ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
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www.alsglobal.com

December 13, 2018 **Analytical Report for Service Request No:** K1810410

Janet Knox
Pacific Groundwater Group
2377 Eastlake Ave., East
Suite 200
Seattle, WA 98102

RE: Head of Swan Island Lagoon / JK1807.01

Dear Janet,

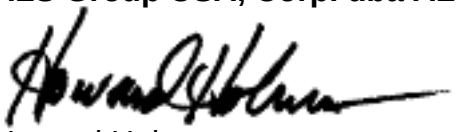
Enclosed are the results of the sample(s) submitted to our laboratory October 24, 2018
For your reference, these analyses have been assigned our service request number **K1810410.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Howard Holmes
Project Manager

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Table of Contents

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon
Sample Matrix: Soil, Water

Service Request: K1810410
Date Received: 10/24/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

Twenty eight soil and one water samples were received for analysis at ALS Environmental on 10/24/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

Method 8270D, Polynuclear Aromatic Hydrocarbons 11/27/18: The following analyte was flagged as outside the control criterion for Continuing Calibration Verifications (CCV) MS14\1112F002.D, MS14\1127F002.D, and MS14\1128F002.D: Pyrene. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Method 8270D, Polynuclear Aromatic Hydrocarbons 11/27/18: The recoveries of a few analytes in Matrix Spikes (MS/DMS) KWG1805768-1/2 and KWG1805769-1/2 were outside the control limits listed in the results summary. The limits are default values temporarily in use until sufficient data points are generated to calculate statistical control limits. Based on the method and historic data, the recoveries observed were in the range expected for this procedure. No further corrective action was taken.

Approved by  Date 12/13/2018

Chain of Custody

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CHAIN OF CUSTODY

SR# K81010410

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PAGE 1 OF 3 COC#

PROJECT NAME: Head of Swan Island Lagoon
PROJECT NUMBER: JK1807.01
PROJECT MANAGER: Janet Knox
COMPANY NAME: POE
ADDRESS: 2377 Eastlake Ave E
CITY/STATE/ZIP: Seattle WA 98102
E-MAIL ADDRESS: Janet@Pgwg.com
PHONE #: 206 329 0141 FAX #:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ SIM PAH☐	Volatile Organics 624☐ 8270LL☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity☐ CO_3☐ HCO_3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases CO_2☐ RSK 175☐ Methane☐ Ethane☐ Ethene☐	Frozen Archive	REMARKS
D-9.09SC 0 to 10	102318	1330		S	2	X																X	
D-9.09-SC-10 to 20	102318	1340		S	1	X																	
D-9.09-SC-20 to 40	102318	1350		S	2	X																X	MS/MSD*
D-9.09-SC-40 to 60	102318	1430		S	2	X																X	
D-9.09-SC-60 to 80	102318	1440		S	2	X																X	
D-9.09-SC-80 to 100	102318	1510		S	2	X																X	
D-9.09-SC-100 to 117	102318	1520		S	2	X																X	
D-9.09-SC-117 to 121	102318	1540		S	1																	X	
SII-20-40-102318		1350		S	2	X																X	

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
___ Standard (15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

MS/MSD on sample D-9.09-20to40-102318. Use primary jar if possible & frozen archive jar if necessary.

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 10/24/18 1055	Date/Time: 10/24/18 1055	Date/Time: 10/24/18 1305	Date/Time: 10/24/18 1305
Printed Name: Jeff Pafe	Printed Name: Brennan	Printed Name: Brennan	Printed Name: Brennan
Firm: POE	Firm: ALS	Firm: ALS	Firm: ALS

CHAIN OF CUSTODY

SR# K1810410

1317 South 13th Ave., Kelso, WA 98626 | +1 360 577 7222 | +1 800 695 7222 | +1 360 636 1068 (fax)

 COC# _____

PROJECT NAME: Head of Salmon Island Lagoon
PROJECT NUMBER: JK1807.01
PROJECT MANAGER: Janet Jenkins
COMPANY NAME: POC
ADDRESS: 2377 Eastlake Ave E
CITY/STATE/ZIP: Seattle WA 98103
E-MAIL ADDRESS: Janet@pgwg.com
PHONE #: 206 329 0141 FAX #:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8270LL☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO_3☐ HCO_3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases CO_2☐ RSK 175☐ Methane☐ Ethane☐ Ethene☐	frozen Archive		REMARKS
D-8.90-SC-00to10-	102318	1640		S	1	X																		
D-8.90-SC-10to20-	102318	1650		S	1	X																		
D-8.90-SC-20to40-	102318	1700		S	2	X																X		
D-8.90-SC-40to62-	102318	1720		S	2	X																X		
D-8.90-SC-62to80-	102318	1730		S	1	X																		
D-8.90-SC-80to103-	102318	1800		S	2	X																X		
D-8.90-SC-103to120-	102318	1810		S	2	X																X		
D-8.90-SC-120to140-	102318	1900		S	2	X																X		
D-8.90-SC-140to160-	102318	1910		S	2	X																X		
D-8.90-SC-160to164-	102318	1920		S	1	X																X		

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

_____ 24 hr. _____ 48 hr.
_____ 5 day
_____ Standard (15 working days)
_____ Provide FAX Results

_____ Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 10/24/18 1055	Date/Time: 10/24/18 1055	Date/Time: 10/24/18 1305	Date/Time: 10/24/18 1305
Printed Name:	Printed Name: Brennan	Printed Name: Brennan	Printed Name: Brennan
Firm: POC	Firm: ALS	Firm: ALS	Firm: ALS

CHAIN OF CUSTODY

SR# K1810410

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PAGE 3 OF 3 COC#

PROJECT NAME: Head of Salmon Island Lagoon
PROJECT NUMBER: JK180 7.01
PROJECT MANAGER: Janet Knox
COMPANY NAME: PGG
ADDRESS: 2377 Eastlake Ave E
CITY/STATE/ZIP: Seattle WA 98102
E-MAIL ADDRESS: janet@pgwg.com
PHONE #: 206 329 0141 FAX #:
SAMPLER'S SIGNATURE: J. Knox

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ SIM PAH☐	Volatile Organics 624☐ 8260☐ 8270LL☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity☐ CO_3☐ HCO_3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases CO_2☐ RSK 175☐Methane☐Ethane☐Ethene☐	frozen overnight	REMARKS
E902-SC-00to10-102318		1022		S	2	X																X	
E-9.02-SC-10to20-102318		1032		S	2	X																X	
E-9.02-SC-20to40-102318		1042		S	2	X																X	
E-9.02-SC-40to60-102318		1110		S	2	X																X	
E-9.02-SC-60to80-102318		1120		S	2	X																X	
E-9.02-SC-80to100-102318		1210		S	2	X																X	
E-9.02-SC-100to115-102318		1220		S	2	X																X	
E-9.02-SC-115to130-102318		1240		S	2	X																X	
E-9.02-SC-130to137-102318		1250		S	1																	X	
611-102318	102318	1655		W	2	X																	

REPORT REQUIREMENTS

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___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
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P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 day
___ Standard (15 working days)
___ Provide FAX Results

Requested Report Date

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Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature	Signature	Signature	Signature
Printed Name: J. Parker	Printed Name: B Bowman	Printed Name: B Bowman	Printed Name: B Bowman
Firm: PGG	Firm: ALS	Firm: ALS	Firm: ALS
Date/Time: 10/24/18 1055	Date/Time: 10/24/18 1055	Date/Time: 10/24/18 1305	Date/Time: 10/24/18 1305

PC 42

Cooler Receipt and Preservation Form

Client PGG Service Request *K18* 10410

Received: 10/24/18 Opened: 10/24/18 By: BR Unloaded: 10/24/18 By: BR

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y (N) If present, were they signed and dated? Y (N)

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number (NA)	Filed
0.8	0.0	1.2	1.0	-0.2	271			
1.0	1.1	1.3	1.4	+0.1	349			

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: ***Frozen*** ***Partially Thawed*** ***Thawed***
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

7/25/16 ***Page____of____***

Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Analytical Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/18
Sample Matrix:	Soil	**Date Received:**	10/24/18
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
D-9.09-SC-00 to 10-102318	K1810410-001	**42.3**	-	-	1	10/29/18 12:09	
D-9.09-SC-10 to 20-102318	K1810410-002	**47.2**	-	-	1	10/29/18 12:09	
D-9.09-SC-20 to 40-102318	K1810410-003	**51.3**	-	-	1	10/29/18 12:09	
D-9.09-SC-40 to 60-102318	K1810410-004	**52.0**	-	-	1	10/29/18 12:09	
D-9.09-SC-60 to 80-102318	K1810410-005	**54.9**	-	-	1	10/29/18 12:09	
D-9.09-SC-80 to 100-102318	K1810410-006	**56.2**	-	-	1	10/29/18 12:09	
D-9.09-SC-100 to 117-102318	K1810410-007	**59.0**	-	-	1	10/29/18 12:09	
D-9.09-SC-117 to 121-102318	K1810410-008	**63.1**	-	-	1	10/29/18 12:09	
511-20-40-102318	K1810410-009	**50.7**	-	-	1	10/29/18 12:09	
D-8.90-SC-00 to 10-102318	K1810410-010	**42.1**	-	-	1	10/29/18 12:09	
D-8.90-SC-10 to 20-102318	K1810410-011	**51.2**	-	-	1	10/29/18 12:09	
D-8.90-SC-20 to 40-102318	K1810410-012	**53.1**	-	-	1	10/29/18 15:43	
D-8.90-SC-40 to 62-102318	K1810410-013	**50.7**	-	-	1	10/29/18 15:43	
D-8.90-SC-62 to 80-102318	K1810410-014	**54.7**	-	-	1	10/29/18 15:43	
D-8.90-SC-80 to 103-102318	K1810410-015	**54.5**	-	-	1	10/29/18 15:43	
D-8.90-SC-103 to 120-102318	K1810410-016	**55.6**	-	-	1	10/29/18 15:43	
D-8.90-SC-120 to 140-102318	K1810410-017	**54.8**	-	-	1	10/29/18 15:43	
D-8.90-SC-140 to 160-102318	K1810410-018	**55.9**	-	-	1	10/29/18 15:43	
D-8.90-SC-160 to 164-102318	K1810410-019	**54.8**	-	-	1	10/29/18 15:43	
E-9.02-SC-00 to 10-102318	K1810410-020	**41.0**	-	-	1	10/29/18 15:43	
E-9.02-SC-10 to 20-102318	K1810410-021	**45.1**	-	-	1	10/29/18 15:43	
E-9.02-SC-20 to 40-102318	K1810410-022	**50.1**	-	-	1	10/29/18 15:43	
E-9.02-SC-40 to 60-102318	K1810410-023	**50.3**	-	-	1	10/29/18 15:43	
E-9.02-SC-60 to 80-102318	K1810410-024	**56.6**	-	-	1	10/29/18 15:43	
E-9.02-SC-80 to 100-102318	K1810410-025	**56.2**	-	-	1	10/29/18 15:43	
E-9.02-SC-100 to 115-102318	K1810410-026	**58.8**	-	-	1	10/29/18 15:43	
E-9.02-SC-115 to 130-102318	K1810410-027	**58.0**	-	-	1	10/29/18 15:43	
E-9.02-SC-130 to 133-102318	K1810410-028	**57.2**	-	-	1	10/29/18 15:43	

ALS Group USA, Corp.
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QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/18
Sample Matrix:	Soil	**Date Received:**	10/24/18
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Inorganic Parameters

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
D-9.09-SC-20 to 40-102318	K1810410-003DUP	-	51.3	50.9	51.1	<1	20	10/29/18
D-8.90-SC-10 to 20-102318	K1810410-011DUP	-	51.2	52.4	51.8	2	20	10/29/18
D-8.90-SC-20 to 40-102318	K1810410-012DUP	-	53.1	53.4	53.3	<1	20	10/29/18
E-9.02-SC-130 to 133-102318	K1810410-028DUP	-	57.2	56.6	56.9	1	20	10/29/18

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
D-9.09-SC-00to10-102318	K1810410-001	10/23/2018	10/24/2018
D-9.09-SC-10to20-102318	K1810410-002	10/23/2018	10/24/2018
D-9.09-SC-20to40-102318	K1810410-003	10/23/2018	10/24/2018
D-9.09-SC-40to60-102318	K1810410-004	10/23/2018	10/24/2018
D-9.09-SC-60to80-102318	K1810410-005	10/23/2018	10/24/2018
D-9.09-SC-80to100-102318	K1810410-006	10/23/2018	10/24/2018
D-9.09-SC-100to117-102318	K1810410-007	10/23/2018	10/24/2018
511-20to40-102318	K1810410-009	10/23/2018	10/24/2018
D-8.90-SC-00to10-102318	K1810410-010	10/23/2018	10/24/2018
D-8.90-SC-10to20-102318	K1810410-011	10/23/2018	10/24/2018
D-8.90-SC-20to40-102318	K1810410-012	10/23/2018	10/24/2018
D-8.90-SC-40to62-102318	K1810410-013	10/23/2018	10/24/2018
D-8.90-SC-62to80-102318	K1810410-014	10/23/2018	10/24/2018
D-8.90-SC-80to103-102318	K1810410-015	10/23/2018	10/24/2018
D-8.90-SC-103to120-102318	K1810410-016	10/23/2018	10/24/2018
D-8.90-SC-120to140-102318	K1810410-017	10/23/2018	10/24/2018
D-8.90-SC-140to160-102318	K1810410-018	10/23/2018	10/24/2018
E-9.02-SC-00to10-102318	K1810410-020	10/23/2018	10/24/2018
E-9.02-SC-10to20-102318	K1810410-021	10/23/2018	10/24/2018
E-9.02-SC-20to40-102318	K1810410-022	10/23/2018	10/24/2018
E-9.02-SC-40to60-102318	K1810410-023	10/23/2018	10/24/2018
E-9.02-SC-60to80-102318	K1810410-024	10/23/2018	10/24/2018
E-9.02-SC-80to100-102318	K1810410-025	10/23/2018	10/24/2018
E-9.02-SC-100to115-102318	K1810410-026	10/23/2018	10/24/2018
E-9.02-SC-115to130-102318	K1810410-027	10/23/2018	10/24/2018
D-9.09-SC-20to40-102318MS	KWG1805768-1	10/23/2018	10/24/2018
D-9.09-SC-20to40-102318DMS	KWG1805768-2	10/23/2018	10/24/2018
E-9.02-SC-80to100-102318MS	KWG1805769-1	10/23/2018	10/24/2018
E-9.02-SC-80to100-102318DMS	KWG1805769-2	10/23/2018	10/24/2018

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-00to10-102318	**Units:**	ug/Kg
Lab Code:	K1810410-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**18**	D	5.9	0.53	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**8.3**	D	5.9	0.28	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**8.0**	D	3.0	0.18	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**9.8**	D	3.0	0.19	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**4.9**	D	3.0	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**8.8**	D	3.0	0.23	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**56**	D	3.0	0.20	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**13**	D	3.0	0.16	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**95**	D	3.0	0.19	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**110**	D	3.0	0.19	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**39**	D	3.0	0.20	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**58**	D	3.0	0.16	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**68**	D	3.0	0.34	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**22**	D	3.0	0.27	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**56**	D	3.0	0.22	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**46**	D	3.0	0.38	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**9.8**	D	3.0	0.35	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**51**	D	3.0	0.35	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	64	26-102	11/27/18	Acceptable
Fluoranthene-d10	64	23-110	11/27/18	Acceptable
Terphenyl-d14	70	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-10to20-102318	**Units:**	ug/Kg
Lab Code:	K1810410-002	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**42**	D	5.3	0.48	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**19**	D	5.3	0.25	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**16**	D	2.7	0.16	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**21**	D	2.7	0.17	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**13**	D	2.7	0.12	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**18**	D	2.7	0.21	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**120**	D	2.7	0.18	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**24**	D	2.7	0.14	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**150**	D	2.7	0.17	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**170**	D	2.7	0.17	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**56**	D	2.7	0.18	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**76**	D	2.7	0.15	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**79**	D	2.7	0.31	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**29**	D	2.7	0.24	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**70**	D	2.7	0.20	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**52**	D	2.7	0.34	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**11**	D	2.7	0.31	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**60**	D	2.7	0.32	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	77	26-102	11/27/18	Acceptable
Fluoranthene-d10	81	23-110	11/27/18	Acceptable
Terphenyl-d14	83	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-20to40-102318	**Units:**	ug/Kg
Lab Code:	K1810410-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**39**		0.97	0.089	1	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**18**		0.97	0.047	1	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**14**		0.49	0.029	1	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**12**		0.49	0.032	1	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**13**		0.49	0.022	1	11/06/18	11/27/18	KWG1805768	
Fluorene	**18**		0.49	0.039	1	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**100**		0.49	0.033	1	11/06/18	11/27/18	KWG1805768	
Anthracene	**22**		0.49	0.026	1	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**160**		0.49	0.032	1	11/06/18	11/27/18	KWG1805768	
Pyrene	**150**	D	2.5	0.16	5	11/06/18	11/28/18	KWG1805768	*
Benz(a)anthracene	**60**	D	2.5	0.17	5	11/06/18	11/28/18	KWG1805768	
Chrysene	**69**	D	2.5	0.14	5	11/06/18	11/28/18	KWG1805768	
Benzo(b)fluoranthene†	**92**	D	2.5	0.29	5	11/06/18	11/28/18	KWG1805768	
Benzo(k)fluoranthene	**35**	D	2.5	0.23	5	11/06/18	11/28/18	KWG1805768	
Benzo(a)pyrene	**77**	D	2.5	0.18	5	11/06/18	11/28/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**54**	D	2.5	0.32	5	11/06/18	11/28/18	KWG1805768	
Dibenz(a,h)anthracene	**14**	D	2.5	0.29	5	11/06/18	11/28/18	KWG1805768	
Benzo(g,h,i)perylene	**57**	D	2.5	0.30	5	11/06/18	11/28/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	26-102	11/27/18	Acceptable
Fluoranthene-d10	87	23-110	11/27/18	Acceptable
Terphenyl-d14	83	27-115	11/28/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-40to60-102318	**Units:**	ug/Kg
Lab Code:	K1810410-004	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**96**	D	4.9	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**50**	D	4.9	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**35**	D	2.5	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**36**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**21**	D	2.5	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**41**	D	2.5	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**270**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**67**	D	2.5	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**400**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**460**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**120**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**160**	D	2.5	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**180**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**64**	D	2.5	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**180**	D	2.5	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**140**	D	2.5	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**23**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**150**	D	2.5	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	26-102	11/27/18	Acceptable
Fluoranthene-d10	80	23-110	11/27/18	Acceptable
Terphenyl-d14	81	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-60to80-102318	**Units:**	ug/Kg
Lab Code:	K1810410-005	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**64**	D	4.6	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**32**	D	4.6	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**21**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**30**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**15**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**34**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**220**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**59**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**340**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**410**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**150**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**210**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**230**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**83**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**230**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**180**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**33**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**190**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	69	26-102	11/27/18	Acceptable
Fluoranthene-d10	72	23-110	11/27/18	Acceptable
Terphenyl-d14	77	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-80to100-102318	**Units:**	ug/Kg
Lab Code:	K1810410-006	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**44**	D	4.5	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**28**	D	4.5	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**17**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**20**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**14**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**23**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**150**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**33**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**190**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**210**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**72**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**96**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**99**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**34**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**95**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**69**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**15**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**79**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	26-102	11/27/18	Acceptable
Fluoranthene-d10	82	23-110	11/27/18	Acceptable
Terphenyl-d14	82	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-100to117-102318	**Units:**	ug/Kg
Lab Code:	K1810410-007	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**88**	D	4.3	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**35**	D	4.3	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**16**	D	2.2	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**54**	D	2.2	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**24**	D	2.2	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**44**	D	2.2	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**210**	D	2.2	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**42**	D	2.2	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**220**	D	2.2	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**260**	D	2.2	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**75**	D	2.2	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**96**	D	2.2	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**100**	D	2.2	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**37**	D	2.2	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**98**	D	2.2	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**73**	D	2.2	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**15**	D	2.2	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**82**	D	2.2	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	79	26-102	11/27/18	Acceptable
Fluoranthene-d10	81	23-110	11/27/18	Acceptable
Terphenyl-d14	85	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	511-20to40-102318	**Units:**	ug/Kg
Lab Code:	K1810410-009	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**52**	D	4.9	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**25**	D	4.9	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**18**	D	2.5	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**15**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**15**	D	2.5	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**21**	D	2.5	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**120**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**24**	D	2.5	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**160**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**170**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**60**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**88**	D	2.5	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**94**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**35**	D	2.5	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**79**	D	2.5	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**59**	D	2.5	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**14**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**65**	D	2.5	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	78	26-102	11/27/18	Acceptable
Fluoranthene-d10	81	23-110	11/27/18	Acceptable
Terphenyl-d14	83	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-00to10-102318	**Units:**	ug/Kg
Lab Code:	K1810410-010	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**18**	D	6.0	0.53	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**9.6**	D	6.0	0.28	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**9.0**	D	3.0	0.18	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**11**	D	3.0	0.19	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**5.5**	D	3.0	0.14	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**9.9**	D	3.0	0.24	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**72**	D	3.0	0.20	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**12**	D	3.0	0.16	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**110**	D	3.0	0.19	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**120**	D	3.0	0.19	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**49**	D	3.0	0.20	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**72**	D	3.0	0.17	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**75**	D	3.0	0.34	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**27**	D	3.0	0.27	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**66**	D	3.0	0.22	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**51**	D	3.0	0.38	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**13**	D	3.0	0.35	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**55**	D	3.0	0.35	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	26-102	11/27/18	Acceptable
Fluoranthene-d10	75	23-110	11/27/18	Acceptable
Terphenyl-d14	81	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-10to20-102318	**Units:**	ug/Kg
Lab Code:	K1810410-011	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**51**	D	4.9	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**29**	D	4.9	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**22**	D	2.5	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**59**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**15**	D	2.5	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**39**	D	2.5	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**210**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**44**	D	2.5	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**340**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**400**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**120**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**160**	D	2.5	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**180**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**61**	D	2.5	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**190**	D	2.5	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**150**	D	2.5	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**26**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**170**	D	2.5	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	26-102	11/27/18	Acceptable
Fluoranthene-d10	76	23-110	11/27/18	Acceptable
Terphenyl-d14	81	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-20to40-102318	**Units:**	ug/Kg
Lab Code:	K1810410-012	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**43**	D	4.7	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**27**	D	4.7	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**16**	D	2.4	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**29**	D	2.4	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**12**	D	2.4	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**27**	D	2.4	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**160**	D	2.4	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**33**	D	2.4	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**200**	D	2.4	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**240**	D	2.4	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**73**	D	2.4	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**95**	D	2.4	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**110**	D	2.4	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**36**	D	2.4	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**110**	D	2.4	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**90**	D	2.4	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**17**	D	2.4	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**100**	D	2.4	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	26-102	11/27/18	Acceptable
Fluoranthene-d10	72	23-110	11/27/18	Acceptable
Terphenyl-d14	77	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-40to62-102318	**Units:**	ug/Kg
Lab Code:	K1810410-013	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**36**	D	4.9	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**23**	D	4.9	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**12**	D	2.5	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**22**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**13**	D	2.5	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**23**	D	2.5	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**130**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**25**	D	2.5	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**180**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**200**	D	2.5	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**64**	D	2.5	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**85**	D	2.5	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**90**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**34**	D	2.5	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**80**	D	2.5	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**59**	D	2.5	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**14**	D	2.5	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**65**	D	2.5	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	26-102	11/27/18	Acceptable
Fluoranthene-d10	73	23-110	11/27/18	Acceptable
Terphenyl-d14	78	27-115	11/27/18	Acceptable

† **Analyte Comments**

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-62to80-102318	**Units:**	ug/Kg
Lab Code:	K1810410-014	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**15**	D	4.6	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**15**	D	4.6	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**7.5**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**13**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**6.6**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**14**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**80**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**14**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**110**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**110**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**45**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**55**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**62**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**23**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**54**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**39**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**10**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**40**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	67	26-102	11/27/18	Acceptable
Fluoranthene-d10	68	23-110	11/27/18	Acceptable
Terphenyl-d14	71	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-80to103-102318	**Units:**	ug/Kg
Lab Code:	K1810410-015	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**22**	D	4.6	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**21**	D	4.6	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**8.4**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**15**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**9.7**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**17**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**100**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**19**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**150**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**160**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**63**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**79**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**86**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**33**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**74**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**51**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**14**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**53**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	26-102	11/27/18	Acceptable
Fluoranthene-d10	80	23-110	11/27/18	Acceptable
Terphenyl-d14	85	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-103to120-102318	**Units:**	ug/Kg
Lab Code:	K1810410-016	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**28**	D	4.5	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**19**	D	4.5	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**17**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**20**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**13**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**24**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**140**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**30**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**190**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**220**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**66**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**92**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**96**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**36**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**87**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**70**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**15**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**78**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	76	26-102	11/27/18	Acceptable
Fluoranthene-d10	83	23-110	11/27/18	Acceptable
Terphenyl-d14	85	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-120to140-102318	**Units:**	ug/Kg
Lab Code:	K1810410-017	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**34**	D	4.6	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**29**	D	4.6	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**13**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**13**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**11**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**20**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**130**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**26**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**190**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**200**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**69**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**87**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**95**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**31**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**81**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**55**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**14**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**60**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	26-102	11/27/18	Acceptable
Fluoranthene-d10	77	23-110	11/27/18	Acceptable
Terphenyl-d14	80	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	D-8.90-SC-140to160-102318	**Units:**	ug/Kg
Lab Code:	K1810410-018	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**33**	D	4.5	0.45	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**24**	D	4.5	0.24	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**14**	D	2.3	0.15	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**11**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**11**	D	2.3	0.11	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**19**	D	2.3	0.20	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**120**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**25**	D	2.3	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**170**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**200**	D	2.3	0.16	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**61**	D	2.3	0.17	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**87**	D	2.3	0.14	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**90**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**31**	D	2.3	0.23	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**80**	D	2.3	0.18	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**59**	D	2.3	0.32	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**12**	D	2.3	0.29	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**67**	D	2.3	0.30	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	26-102	11/27/18	Acceptable
Fluoranthene-d10	76	23-110	11/27/18	Acceptable
Terphenyl-d14	80	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-00to10-102318	**Units:**	ug/Kg
Lab Code:	K1810410-020	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**19**	D	6.1	0.54	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**8.7**	D	6.1	0.29	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**7.4**	D	3.1	0.18	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**9.9**	D	3.1	0.20	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**5.1**	D	3.1	0.14	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**8.2**	D	3.1	0.24	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**48**	D	3.1	0.20	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**9.8**	D	3.1	0.16	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**73**	D	3.1	0.20	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**80**	D	3.1	0.20	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**33**	D	3.1	0.20	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**43**	D	3.1	0.17	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**50**	D	3.1	0.35	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**17**	D	3.1	0.28	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**45**	D	3.1	0.22	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**33**	D	3.1	0.39	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**7.7**	D	3.1	0.36	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**35**	D	3.1	0.36	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	75	26-102	11/27/18	Acceptable
Fluoranthene-d10	75	23-110	11/27/18	Acceptable
Terphenyl-d14	81	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-10to20-102318	**Units:**	ug/Kg
Lab Code:	K1810410-021	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**52**	D	5.6	0.49	5	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**26**	D	5.6	0.26	5	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**18**	D	2.8	0.16	5	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**15**	D	2.8	0.18	5	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**15**	D	2.8	0.13	5	11/06/18	11/27/18	KWG1805768	
Fluorene	**18**	D	2.8	0.22	5	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**110**	D	2.8	0.19	5	11/06/18	11/27/18	KWG1805768	
Anthracene	**22**	D	2.8	0.15	5	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**150**	D	2.8	0.18	5	11/06/18	11/27/18	KWG1805768	
Pyrene	**160**	D	2.8	0.18	5	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**55**	D	2.8	0.19	5	11/06/18	11/27/18	KWG1805768	
Chrysene	**78**	D	2.8	0.15	5	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**82**	D	2.8	0.32	5	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**27**	D	2.8	0.25	5	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**68**	D	2.8	0.20	5	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**49**	D	2.8	0.36	5	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**13**	D	2.8	0.32	5	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**59**	D	2.8	0.33	5	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	85	26-102	11/27/18	Acceptable
Fluoranthene-d10	92	23-110	11/27/18	Acceptable
Terphenyl-d14	96	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-20to40-102318	**Units:**	ug/Kg
Lab Code:	K1810410-022	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**81**	D	20	1.8	20	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	**52**	D	20	0.94	20	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	**28**	D	10	0.58	20	11/06/18	11/27/18	KWG1805768	
Acenaphthene	**120**	D	10	0.64	20	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	**44**	D	10	0.44	20	11/06/18	11/27/18	KWG1805768	
Fluorene	**98**	D	10	0.78	20	11/06/18	11/27/18	KWG1805768	
Phenanthrene	**880**	D	10	0.66	20	11/06/18	11/27/18	KWG1805768	
Anthracene	**100**	D	10	0.52	20	11/06/18	11/27/18	KWG1805768	
Fluoranthene	**1900**	D	10	0.64	20	11/06/18	11/27/18	KWG1805768	
Pyrene	**1600**	D	10	0.64	20	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**950**	D	10	0.66	20	11/06/18	11/27/18	KWG1805768	
Chrysene	**1200**	D	10	0.54	20	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	**1400**	D	10	1.2	20	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	**510**	D	10	0.90	20	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	**1100**	D	10	0.72	20	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	**770**	D	10	1.3	20	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	**220**	D	10	1.2	20	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	**670**	D	10	1.2	20	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	81	26-102	11/27/18	Acceptable
Fluoranthene-d10	75	23-110	11/27/18	Acceptable
Terphenyl-d14	83	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-40to60-102318	**Units:**	ug/Kg
Lab Code:	K1810410-023	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**45**	D	5.0	0.45	5	11/06/18	11/12/18	KWG1805769	
2-Methylnaphthalene	**30**	D	5.0	0.24	5	11/06/18	11/12/18	KWG1805769	
Acenaphthylene	**20**	D	2.5	0.15	5	11/06/18	11/12/18	KWG1805769	
Acenaphthene	**19**	D	2.5	0.16	5	11/06/18	11/12/18	KWG1805769	
Dibenzofuran	**19**	D	2.5	0.11	5	11/06/18	11/12/18	KWG1805769	
Fluorene	**25**	D	2.5	0.20	5	11/06/18	11/12/18	KWG1805769	
Phenanthrene	**120**	D	2.5	0.17	5	11/06/18	11/12/18	KWG1805769	
Anthracene	**30**	D	2.5	0.13	5	11/06/18	11/12/18	KWG1805769	
Fluoranthene	**160**	D	2.5	0.16	5	11/06/18	11/12/18	KWG1805769	
Pyrene	**190**	D	2.5	0.16	5	11/06/18	11/12/18	KWG1805769	*
Benz(a)anthracene	**67**	D	2.5	0.17	5	11/06/18	11/12/18	KWG1805769	
Chrysene	**87**	D	2.5	0.14	5	11/06/18	11/12/18	KWG1805769	
Benzo(b)fluoranthene†	**96**	D	2.5	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(k)fluoranthene	**39**	D	2.5	0.23	5	11/06/18	11/12/18	KWG1805769	
Benzo(a)pyrene	**81**	D	2.5	0.18	5	11/06/18	11/12/18	KWG1805769	
Indeno(1,2,3-cd)pyrene	**64**	D	2.5	0.32	5	11/06/18	11/12/18	KWG1805769	
Dibenz(a,h)anthracene	**18**	D	2.5	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(g,h,i)perylene	**69**	D	2.5	0.30	5	11/06/18	11/12/18	KWG1805769	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	72	26-102	11/12/18	Acceptable
Fluoranthene-d10	76	23-110	11/12/18	Acceptable
Terphenyl-d14	88	27-115	11/12/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-60to80-102318	**Units:**	ug/Kg
Lab Code:	K1810410-024	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**59**	D	4.5	0.45	5	11/06/18	11/12/18	KWG1805769	
2-Methylnaphthalene	**34**	D	4.5	0.24	5	11/06/18	11/12/18	KWG1805769	
Acenaphthylene	**19**	D	2.3	0.15	5	11/06/18	11/12/18	KWG1805769	
Acenaphthene	**43**	D	2.3	0.16	5	11/06/18	11/12/18	KWG1805769	
Dibenzofuran	**24**	D	2.3	0.11	5	11/06/18	11/12/18	KWG1805769	
Fluorene	**38**	D	2.3	0.20	5	11/06/18	11/12/18	KWG1805769	
Phenanthrene	**170**	D	2.3	0.17	5	11/06/18	11/12/18	KWG1805769	
Anthracene	**39**	D	2.3	0.13	5	11/06/18	11/12/18	KWG1805769	
Fluoranthene	**200**	D	2.3	0.16	5	11/06/18	11/12/18	KWG1805769	
Pyrene	**240**	D	2.3	0.16	5	11/06/18	11/12/18	KWG1805769	*
Benz(a)anthracene	**74**	D	2.3	0.17	5	11/06/18	11/12/18	KWG1805769	
Chrysene	**94**	D	2.3	0.14	5	11/06/18	11/12/18	KWG1805769	
Benzo(b)fluoranthene†	**110**	D	2.3	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(k)fluoranthene	**40**	D	2.3	0.23	5	11/06/18	11/12/18	KWG1805769	
Benzo(a)pyrene	**92**	D	2.3	0.18	5	11/06/18	11/12/18	KWG1805769	
Indeno(1,2,3-cd)pyrene	**74**	D	2.3	0.32	5	11/06/18	11/12/18	KWG1805769	
Dibenz(a,h)anthracene	**18**	D	2.3	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(g,h,i)perylene	**80**	D	2.3	0.30	5	11/06/18	11/12/18	KWG1805769	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	73	26-102	11/12/18	Acceptable
Fluoranthene-d10	78	23-110	11/12/18	Acceptable
Terphenyl-d14	93	27-115	11/12/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-80to100-102318	**Units:**	ug/Kg
Lab Code:	K1810410-025	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**58**	D	4.5	0.45	5	11/06/18	11/12/18	KWG1805769	
2-Methylnaphthalene	**32**	D	4.5	0.24	5	11/06/18	11/12/18	KWG1805769	
Acenaphthylene	**19**	D	2.3	0.15	5	11/06/18	11/12/18	KWG1805769	
Acenaphthene	**54**	D	2.3	0.16	5	11/06/18	11/12/18	KWG1805769	
Dibenzofuran	**24**	D	2.3	0.11	5	11/06/18	11/12/18	KWG1805769	
Fluorene	**45**	D	2.3	0.20	5	11/06/18	11/12/18	KWG1805769	
Phenanthrene	**260**	D	2.3	0.17	5	11/06/18	11/12/18	KWG1805769	
Anthracene	**48**	D	2.3	0.13	5	11/06/18	11/12/18	KWG1805769	
Fluoranthene	**260**	D	2.3	0.16	5	11/06/18	11/12/18	KWG1805769	
Pyrene	**300**	D	2.3	0.16	5	11/06/18	11/12/18	KWG1805769	*
Benz(a)anthracene	**93**	D	2.3	0.17	5	11/06/18	11/12/18	KWG1805769	
Chrysene	**120**	D	2.3	0.14	5	11/06/18	11/12/18	KWG1805769	
Benzo(b)fluoranthene†	**120**	D	2.3	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(k)fluoranthene	**45**	D	2.3	0.23	5	11/06/18	11/12/18	KWG1805769	
Benzo(a)pyrene	**110**	D	2.3	0.18	5	11/06/18	11/12/18	KWG1805769	
Indeno(1,2,3-cd)pyrene	**88**	D	2.3	0.32	5	11/06/18	11/12/18	KWG1805769	
Dibenz(a,h)anthracene	**21**	D	2.3	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(g,h,i)perylene	**94**	D	2.3	0.30	5	11/06/18	11/12/18	KWG1805769	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	66	26-102	11/12/18	Acceptable
Fluoranthene-d10	72	23-110	11/12/18	Acceptable
Terphenyl-d14	84	27-115	11/12/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-100to115-102318	**Units:**	ug/Kg
Lab Code:	K1810410-026	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**22**	D	4.3	0.45	5	11/06/18	11/12/18	KWG1805769	
2-Methylnaphthalene	**27**	D	4.3	0.24	5	11/06/18	11/12/18	KWG1805769	
Acenaphthylene	**13**	D	2.2	0.15	5	11/06/18	11/12/18	KWG1805769	
Acenaphthene	**18**	D	2.2	0.16	5	11/06/18	11/12/18	KWG1805769	
Dibenzofuran	**15**	D	2.2	0.11	5	11/06/18	11/12/18	KWG1805769	
Fluorene	**22**	D	2.2	0.20	5	11/06/18	11/12/18	KWG1805769	
Phenanthrene	**110**	D	2.2	0.17	5	11/06/18	11/12/18	KWG1805769	
Anthracene	**27**	D	2.2	0.13	5	11/06/18	11/12/18	KWG1805769	
Fluoranthene	**140**	D	2.2	0.16	5	11/06/18	11/12/18	KWG1805769	
Pyrene	**160**	D	2.2	0.16	5	11/06/18	11/12/18	KWG1805769	*
Benz(a)anthracene	**65**	D	2.2	0.17	5	11/06/18	11/12/18	KWG1805769	
Chrysene	**80**	D	2.2	0.14	5	11/06/18	11/12/18	KWG1805769	
Benzo(b)fluoranthene†	**88**	D	2.2	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(k)fluoranthene	**36**	D	2.2	0.23	5	11/06/18	11/12/18	KWG1805769	
Benzo(a)pyrene	**76**	D	2.2	0.18	5	11/06/18	11/12/18	KWG1805769	
Indeno(1,2,3-cd)pyrene	**55**	D	2.2	0.32	5	11/06/18	11/12/18	KWG1805769	
Dibenz(a,h)anthracene	**17**	D	2.2	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(g,h,i)perylene	**57**	D	2.2	0.30	5	11/06/18	11/12/18	KWG1805769	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	26-102	11/12/18	Acceptable
Fluoranthene-d10	79	23-110	11/12/18	Acceptable
Terphenyl-d14	94	27-115	11/12/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Soil	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-115to130-102318	**Units:**	ug/Kg
Lab Code:	K1810410-027	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**23**	D	4.4	0.45	5	11/06/18	11/12/18	KWG1805769	
2-Methylnaphthalene	**27**	D	4.4	0.24	5	11/06/18	11/12/18	KWG1805769	
Acenaphthylene	**14**	D	2.2	0.15	5	11/06/18	11/12/18	KWG1805769	
Acenaphthene	**15**	D	2.2	0.16	5	11/06/18	11/12/18	KWG1805769	
Dibenzofuran	**13**	D	2.2	0.11	5	11/06/18	11/12/18	KWG1805769	
Fluorene	**19**	D	2.2	0.20	5	11/06/18	11/12/18	KWG1805769	
Phenanthrene	**94**	D	2.2	0.17	5	11/06/18	11/12/18	KWG1805769	
Anthracene	**24**	D	2.2	0.13	5	11/06/18	11/12/18	KWG1805769	
Fluoranthene	**130**	D	2.2	0.16	5	11/06/18	11/12/18	KWG1805769	
Pyrene	**150**	D	2.2	0.16	5	11/06/18	11/12/18	KWG1805769	*
Benz(a)anthracene	**60**	D	2.2	0.17	5	11/06/18	11/12/18	KWG1805769	
Chrysene	**74**	D	2.2	0.14	5	11/06/18	11/12/18	KWG1805769	
Benzo(b)fluoranthene†	**82**	D	2.2	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(k)fluoranthene	**33**	D	2.2	0.23	5	11/06/18	11/12/18	KWG1805769	
Benzo(a)pyrene	**70**	D	2.2	0.18	5	11/06/18	11/12/18	KWG1805769	
Indeno(1,2,3-cd)pyrene	**53**	D	2.2	0.32	5	11/06/18	11/12/18	KWG1805769	
Dibenz(a,h)anthracene	**15**	D	2.2	0.29	5	11/06/18	11/12/18	KWG1805769	
Benzo(g,h,i)perylene	**54**	D	2.2	0.30	5	11/06/18	11/12/18	KWG1805769	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	71	26-102	11/12/18	Acceptable
Fluoranthene-d10	74	23-110	11/12/18	Acceptable
Terphenyl-d14	90	27-115	11/12/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1805768-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	0.50	0.089	1	11/06/18	11/27/18	KWG1805768	
2-Methylnaphthalene	ND	U	0.50	0.047	1	11/06/18	11/27/18	KWG1805768	
Acenaphthylene	ND	U	0.25	0.029	1	11/06/18	11/27/18	KWG1805768	
Acenaphthene	ND	U	0.25	0.032	1	11/06/18	11/27/18	KWG1805768	
Dibenzofuran	ND	U	0.25	0.022	1	11/06/18	11/27/18	KWG1805768	
Fluorene	ND	U	0.25	0.039	1	11/06/18	11/27/18	KWG1805768	
Phenanthrene	ND	U	0.25	0.033	1	11/06/18	11/27/18	KWG1805768	
Anthracene	ND	U	0.25	0.026	1	11/06/18	11/27/18	KWG1805768	
Fluoranthene	ND	U	0.25	0.032	1	11/06/18	11/27/18	KWG1805768	
Pyrene	ND	U	0.25	0.032	1	11/06/18	11/27/18	KWG1805768	*
Benz(a)anthracene	**0.035**	J	0.25	0.033	1	11/06/18	11/27/18	KWG1805768	
Chrysene	ND	U	0.25	0.027	1	11/06/18	11/27/18	KWG1805768	
Benzo(b)fluoranthene†	ND	U	0.25	0.057	1	11/06/18	11/27/18	KWG1805768	
Benzo(k)fluoranthene	ND	U	0.25	0.045	1	11/06/18	11/27/18	KWG1805768	
Benzo(a)pyrene	ND	U	0.25	0.036	1	11/06/18	11/27/18	KWG1805768	
Indeno(1,2,3-cd)pyrene	ND	U	0.25	0.064	1	11/06/18	11/27/18	KWG1805768	
Dibenz(a,h)anthracene	ND	U	0.25	0.058	1	11/06/18	11/27/18	KWG1805768	
Benzo(g,h,i)perylene	ND	U	0.25	0.059	1	11/06/18	11/27/18	KWG1805768	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	26-102	11/27/18	Acceptable
Fluoranthene-d10	72	23-110	11/27/18	Acceptable
Terphenyl-d14	79	27-115	11/27/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG1805769-4	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.11**	J	0.50	0.089	1	11/06/18	11/12/18	KWG1805769	
2-Methylnaphthalene	**0.076**	J	0.50	0.047	1	11/06/18	11/12/18	KWG1805769	
Acenaphthylene	ND	U	0.25	0.029	1	11/06/18	11/12/18	KWG1805769	
Acenaphthene	ND	U	0.25	0.032	1	11/06/18	11/12/18	KWG1805769	
Dibenzofuran	**0.065**	J	0.25	0.022	1	11/06/18	11/12/18	KWG1805769	
Fluorene	**0.040**	J	0.25	0.039	1	11/06/18	11/12/18	KWG1805769	
Phenanthrene	**0.15**	J	0.25	0.033	1	11/06/18	11/12/18	KWG1805769	
Anthracene	**0.028**	J	0.25	0.026	1	11/06/18	11/12/18	KWG1805769	
Fluoranthene	**0.046**	J	0.25	0.032	1	11/06/18	11/12/18	KWG1805769	
Pyrene	ND	U	0.25	0.032	1	11/06/18	11/12/18	KWG1805769	*
Benz(a)anthracene	ND	U	0.25	0.033	1	11/06/18	11/12/18	KWG1805769	
Chrysene	ND	U	0.25	0.027	1	11/06/18	11/12/18	KWG1805769	
Benzo(b)fluoranthene†	ND	U	0.25	0.057	1	11/06/18	11/12/18	KWG1805769	
Benzo(k)fluoranthene	ND	U	0.25	0.045	1	11/06/18	11/12/18	KWG1805769	
Benzo(a)pyrene	ND	U	0.25	0.036	1	11/06/18	11/12/18	KWG1805769	
Indeno(1,2,3-cd)pyrene	ND	U	0.25	0.064	1	11/06/18	11/12/18	KWG1805769	
Dibenz(a,h)anthracene	ND	U	0.25	0.058	1	11/06/18	11/12/18	KWG1805769	
Benzo(g,h,i)perylene	ND	U	0.25	0.059	1	11/06/18	11/12/18	KWG1805769	

* See Case Narrative

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	70	26-102	11/12/18	Acceptable
Fluoranthene-d10	73	23-110	11/12/18	Acceptable
Terphenyl-d14	72	27-115	11/12/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

QA/QC Report

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01
Sample Matrix: Soil

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541 **Units:** Percent
Analysis Method: 8270D SIM **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
D-9.09-SC-00to10-102318	K1810410-001	64 D	64 D	70 D
D-9.09-SC-10to20-102318	K1810410-002	77 D	81 D	83 D
D-9.09-SC-20to40-102318	K1810410-003	73	87	83 D
D-9.09-SC-40to60-102318	K1810410-004	76 D	80 D	81 D
D-9.09-SC-60to80-102318	K1810410-005	69 D	72 D	77 D
D-9.09-SC-80to100-102318	K1810410-006	76 D	82 D	82 D
D-9.09-SC-100to117-102318	K1810410-007	79 D	81 D	85 D
511-20to40-102318	K1810410-009	78 D	81 D	83 D
D-8.90-SC-00to10-102318	K1810410-010	76 D	75 D	81 D
D-8.90-SC-10to20-102318	K1810410-011	74 D	76 D	81 D
D-8.90-SC-20to40-102318	K1810410-012	72 D	72 D	77 D
D-8.90-SC-40to62-102318	K1810410-013	71 D	73 D	78 D
D-8.90-SC-62to80-102318	K1810410-014	67 D	68 D	71 D
D-8.90-SC-80to103-102318	K1810410-015	76 D	80 D	85 D
D-8.90-SC-103to120-102318	K1810410-016	76 D	83 D	85 D
D-8.90-SC-120to140-102318	K1810410-017	73 D	77 D	80 D
D-8.90-SC-140to160-102318	K1810410-018	73 D	76 D	80 D
E-9.02-SC-00to10-102318	K1810410-020	75 D	75 D	81 D
E-9.02-SC-10to20-102318	K1810410-021	85 D	92 D	96 D
E-9.02-SC-20to40-102318	K1810410-022	81 D	75 D	83 D
E-9.02-SC-40to60-102318	K1810410-023	72 D	76 D	88 D
E-9.02-SC-60to80-102318	K1810410-024	73 D	78 D	93 D
E-9.02-SC-80to100-102318	K1810410-025	66 D	72 D	84 D
E-9.02-SC-100to115-102318	K1810410-026	74 D	79 D	94 D
E-9.02-SC-115to130-102318	K1810410-027	71 D	74 D	90 D
Method Blank	KWG1805768-4	70	72	79
Method Blank	KWG1805769-4	70	73	72
D-9.09-SC-20to40-102318MS	KWG1805768-1	72 D	87 D	82 D
D-9.09-SC-20to40-102318DMS	KWG1805768-2	74 D	84 D	84 D
E-9.02-SC-80to100-102318MS	KWG1805769-1	80 D	89 D	99 D
E-9.02-SC-80to100-102318DMS	KWG1805769-2	73 D	80 D	90 D
Lab Control Sample	KWG1805768-3	78	87	88
Lab Control Sample	KWG1805769-3	70	72	78

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	26-102
Sur2	=	Fluoranthene-d10	23-110
Sur3	=	Terphenyl-d14	27-115

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/12/2018
Time Analyzed: 07:22

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\111218\1112F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1805925-2
Analysis Lot: KWG1805925

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	75,095	4.75	33,254	6.30	62,457	7.54
	Upper Limit ==>	150,190	5.25	66,508	6.80	124,914	8.04
	Lower Limit ==>	37,548	4.25	16,627	5.80	31,229	7.04
	ICAL Result ==>	60,855	4.80	25,959	6.35	53,916	7.59
Associated Analyses							
Method Blank	KWG1805769-4	63,654	4.74	32,898	6.30	67,944	7.54
Lab Control Sample	KWG1805769-3	74,731	4.75	34,460	6.30	71,707	7.54
E-9.02-SC-80to100-102318MS	KWG1805769-1	61,736	4.75	31,734	6.31	75,819	7.56
E-9.02-SC-80to100-102318DMS	KWG1805769-2	61,803	4.75	32,962	6.31	78,679	7.56
E-9.02-SC-80to100-102318	K1810410-025	61,630	4.75	32,351	6.31	77,004	7.55
E-9.02-SC-40to60-102318	K1810410-023	62,749	4.75	33,186	6.31	80,901	7.55
E-9.02-SC-60to80-102318	K1810410-024	61,704	4.75	33,440	6.31	78,154	7.55
E-9.02-SC-100to115-102318	K1810410-026	62,118	4.75	34,005	6.31	82,446	7.55
E-9.02-SC-115to130-102318	K1810410-027	61,711	4.75	33,728	6.31	82,154	7.55

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/12/2018
Time Analyzed: 07:22

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\111218\1112F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1805925-2
Analysis Lot: KWG1805925

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	88,990	10.08	97,431	13.23
	Upper Limit ==>	177,980	10.58	194,862	13.73
	Lower Limit ==>	44,495	9.58	48,716	12.73
	ICAL Result ==>	68,964	10.15	73,742	13.30
Associated Analyses					
Method Blank	KWG1805769-4	90,374	10.08	101,331	13.23
Lab Control Sample	KWG1805769-3	83,780	10.08	92,860	13.24
E-9.02-SC-80to100-102318MS	KWG1805769-1	92,857	10.13	99,518	13.38
E-9.02-SC-80to100-102318DMS	KWG1805769-2	94,180	10.12	98,707	13.37
E-9.02-SC-80to100-102318	K1810410-025	92,232	10.12	98,704	13.35
E-9.02-SC-40to60-102318	K1810410-023	93,253	10.12	98,016	13.35
E-9.02-SC-60to80-102318	K1810410-024	91,456	10.12	98,241	13.34
E-9.02-SC-100to115-102318	K1810410-026	95,448	10.11	100,005	13.34
E-9.02-SC-115to130-102318	K1810410-027	93,007	10.11	99,539	13.33

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/27/2018
Time Analyzed: 06:40

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\112718\1127F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1806324-2
Analysis Lot: KWG1806324

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	73,596	4.74	32,634	6.31	63,336	7.55
	Upper Limit ==>	147,192	5.24	65,268	6.81	126,672	8.05
	Lower Limit ==>	36,798	4.24	16,317	5.81	31,668	7.05
	ICAL Result ==>	60,855	4.80	25,959	6.35	53,916	7.59
Associated Analyses							
Lab Control Sample	KWG1805768-3	61,278	4.73	27,733	6.31	57,380	7.55
Method Blank	KWG1805768-4	64,889	4.74	32,029	6.31	68,725	7.55
D-9.09-SC-20to40-102318	K1810410-003	54,449	4.74	33,019	6.32	80,997	7.57
D-9.09-SC-00to10-102318	K1810410-001	51,199	4.75	28,041	6.32	65,474	7.56
D-9.09-SC-10to20-102318	K1810410-002	50,698	4.74	26,466	6.32	64,809	7.56
D-8.90-SC-00to10-102318	K1810410-010	52,437	4.74	27,847	6.32	63,894	7.56
D-8.90-SC-62to80-102318	K1810410-014	53,621	4.74	27,421	6.32	66,677	7.56
E-9.02-SC-00to10-102318	K1810410-020	50,718	4.74	28,175	6.32	64,664	7.56
D-9.09-SC-40to60-102318	K1810410-004	49,671	4.74	30,104	6.32	68,715	7.56
D-9.09-SC-60to80-102318	K1810410-005	49,978	4.74	29,231	6.32	65,415	7.56
D-9.09-SC-80to100-102318	K1810410-006	47,299	4.74	28,659	6.32	62,716	7.56
D-9.09-SC-100to117-102318	K1810410-007	47,275	4.74	26,974	6.32	64,686	7.56
511-20to40-102318	K1810410-009	46,325	4.74	26,441	6.32	63,776	7.56
D-8.90-SC-10to20-102318	K1810410-011	44,156	4.74	27,936	6.32	64,645	7.56
D-8.90-SC-20to40-102318	K1810410-012	45,692	4.74	27,216	6.32	62,868	7.56
D-8.90-SC-40to62-102318	K1810410-013	47,098	4.74	28,382	6.32	65,666	7.56
D-8.90-SC-80to103-102318	K1810410-015	46,556	4.74	28,869	6.32	64,954	7.56
D-8.90-SC-103to120-102318	K1810410-016	46,118	4.74	30,373	6.32	68,078	7.56
D-8.90-SC-120to140-102318	K1810410-017	43,748	4.74	27,980	6.32	61,858	7.56
D-8.90-SC-140to160-102318	K1810410-018	44,400	4.74	28,752	6.32	65,164	7.57
E-9.02-SC-10to20-102318	K1810410-021	43,521	4.74	28,725	6.32	63,901	7.56
E-9.02-SC-20to40-102318	K1810410-022	44,960	4.75	27,985	6.32	61,453	7.56

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/27/2018
Time Analyzed: 06:40

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\112718\1127F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1806324-2
Analysis Lot: KWG1806324

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	89,794	10.11	99,034	13.30
	Upper Limit ==>	179,588	10.61	198,068	13.80
	Lower Limit ==>	44,897	9.61	49,517	12.80
	ICAL Result ==>	68,964	10.15	73,742	13.30
Associated Analyses					
Lab Control Sample	KWG1805768-3	76,125	10.11	85,077	13.30
Method Blank	KWG1805768-4	80,201	10.11	88,211	13.30
D-9.09-SC-20to40-102318	K1810410-003	0*	0.00	0*	0.00
D-9.09-SC-00to10-102318	K1810410-001	79,206	10.13	90,462	13.37
D-9.09-SC-10to20-102318	K1810410-002	84,844	10.13	93,714	13.39
D-8.90-SC-00to10-102318	K1810410-010	78,857	10.12	91,054	13.36
D-8.90-SC-62to80-102318	K1810410-014	83,280	10.12	93,735	13.37
E-9.02-SC-00to10-102318	K1810410-020	78,407	10.12	89,946	13.35
D-9.09-SC-40to60-102318	K1810410-004	87,873	10.14	95,211	13.42
D-9.09-SC-60to80-102318	K1810410-005	81,630	10.14	92,767	13.40
D-9.09-SC-80to100-102318	K1810410-006	80,679	10.13	89,290	13.39
D-9.09-SC-100to117-102318	K1810410-007	80,552	10.13	91,151	13.39
511-20to40-102318	K1810410-009	81,803	10.13	90,817	13.39
D-8.90-SC-10to20-102318	K1810410-011	79,974	10.13	92,196	13.39
D-8.90-SC-20to40-102318	K1810410-012	78,427	10.13	88,779	13.38
D-8.90-SC-40to62-102318	K1810410-013	82,463	10.13	92,399	13.39
D-8.90-SC-80to103-102318	K1810410-015	80,741	10.14	89,958	13.39
D-8.90-SC-103to120-102318	K1810410-016	87,063	10.14	95,769	13.43
D-8.90-SC-120to140-102318	K1810410-017	76,783	10.13	85,836	13.41
D-8.90-SC-140to160-102318	K1810410-018	82,489	10.14	89,854	13.41
E-9.02-SC-10to20-102318	K1810410-021	80,588	10.14	86,592	13.43
E-9.02-SC-20to40-102318	K1810410-022	70,047	10.13	83,034	13.37

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Analyzed:**	11/28/2018
		Time Analyzed:	07:57

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID:	J:\MS14\DATA\112818\1128F002.D	**Lab Code:**	KWG1806383-2
Instrument ID:	MS14	**Analysis Lot:**	KWG1806383
Analysis Method:	8270D SIM		

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	61,097	4.70	27,155	6.29	54,159	7.54
	Upper Limit ==>	122,194	5.20	54,310	6.79	108,318	8.04
	Lower Limit ==>	30,549	4.20	13,578	5.79	27,080	7.04
	ICAL Result ==>	60,855	4.80	25,959	6.35	53,916	7.59
Associated Analyses							
D-9.09-SC-20to40-102318MS	KWG1805768-1	56,953	4.71	27,314	6.29	63,035	7.54
D-9.09-SC-20to40-102318DMS	KWG1805768-2	52,942	4.71	26,715	6.30	61,598	7.55
D-9.09-SC-20to40-102318DL	K1810410-003	49,788	4.71	26,321	6.29	59,505	7.54

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/28/2018
Time Analyzed: 07:57

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\112818\1128F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1806383-2
Analysis Lot: KWG1806383

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	71,749	10.09	83,832	13.27
	Upper Limit ==>	143,498	10.59	167,664	13.77
	Lower Limit ==>	35,875	9.59	41,916	12.77
	ICAL Result ==>	68,964	10.15	73,742	13.30
Associated Analyses					
D-9.09-SC-20to40-102318MS	KWG1805768-1	85,319	10.11	90,634	13.34
D-9.09-SC-20to40-102318DMS	KWG1805768-2	81,900	10.11	87,602	13.34
D-9.09-SC-20to40-102318DL	K1810410-003	80,226	10.10	86,553	13.33

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/28/2018

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	D-9.09-SC-20to40-102318	**Units:**	ug/Kg
Lab Code:	K1810410-003	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805768

		D-9.09-SC-20to40-102318 MS KWG1805768-1 Matrix Spike			D-9.09-SC-20to40-102318 DMS KWG1805768-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	39	98.8	96.7	62 *	88.5	96.7	51 *	70-130	11	40
2-Methylnaphthalene	18	77.0	96.7	61 *	79.5	96.7	63 *	70-130	3	40
Acenaphthylene	14	74.6	96.7	63 *	76.6	96.7	65 *	70-130	3	40
Acenaphthene	12	73.5	96.7	63 *	73.8	96.7	64 *	70-130	0	40
Dibenzofuran	13	74.2	96.7	64 *	72.8	96.7	62 *	70-130	2	40
Fluorene	18	88.1	96.7	73	86.3	96.7	71	70-130	2	40
Phenanthrene	100	196	96.7	94	178	96.7	76	70-130	9	40
Anthracene	22	97.3	96.7	77	96.1	96.7	76	70-130	1	40
Fluoranthene	160	272	96.7	121	248	96.7	95	70-130	9	40
Pyrene	150	264	96.7	118	259	96.7	114	70-130	2	40
Benz(a)anthracene	60	133	96.7	75	141	96.7	83	70-130	6	40
Chrysene	69	158	96.7	92	165	96.7	99	70-130	4	40
Benzo(b)fluoranthene	92	168	96.7	79	176	96.7	87	70-130	4	40
Benzo(k)fluoranthene	35	99.0	96.7	66 *	101	96.7	68 *	70-130	2	40
Benzo(a)pyrene	77	146	96.7	72	161	96.7	87	70-130	9	40
Indeno(1,2,3-cd)pyrene	54	136	96.7	84	149	96.7	98	70-130	9	40
Dibenz(a,h)anthracene	14	70.0	96.7	58 *	76.8	96.7	65 *	70-130	9	40
Benzo(g,h,i)perylene	57	122	96.7	67 *	132	96.7	77	70-130	8	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/12/2018

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	E-9.02-SC-80to100-102318	**Units:**	ug/Kg
Lab Code:	K1810410-025	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805769

		E-9.02-SC-80to100-102318 MS KWG1805769-1 Matrix Spike			E-9.02-SC-80to100-102318 DMS KWG1805769-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	58	99.2	88.3	47 *	99.9	88.7	47 *	70-130	1	40
2-Methylnaphthalene	32	83.5	88.3	58 *	81.5	88.7	56 *	70-130	2	40
Acenaphthylene	19	76.8	88.3	65 *	71.1	88.7	58 *	70-130	8	40
Acenaphthene	54	121	88.3	76	112	88.7	65 *	70-130	8	40
Dibenzofuran	24	84.0	88.3	68 *	78.1	88.7	61 *	70-130	7	40
Fluorene	45	119	88.3	84	109	88.7	72	70-130	9	40
Phenanthrene	260	378	88.3	139 *	342	88.7	97	70-130	10	40
Anthracene	48	126	88.3	88	113	88.7	73	70-130	11	40
Fluoranthene	260	384	88.3	136 *	353	88.7	100	70-130	9	40
Pyrene	300	425	88.3	137 *	400	88.7	107	70-130	6	40
Benz(a)anthracene	93	175	88.3	92	165	88.7	81	70-130	6	40
Chrysene	120	196	88.3	92	185	88.7	79	70-130	6	40
Benzo(b)fluoranthene	120	203	88.3	93	199	88.7	87	70-130	2	40
Benzo(k)fluoranthene	45	121	88.3	86	118	88.7	82	70-130	3	40
Benzo(a)pyrene	110	203	88.3	100	195	88.7	90	70-130	4	40
Indeno(1,2,3-cd)pyrene	88	188	88.3	113	180	88.7	104	70-130	4	40
Dibenz(a,h)anthracene	21	92.6	88.3	81	80.7	88.7	67 *	70-130	14	40
Benzo(g,h,i)perylene	94	173	88.3	90	166	88.7	81	70-130	4	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/27/2018

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1805768

	Lab Control Sample KWG1805768-3 Lab Control Spike			
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**
Naphthalene	66.6	100	67	48-77
2-Methylnaphthalene	67.8	100	68	52-85
Acenaphthylene	72.4	100	72	51-80
Acenaphthene	70.8	100	71	51-82
Dibenzofuran	70.4	100	70	14-125
Fluorene	71.2	100	71	52-83
Phenanthrene	71.1	100	71	48-85
Anthracene	76.2	100	76	56-87
Fluoranthene	75.9	100	76	45-96
Pyrene	71.4	100	71	59-98
Benz(a)anthracene	85.2	100	85	65-97
Chrysene	81.9	100	82	63-100
Benzo(b)fluoranthene	88.1	100	88	63-99
Benzo(k)fluoranthene	85.4	100	85	62-99
Benzo(a)pyrene	88.0	100	88	64-103
Indeno(1,2,3-cd)pyrene	88.0	100	88	61-105
Dibenz(a,h)anthracene	89.7	100	90	56-104
Benzo(g,h,i)perylene	80.9	100	81	56-101

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/12/2018

Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270D SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1805769

Lab Control Sample
KWG1805769-3
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Naphthalene	60.1	100	60	48-77
2-Methylnaphthalene	63.0	100	63	52-85
Acenaphthylene	66.9	100	67	51-80
Acenaphthene	64.9	100	65	51-82
Dibenzofuran	64.4	100	64	14-125
Fluorene	65.2	100	65	52-83
Phenanthrene	64.2	100	64	48-85
Anthracene	69.8	100	70	56-87
Fluoranthene	64.5	100	64	45-96
Pyrene	67.8	100	68	59-98
Benz(a)anthracene	77.9	100	78	65-97
Chrysene	75.7	100	76	63-100
Benzo(b)fluoranthene	82.8	100	83	63-99
Benzo(k)fluoranthene	78.3	100	78	62-99
Benzo(a)pyrene	82.3	100	82	64-103
Indeno(1,2,3-cd)pyrene	78.5	100	79	61-105
Dibenz(a,h)anthracene	77.5	100	78	56-104
Benzo(g,h,i)perylene	66.9	100	67	56-101

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/27/2018
		Time Analyzed:	07:30

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1805768-4	**File ID:**	J:\MS14\DATA\112718\1127F004.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805768

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1805768-3	J:\MS14\DATA\112718\1127F003.D	11/27/18	07:05
D-9.09-SC-20to40-102318	K1810410-003	J:\MS14\DATA\112718\1127F007.D	11/27/18	08:43
D-9.09-SC-00to10-102318	K1810410-001	J:\MS14\DATA\112718\1127F008.D	11/27/18	09:08
D-9.09-SC-10to20-102318	K1810410-002	J:\MS14\DATA\112718\1127F009.D	11/27/18	09:33
D-8.90-SC-00to10-102318	K1810410-010	J:\MS14\DATA\112718\1127F010.D	11/27/18	09:58
D-8.90-SC-62to80-102318	K1810410-014	J:\MS14\DATA\112718\1127F011.D	11/27/18	10:22
E-9.02-SC-00to10-102318	K1810410-020	J:\MS14\DATA\112718\1127F012.D	11/27/18	10:47
D-9.09-SC-40to60-102318	K1810410-004	J:\MS14\DATA\112718\1127F013.D	11/27/18	11:14
D-9.09-SC-60to80-102318	K1810410-005	J:\MS14\DATA\112718\1127F014.D	11/27/18	11:40
D-9.09-SC-80to100-102318	K1810410-006	J:\MS14\DATA\112718\1127F015.D	11/27/18	12:06
D-9.09-SC-100to117-102318	K1810410-007	J:\MS14\DATA\112718\1127F016.D	11/27/18	12:31
511-20to40-102318	K1810410-009	J:\MS14\DATA\112718\1127F017.D	11/27/18	12:56
D-8.90-SC-10to20-102318	K1810410-011	J:\MS14\DATA\112718\1127F018.D	11/27/18	13:21
D-8.90-SC-20to40-102318	K1810410-012	J:\MS14\DATA\112718\1127F019.D	11/27/18	13:47
D-8.90-SC-40to62-102318	K1810410-013	J:\MS14\DATA\112718\1127F020.D	11/27/18	14:12
D-8.90-SC-80to103-102318	K1810410-015	J:\MS14\DATA\112718\1127F021.D	11/27/18	14:38
D-8.90-SC-103to120-102318	K1810410-016	J:\MS14\DATA\112718\1127F022.D	11/27/18	15:04
D-8.90-SC-120to140-102318	K1810410-017	J:\MS14\DATA\112718\1127F023.D	11/27/18	15:30
D-8.90-SC-140to160-102318	K1810410-018	J:\MS14\DATA\112718\1127F024.D	11/27/18	15:56
E-9.02-SC-10to20-102318	K1810410-021	J:\MS14\DATA\112718\1127F025.D	11/27/18	16:21
E-9.02-SC-20to40-102318	K1810410-022	J:\MS14\DATA\112718\1127F026.D	11/27/18	16:47
D-9.09-SC-20to40-102318MS	KWG1805768-1	J:\MS14\DATA\112818\1128F011.D	11/28/18	11:40
D-9.09-SC-20to40-102318DMS	KWG1805768-2	J:\MS14\DATA\112818\1128F012.D	11/28/18	12:05
D-9.09-SC-20to40-102318	K1810410-003	J:\MS14\DATA\112818\1128F013.D	11/28/18	12:29

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/12/2018
		Time Analyzed:	08:37

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1805769-4	**File ID:**	J:\MS14\DATA\111218\1112F005.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805769

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1805769-3	J:\MS14\DATA\111218\1112F006.D	11/12/18	09:03
E-9.02-SC-80to100-102318MS	KWG1805769-1	J:\MS14\DATA\111218\1112F016.D	11/12/18	13:26
E-9.02-SC-80to100-102318DMS	KWG1805769-2	J:\MS14\DATA\111218\1112F017.D	11/12/18	13:53
E-9.02-SC-80to100-102318	K1810410-025	J:\MS14\DATA\111218\1112F018.D	11/12/18	14:19
E-9.02-SC-40to60-102318	K1810410-023	J:\MS14\DATA\111218\1112F019.D	11/12/18	14:47
E-9.02-SC-60to80-102318	K1810410-024	J:\MS14\DATA\111218\1112F020.D	11/12/18	15:14
E-9.02-SC-100to115-102318	K1810410-026	J:\MS14\DATA\111218\1112F021.D	11/12/18	15:40
E-9.02-SC-115to130-102318	K1810410-027	J:\MS14\DATA\111218\1112F022.D	11/12/18	16:07

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/27/2018
		Time Analyzed:	07:05

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1805768-3	**File ID:**	J:\MS14\DATA\112718\1127F003.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805768

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1805768-4	J:\MS14\DATA\112718\1127F004.D	11/27/18	07:30
D-9.09-SC-20to40-102318	K1810410-003	J:\MS14\DATA\112718\1127F007.D	11/27/18	08:43
D-9.09-SC-00to10-102318	K1810410-001	J:\MS14\DATA\112718\1127F008.D	11/27/18	09:08
D-9.09-SC-10to20-102318	K1810410-002	J:\MS14\DATA\112718\1127F009.D	11/27/18	09:33
D-8.90-SC-00to10-102318	K1810410-010	J:\MS14\DATA\112718\1127F010.D	11/27/18	09:58
D-8.90-SC-62to80-102318	K1810410-014	J:\MS14\DATA\112718\1127F011.D	11/27/18	10:22
E-9.02-SC-00to10-102318	K1810410-020	J:\MS14\DATA\112718\1127F012.D	11/27/18	10:47
D-9.09-SC-40to60-102318	K1810410-004	J:\MS14\DATA\112718\1127F013.D	11/27/18	11:14
D-9.09-SC-60to80-102318	K1810410-005	J:\MS14\DATA\112718\1127F014.D	11/27/18	11:40
D-9.09-SC-80to100-102318	K1810410-006	J:\MS14\DATA\112718\1127F015.D	11/27/18	12:06
D-9.09-SC-100to117-102318	K1810410-007	J:\MS14\DATA\112718\1127F016.D	11/27/18	12:31
511-20to40-102318	K1810410-009	J:\MS14\DATA\112718\1127F017.D	11/27/18	12:56
D-8.90-SC-10to20-102318	K1810410-011	J:\MS14\DATA\112718\1127F018.D	11/27/18	13:21
D-8.90-SC-20to40-102318	K1810410-012	J:\MS14\DATA\112718\1127F019.D	11/27/18	13:47
D-8.90-SC-40to62-102318	K1810410-013	J:\MS14\DATA\112718\1127F020.D	11/27/18	14:12
D-8.90-SC-80to103-102318	K1810410-015	J:\MS14\DATA\112718\1127F021.D	11/27/18	14:38
D-8.90-SC-103to120-102318	K1810410-016	J:\MS14\DATA\112718\1127F022.D	11/27/18	15:04
D-8.90-SC-120to140-102318	K1810410-017	J:\MS14\DATA\112718\1127F023.D	11/27/18	15:30
D-8.90-SC-140to160-102318	K1810410-018	J:\MS14\DATA\112718\1127F024.D	11/27/18	15:56
E-9.02-SC-10to20-102318	K1810410-021	J:\MS14\DATA\112718\1127F025.D	11/27/18	16:21
E-9.02-SC-20to40-102318	K1810410-022	J:\MS14\DATA\112718\1127F026.D	11/27/18	16:47
D-9.09-SC-20to40-102318MS	KWG1805768-1	J:\MS14\DATA\112818\1128F011.D	11/28/18	11:40
D-9.09-SC-20to40-102318DMS	KWG1805768-2	J:\MS14\DATA\112818\1128F012.D	11/28/18	12:05
D-9.09-SC-20to40-102318	K1810410-003	J:\MS14\DATA\112818\1128F013.D	11/28/18	12:29

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	11/06/2018
Sample Matrix:	Soil	**Date Analyzed:**	11/12/2018
		Time Analyzed:	09:03

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1805769-3	**File ID:**	J:\MS14\DATA\111218\1112F006.D
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805769

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1805769-4	J:\MS14\DATA\111218\1112F005.D	11/12/18	08:37
E-9.02-SC-80to100-102318MS	KWG1805769-1	J:\MS14\DATA\111218\1112F016.D	11/12/18	13:26
E-9.02-SC-80to100-102318DMS	KWG1805769-2	J:\MS14\DATA\111218\1112F017.D	11/12/18	13:53
E-9.02-SC-80to100-102318	K1810410-025	J:\MS14\DATA\111218\1112F018.D	11/12/18	14:19
E-9.02-SC-40to60-102318	K1810410-023	J:\MS14\DATA\111218\1112F019.D	11/12/18	14:47
E-9.02-SC-60to80-102318	K1810410-024	J:\MS14\DATA\111218\1112F020.D	11/12/18	15:14
E-9.02-SC-100to115-102318	K1810410-026	J:\MS14\DATA\111218\1112F021.D	11/12/18	15:40
E-9.02-SC-115to130-102318	K1810410-027	J:\MS14\DATA\111218\1112F022.D	11/12/18	16:07

QA/QC Results

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/12/2018
Time Analyzed: 06:58

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\111218\1112F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1805925

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	45.6	156072	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	47.5	162746	PASS
70	69	0	2	0.7	1211	PASS
127	198	10	80	50.3	172240	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	56.1	342442	PASS
199	198	5	9	6.5	22232	PASS
275	198	10	60	34.0	116549	PASS
365	442	1	50	3.1	19146	PASS
441	443	0	100	73.8	88114	PASS
442	442	100	100	100.0	610474	PASS
443	442	15	24	19.6	119429	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1805925-2	J:\MS14\DATA\111218\1112F002.D	11/12/2018	07:22	
Method Blank	KWG1805769-4	J:\MS14\DATA\111218\1112F005.D	11/12/2018	08:37	
Lab Control Sample	KWG1805769-3	J:\MS14\DATA\111218\1112F006.D	11/12/2018	09:03	
E-9.02-SC-80to100-102318MS	KWG1805769-1	J:\MS14\DATA\111218\1112F016.D	11/12/2018	13:26	
E-9.02-SC-80to100-102318DMS	KWG1805769-2	J:\MS14\DATA\111218\1112F017.D	11/12/2018	13:53	
E-9.02-SC-80to100-102318	K1810410-025	J:\MS14\DATA\111218\1112F018.D	11/12/2018	14:19	
E-9.02-SC-40to60-102318	K1810410-023	J:\MS14\DATA\111218\1112F019.D	11/12/2018	14:47	
E-9.02-SC-60to80-102318	K1810410-024	J:\MS14\DATA\111218\1112F020.D	11/12/2018	15:14	
E-9.02-SC-100to115-102318	K1810410-026	J:\MS14\DATA\111218\1112F021.D	11/12/2018	15:40	
E-9.02-SC-115to130-102318	K1810410-027	J:\MS14\DATA\111218\1112F022.D	11/12/2018	16:07	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

QA/QC Results

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/27/2018
Time Analyzed: 06:16

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\112718\1127F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1806324

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	49.6	113745	PASS
68	69	0	2	1.0	1132	PASS
69	198	0	100	47.1	108183	PASS
70	69	0	2	0.7	721	PASS
127	198	10	80	52.2	119760	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	51.1	229525	PASS
199	198	5	9	7.3	16711	PASS
275	198	10	60	35.5	81549	PASS
365	442	1	50	3.4	15098	PASS
441	443	0	100	74.7	67285	PASS
442	442	100	100	100.0	448938	PASS
443	442	15	24	20.1	90109	PASS

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/27/2018
Time Analyzed: 06:16

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\112718\1127F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1806324

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1806324-2	J:\MS14\DATA\112718\1127F002.D	11/27/2018	06:40	
Lab Control Sample	KWG1805768-3	J:\MS14\DATA\112718\1127F003.D	11/27/2018	07:05	
Method Blank	KWG1805768-4	J:\MS14\DATA\112718\1127F004.D	11/27/2018	07:30	
D-9.09-SC-20to40-102318	K1810410-003	J:\MS14\DATA\112718\1127F007.D	11/27/2018	08:43	
D-9.09-SC-00to10-102318	K1810410-001	J:\MS14\DATA\112718\1127F008.D	11/27/2018	09:08	
D-9.09-SC-10to20-102318	K1810410-002	J:\MS14\DATA\112718\1127F009.D	11/27/2018	09:33	
D-8.90-SC-00to10-102318	K1810410-010	J:\MS14\DATA\112718\1127F010.D	11/27/2018	09:58	
D-8.90-SC-62to80-102318	K1810410-014	J:\MS14\DATA\112718\1127F011.D	11/27/2018	10:22	
E-9.02-SC-00to10-102318	K1810410-020	J:\MS14\DATA\112718\1127F012.D	11/27/2018	10:47	
D-9.09-SC-40to60-102318	K1810410-004	J:\MS14\DATA\112718\1127F013.D	11/27/2018	11:14	
D-9.09-SC-60to80-102318	K1810410-005	J:\MS14\DATA\112718\1127F014.D	11/27/2018	11:40	
D-9.09-SC-80to100-102318	K1810410-006	J:\MS14\DATA\112718\1127F015.D	11/27/2018	12:06	
D-9.09-SC-100to117-102318	K1810410-007	J:\MS14\DATA\112718\1127F016.D	11/27/2018	12:31	
511-20to40-102318	K1810410-009	J:\MS14\DATA\112718\1127F017.D	11/27/2018	12:56	
D-8.90-SC-10to20-102318	K1810410-011	J:\MS14\DATA\112718\1127F018.D	11/27/2018	13:21	
D-8.90-SC-20to40-102318	K1810410-012	J:\MS14\DATA\112718\1127F019.D	11/27/2018	13:47	
D-8.90-SC-40to62-102318	K1810410-013	J:\MS14\DATA\112718\1127F020.D	11/27/2018	14:12	
D-8.90-SC-80to103-102318	K1810410-015	J:\MS14\DATA\112718\1127F021.D	11/27/2018	14:38	
D-8.90-SC-103to120-102318	K1810410-016	J:\MS14\DATA\112718\1127F022.D	11/27/2018	15:04	
D-8.90-SC-120to140-102318	K1810410-017	J:\MS14\DATA\112718\1127F023.D	11/27/2018	15:30	
D-8.90-SC-140to160-102318	K1810410-018	J:\MS14\DATA\112718\1127F024.D	11/27/2018	15:56	
E-9.02-SC-10to20-102318	K1810410-021	J:\MS14\DATA\112718\1127F025.D	11/27/2018	16:21	
E-9.02-SC-20to40-102318	K1810410-022	J:\MS14\DATA\112718\1127F026.D	11/27/2018	16:47	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 11/28/2018
Time Analyzed: 07:33

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\112818\1128F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1806383

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	48.6	92512	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	48.6	92537	PASS
70	69	0	2	0.3	319	PASS
127	198	10	80	51.5	98032	PASS
197	198	0	2	0.3	506	PASS
198	442	30	100	52.6	190250	PASS
199	198	5	9	6.6	12568	PASS
275	198	10	60	34.6	65829	PASS
365	442	1	50	3.2	11759	PASS
441	443	0	100	75.8	53352	PASS
442	442	100	100	100.0	361898	PASS
443	442	15	24	19.5	70392	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1806383-2	J:\MS14\DATA\112818\1128F002.D	11/28/2018	07:57	
D-9.09-SC-20to40-102318MS	KWG1805768-1	J:\MS14\DATA\112818\1128F011.D	11/28/2018	11:40	
D-9.09-SC-20to40-102318DMS	KWG1805768-2	J:\MS14\DATA\112818\1128F012.D	11/28/2018	12:05	
D-9.09-SC-20to40-102318	K1810410-003	J:\MS14\DATA\112818\1128F013.D	11/28/2018	12:29	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Calibration Date:** 07/11/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15779 **Column:** MS
Instrument ID: MS14

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\071118\0711F003.D	G	J:\MS14\DATA\071118\0711F009.D
B	J:\MS14\DATA\071118\0711F004.D	H	J:\MS14\DATA\071118\0711F010.D
C	J:\MS14\DATA\071118\0711F005.D	I	J:\MS14\DATA\071118\0711F011.D
D	J:\MS14\DATA\071118\0711F006.D	J	J:\MS14\DATA\071118\0711F012.D
E	J:\MS14\DATA\071118\0711F007.D		
F	J:\MS14\DATA\071118\0711F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	2.0	1.42	B	4.0	1.31	C	8.0	1.19	D	20	1.15	E	100	1.13
	F	200	1.11	G	400	1.09	H	1000	1.06	I	1600	1.03	J	2000	1.07
2-Methylnaphthalene	A	2.0	0.789	B	4.0	0.741	C	8.0	0.734	D	20	0.715	E	100	0.718
	F	200	0.692	G	400	0.662	H	1000	0.650	I	1600	0.627	J	2000	0.635
Acenaphthylene	A	2.0	2.52	B	4.0	2.35	C	8.0	2.29	D	20	2.33	E	100	2.37
	F	200	2.41	G	400	2.42	H	1000	2.41	I	1600	2.43	J	2000	2.34
Acenaphthene	A	2.0	1.44	B	4.0	1.38	C	8.0	1.33	D	20	1.38	E	100	1.38
	F	200	1.39	G	400	1.38	H	1000	1.35	I	1600	1.38	J	2000	1.32
Dibenzofuran	A	2.0	2.25	B	4.0	2.12	C	8.0	2.21	D	20	2.09	E	100	2.22
	F	200	2.29	G	400	2.24	H	1000	2.22	I	1600	2.24	J	2000	2.11
Fluorene	A	2.0	1.81	B	4.0	1.68	C	8.0	1.62	D	20	1.64	E	100	1.70
	F	200	1.68	G	400	1.67	H	1000	1.60	I	1600	1.63	J	2000	1.56
Phenanthrene	A	2.0	1.33	B	4.0	1.33	C	8.0	1.25	D	20	1.23	E	100	1.25
	F	200	1.25	G	400	1.22	H	1000	1.23	I	1600	1.22	J	2000	1.16
Anthracene	A	2.0	1.20	B	4.0	1.17	C	8.0	1.17	D	20	1.14	E	100	1.21
	F	200	1.22	G	400	1.22	H	1000	1.22	I	1600	1.21	J	2000	1.17
Fluoranthene	A	2.0	1.50	B	4.0	1.44	C	8.0	1.44	D	20	1.41	E	100	1.54
	F	200	1.60	G	400	1.58	H	1000	1.63	I	1600	1.65	J	2000	1.62
Pyrene	A	2.0	1.49	B	4.0	1.46	C	8.0	1.38	D	20	1.37	E	100	1.34
	F	200	1.29	G	400	1.32	H	1000	1.33	I	1600	1.39	J	2000	1.36
Benz(a)anthracene	A	2.0	1.50	B	4.0	1.32	C	8.0	1.26	D	20	1.19	E	100	1.20
	F	200	1.23	G	400	1.27	H	1000	1.32	I	1600	1.34	J	2000	1.31
Chrysene	A	2.0	1.23	B	4.0	1.21	C	8.0	1.23	D	20	1.20	E	100	1.24
	F	200	1.25	G	400	1.25	H	1000	1.26	I	1600	1.28	J	2000	1.24
Benzo(b)fluoranthene	A	2.0	1.19	B	4.0	1.16	C	8.0	1.15	D	20	1.16	E	100	1.20
	F	200	1.26	G	400	1.30	H	1000	1.34	I	1600	1.32	J	2000	1.27
Benzo(k)fluoranthene	A	2.0	1.16	B	4.0	1.17	C	8.0	1.13	D	20	1.19	E	100	1.23
	F	200	1.26	G	400	1.29	H	1000	1.29	I	1600	1.29	J	2000	1.25

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Calibration Date:** 07/11/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15779 **Column:** MS
Instrument ID: MS14

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(a)pyrene	A	2.0	1.09	B	4.0	1.01	C	8.0	1.03	D	20	1.04	E	100	1.05
	F	200	1.07	G	400	1.11	H	1000	1.15	I	1600	1.16	J	2000	1.12
Indeno(1,2,3-cd)pyrene	A	2.0	1.23	B	4.0	1.10	C	8.0	1.06	D	20	1.06	E	100	1.07
	F	200	1.08	G	400	1.05	H	1000	1.01	I	1600	0.996	J	2000	0.959
Dibenz(a,h)anthracene	A	2.0	1.12	B	4.0	1.10	C	8.0	1.09	D	20	1.17	E	100	1.12
	F	200	1.10	G	400	1.07	H	1000	1.02	I	1600	1.00	J	2000	0.971
Benzo(g,h,i)perylene	A	2.0	1.44	B	4.0	1.37	C	8.0	1.31	D	20	1.34	E	100	1.28
	F	200	1.27	G	400	1.21	H	1000	1.12	I	1600	1.07	J	2000	1.04
Fluorene-d10				B	4.0	1.49	C	8.0	1.33	D	20	1.28	E	100	1.25
	F	200	1.24	G	400	1.25	H	1000	1.21	I	1600	1.24	J	2000	1.20
Fluoranthene-d10	A	2.0	1.18	B	4.0	1.19	C	8.0	1.15	D	20	1.11	E	100	1.20
	F	200	1.26	G	400	1.31	H	1000	1.40	I	1600	1.42	J	2000	1.39
Terphenyl-d14				B	4.0	1.05	C	8.0	0.934	D	20	0.867	E	100	0.832
	F	200	0.823	G	400	0.835	H	1000	0.837	I	1600	0.830	J	2000	0.801

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Calibration Date:** 07/11/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15779 **Column:** MS
Instrument ID: MS14

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	10.7		≤ 20	1.15		0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	7.5		≤ 20	0.696		0.40
Acenaphthylene	MS	AverageRF	% RSD	2.7		≤ 20	2.39		0.90
Acenaphthene	MS	AverageRF	% RSD	2.3		≤ 20	1.37		0.90
Dibenzofuran	MS	AverageRF	% RSD	3.1		≤ 20	2.20		0.80
Fluorene	MS	AverageRF	% RSD	4.1		≤ 20	1.66		0.90
Phenanthrene	MS	AverageRF	% RSD	4.1		≤ 20	1.25		0.70
Anthracene	MS	AverageRF	% RSD	2.4		≤ 20	1.19		0.70
Fluoranthene	MS	AverageRF	% RSD	5.8		≤ 20	1.54		0.60
Pyrene	MS	AverageRF	% RSD	4.5		≤ 20	1.37		0.60
Benz(a)anthracene	MS	AverageRF	% RSD	6.8		≤ 20	1.29		0.80
Chrysene	MS	AverageRF	% RSD	1.9		≤ 20	1.24		0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	5.7		≤ 20	1.24		0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	4.7		≤ 20	1.23		0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	4.7		≤ 20	1.08		0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	6.9		≤ 20	1.06		0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	5.7		≤ 20	1.08		0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	10.7		≤ 20	1.24		0.50
Fluorene-d10	SURR	AverageRF	% RSD	6.9		≤ 20	1.28		0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	9.0		≤ 20	1.26		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	8.9		≤ 20	0.867		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Calibration Date: 07/11/2018
Date Analyzed: 07/11/2018

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15779
Units: ng/ml

File ID: J:\MS14\DATA\071118\0711F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	370	1.15	1.06	-8	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	390	0.696	0.683	-2	NA	± 30 %	AverageRF
Acenaphthylene	400	390	2.39	2.33	-2	NA	± 30 %	AverageRF
Acenaphthene	400	380	1.37	1.32	-4	NA	± 30 %	AverageRF
Dibenzofuran	400	370	2.20	2.05	-7	NA	± 30 %	AverageRF
Fluorene	400	390	1.66	1.60	-4	NA	± 30 %	AverageRF
Phenanthrene	400	380	1.25	1.19	-4	NA	± 30 %	AverageRF
Anthracene	400	400	1.19	1.18	-1	NA	± 30 %	AverageRF
Fluoranthene	400	410	1.54	1.60	4	NA	± 30 %	AverageRF
Pyrene	400	350	1.37	1.21	-12	NA	± 30 %	AverageRF
Benz(a)anthracene	400	380	1.29	1.22	-6	NA	± 30 %	AverageRF
Chrysene	400	390	1.24	1.20	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	410	1.24	1.27	2	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	420	1.23	1.28	4	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	400	1.08	1.08	0	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	1.06	0.993	-7	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	380	1.08	1.03	-4	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	370	1.24	1.14	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Date Analyzed:** 11/12/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 07/11/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15779
Analysis Lot: KWG1805925
Units: ng/ml

File ID: J:\MS14\DATA\111218\1112F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Naphthalene	400	350	0.70	1.15	1.01	-12		NA	± 20	AverageRF
2-Methylnaphthalene	400	360	0.40	0.696	0.620	-11		NA	± 20	AverageRF
Acenaphthylene	400	370	0.90	2.39	2.19	-8		NA	± 20	AverageRF
Acenaphthene	400	360	0.90	1.37	1.23	-10		NA	± 20	AverageRF
Dibenzofuran	400	350	0.80	2.20	1.91	-13		NA	± 20	AverageRF
Fluorene	400	350	0.90	1.66	1.45	-12		NA	± 20	AverageRF
Phenanthrene	400	350	0.70	1.25	1.10	-12		NA	± 20	AverageRF
Anthracene	400	370	0.70	1.19	1.11	-7		NA	± 20	AverageRF
Fluoranthene	400	350	0.60	1.54	1.34	-13		NA	± 20	AverageRF
Pyrene	400	300	0.60	1.37	1.02	-25	*	NA	± 20	AverageRF
Benz(a)anthracene	400	370	0.80	1.29	1.19	-8		NA	± 20	AverageRF
Chrysene	400	360	0.70	1.24	1.12	-10		NA	± 20	AverageRF
Benzo(b)fluoranthene	400	390	0.70	1.24	1.21	-2		NA	± 20	AverageRF
Benzo(k)fluoranthene	400	380	0.70	1.23	1.17	-5		NA	± 20	AverageRF
Benzo(a)pyrene	400	400	0.70	1.08	1.07	-1		NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	400	0.50	1.06	1.07	0		NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	390	0.40	1.08	1.06	-1		NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	350	0.50	1.24	1.10	-12		NA	± 20	AverageRF
Fluorene-d10	400	390	0.01	1.28	1.24	-3		NA	± 20	AverageRF
Fluoranthene-d10	400	400	0.01	1.26	1.26	0		NA	± 20	AverageRF
Terphenyl-d14	400	350	0.01	0.867	0.758	-13		NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Date Analyzed:** 11/27/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 07/11/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15779
Analysis Lot: KWG1806324
Units: ng/ml

File ID: J:\MS14\DATA\112718\1127F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Naphthalene	400	340	0.70	1.15	0.996	-14		NA	± 20	AverageRF
2-Methylnaphthalene	400	340	0.40	0.696	0.593	-15		NA	± 20	AverageRF
Acenaphthylene	400	350	0.90	2.39	2.09	-12		NA	± 20	AverageRF
Acenaphthene	400	350	0.90	1.37	1.21	-12		NA	± 20	AverageRF
Dibenzofuran	400	340	0.80	2.20	1.88	-14		NA	± 20	AverageRF
Fluorene	400	350	0.90	1.66	1.44	-13		NA	± 20	AverageRF
Phenanthrene	400	350	0.70	1.25	1.08	-13		NA	± 20	AverageRF
Anthracene	400	350	0.70	1.19	1.03	-14		NA	± 20	AverageRF
Fluoranthene	400	340	0.60	1.54	1.32	-14		NA	± 20	AverageRF
Pyrene	400	300	0.60	1.37	1.01	-26	*	NA	± 20	AverageRF
Benz(a)anthracene	400	360	0.80	1.29	1.16	-10		NA	± 20	AverageRF
Chrysene	400	350	0.70	1.24	1.08	-12		NA	± 20	AverageRF
Benzo(b)fluoranthene	400	390	0.70	1.24	1.20	-3		NA	± 20	AverageRF
Benzo(k)fluoranthene	400	380	0.70	1.23	1.16	-6		NA	± 20	AverageRF
Benzo(a)pyrene	400	380	0.70	1.08	1.04	-4		NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	390	0.50	1.06	1.04	-2		NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	390	0.40	1.08	1.05	-3		NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	370	0.50	1.24	1.14	-8		NA	± 20	AverageRF
Fluorene-d10	400	390	0.01	1.28	1.26	-1		NA	± 20	AverageRF
Fluoranthene-d10	400	400	0.01	1.26	1.26	0		NA	± 20	AverageRF
Terphenyl-d14	400	360	0.01	0.867	0.786	-9		NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Date Analyzed:** 11/28/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 07/11/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15779
Analysis Lot: KWG1806383
Units: ng/ml

File ID: J:\MS14\DATA\112818\1128F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D		%Drift	Criteria	Curve Fit
Naphthalene	400	360	0.70	1.15	1.04	-10		NA	± 20	AverageRF
2-Methylnaphthalene	400	360	0.40	0.696	0.632	-9		NA	± 20	AverageRF
Acenaphthylene	400	380	0.90	2.39	2.24	-6		NA	± 20	AverageRF
Acenaphthene	400	370	0.90	1.37	1.27	-7		NA	± 20	AverageRF
Dibenzofuran	400	360	0.80	2.20	1.97	-11		NA	± 20	AverageRF
Fluorene	400	370	0.90	1.66	1.52	-8		NA	± 20	AverageRF
Phenanthrene	400	360	0.70	1.25	1.13	-9		NA	± 20	AverageRF
Anthracene	400	350	0.70	1.19	1.06	-11		NA	± 20	AverageRF
Fluoranthene	400	350	0.60	1.54	1.35	-12		NA	± 20	AverageRF
Pyrene	400	310	0.60	1.37	1.07	-22	*	NA	± 20	AverageRF
Benz(a)anthracene	400	380	0.80	1.29	1.21	-6		NA	± 20	AverageRF
Chrysene	400	370	0.70	1.24	1.15	-7		NA	± 20	AverageRF
Benzo(b)fluoranthene	400	390	0.70	1.24	1.22	-1		NA	± 20	AverageRF
Benzo(k)fluoranthene	400	390	0.70	1.23	1.18	-4		NA	± 20	AverageRF
Benzo(a)pyrene	400	400	0.70	1.08	1.09	0		NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	420	0.50	1.06	1.13	6		NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	420	0.40	1.08	1.14	5		NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	380	0.50	1.24	1.17	-6		NA	± 20	AverageRF
Fluorene-d10	400	400	0.01	1.28	1.28	0		NA	± 20	AverageRF
Fluoranthene-d10	400	400	0.01	1.26	1.25	-1		NA	± 20	AverageRF
Terphenyl-d14	400	370	0.01	0.867	0.793	-9		NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1805925
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1112F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1805925-1	11/12/2018	06:58		11/12/2018	07:18
1112F002.D	Continuing Calibration Verification	KWG1805925-2	11/12/2018	07:22		11/12/2018	07:41
1112F003.D	ZZZZZZ	ZZZZZZ	11/12/2018	07:47		11/12/2018	08:06
1112F004.D	ZZZZZZ	ZZZZZZ	11/12/2018	08:11		11/12/2018	08:30
1112F005.D	Method Blank	KWG1805769-4	11/12/2018	08:37		11/12/2018	08:56
1112F006.D	Lab Control Sample	KWG1805769-3	11/12/2018	09:03		11/12/2018	09:22
1112F007.D	ZZZZZZ	ZZZZZZ	11/12/2018	09:29		11/12/2018	09:48
1112F008.D	ZZZZZZ	ZZZZZZ	11/12/2018	09:55		11/12/2018	10:14
1112F009.D	ZZZZZZ	ZZZZZZ	11/12/2018	10:21		11/12/2018	10:40
1112F010.D	ZZZZZZ	ZZZZZZ	11/12/2018	10:47		11/12/2018	11:06
1112F011.D	ZZZZZZ	ZZZZZZ	11/12/2018	11:13		11/12/2018	11:32
1112F012.D	ZZZZZZ	ZZZZZZ	11/12/2018	11:40		11/12/2018	11:59
1112F013.D	ZZZZZZ	ZZZZZZ	11/12/2018	12:07		11/12/2018	12:26
1112F014.D	ZZZZZZ	ZZZZZZ	11/12/2018	12:33		11/12/2018	12:52
1112F015.D	ZZZZZZ	ZZZZZZ	11/12/2018	13:00		11/12/2018	13:19
1112F016.D	E-9.02-SC-80to100-102318MS	KWG1805769-1	11/12/2018	13:26		11/12/2018	13:45
1112F017.D	E-9.02-SC-80to100-102318DMS	KWG1805769-2	11/12/2018	13:53		11/12/2018	14:12
1112F018.D	E-9.02-SC-80to100-102318	K1810410-025	11/12/2018	14:19		11/12/2018	14:38
1112F019.D	E-9.02-SC-40to60-102318	K1810410-023	11/12/2018	14:47		11/12/2018	15:06
1112F020.D	E-9.02-SC-60to80-102318	K1810410-024	11/12/2018	15:14		11/12/2018	15:33
1112F021.D	E-9.02-SC-100to115-102318	K1810410-026	11/12/2018	15:40		11/12/2018	15:59
1112F022.D	E-9.02-SC-115to130-102318	K1810410-027	11/12/2018	16:07		11/12/2018	16:26

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1806324
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1127F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1806324-1	11/27/2018	06:16		11/27/2018	06:36
1127F002.D	Continuing Calibration Verification	KWG1806324-2	11/27/2018	06:40		11/27/2018	06:59
1127F003.D	Lab Control Sample	KWG1805768-3	11/27/2018	07:05		11/27/2018	07:24
1127F004.D	Method Blank	KWG1805768-4	11/27/2018	07:30		11/27/2018	07:49
1127F007.D	D-9.09-SC-20to40-102318	K1810410-003	11/27/2018	08:43		11/27/2018	09:02
1127F008.D	D-9.09-SC-00to10-102318	K1810410-001	11/27/2018	09:08		11/27/2018	09:27
1127F009.D	D-9.09-SC-10to20-102318	K1810410-002	11/27/2018	09:33		11/27/2018	09:52
1127F010.D	D-8.90-SC-00to10-102318	K1810410-010	11/27/2018	09:58		11/27/2018	10:17
1127F011.D	D-8.90-SC-62to80-102318	K1810410-014	11/27/2018	10:22		11/27/2018	10:41
1127F012.D	E-9.02-SC-00to10-102318	K1810410-020	11/27/2018	10:47		11/27/2018	11:06
1127F013.D	D-9.09-SC-40to60-102318	K1810410-004	11/27/2018	11:14		11/27/2018	11:33
1127F014.D	D-9.09-SC-60to80-102318	K1810410-005	11/27/2018	11:40		11/27/2018	11:59
1127F015.D	D-9.09-SC-80to100-102318	K1810410-006	11/27/2018	12:06		11/27/2018	12:25
1127F016.D	D-9.09-SC-100to117-102318	K1810410-007	11/27/2018	12:31		11/27/2018	12:50
1127F017.D	511-20to40-102318	K1810410-009	11/27/2018	12:56		11/27/2018	13:15
1127F018.D	D-8.90-SC-10to20-102318	K1810410-011	11/27/2018	13:21		11/27/2018	13:40
1127F019.D	D-8.90-SC-20to40-102318	K1810410-012	11/27/2018	13:47		11/27/2018	14:06
1127F020.D	D-8.90-SC-40to62-102318	K1810410-013	11/27/2018	14:12		11/27/2018	14:31
1127F021.D	D-8.90-SC-80to103-102318	K1810410-015	11/27/2018	14:38		11/27/2018	14:57
1127F022.D	D-8.90-SC-103to120-102318	K1810410-016	11/27/2018	15:04		11/27/2018	15:23
1127F023.D	D-8.90-SC-120to140-102318	K1810410-017	11/27/2018	15:30		11/27/2018	15:49
1127F024.D	D-8.90-SC-140to160-102318	K1810410-018	11/27/2018	15:56		11/27/2018	16:15
1127F025.D	E-9.02-SC-10to20-102318	K1810410-021	11/27/2018	16:21		11/27/2018	16:40
1127F026.D	E-9.02-SC-20to40-102318	K1810410-022	11/27/2018	16:47		11/27/2018	17:06

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1806383
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1128F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1806383-1	11/28/2018	07:33		11/28/2018	07:53
1128F002.D	Continuing Calibration Verification	KWG1806383-2	11/28/2018	07:57		11/28/2018	08:16
1128F003.D	ZZZZZZ	ZZZZZZ	11/28/2018	08:22		11/28/2018	08:41
1128F004.D	ZZZZZZ	ZZZZZZ	11/28/2018	08:46		11/28/2018	09:05
1128F005.D	ZZZZZZ	ZZZZZZ	11/28/2018	09:11		11/28/2018	09:30
1128F006.D	ZZZZZZ	ZZZZZZ	11/28/2018	09:35		11/28/2018	09:54
1128F007.D	ZZZZZZ	ZZZZZZ	11/28/2018	10:00		11/28/2018	10:19
1128F008.D	ZZZZZZ	ZZZZZZ	11/28/2018	10:25		11/28/2018	10:44
1128F009.D	ZZZZZZ	ZZZZZZ	11/28/2018	10:50		11/28/2018	11:09
1128F010.D	ZZZZZZ	ZZZZZZ	11/28/2018	11:15		11/28/2018	11:34
1128F011.D	D-9.09-SC-20to40-102318MS	KWG1805768-1	11/28/2018	11:40		11/28/2018	11:59
1128F012.D	D-9.09-SC-20to40-102318DMS	KWG1805768-2	11/28/2018	12:05		11/28/2018	12:24
1128F013.D	D-9.09-SC-20to40-102318	K1810410-003	11/28/2018	12:29		11/28/2018	12:48
1128F014.D	ZZZZZZ	ZZZZZZ	11/28/2018	12:54		11/28/2018	13:13
1128F015.D	ZZZZZZ	ZZZZZZ	11/28/2018	13:19		11/28/2018	13:38
1128F016.D	ZZZZZZ	ZZZZZZ	11/28/2018	13:43		11/28/2018	14:02
1128F017.D	ZZZZZZ	ZZZZZZ	11/28/2018	14:09		11/28/2018	14:28
1128F018.D	ZZZZZZ	ZZZZZZ	11/28/2018	14:34		11/28/2018	14:53
1128F019.D	ZZZZZZ	ZZZZZZ	11/28/2018	14:59		11/28/2018	15:18
1128F020.D	ZZZZZZ	ZZZZZZ	11/28/2018	15:25		11/28/2018	15:44
1128F021.D	ZZZZZZ	ZZZZZZ	11/28/2018	15:50		11/28/2018	16:09
1128F022.D	ZZZZZZ	ZZZZZZ	11/28/2018	16:16		11/28/2018	16:35
1128F023.D	ZZZZZZ	ZZZZZZ	11/28/2018	16:41		11/28/2018	17:00
1128F024.D	ZZZZZZ	ZZZZZZ	11/28/2018	17:06		11/28/2018	17:25
1128F025.D	ZZZZZZ	ZZZZZZ	11/28/2018	17:32		11/28/2018	17:51
1128F026.D	ZZZZZZ	ZZZZZZ	11/28/2018	17:57		11/28/2018	18:16
1128F027.D	ZZZZZZ	ZZZZZZ	11/28/2018	18:23		11/28/2018	18:42
1128F028.D	ZZZZZZ	ZZZZZZ	11/28/2018	18:48		11/28/2018	19:07
1128F029.D	ZZZZZZ	ZZZZZZ	11/28/2018	19:15		11/28/2018	19:34

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Date Extracted:** 11/06/2018
Sample Matrix: Soil

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541 **Extraction Lot:** KWG1805768
Analysis Method: 8270D SIM **Level:** Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
D-9.09-SC-00to10-102318	K1810410-001	10/23/18	10/24/18	40.239g	2mL	42.3	
D-9.09-SC-10to20-102318	K1810410-002	10/23/18	10/24/18	40.081g	2mL	47.2	
D-9.09-SC-20to40-102318DL	K1810410-003	10/23/18	10/24/18	40.287g	2mL	51.3	
D-9.09-SC-20to40-102318	K1810410-003	10/23/18	10/24/18	40.287g	2mL	51.3	
D-9.09-SC-40to60-102318	K1810410-004	10/23/18	10/24/18	40.002g	2mL	52	
D-9.09-SC-60to80-102318	K1810410-005	10/23/18	10/24/18	40.051g	2mL	54.9	
D-9.09-SC-80to100-102318	K1810410-006	10/23/18	10/24/18	40.135g	2mL	56.2	
D-9.09-SC-100to117-102318	K1810410-007	10/23/18	10/24/18	40.212g	2mL	59	
511-20to40-102318	K1810410-009	10/23/18	10/24/18	40.277g	2mL	50.7	
D-8.90-SC-00to10-102318	K1810410-010	10/23/18	10/24/18	40.049g	2mL	42.1	
D-8.90-SC-10to20-102318	K1810410-011	10/23/18	10/24/18	40.224g	2mL	51.2	
D-8.90-SC-20to40-102318	K1810410-012	10/23/18	10/24/18	40.177g	2mL	53.1	
D-8.90-SC-40to62-102318	K1810410-013	10/23/18	10/24/18	40.266g	2mL	50.7	
D-8.90-SC-62to80-102318	K1810410-014	10/23/18	10/24/18	40.354g	2mL	54.7	
D-8.90-SC-80to103-102318	K1810410-015	10/23/18	10/24/18	40.144g	2mL	54.5	
D-8.90-SC-103to120-102318	K1810410-016	10/23/18	10/24/18	40.191g	2mL	55.6	
D-8.90-SC-120to140-102318	K1810410-017	10/23/18	10/24/18	40.176g	2mL	54.8	
D-8.90-SC-140to160-102318	K1810410-018	10/23/18	10/24/18	40.457g	2mL	55.9	
E-9.02-SC-00to10-102318	K1810410-020	10/23/18	10/24/18	40.295g	2mL	41	
E-9.02-SC-10to20-102318	K1810410-021	10/23/18	10/24/18	40.279g	2mL	45.1	
E-9.02-SC-20to40-102318	K1810410-022	10/23/18	10/24/18	40.125g	2mL	50.1	
Method Blank	KWG1805768-4	NA	NA	40.457g	2mL	NA	
D-9.09-SC-20to40-102318MS	KWG1805768-1	10/23/18	10/24/18	40.324g	2mL	51.3	
D-9.09-SC-20to40-102318DMS	KWG1805768-2	10/23/18	10/24/18	40.314g	2mL	51.3	
Lab Control Sample	KWG1805768-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01
Sample Matrix: Soil

Service Request: K1810410
Date Extracted: 11/06/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270D SIM

Extraction Lot: KWG1805769
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
E-9.02-SC-40to60-102318	K1810410-023	10/23/18	10/24/18	40.425g	2mL	50.3	
E-9.02-SC-60to80-102318	K1810410-024	10/23/18	10/24/18	40.145g	2mL	56.6	
E-9.02-SC-80to100-102318	K1810410-025	10/23/18	10/24/18	40.370g	2mL	56.2	
E-9.02-SC-100to115-102318	K1810410-026	10/23/18	10/24/18	40.343g	2mL	58.8	
E-9.02-SC-115to130-102318	K1810410-027	10/23/18	10/24/18	40.034g	2mL	58	
Method Blank	KWG1805769-4	NA	NA	40.425g	2mL	NA	
E-9.02-SC-80to100-102318MS	KWG1805769-1	10/23/18	10/24/18	40.290g	2mL	56.2	
E-9.02-SC-80to100-102318DMS	KWG1805769-2	10/23/18	10/24/18	40.119g	2mL	56.2	
Lab Control Sample	KWG1805769-3	NA	NA	20.000g	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Polynuclear Aromatic Hydrocarbons

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01

Cover Page - Organic Analysis Data Package
Polynuclear Aromatic Hydrocarbons

Sample Name	Lab Code	Date Collected	Date Received
611-102318	K1810410-029	10/23/2018	10/24/2018

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	10/23/2018
Sample Matrix:	Water	**Date Received:**	10/24/2018

Polynuclear Aromatic Hydrocarbons

Sample Name:	611-102318	**Units:**	ug/L
Lab Code:	K1810410-029	**Basis:**	NA
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0069**	J	0.020	0.0014	1	10/29/18	10/30/18	KWG1805575	
2-Methylnaphthalene	**0.0060**	J	0.020	0.0013	1	10/29/18	10/30/18	KWG1805575	
Acenaphthylene	ND	U	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Acenaphthene	**0.0029**	J	0.020	0.0012	1	10/29/18	10/30/18	KWG1805575	
Dibenzofuran	**0.0031**	J	0.020	0.00096	1	10/29/18	10/30/18	KWG1805575	
Fluorene	**0.0023**	J	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Phenanthrene	**0.0053**	J	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Anthracene	ND	U	0.020	0.00082	1	10/29/18	10/30/18	KWG1805575	
Fluoranthene	**0.0012**	J	0.020	0.00082	1	10/29/18	10/30/18	KWG1805575	
Pyrene	ND	U	0.020	0.0010	1	10/29/18	10/30/18	KWG1805575	
Benz(a)anthracene	**0.0024**	J	0.020	0.00097	1	10/29/18	10/30/18	KWG1805575	
Chrysene	ND	U	0.020	0.00076	1	10/29/18	10/30/18	KWG1805575	
Benzo(b)fluoranthene†	ND	U	0.020	0.00083	1	10/29/18	10/30/18	KWG1805575	
Benzo(k)fluoranthene	ND	U	0.020	0.00094	1	10/29/18	10/30/18	KWG1805575	
Benzo(a)pyrene	ND	U	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.00089	1	10/29/18	10/30/18	KWG1805575	
Dibenz(a,h)anthracene	ND	U	0.020	0.0013	1	10/29/18	10/30/18	KWG1805575	
Benzo(g,h,i)perylene	ND	U	0.020	0.00086	1	10/29/18	10/30/18	KWG1805575	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	90	42-131	10/30/18	Acceptable
Fluoranthene-d10	86	42-133	10/30/18	Acceptable
Terphenyl-d14	80	32-129	10/30/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

Analytical Results

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1805575-3	**Basis:**	NA
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**0.0027**	J	0.020	0.0014	1	10/29/18	10/30/18	KWG1805575	
2-Methylnaphthalene	ND	U	0.020	0.0013	1	10/29/18	10/30/18	KWG1805575	
Acenaphthylene	ND	U	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Acenaphthene	ND	U	0.020	0.0012	1	10/29/18	10/30/18	KWG1805575	
Dibenzofuran	ND	U	0.020	0.00096	1	10/29/18	10/30/18	KWG1805575	
Fluorene	ND	U	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Phenanthrene	**0.0015**	J	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Anthracene	ND	U	0.020	0.00082	1	10/29/18	10/30/18	KWG1805575	
Fluoranthene	ND	U	0.020	0.00082	1	10/29/18	10/30/18	KWG1805575	
Pyrene	ND	U	0.020	0.0010	1	10/29/18	10/30/18	KWG1805575	
Benz(a)anthracene	**0.0019**	J	0.020	0.00097	1	10/29/18	10/30/18	KWG1805575	
Chrysene	ND	U	0.020	0.00076	1	10/29/18	10/30/18	KWG1805575	
Benzo(b)fluoranthene†	ND	U	0.020	0.00083	1	10/29/18	10/30/18	KWG1805575	
Benzo(k)fluoranthene	ND	U	0.020	0.00094	1	10/29/18	10/30/18	KWG1805575	
Benzo(a)pyrene	ND	U	0.020	0.0011	1	10/29/18	10/30/18	KWG1805575	
Indeno(1,2,3-cd)pyrene	ND	U	0.020	0.00089	1	10/29/18	10/30/18	KWG1805575	
Dibenz(a,h)anthracene	ND	U	0.020	0.0013	1	10/29/18	10/30/18	KWG1805575	
Benzo(g,h,i)perylene	ND	U	0.020	0.00086	1	10/29/18	10/30/18	KWG1805575	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	97	42-131	10/30/18	Acceptable
Fluoranthene-d10	94	42-133	10/30/18	Acceptable
Terphenyl-d14	90	32-129	10/30/18	Acceptable

† Analyte Comments

Benzo(b)fluoranthene	This analyte cannot be separated from Benzo(j)fluoranthene.

Comments:

QA/QC Report

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01
Sample Matrix: Water

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3511 **Units:** Percent
Analysis Method: 8270D SIM **Level:** Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
611-102318	K1810410-029	90	86	80
Method Blank	KWG1805575-3	97	94	90
Lab Control Sample	KWG1805575-1	88	86	81
Duplicate Lab Control Sample	KWG1805575-2	94	92	88

Surrogate Recovery Control Limits (%)

Sur1	=	Fluorene-d10	42-131
Sur2	=	Fluoranthene-d10	42-133
Sur3	=	Terphenyl-d14	32-129

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 10/30/2018
Time Analyzed: 06:13

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\103018\1030F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1805842-2
Analysis Lot: KWG1805842

		Naphthalene-d8		Acenaphthene-d10		Phenanthrene-d10	
		Area	**RT**	**Area**	**RT**	**Area**	**RT**
	Results ==>	62,027	4.79	27,360	6.35	56,638	7.59
	Upper Limit ==>	124,054	5.29	54,720	6.85	113,276	8.09
	Lower Limit ==>	31,014	4.29	13,680	5.85	28,319	7.09
	ICAL Result ==>	60,855	4.80	25,959	6.35	53,916	7.59
Associated Analyses							
Method Blank	KWG1805575-3	74,095	4.80	33,153	6.35	67,632	7.59
Lab Control Sample	KWG1805575-1	75,789	4.80	31,720	6.35	64,438	7.59
Duplicate Lab Control Sample	KWG1805575-2	74,408	4.80	31,157	6.35	63,337	7.59
611-102318	K1810410-029	72,013	4.80	32,504	6.35	65,363	7.59

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 10/30/2018
Time Analyzed: 06:13

Internal Standard Area and RT Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\103018\1030F002.D
Instrument ID: MS14
Analysis Method: 8270D SIM

Lab Code: KWG1805842-2
Analysis Lot: KWG1805842

		Chrysene-d12		Perylene-d12	
		Area	**RT**	**Area**	**RT**
	Results ==>	66,833	10.16	77,221	13.36
	Upper Limit ==>	133,666	10.66	154,442	13.86
	Lower Limit ==>	33,417	9.66	38,611	12.86
	ICAL Result ==>	68,964	10.15	73,742	13.30
Associated Analyses					
Method Blank	KWG1805575-3	72,170	10.16	79,091	13.37
Lab Control Sample	KWG1805575-1	68,487	10.16	75,607	13.37
Duplicate Lab Control Sample	KWG1805575-2	67,290	10.16	73,921	13.37
611-102318	K1810410-029	65,308	10.16	70,746	13.36

Results flagged with an asterisk (*) indicate values outside control criteria.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	10/29/2018
Sample Matrix:	Water	**Date Analyzed:**	10/30/2018

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3511	**Units:**	ug/L
Analysis Method:	8270D SIM	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1805575

	Lab Control Sample KWG1805575-1 Lab Control Spike			Duplicate Lab Control Sample KWG1805575-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Spike Amount**	**%Rec**	**Result**	**Spike Amount**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	2.34	2.78	84	2.37	2.78	85	52-115	1	30
2-Methylnaphthalene	2.30	2.78	83	2.32	2.78	83	48-120	1	30
Acenaphthylene	2.69	2.78	97	2.74	2.78	99	58-124	2	30
Acenaphthene	2.60	2.78	94	2.66	2.78	96	63-121	2	30
Dibenzofuran	2.73	2.78	98	2.83	2.78	102	56-132	3	30
Fluorene	2.60	2.78	93	2.67	2.78	96	68-121	3	30
Phenanthrene	2.57	2.78	92	2.66	2.78	96	64-126	4	30
Anthracene	2.73	2.78	98	2.81	2.78	101	68-127	3	30
Fluoranthene	2.40	2.78	86	2.47	2.78	89	70-127	3	30
Pyrene	2.75	2.78	99	2.85	2.78	103	72-127	4	30
Benz(a)anthracene	2.75	2.78	99	2.85	2.78	102	74-124	3	30
Chrysene	2.66	2.78	96	2.73	2.78	98	74-132	3	30
Benzo(b)fluoranthene	2.83	2.78	102	2.96	2.78	107	73-136	5	30
Benzo(k)fluoranthene	2.69	2.78	97	2.78	2.78	100	74-134	4	30
Benzo(a)pyrene	2.78	2.78	100	2.89	2.78	104	75-131	4	30
Indeno(1,2,3-cd)pyrene	2.76	2.78	99	2.81	2.78	101	63-136	2	30
Dibenz(a,h)anthracene	2.52	2.78	91	2.56	2.78	92	59-135	2	30
Benzo(g,h,i)perylene	2.63	2.78	95	2.68	2.78	96	63-127	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	10/29/2018
Sample Matrix:	Water	**Date Analyzed:**	10/30/2018
		Time Analyzed:	08:10

Method Blank Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Instrument ID:**	MS14
Lab Code:	KWG1805575-3	**File ID:**	J:\MS14\DATA\103018\1030F006.D
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805575

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1805575-1	J:\MS14\DATA\103018\1030F007.D	10/30/18	08:39
Duplicate Lab Control Sample	KWG1805575-2	J:\MS14\DATA\103018\1030F008.D	10/30/18	09:08
611-102318	K1810410-029	J:\MS14\DATA\103018\1030F009.D	10/30/18	09:37

QA/QC Report

Client:	Pacific Groundwater Group (PGG)	**Service Request:**	K1810410
Project:	Head of Swan Island Lagoon/JK1807.01	**Date Extracted:**	10/29/2018
Sample Matrix:	Water	**Date Analyzed:**	10/30/2018
		Time Analyzed:	08:39

Lab Control Sample Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	Lab Control Sample	**Instrument ID:**	MS14
Lab Code:	KWG1805575-1	**File ID:**	J:\MS14\DATA\103018\1030F007.D
Extraction Method:	EPA 3511	**Level:**	Low
Analysis Method:	8270D SIM	**Extraction Lot:**	KWG1805575

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1805575-3	J:\MS14\DATA\103018\1030F006.D	10/30/18	08:10
611-102318	K1810410-029	J:\MS14\DATA\103018\1030F009.D	10/30/18	09:37

QA/QC Results

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Date Analyzed: 10/30/2018
Time Analyzed: 05:44

Tune Summary
Polynuclear Aromatic Hydrocarbons

File ID: J:\MS14\DATA\103018\1030F001.D
Instrument ID: MS14
Column:

Analysis Method: 8270D SIM
Analysis Lot: KWG1805842

Target Mass	Relative to Mass	Lower Limit%	Upper Limit%	Relative Abundance %	Raw Abundance	Result Pass/Fail
51	198	10	80	43.2	87464	PASS
68	69	0	2	0.0	0	PASS
69	198	0	100	44.6	90362	PASS
70	69	0	2	0.7	606	PASS
127	198	10	80	49.5	100264	PASS
197	198	0	2	0.0	0	PASS
198	442	30	100	50.1	202538	PASS
199	198	5	9	7.2	14657	PASS
275	198	10	60	36.2	73381	PASS
365	442	1	50	2.6	10617	PASS
441	443	0	100	76.2	58722	PASS
442	442	100	100	100.0	404288	PASS
443	442	15	24	19.1	77082	PASS

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed	Q
Continuing Calibration Verification	KWG1805842-2	J:\MS14\DATA\103018\1030F002.D	10/30/2018	06:13	
Method Blank	KWG1805575-3	J:\MS14\DATA\103018\1030F006.D	10/30/2018	08:10	
Lab Control Sample	KWG1805575-1	J:\MS14\DATA\103018\1030F007.D	10/30/2018	08:39	
Duplicate Lab Control Sample	KWG1805575-2	J:\MS14\DATA\103018\1030F008.D	10/30/2018	09:08	
611-102318	K1810410-029	J:\MS14\DATA\103018\1030F009.D	10/30/2018	09:37	

Results flagged with an asterisk (*) indicate the analysis performed outside specified tune window

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Calibration Date:** 07/11/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15779 **Column:** MS
Instrument ID: MS14

Level ID	File ID	Level ID	File ID
A	J:\MS14\DATA\071118\0711F003.D	G	J:\MS14\DATA\071118\0711F009.D
B	J:\MS14\DATA\071118\0711F004.D	H	J:\MS14\DATA\071118\0711F010.D
C	J:\MS14\DATA\071118\0711F005.D	I	J:\MS14\DATA\071118\0711F011.D
D	J:\MS14\DATA\071118\0711F006.D	J	J:\MS14\DATA\071118\0711F012.D
E	J:\MS14\DATA\071118\0711F007.D		
F	J:\MS14\DATA\071118\0711F008.D		

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Naphthalene	A	2.0	1.42	B	4.0	1.31	C	8.0	1.19	D	20	1.15	E	100	1.13
	F	200	1.11	G	400	1.09	H	1000	1.06	I	1600	1.03	J	2000	1.07
2-Methylnaphthalene	A	2.0	0.789	B	4.0	0.741	C	8.0	0.734	D	20	0.715	E	100	0.718
	F	200	0.692	G	400	0.662	H	1000	0.650	I	1600	0.627	J	2000	0.635
Acenaphthylene	A	2.0	2.52	B	4.0	2.35	C	8.0	2.29	D	20	2.33	E	100	2.37
	F	200	2.41	G	400	2.42	H	1000	2.41	I	1600	2.43	J	2000	2.34
Acenaphthene	A	2.0	1.44	B	4.0	1.38	C	8.0	1.33	D	20	1.38	E	100	1.38
	F	200	1.39	G	400	1.38	H	1000	1.35	I	1600	1.38	J	2000	1.32
Dibenzofuran	A	2.0	2.25	B	4.0	2.12	C	8.0	2.21	D	20	2.09	E	100	2.22
	F	200	2.29	G	400	2.24	H	1000	2.22	I	1600	2.24	J	2000	2.11
Fluorene	A	2.0	1.81	B	4.0	1.68	C	8.0	1.62	D	20	1.64	E	100	1.70
	F	200	1.68	G	400	1.67	H	1000	1.60	I	1600	1.63	J	2000	1.56
Phenanthrene	A	2.0	1.33	B	4.0	1.33	C	8.0	1.25	D	20	1.23	E	100	1.25
	F	200	1.25	G	400	1.22	H	1000	1.23	I	1600	1.22	J	2000	1.16
Anthracene	A	2.0	1.20	B	4.0	1.17	C	8.0	1.17	D	20	1.14	E	100	1.21
	F	200	1.22	G	400	1.22	H	1000	1.22	I	1600	1.21	J	2000	1.17
Fluoranthene	A	2.0	1.50	B	4.0	1.44	C	8.0	1.44	D	20	1.41	E	100	1.54
	F	200	1.60	G	400	1.58	H	1000	1.63	I	1600	1.65	J	2000	1.62
Pyrene	A	2.0	1.49	B	4.0	1.46	C	8.0	1.38	D	20	1.37	E	100	1.34
	F	200	1.29	G	400	1.32	H	1000	1.33	I	1600	1.39	J	2000	1.36
Benz(a)anthracene	A	2.0	1.50	B	4.0	1.32	C	8.0	1.26	D	20	1.19	E	100	1.20
	F	200	1.23	G	400	1.27	H	1000	1.32	I	1600	1.34	J	2000	1.31
Chrysene	A	2.0	1.23	B	4.0	1.21	C	8.0	1.23	D	20	1.20	E	100	1.24
	F	200	1.25	G	400	1.25	H	1000	1.26	I	1600	1.28	J	2000	1.24
Benzo(b)fluoranthene	A	2.0	1.19	B	4.0	1.16	C	8.0	1.15	D	20	1.16	E	100	1.20
	F	200	1.26	G	400	1.30	H	1000	1.34	I	1600	1.32	J	2000	1.27
Benzo(k)fluoranthene	A	2.0	1.16	B	4.0	1.17	C	8.0	1.13	D	20	1.19	E	100	1.23
	F	200	1.26	G	400	1.29	H	1000	1.29	I	1600	1.29	J	2000	1.25

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Calibration Date:** 07/11/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15779 **Column:** MS
Instrument ID: MS14

Analyte Name	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF	Level ID	Amt	RRF
Benzo(a)pyrene	A	2.0	1.09	B	4.0	1.01	C	8.0	1.03	D	20	1.04	E	100	1.05
	F	200	1.07	G	400	1.11	H	1000	1.15	I	1600	1.16	J	2000	1.12
Indeno(1,2,3-cd)pyrene	A	2.0	1.23	B	4.0	1.10	C	8.0	1.06	D	20	1.06	E	100	1.07
	F	200	1.08	G	400	1.05	H	1000	1.01	I	1600	0.996	J	2000	0.959
Dibenz(a,h)anthracene	A	2.0	1.12	B	4.0	1.10	C	8.0	1.09	D	20	1.17	E	100	1.12
	F	200	1.10	G	400	1.07	H	1000	1.02	I	1600	1.00	J	2000	0.971
Benzo(g,h,i)perylene	A	2.0	1.44	B	4.0	1.37	C	8.0	1.31	D	20	1.34	E	100	1.28
	F	200	1.27	G	400	1.21	H	1000	1.12	I	1600	1.07	J	2000	1.04
Fluorene-d10				B	4.0	1.49	C	8.0	1.33	D	20	1.28	E	100	1.25
	F	200	1.24	G	400	1.25	H	1000	1.21	I	1600	1.24	J	2000	1.20
Fluoranthene-d10	A	2.0	1.18	B	4.0	1.19	C	8.0	1.15	D	20	1.11	E	100	1.20
	F	200	1.26	G	400	1.31	H	1000	1.40	I	1600	1.42	J	2000	1.39
Terphenyl-d14				B	4.0	1.05	C	8.0	0.934	D	20	0.867	E	100	0.832
	F	200	0.823	G	400	0.835	H	1000	0.837	I	1600	0.830	J	2000	0.801

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Calibration Date:** 07/11/2018

Initial Calibration Summary
Polynuclear Aromatic Hydrocarbons

Calibration ID: CAL15779 **Column:** MS
Instrument ID: MS14

Analyte Name	Compound Type	Calibration Evaluation					RRF Evaluation		
		Fit Type	Eval.	Eval. Result	Q	Control Criteria	Average RRF	Q	Minimum RRF
Naphthalene	MS	AverageRF	% RSD	10.7		≤ 20	1.15		0.70
2-Methylnaphthalene	MS	AverageRF	% RSD	7.5		≤ 20	0.696		0.40
Acenaphthylene	MS	AverageRF	% RSD	2.7		≤ 20	2.39		0.90
Acenaphthene	MS	AverageRF	% RSD	2.3		≤ 20	1.37		0.90
Dibenzofuran	MS	AverageRF	% RSD	3.1		≤ 20	2.20		0.80
Fluorene	MS	AverageRF	% RSD	4.1		≤ 20	1.66		0.90
Phenanthrene	MS	AverageRF	% RSD	4.1		≤ 20	1.25		0.70
Anthracene	MS	AverageRF	% RSD	2.4		≤ 20	1.19		0.70
Fluoranthene	MS	AverageRF	% RSD	5.8		≤ 20	1.54		0.60
Pyrene	MS	AverageRF	% RSD	4.5		≤ 20	1.37		0.60
Benz(a)anthracene	MS	AverageRF	% RSD	6.8		≤ 20	1.29		0.80
Chrysene	MS	AverageRF	% RSD	1.9		≤ 20	1.24		0.70
Benzo(b)fluoranthene	MS	AverageRF	% RSD	5.7		≤ 20	1.24		0.70
Benzo(k)fluoranthene	MS	AverageRF	% RSD	4.7		≤ 20	1.23		0.70
Benzo(a)pyrene	MS	AverageRF	% RSD	4.7		≤ 20	1.08		0.70
Indeno(1,2,3-cd)pyrene	MS	AverageRF	% RSD	6.9		≤ 20	1.06		0.50
Dibenz(a,h)anthracene	MS	AverageRF	% RSD	5.7		≤ 20	1.08		0.40
Benzo(g,h,i)perylene	MS	AverageRF	% RSD	10.7		≤ 20	1.24		0.50
Fluorene-d10	SURR	AverageRF	% RSD	6.9		≤ 20	1.28		0.01
Fluoranthene-d10	SURR	AverageRF	% RSD	9.0		≤ 20	1.26		0.01
Terphenyl-d14	SURR	AverageRF	% RSD	8.9		≤ 20	0.867		0.01

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01

Service Request: K1810410
Calibration Date: 07/11/2018
Date Analyzed: 07/11/2018

Second Source Calibration Verification
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard
Analysis Method: 8270D SIM

Calibration ID: CAL15779
Units: ng/ml

File ID: J:\MS14\DATA\071118\0711F013.D

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	370	1.15	1.06	-8	NA	± 30 %	AverageRF
2-Methylnaphthalene	400	390	0.696	0.683	-2	NA	± 30 %	AverageRF
Acenaphthylene	400	390	2.39	2.33	-2	NA	± 30 %	AverageRF
Acenaphthene	400	380	1.37	1.32	-4	NA	± 30 %	AverageRF
Dibenzofuran	400	370	2.20	2.05	-7	NA	± 30 %	AverageRF
Fluorene	400	390	1.66	1.60	-4	NA	± 30 %	AverageRF
Phenanthrene	400	380	1.25	1.19	-4	NA	± 30 %	AverageRF
Anthracene	400	400	1.19	1.18	-1	NA	± 30 %	AverageRF
Fluoranthene	400	410	1.54	1.60	4	NA	± 30 %	AverageRF
Pyrene	400	350	1.37	1.21	-12	NA	± 30 %	AverageRF
Benz(a)anthracene	400	380	1.29	1.22	-6	NA	± 30 %	AverageRF
Chrysene	400	390	1.24	1.20	-3	NA	± 30 %	AverageRF
Benzo(b)fluoranthene	400	410	1.24	1.27	2	NA	± 30 %	AverageRF
Benzo(k)fluoranthene	400	420	1.23	1.28	4	NA	± 30 %	AverageRF
Benzo(a)pyrene	400	400	1.08	1.08	0	NA	± 30 %	AverageRF
Indeno(1,2,3-cd)pyrene	400	370	1.06	0.993	-7	NA	± 30 %	AverageRF
Dibenz(a,h)anthracene	400	380	1.08	1.03	-4	NA	± 30 %	AverageRF
Benzo(g,h,i)perylene	400	370	1.24	1.14	-9	NA	± 30 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01 **Date Analyzed:** 10/30/2018

Continuing Calibration Verification Summary
Polynuclear Aromatic Hydrocarbons

Calibration Type: Internal Standard **Calibration Date:** 07/11/2018
Analysis Method: 8270D SIM **Calibration ID:** CAL15779
Analysis Lot: KWG1805842
Units: ng/ml

File ID: J:\MS14\DATA\103018\1030F002.D

Analyte Name	Expected	Result	Min RF	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Naphthalene	400	380	0.70	1.15	1.10	-5	NA	± 20	AverageRF
2-Methylnaphthalene	400	380	0.40	0.696	0.661	-5	NA	± 20	AverageRF
Acenaphthylene	400	410	0.90	2.39	2.46	3	NA	± 20	AverageRF
Acenaphthene	400	400	0.90	1.37	1.38	1	NA	± 20	AverageRF
Dibenzofuran	400	420	0.80	2.20	2.31	5	NA	± 20	AverageRF
Fluorene	400	410	0.90	1.66	1.69	2	NA	± 20	AverageRF
Phenanthrene	400	390	0.70	1.25	1.22	-2	NA	± 20	AverageRF
Anthracene	400	380	0.70	1.19	1.14	-4	NA	± 20	AverageRF
Fluoranthene	400	380	0.60	1.54	1.47	-4	NA	± 20	AverageRF
Pyrene	400	390	0.60	1.37	1.33	-3	NA	± 20	AverageRF
Benz(a)anthracene	400	410	0.80	1.29	1.33	3	NA	± 20	AverageRF
Chrysene	400	400	0.70	1.24	1.24	0	NA	± 20	AverageRF
Benzo(b)fluoranthene	400	410	0.70	1.24	1.28	3	NA	± 20	AverageRF
Benzo(k)fluoranthene	400	400	0.70	1.23	1.23	0	NA	± 20	AverageRF
Benzo(a)pyrene	400	430	0.70	1.08	1.15	6	NA	± 20	AverageRF
Indeno(1,2,3-cd)pyrene	400	430	0.50	1.06	1.14	7	NA	± 20	AverageRF
Dibenz(a,h)anthracene	400	390	0.40	1.08	1.06	-2	NA	± 20	AverageRF
Benzo(g,h,i)perylene	400	400	0.50	1.24	1.26	1	NA	± 20	AverageRF
Fluorene-d10	400	410	0.01	1.28	1.30	2	NA	± 20	AverageRF
Fluoranthene-d10	400	400	0.01	1.26	1.25	-1	NA	± 20	AverageRF
Terphenyl-d14	400	380	0.01	0.867	0.833	-4	NA	± 20	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound **‡ CCC Compound**

QA/QC Results

Client: Pacific Groundwater Group (PGG) **Service Request:** K1810410
Project: Head of Swan Island Lagoon/JK1807.01

Analysis Run Log
Polynuclear Aromatic Hydrocarbons

Analysis Method: 8270D SIM **Analysis Lot:** KWG1805842
Instrument ID: MS14

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
1030F001.D	GC/MS Tuning - Decafluorotriphenylphosph	KWG1805842-1	10/30/2018	05:44		10/30/2018	06:04
1030F002.D	Continuing Calibration Verification	KWG1805842-2	10/30/2018	06:13		10/30/2018	06:32
1030F003.D	ZZZZZZ	ZZZZZZ	10/30/2018	06:43		10/30/2018	07:02
1030F004.D	ZZZZZZ	ZZZZZZ	10/30/2018	07:12		10/30/2018	07:31
1030F005.D	ZZZZZZ	ZZZZZZ	10/30/2018	07:41		10/30/2018	08:00
1030F006.D	Method Blank	KWG1805575-3	10/30/2018	08:10		10/30/2018	08:29
1030F007.D	Lab Control Sample	KWG1805575-1	10/30/2018	08:39		10/30/2018	08:58
1030F008.D	Duplicate Lab Control Sample	KWG1805575-2	10/30/2018	09:08		10/30/2018	09:27
1030F009.D	611-102318	K1810410-029	10/30/2018	09:37		10/30/2018	09:56
1030F010.D	ZZZZZZ	ZZZZZZ	10/30/2018	10:07		10/30/2018	10:26
1030F011.D	ZZZZZZ	ZZZZZZ	10/30/2018	10:50		10/30/2018	11:09
1030F012.D	ZZZZZZ	ZZZZZZ	10/30/2018	11:19		10/30/2018	11:38
1030F013.D	ZZZZZZ	ZZZZZZ	10/30/2018	11:49		10/30/2018	12:08
1030F014.D	ZZZZZZ	ZZZZZZ	10/30/2018	12:18		10/30/2018	12:37
1030F015.D	ZZZZZZ	ZZZZZZ	10/30/2018	12:47		10/30/2018	13:06
1030F016.D	ZZZZZZ	ZZZZZZ	10/30/2018	13:17		10/30/2018	13:36
1030F017.D	ZZZZZZ	ZZZZZZ	10/30/2018	13:46		10/30/2018	14:05
1030F018.D	ZZZZZZ	ZZZZZZ	10/30/2018	14:16		10/30/2018	14:35

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

QA/QC Results

Client: Pacific Groundwater Group (PGG)
Project: Head of Swan Island Lagoon/JK1807.01
Sample Matrix: Water

Service Request: K1810410
Date Extracted: 10/29/2018

Extraction Prep Log
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3511
Analysis Method: 8270D SIM

Extraction Lot: KWG1805575
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
611-102318	K1810410-029	10/23/18	10/24/18	450mL	2ml	NA	
Method Blank	KWG1805575-3	NA	NA	450mL	2ml	NA	
Lab Control Sample	KWG1805575-1	NA	NA	450mL	2ml	NA	
Duplicate Lab Control Sample	KWG1805575-2	NA	NA	450mL	2ml	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis