19/19 09:52	5
Sulfate	**270**		10	3.5	mg/L			12/19/19 15:35	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:37	1
Arsenic	**0.82**	**J**	2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:37	1
Barium	**47**		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:37	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:37	1
Boron	**570**		200	110	ug/L		12/17/19 07:39	12/19/19 13:37	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:37	1
Calcium	**130**		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:37	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:37	1
Cobalt	**0.95**		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:37	1
Lead	<0.27		0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:37	1
Lithium	**27**		10	2.7	ug/L		12/17/19 07:39	12/19/19 13:37	1
Molybdenum	**19**		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:37	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:37	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:37	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 11:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**740**		30	24	mg/L			12/17/19 13:28	1
pH	**7.2**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.47**				ft			12/12/19 09:15	1
Oxidation Reduction Potential	**52.8**				millivolts			12/12/19 09:15	1
Oxygen, Dissolved, Client Supplied	**1.02**				mg/L			12/12/19 09:15	1
pH, Field	**6.82**				SU			12/12/19 09:15	1
Specific Conductance, Field	**1004**				umhos/cm			12/12/19 09:15	1
Temperature, Field	**10.40**				Degrees C			12/12/19 09:15	1
Turbidity, Field	**15.07**				NTU			12/12/19 09:15	1

Client Sample ID: MW-304
Lab Sample ID: 310-172152-4

Date Collected: 12/12/19 11:25
Matrix: Water
Date Received: 12/14/19 09:20

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**17**		5.0	1.5	mg/L			12/19/19 10:07	5
Fluoride	<0.23		0.50	0.23	mg/L			12/19/19 10:07	5
Sulfate	**360**		10	3.5	mg/L			12/19/19 15:50	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:42	1
Arsenic	<0.75		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:42	1
Barium	**28**		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:42	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:42	1
Boron	**660**		200	110	ug/L		12/17/19 07:39	12/19/19 13:42	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:42	1
Calcium	**150**		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:42	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:42	1
Cobalt	**0.41**	**J**	0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:42	1
Lead	<0.27		0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:42	1
Lithium	**2.9**	**J**	10	2.7	ug/L		12/17/19 07:39	12/19/19 13:42	1
Molybdenum	**1.3**	**J**	2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:42	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:42	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:42	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 11:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**840**		30	24	mg/L			12/17/19 13:28	1
pH	**6.7**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.29**				ft			12/12/19 11:25	1
Oxidation Reduction Potential	**75.1**				millivolts			12/12/19 11:25	1
Oxygen, Dissolved, Client Supplied	**0.37**				mg/L			12/12/19 11:25	1
pH, Field	**6.47**				SU			12/12/19 11:25	1
Specific Conductance, Field	**1083**				umhos/cm			12/12/19 11:25	1
Temperature, Field	**10.50**				Degrees C			12/12/19 11:25	1
Turbidity, Field	**0.19**				NTU			12/12/19 11:25	1

Client Sample ID: MW-305
Lab Sample ID: 310-172152-5

Date Collected: 12/12/19 12:50
Matrix: Water
Date Received: 12/14/19 09:20

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15**		5.0	1.5	mg/L			12/19/19 10:23	5
Fluoride	<0.23		0.50	0.23	mg/L			12/19/19 10:23	5
Sulfate	**450**		20	7.0	mg/L			12/19/19 16:06	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:45	1
Arsenic	**7.6**		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:45	1
Barium	**45**		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:45	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:45	1
Boron	**760**		200	110	ug/L		12/17/19 07:39	12/19/19 13:45	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:45	1
Calcium	**160**		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:45	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:45	1
Cobalt	**1.5**		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:45	1
Lead	**0.38**	**J**	0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:45	1
Lithium	**16**		10	2.7	ug/L		12/17/19 07:39	12/19/19 13:45	1
Molybdenum	**24**		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:45	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:45	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:45	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 11:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**960**		30	24	mg/L			12/17/19 13:28	1
pH	**6.9**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.33**				ft			12/12/19 12:50	1
Oxidation Reduction Potential	**50.5**				millivolts			12/12/19 12:50	1
Oxygen, Dissolved, Client Supplied	**0.27**				mg/L			12/12/19 12:50	1
pH, Field	**6.52**				SU			12/12/19 12:50	1
Specific Conductance, Field	**1178**				umhos/cm			12/12/19 12:50	1
Temperature, Field	**11.40**				Degrees C			12/12/19 12:50	1
Turbidity, Field	**78.41**				NTU			12/12/19 12:50	1

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25219076

Job ID: 310-172152-1

Client Sample ID: MW-306

Date Collected: 12/12/19 10:20
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-6

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11**		5.0	1.5	mg/L			12/19/19 10:39	5
Fluoride	<0.23		0.50	0.23	mg/L			12/19/19 10:39	5
Sulfate	**480**		20	7.0	mg/L			12/19/19 16:21	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:47	1
Arsenic	**4.3**		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:47	1
Barium	**98**		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:47	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:47	1
Boron	**2400**		200	110	ug/L		12/17/19 07:39	12/19/19 13:47	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:47	1
Calcium	**210**		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:47	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:47	1
Cobalt	**0.75**		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:47	1
Lead	<0.27		0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:47	1
Lithium	**40**		10	2.7	ug/L		12/17/19 07:39	12/19/19 13:47	1
Molybdenum	**40**		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:47	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:47	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:47	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 11:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1100**		60	48	mg/L			12/17/19 13:28	1
pH	**7.8**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.39**				ft			12/12/19 10:20	1
Oxidation Reduction Potential	**30.8**				millivolts			12/12/19 10:20	1
Oxygen, Dissolved, Client Supplied	**0.32**				mg/L			12/12/19 10:20	1
pH, Field	**7.50**				SU			12/12/19 10:20	1
Specific Conductance, Field	**1329**				umhos/cm			12/12/19 10:20	1
Temperature, Field	**11.60**				Degrees C			12/12/19 10:20	1
Turbidity, Field	**0.78**				NTU			12/12/19 10:20	1

Client Sample ID: Field Blank
Lab Sample ID: 310-172152-7

Date Collected: 12/12/19 07:00
Matrix: Water
Date Received: 12/14/19 09:20

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			12/19/19 11:25	1
Fluoride	<0.045		0.10	0.045	mg/L			12/19/19 11:25	1
Sulfate	<0.35		1.0	0.35	mg/L			12/19/19 11:25	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 13:50	1
Arsenic	<0.75		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 13:50	1
Barium	<0.84		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 13:50	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:50	1
Boron	<110		200	110	ug/L		12/17/19 07:39	12/19/19 13:50	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 13:50	1
Calcium	<0.10		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 13:50	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 13:50	1
Cobalt	<0.091		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 13:50	1
Lead	**1.3**		0.50	0.27	ug/L		12/17/19 07:39	12/19/19 13:50	1
Lithium	<2.7		10	2.7	ug/L		12/17/19 07:39	12/19/19 13:50	1
Molybdenum	<1.1		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 13:50	1
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 13:50	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 13:50	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:09	12/17/19 11:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			12/17/19 13:28	1
pH	**6.4**	**HF**	0.1	0.1	SU			12/14/19 10:22	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-265408/3
Matrix: Water
Analysis Batch: 265408

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.29		1.0	0.29	mg/L			12/19/19 08:18	1
Fluoride	<0.045		0.10	0.045	mg/L			12/19/19 08:18	1
Sulfate	<0.35		1.0	0.35	mg/L			12/19/19 08:18	1

Lab Sample ID: LCS 310-265408/4
Matrix: Water
Analysis Batch: 265408

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.45		mg/L		95	90 - 110
Fluoride	2.00	1.88		mg/L		94	90 - 110
Sulfate	10.0	9.53		mg/L		95	90 - 110

Lab Sample ID: 310-172152-1 MS
Matrix: Water
Analysis Batch: 265408

Client Sample ID: MW-301
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	16		25.0	39.7		mg/L		94	80 - 120
Fluoride	<0.23	F1	5.00	3.97	F1	mg/L		79	80 - 120
Sulfate	29		25.0	53.1		mg/L		95	80 - 120

Lab Sample ID: 310-172152-1 MSD
Matrix: Water
Analysis Batch: 265408

Client Sample ID: MW-301
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	16		25.0	40.3		mg/L		97	80 - 120	2	15
Fluoride	<0.23	F1	5.00	3.92	F1	mg/L		78	80 - 120	1	15
Sulfate	29		25.0	53.6		mg/L		97	80 - 120	1	15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-264867/1-A
Matrix: Water
Analysis Batch: 265426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264867

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.53		1.0	0.53	ug/L		12/17/19 07:39	12/19/19 12:33	1
Arsenic	<0.75		2.0	0.75	ug/L		12/17/19 07:39	12/19/19 12:33	1
Barium	<0.84		2.0	0.84	ug/L		12/17/19 07:39	12/19/19 12:33	1
Beryllium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 12:33	1
Boron	<110		200	110	ug/L		12/17/19 07:39	12/19/19 12:33	1
Cadmium	<0.039		0.10	0.039	ug/L		12/17/19 07:39	12/19/19 12:33	1
Calcium	<0.10		0.50	0.10	mg/L		12/17/19 07:39	12/19/19 12:33	1
Chromium	<0.98		5.0	0.98	ug/L		12/17/19 07:39	12/19/19 12:33	1
Cobalt	<0.091		0.50	0.091	ug/L		12/17/19 07:39	12/19/19 12:33	1
Lead	<0.27		0.50	0.27	ug/L		12/17/19 07:39	12/19/19 12:33	1
Lithium	<2.7		10	2.7	ug/L		12/17/19 07:39	12/19/19 12:33	1
Molybdenum	<1.1		2.0	1.1	ug/L		12/17/19 07:39	12/19/19 12:33	1

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 310-264867/1-A
Matrix: Water
Analysis Batch: 265426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264867

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	<1.0		5.0	1.0	ug/L		12/17/19 07:39	12/19/19 12:33	1
Thallium	<0.27		1.0	0.27	ug/L		12/17/19 07:39	12/19/19 12:33	1

Lab Sample ID: LCS 310-264867/2-A
Matrix: Water
Analysis Batch: 265426

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264867

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	80.0	68.0		ug/L		85	80 - 120
Barium	80.0	76.6		ug/L		96	80 - 120
Beryllium	40.0	40.8		ug/L		102	80 - 120
Boron	1760	1750		ug/L		100	80 - 120
Cadmium	40.0	38.5		ug/L		96	80 - 120
Calcium	4.00	3.84		mg/L		96	80 - 120
Chromium	80.0	76.1		ug/L		95	80 - 120
Cobalt	40.0	39.5		ug/L		99	80 - 120
Lead	40.0	38.3		ug/L		96	80 - 120
Lithium	200	195		ug/L		97	80 - 120
Molybdenum	80.0	64.0		ug/L		80	80 - 120
Selenium	80.0	72.2		ug/L		90	80 - 120
Thallium	32.0	29.4		ug/L		92	80 - 120

Lab Sample ID: LCS 310-264867/2-A
Matrix: Water
Analysis Batch: 265741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264867

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	40.0	34.2		ug/L		85	80 - 120

Lab Sample ID: 310-172152-3 DU
Matrix: Water
Analysis Batch: 265426

Client Sample ID: MW-303
Prep Type: Total/NA
Prep Batch: 264867

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.53		<0.53		ug/L		NC	20
Arsenic	0.82	J	0.842	J	ug/L		3	20
Barium	47		47.0		ug/L		0.2	20
Beryllium	<0.27		<0.27		ug/L		NC	20
Boron	570		568		ug/L		0.5	20
Cadmium	<0.039		<0.039		ug/L		NC	20
Calcium	130		134		mg/L		3	20
Chromium	<0.98		<0.98		ug/L		NC	20
Cobalt	0.95		0.990		ug/L		4	20
Lead	<0.27		<0.27		ug/L		NC	20
Lithium	27		27.4		ug/L		0.9	20
Molybdenum	19		18.8		ug/L		0.9	20
Selenium	<1.0		<1.0		ug/L		NC	20
Thallium	<0.27		<0.27		ug/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-264802/1-A
Matrix: Water
Analysis Batch: 264969
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264802

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:01	12/17/19 10:17	1

Lab Sample ID: LCS 310-264802/2-A
Matrix: Water
Analysis Batch: 264969
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264802

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.67	1.49		ug/L		89	80 - 120

Lab Sample ID: MB 310-264617/1-B
Matrix: Water
Analysis Batch: 264969
Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 264803

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		12/16/19 15:02	12/17/19 11:17	1

Lab Sample ID: LCS 310-264617/2-B
Matrix: Water
Analysis Batch: 264969
Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 264803

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.67	1.56		ug/L		93	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-264957/1
Matrix: Water
Analysis Batch: 264957
Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<24		30	24	mg/L			12/17/19 13:28	1

Lab Sample ID: LCS 310-264957/2
Matrix: Water
Analysis Batch: 264957
Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	960		mg/L		96	90 - 110

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-264670/1
Matrix: Water
Analysis Batch: 264670
Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	7.00	7.0		SU		100	98 - 102

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Method: SM 4500 H+ B - pH (Continued)

Lab Sample ID: 310-172152-1 DU
Client Sample ID: MW-301
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 264670

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.0	HF		7.0		SU				0.1	20

HPLC/IC

Analysis Batch: 265408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	9056A	
310-172152-2	MW-302	Total/NA	Water	9056A	
310-172152-3	MW-303	Total/NA	Water	9056A	
310-172152-3	MW-303	Total/NA	Water	9056A	
310-172152-4	MW-304	Total/NA	Water	9056A	
310-172152-4	MW-304	Total/NA	Water	9056A	
310-172152-5	MW-305	Total/NA	Water	9056A	
310-172152-5	MW-305	Total/NA	Water	9056A	
310-172152-6	MW-306	Total/NA	Water	9056A	
310-172152-6	MW-306	Total/NA	Water	9056A	
310-172152-7	Field Blank	Total/NA	Water	9056A	
MB 310-265408/3	Method Blank	Total/NA	Water	9056A	
LCS 310-265408/4	Lab Control Sample	Total/NA	Water	9056A	
310-172152-1 MS	MW-301	Total/NA	Water	9056A	
310-172152-1 MSD	MW-301	Total/NA	Water	9056A	

Metals

Filtration Batch: 264617

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-264617/1-B	Method Blank	Total/NA	Water	Filtration	
LCS 310-264617/2-B	Lab Control Sample	Total/NA	Water	Filtration	

Prep Batch: 264802

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	7470A	
310-172152-2	MW-302	Total/NA	Water	7470A	
310-172152-3	MW-303	Total/NA	Water	7470A	
310-172152-4	MW-304	Total/NA	Water	7470A	
310-172152-5	MW-305	Total/NA	Water	7470A	
310-172152-6	MW-306	Total/NA	Water	7470A	
MB 310-264802/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-264802/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 264803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-7	Field Blank	Total/NA	Water	7470A	
MB 310-264617/1-B	Method Blank	Total/NA	Water	7470A	264617
LCS 310-264617/2-B	Lab Control Sample	Total/NA	Water	7470A	264617

Prep Batch: 264867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	3010A	
310-172152-2	MW-302	Total/NA	Water	3010A	
310-172152-3	MW-303	Total/NA	Water	3010A	
310-172152-4	MW-304	Total/NA	Water	3010A	
310-172152-5	MW-305	Total/NA	Water	3010A	
310-172152-6	MW-306	Total/NA	Water	3010A	
310-172152-7	Field Blank	Total/NA	Water	3010A	
MB 310-264867/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-264867/2-A	Lab Control Sample	Total/NA	Water	3010A	

Metals (Continued)

Prep Batch: 264867 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-3 DU	MW-303	Total/NA	Water	3010A	

Analysis Batch: 264969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	7470A	264802
310-172152-2	MW-302	Total/NA	Water	7470A	264802
310-172152-3	MW-303	Total/NA	Water	7470A	264802
310-172152-4	MW-304	Total/NA	Water	7470A	264802
310-172152-5	MW-305	Total/NA	Water	7470A	264802
310-172152-6	MW-306	Total/NA	Water	7470A	264802
310-172152-7	Field Blank	Total/NA	Water	7470A	264803
MB 310-264617/1-B	Method Blank	Total/NA	Water	7470A	264803
MB 310-264802/1-A	Method Blank	Total/NA	Water	7470A	264802
LCS 310-264617/2-B	Lab Control Sample	Total/NA	Water	7470A	264803
LCS 310-264802/2-A	Lab Control Sample	Total/NA	Water	7470A	264802

Analysis Batch: 265426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	6020A	264867
310-172152-2	MW-302	Total/NA	Water	6020A	264867
310-172152-3	MW-303	Total/NA	Water	6020A	264867
310-172152-4	MW-304	Total/NA	Water	6020A	264867
310-172152-5	MW-305	Total/NA	Water	6020A	264867
310-172152-6	MW-306	Total/NA	Water	6020A	264867
310-172152-7	Field Blank	Total/NA	Water	6020A	264867
MB 310-264867/1-A	Method Blank	Total/NA	Water	6020A	264867
LCS 310-264867/2-A	Lab Control Sample	Total/NA	Water	6020A	264867
310-172152-3 DU	MW-303	Total/NA	Water	6020A	264867

Analysis Batch: 265741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-264867/2-A	Lab Control Sample	Total/NA	Water	6020A	264867

General Chemistry

Analysis Batch: 264670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-172152-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-172152-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-172152-4	MW-304	Total/NA	Water	SM 4500 H+ B	
310-172152-5	MW-305	Total/NA	Water	SM 4500 H+ B	
310-172152-6	MW-306	Total/NA	Water	SM 4500 H+ B	
310-172152-7	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-264670/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-172152-1 DU	MW-301	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 264957

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	SM 2540C	
310-172152-2	MW-302	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 264957 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-3	MW-303	Total/NA	Water	SM 2540C	
310-172152-4	MW-304	Total/NA	Water	SM 2540C	
310-172152-5	MW-305	Total/NA	Water	SM 2540C	
310-172152-6	MW-306	Total/NA	Water	SM 2540C	
310-172152-7	Field Blank	Total/NA	Water	SM 2540C	
MB 310-264957/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-264957/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 265262

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	Field Sampling	
310-172152-2	MW-302	Total/NA	Water	Field Sampling	
310-172152-3	MW-303	Total/NA	Water	Field Sampling	
310-172152-4	MW-304	Total/NA	Water	Field Sampling	
310-172152-5	MW-305	Total/NA	Water	Field Sampling	
310-172152-6	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-301
Lab Sample ID: 310-172152-1
Date Collected: 12/11/19 16:30
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	265408	12/19/19 08:49	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:22	SAD	TAL CF
Total/NA	Prep	7470A			264802	12/16/19 15:01	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:04	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF
Total/NA	Analysis	Field Sampling		1	265262	12/11/19 16:30	EAR	TAL CF

Client Sample ID: MW-302
Lab Sample ID: 310-172152-2
Date Collected: 12/12/19 08:00
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	265408	12/19/19 09:36	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:25	SAD	TAL CF
Total/NA	Prep	7470A			264802	12/16/19 15:01	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:06	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF
Total/NA	Analysis	Field Sampling		1	265262	12/12/19 08:00	EAR	TAL CF

Client Sample ID: MW-303
Lab Sample ID: 310-172152-3
Date Collected: 12/12/19 09:15
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	265408	12/19/19 09:52	ACJ	TAL CF
Total/NA	Analysis	9056A		10	265408	12/19/19 15:35	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:37	SAD	TAL CF
Total/NA	Prep	7470A			264802	12/16/19 15:01	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:08	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF
Total/NA	Analysis	Field Sampling		1	265262	12/12/19 09:15	EAR	TAL CF

Client Sample ID: MW-304
Lab Sample ID: 310-172152-4
Date Collected: 12/12/19 11:25
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	265408	12/19/19 10:07	ACJ	TAL CF

Client Sample ID: MW-304
Lab Sample ID: 310-172152-4
Date Collected: 12/12/19 11:25
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		10	265408	12/19/19 15:50	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:42	SAD	TAL CF
Total/NA	Prep	7470A			264802	12/16/19 15:01	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:10	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF
Total/NA	Analysis	Field Sampling		1	265262	12/12/19 11:25	EAR	TAL CF

Client Sample ID: MW-305
Lab Sample ID: 310-172152-5
Date Collected: 12/12/19 12:50
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	265408	12/19/19 10:23	ACJ	TAL CF
Total/NA	Analysis	9056A		20	265408	12/19/19 16:06	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:45	SAD	TAL CF
Total/NA	Prep	7470A			264802	12/16/19 15:01	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:13	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF
Total/NA	Analysis	Field Sampling		1	265262	12/12/19 12:50	EAR	TAL CF

Client Sample ID: MW-306
Lab Sample ID: 310-172152-6
Date Collected: 12/12/19 10:20
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	265408	12/19/19 10:39	ACJ	TAL CF
Total/NA	Analysis	9056A		20	265408	12/19/19 16:21	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:47	SAD	TAL CF
Total/NA	Prep	7470A			264802	12/16/19 15:01	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:15	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF
Total/NA	Analysis	Field Sampling		1	265262	12/12/19 10:20	EAR	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: Field Blank
Lab Sample ID: 310-172152-7
Date Collected: 12/12/19 07:00
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	265408	12/19/19 11:25	ACJ	TAL CF
Total/NA	Prep	3010A			264867	12/17/19 07:39	DLS	TAL CF
Total/NA	Analysis	6020A		1	265426	12/19/19 13:50	SAD	TAL CF
Total/NA	Prep	7470A			264803	12/16/19 15:09	HIS	TAL CF
Total/NA	Analysis	7470A		1	264969	12/17/19 11:45	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	264957	12/17/19 13:28	MDK	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	264670	12/14/19 10:22	JMR	TAL CF

Laboratory References:
TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State Program	007	12-01-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Job ID: 310-172152-1
Project/Site: Sutherland Generating Station 25219076

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-172152 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Eng.

City/State: CITY Clive STATE IA Project: Sutherland gen. Station

Receipt Information

Date/Time Received: DATE 12-14-19 TIME 920 Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx Sat ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.2 Corrected Temp (°C): 0.1

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Charlie Bills	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-45503-14478.1
Client Contact: Louise Jennings	Phone: (262) 518-4085	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-301	12-11-19	1630	G	Water	N	N	X	X	X		
MW-302	12-12-19	0800	G	Water	N	N	X	X	X		
MW-303	12-12-19	0915	G	Water	N	N	X	X	X		
MW-304	12-12-19	1125	G	Water	N	N	X	X	X		
MW-305	12-12-19	1250	G	Water	N	N	X	X	X		
MW-306	12-12-19	1020	G	Water	N	N	X	X	X		
Field Blank	12-12-19	0700	G	Water	N	N	X	X	X		
				Water							

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by: Charlie Bills	12-13-19 0904	SCS	Received by:	12-13-19 904	TA
Relinquished by:	Date/Time:	Company	Received by: Lindsay Binder	12.14.19 920	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-172152-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-301	310-172152-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-301	310-172152-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-172152-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-302	310-172152-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-172152-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-172152-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-303	310-172152-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-172152-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-304	310-172152-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-304	310-172152-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-304	310-172152-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-172152-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-305	310-172152-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-172152-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-172152-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-306	310-172152-C-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-172152-D-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-172152-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-172152-C-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-172152-D-7	Plastic 1 liter - Nitric Acid	<2	_____	_____

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25219076

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony	x	x	x	x	x	x	x	7
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium	x	x	x	x	x	x	x	7
	Cadmium	x	x	x	x	x	x	x	7
	Chromium	x	x	x	x	x	x	x	7
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury	x	x	x	x	x	x	x	7
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium	x	x	x	x	x	x	x	7
	Thallium	x	x	x	x	x	x	x	7
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		6
	Well Depth	x	x	x	x	x	x		6
	pH (field)	x	x	x	x	x	x		6
	Specific Conductance	x	x	x	x	x	x		6
	Dissolved Oxygen	x	x	x	x	x	x		6
	ORP	x	x	x	x	x	x		6
	Temperature	x	x	x	x	x	x		6
	Turbidity	x	x	x	x	x	x		6
	Color	x	x	x	x	x	x		6
	Odor	x	x	x	x	x	x		6

Notes:

C:\Users\FredrickS\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\L7YR5M9Z\[IPL_Sutherland Generati

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-172152-1

Login Number: 172152
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-172152-2
Client Project/Site: Sutherland Generating Station 25219076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
1/10/2020 3:41:47 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

Table of Contents

Case Narrative

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Job ID: 310-172152-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-172152-2

Comments
No additional comments.

Receipt
The samples were received on 12/14/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.1° C.

RAD
Methods 903.0, 9315: Radium-226 Prep Batch 160-454522: Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.
Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-172152-1), MW-302 (310-172152-2), MW-303 (310-172152-3), MW-304 (310-172152-4), MW-305 (310-172152-5), MW-306 (310-172152-6), Field Blank (310-172152-7), (LCS 160-454522/1-A), (LCSD 160-454522/2-A) and (MB 160-454522/23-A)

Methods 904.0, 9320: Radium-228 Prep Batch 160-454533: Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.
Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-172152-1), MW-302 (310-172152-2), MW-303 (310-172152-3), MW-304 (310-172152-4), MW-305 (310-172152-5), MW-306 (310-172152-6), Field Blank (310-172152-7), (LCS 160-454533/1-A), (LCSD 160-454533/2-A) and (MB 160-454533/23-A)

Method PrecSep_0: Radium 228 Prep Batch 160-454533: This observation narrative is for the following samples:MW-301 (310-172152-1), MW-302 (310-172152-2), MW-304 (310-172152-4) and MW-305 (310-172152-5). Sample 160-36717-1 was reduced due to heavy sediment, brown discoloration and suspended solids. Sample 160-36718-1 was reduced due to light sediment, pale yellow discoloration and suspended solids. Sample 160-36719-1 was reduced due to dark yellow discoloration, light sediment and suspended solids. Sample 160-36720-1 was reduced due to brown discoloration, light sediment and suspended solids. Sample 310-172152-1 was reduced due to cloudy tan discoloration. Samples 310-172073-4, 310-172152-2, 4, and 5 were slightly yellow tinted.

Method PrecSep_0: Radium 228 Prep Batch 454533: Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-172152-1), MW-302 (310-172152-2), MW-303 (310-172152-3), MW-304 (310-172152-4), MW-305 (310-172152-5), MW-306 (310-172152-6) and Field Blank (310-172152-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision. Sample 160-36706-1 was prepared at a reduced aliquot due to insufficient volume.

Method PrecSep-21: Radium 226 Prep Batch 160-454522: This observation narrative is for the following samples:MW-301 (310-172152-1), MW-302 (310-172152-2), MW-304 (310-172152-4) and MW-305 (310-172152-5). Sample 160-36717-1 was reduced due to heavy sediment, brown discoloration and suspended solids. Sample 160-36718-1 was reduced due to light sediment, pale yellow discoloration and suspended solids. Sample 160-36719-1 was reduced due to dark yellow discoloration, light sediment and suspended solids. Sample 160-36720-1 was reduced due to brown discoloration, light sediment and suspended solids. Sample 310-172152-1 was reduced due to cloudy tan discoloration. Samples 310-172073-4, 310-172152-2, 4, and 5 were slightly yellow tinted.

Method PrecSep-21: Radium 226 Prep Batch 160-454522: Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-172152-1), MW-302 (310-172152-2), MW-303 (310-172152-3), MW-304 (310-172152-4), MW-305 (310-172152-5), MW-306 (310-172152-6) and Field Blank (310-172152-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision. Sample 160-36706-1 was prepared at a reduced aliquot due to insufficient volume.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-172152-1	MW-301	Water	12/11/19 16:30	12/14/19 09:20	
310-172152-2	MW-302	Water	12/12/19 08:00	12/14/19 09:20	
310-172152-3	MW-303	Water	12/12/19 09:15	12/14/19 09:20	
310-172152-4	MW-304	Water	12/12/19 11:25	12/14/19 09:20	
310-172152-5	MW-305	Water	12/12/19 12:50	12/14/19 09:20	
310-172152-6	MW-306	Water	12/12/19 10:20	12/14/19 09:20	
310-172152-7	Field Blank	Water	12/12/19 07:00	12/14/19 09:20	

Client Sample Results

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-301
Date Collected: 12/11/19 16:30
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-1
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0830	U	0.209	0.209	1.00	0.380	pCi/L	12/18/19 13:00	01/09/20 09:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*70.4*		*40 - 110*	*12/18/19 13:00*	*01/09/20 09:54*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.973**		0.624	0.631	1.00	0.947	pCi/L	12/18/19 14:07	12/24/19 12:24	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*70.4*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:24*	*1*
Y Carrier	*87.5*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:24*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**1.06**		0.658	0.665	5.00	0.947	pCi/L		01/10/20 10:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-302
Date Collected: 12/12/19 08:00
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-2
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.294		0.134	0.137	1.00	0.171	pCi/L	12/18/19 13:00	01/09/20 09:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*12/18/19 13:00*	*01/09/20 09:54*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.534		0.256	0.261	1.00	0.369	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.4*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*89.6*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.828		0.289	0.295	5.00	0.369	pCi/L		01/10/20 10:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-303
Date Collected: 12/12/19 09:15
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-3
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0780	U	0.111	0.111	1.00	0.188	pCi/L	12/18/19 13:00	01/09/20 09:54	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*12/18/19 13:00*	*01/09/20 09:54*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.852**		0.336	0.345	1.00	0.467	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.0*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*83.6*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.931**		0.354	0.362	5.00	0.467	pCi/L		01/10/20 10:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-304
Date Collected: 12/12/19 11:25
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-4
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0285	U	0.0764	0.0764	1.00	0.141	pCi/L	12/18/19 13:00	01/09/20 11:44	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*78.7*		*40 - 110*	*12/18/19 13:00*	*01/09/20 11:44*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.344	U	0.286	0.288	1.00	0.454	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*78.7*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*88.1*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.373	U	0.296	0.298	5.00	0.454	pCi/L		01/10/20 10:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-305
Date Collected: 12/12/19 12:50
Date Received: 12/14/19 09:20

Lab Sample ID: 310-172152-5
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.167		0.115	0.116	1.00	0.166	pCi/L	12/18/19 13:00	01/09/20 11:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.0*		*40 - 110*	*12/18/19 13:00*	*01/09/20 11:45*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.37		0.432	0.450	1.00	0.559	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*79.0*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*71.7*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.54		0.447	0.465	5.00	0.559	pCi/L		01/10/20 10:16	1

Client Sample ID: MW-306
Lab Sample ID: 310-172152-6

Date Collected: 12/12/19 10:20
Matrix: Water

Date Received: 12/14/19 09:20

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0272	U	0.0896	0.0896	1.00	0.166	pCi/L	12/18/19 13:00	01/09/20 11:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.9*		*40 - 110*	*12/18/19 13:00*	*01/09/20 11:45*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.56**		0.407	0.431	1.00	0.501	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.9*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*87.5*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**1.58**		0.417	0.440	5.00	0.501	pCi/L		01/10/20 10:16	1

Client Sample ID: Field Blank
Lab Sample ID: 310-172152-7

Date Collected: 12/12/19 07:00
Matrix: Water

Date Received: 12/14/19 09:20

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00440	U	0.0594	0.0594	1.00	0.118	pCi/L	12/18/19 13:00	01/09/20 11:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*12/18/19 13:00*	*01/09/20 11:45*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**13.8**		0.916	1.56	1.00	0.562	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*69.6*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**13.8**		0.918	1.56	5.00	0.562	pCi/L		01/10/20 10:16	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-454522/23-A
Matrix: Water
Analysis Batch: 456362

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 454522

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.02788	U	0.0722	0.0723	1.00	0.132	pCi/L	12/18/19 13:00	01/09/20 11:45	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.3*		*40 - 110*	*12/18/19 13:00*	*01/09/20 11:45*	*1*

Lab Sample ID: LCS 160-454522/1-A
Matrix: Water
Analysis Batch: 456362

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 454522

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	12.46		1.28	1.00	0.123	pCi/L	110	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.8*		*40 - 110*

Lab Sample ID: LCSD 160-454522/2-A
Matrix: Water
Analysis Batch: 456362

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 454522

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.3	13.22		1.36	1.00	0.143	pCi/L	117	75 - 125	0.29	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.6*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-454533/23-A
Matrix: Water
Analysis Batch: 455063

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 454533

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.3101	U	0.225	0.227	1.00	0.349	pCi/L	12/18/19 14:07	12/24/19 12:25	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*96.3*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*
Y Carrier	*88.1*		*40 - 110*	*12/18/19 14:07*	*12/24/19 12:25*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-454533/1-A
Matrix: Water
Analysis Batch: 455096

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 454533

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.27	9.961		1.17	1.00	0.440	pCi/L	107	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*94.8*		*40 - 110*
Y Carrier	*86.6*		*40 - 110*

Lab Sample ID: LCSD 160-454533/2-A
Matrix: Water
Analysis Batch: 455096

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 454533

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.27	9.259		1.09	1.00	0.414	pCi/L	100	75 - 125	0.31	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*96.6*		*40 - 110*
Y Carrier	*89.3*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Rad

Prep Batch: 454522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	PrecSep-21	
310-172152-2	MW-302	Total/NA	Water	PrecSep-21	
310-172152-3	MW-303	Total/NA	Water	PrecSep-21	
310-172152-4	MW-304	Total/NA	Water	PrecSep-21	
310-172152-5	MW-305	Total/NA	Water	PrecSep-21	
310-172152-6	MW-306	Total/NA	Water	PrecSep-21	
310-172152-7	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-454522/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-454522/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-454522/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 454533

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-172152-1	MW-301	Total/NA	Water	PrecSep_0	
310-172152-2	MW-302	Total/NA	Water	PrecSep_0	
310-172152-3	MW-303	Total/NA	Water	PrecSep_0	
310-172152-4	MW-304	Total/NA	Water	PrecSep_0	
310-172152-5	MW-305	Total/NA	Water	PrecSep_0	
310-172152-6	MW-306	Total/NA	Water	PrecSep_0	
310-172152-7	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-454533/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-454533/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-454533/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-301
Lab Sample ID: 310-172152-1
Date Collected: 12/11/19 16:30
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 09:54	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:24	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Client Sample ID: MW-302
Lab Sample ID: 310-172152-2
Date Collected: 12/12/19 08:00
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 09:54	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:25	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Client Sample ID: MW-303
Lab Sample ID: 310-172152-3
Date Collected: 12/12/19 09:15
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 09:54	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:25	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Client Sample ID: MW-304
Lab Sample ID: 310-172152-4
Date Collected: 12/12/19 11:25
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 11:44	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:25	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Lab Chronicle

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Client Sample ID: MW-305
Lab Sample ID: 310-172152-5
Date Collected: 12/12/19 12:50
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 11:45	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:25	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Client Sample ID: MW-306
Lab Sample ID: 310-172152-6
Date Collected: 12/12/19 10:20
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 11:45	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:25	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Client Sample ID: Field Blank
Lab Sample ID: 310-172152-7
Date Collected: 12/12/19 07:00
Matrix: Water
Date Received: 12/14/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			454522	12/18/19 13:00	ORM	TAL SL
Total/NA	Analysis	903.0		1	456362	01/09/20 11:45	AJD	TAL SL
Total/NA	Prep	PrecSep_0			454533	12/18/19 14:07	ORM	TAL SL
Total/NA	Analysis	904.0		1	455063	12/24/19 12:25	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	456448	01/10/20 10:16	SMP	TAL SL

Laboratory References:
TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State Program	007	12-01-19 *

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	02-02-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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310-172152 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Eng.

City/State: CITY Clive STATE IA Project: Sutherland gen. Station

Receipt Information

Date/Time Received: DATE 12-14-19 TIME 920 Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx Sat ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.2 Corrected Temp (°C): 0.1

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

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Client Information	Sampler: Charlie Bills	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-45503-14478.1
Client Contact: Louise Jennings	Phone: (262) 518-4085	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-301	12-11-19	1630	G	Water	N	N	X	X	X		
MW-302	12-12-19	0800	G	Water	N	N	X	X	X		
MW-303	12-12-19	0915	G	Water	N	N	X	X	X		
MW-304	12-12-19	1125	G	Water	N	N	X	X	X		
MW-305	12-12-19	1250	G	Water	N	N	X	X	X		
MW-306	12-12-19	1020	G	Water	N	N	X	X	X		
Field Blank	12-12-19	0700	G	Water	N	N	X	X	X		
				Water							

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by: Charlie Bills	12-13-19 0904	SCS	Received by:	12-13-19 904	TA
Relinquished by:	Date/Time:	Company	Received by: Lindsay Binder	12-14-19 920	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW-301	310-172152-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-301	310-172152-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-301	310-172152-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-172152-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-302	310-172152-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-302	310-172152-D-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-172152-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-303	310-172152-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-303	310-172152-D-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-304	310-172152-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-304	310-172152-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-304	310-172152-D-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-172152-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-305	310-172152-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-305	310-172152-D-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-172152-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW-306	310-172152-C-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW-306	310-172152-D-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-172152-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
Field Blank	310-172152-C-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
Field Blank	310-172152-D-7	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-172152-2

Login Number: 172152
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-172152-2

Login Number: 172152
List Number: 2
Creator: Harris, Lorin C

List Source: Eurofins TestAmerica, St. Louis
List Creation: 12/17/19 01:40 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Job ID: 310-172152-2
Project/Site: Sutherland Generating Station 25219076

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-172152-1	MW-301	70.4
310-172152-2	MW-302	94.4
310-172152-3	MW-303	84.0
310-172152-4	MW-304	78.7
310-172152-5	MW-305	79.0
310-172152-6	MW-306	76.9
310-172152-7	Field Blank	102
LCS 160-454522/1-A	Lab Control Sample	94.8
LCSD 160-454522/2-A	Lab Control Sample Dup	96.6
MB 160-454522/23-A	Method Blank	96.3

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-172152-1	MW-301	70.4	87.5
310-172152-2	MW-302	94.4	89.6
310-172152-3	MW-303	84.0	83.6
310-172152-4	MW-304	78.7	88.1
310-172152-5	MW-305	79.0	71.7
310-172152-6	MW-306	76.9	87.5
310-172152-7	Field Blank	102	69.6
LCS 160-454533/1-A	Lab Control Sample	94.8	86.6
LCSD 160-454533/2-A	Lab Control Sample Dup	96.6	89.3
MB 160-454533/23-A	Method Blank	96.3	88.1

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier