

**Production Water Reuse
And
Waste Minimization Plan**

**For
Water Transfers Between**

**Caerus Piceance LLC
And
Encana Oil and Gas (USA), Inc.**

June 1, 2014

Introduction

Caerus Piceance LLC (“Caerus”) and Encana Oil and Gas (USA) Inc. (“Encana”) are each currently and separately engaged in natural gas exploration and production operations in the Piceance Basin, which encompasses areas of Garfield and Mesa Counties, Colorado. Hydraulic fracturing operations associated with completing individual natural gas wells in the Piceance Basin require large volumes of water. A very significant percentage of the water used to conduct hydraulic fracturing is provided by operators from recycling and reuse of formation water co-produced with natural gas from their previously drilled production wells. In addition, the flowback water obtained from the return of hydraulic fracturing fluids following well stimulation is recovered for subsequent reuse during additional well completion operations. Producers typically operate various permitted facilities, which include pits, tanks and ponds, needed to treat and store produced water from its operations (“Production Water” as defined more specifically in Appendix A’s Water Custody Transfer Agreement), to support recycling and reuse of water during additional drilling, completion and workover activities.

Depending largely on the level and location of drilling activity, conditions may exist when and where Caerus’ Production and Flowback Water volumes exceed its available treatment and storage capacity and Caerus’ Production/Flowback Water is transferred for final disposal (with no further possibility for recycling or reuse) to a licensed commercial disposal facility. Under other conditions, Caerus may need additional water to support its activities in new or peripheral areas that are removed from its infrastructure of water gathering lines, and water treatment and storage facilities or otherwise where its own supply of Production and Flowback Water may be inadequate or inconvenient for that specific location or time.

Encana’s operations also occur in the Piceance Basin and in some areas are proximal to Caerus’ operations. Similarly, Encana’s operations experience conditions where its supply of Production/Flowback Water is excessive or insufficient to meet its demands for drilling, completion and workover activities for a given location or time. When either operator’s demand for makeup water exceeds their current and foreseeable supply of Production and Flowback Water, historically one recourse has been to extract fresh water from either company’s rightful water rights and store and treat the fresh water for subsequent downhole use even though other nearby operators may have an abundant supply of Production/Flowback Water that they have no immediate or foreseeable need to use. In this Waste Management Plan, submitted pursuant to The Colorado Oil and Gas Conservation Commission (“COGCC”) Rules, Caerus and Encana seek to implement this Production Water Reuse and Waste Minimization Plan for water transfers. The approval of this Plan satisfies the “director approval” requirement to reuse and recycle under COGCC Rules 907(a)(3) and (c)(3).

Purpose

In order to establish a mutually beneficial relationship, that promotes the reuse of Production/Flowback Water and avoids the withdrawal of precious fresh water supplies, Caerus and Encana

have entered into a legally binding agreement, a copy of which is attached as Appendix A, whereby volumes of each company's Production/Flowback Water could be transferred to the other company, on an as-needed, as requested basis, for re-use in each other's respective drilling, completion, and workover operations.

Sharing via transfer of Production and Flowback Water between operators represents a best management practice that promotes fresh water conservation, waste minimization, recycling, and re-use; consistent with the stated regulatory objectives of various State agencies (DWR, CDPHE and COGCC). This Production Water Reuse and Waste Minimization Plan (Reuse Plan) is intended to satisfy the requirements of the COGCC Rule 907.a(3) for the reuse and recycling of E&P Waste, which states:

Reuse and recycling. To encourage and promote waste minimization, operators may propose plans for managing E&P waste through beneficial use, reuse, and recycling by submitting a written management plan to the Director for approval on a Sundry Notice, Form 4, if applicable. Such plans shall describe, at a minimum, the type(s) of waste, the proposed use of the waste, method of waste treatment, product quality assurance, and shall include a copy of any certification or authorization that may be required by other laws and regulations. The Director may require additional information

Anticipated Benefits

Under this Reuse Plan, each party shall use reasonable and available means to safely transfer Production/Flowback Water, in sufficient volumes and quality, to meet the other party's transfer requests, when mutually agreeable to do so. The benefits of this plan include:

- Shorter haul distances and an overall reduction of truck traffic on lease and county roads, and state and federal highways, for an operator to supply and/or dispose of Production/Flowback Water in the absence of sharing and transfer of Production/Flowback Water between operators. This will result in:
 - Less road damage
 - Decreases in criteria air pollutions from water truck exhaust emissions and fugitive dust
 - Less noise
 - Fewer accidents and spills involving water trucks
- Fewer fresh water withdrawals from surface water sources
- Less reliance on injection wells for disposal of Production and Flowback Water, and
- Increased operating efficiencies from reusing local supplies of Production and Flowback Water to meet water demands for drilling, completion and workover activities.

Proposed Use, Transfer and Ownership of Production Water

To promote waste minimization, Encana, as the Receiver, will accept Production/Flowback Water generated from Caerus' operations as the Supplier/Shipper in the Piceance Basin of Colorado, if and when needed by Encana and as consented to by Caerus, to support Encana's drilling, completion or work over operations. Caerus' Production/ Flowback Water will be

delivered by pipeline or truck to a mutually agreed upon transfer location (“Transfer Location” as identified in a Record of Transfer included as Exhibit A in Appendix A). Transfer locations will be COGCC approved locations or facilities, such as storage tanks on well pads, multi-well pits or centralized E&P Waste Management Facilities. Transfer Locations will change over time as activities conclude in one area and move on to other locales. Best management practices for spill prevention and control will be applied at each Transfer Location. Caerus will be responsible for measuring and recording the volumes of Production and Flowback Water transferred utilizing a Record of Transfer.

Similarly, Caerus has agreed to accept Production/ Flowback Water as the Receiver generated from Encana’s operations as the Supplier/Shipper in the Piceance Basin of Colorado, if and when needed by Caerus and as consented by Encana, to support Caerus’ drilling, completion or workover operations. Encana’s Production and Flowback Water will be delivered by Encana to a mutually agreed upon Transfer Location. Transfer Locations will be COGCC approved locations or facilities, such as well pads, multi-well pits or centralized E&P Waste Management Facilities. Transfer Locations will change over time as completion activities conclude in one area and move on to other locales. Spill prevention and control Best Management Practices will be applied at each Transfer Location. Encana will be responsible for measuring and recording the volumes of Production and Flowback Water transferred utilizing a Record of Transfer. The COGCC has determined that the activities contemplated herein do not qualify as a Centralized E&P Waste Management Facility.

Caerus shall maintain all legal and regulatory responsibility, custody and control for its Production/Flowback Water until it is delivered to Encana. At the time of delivery Encana will assume all legal and regulatory responsibility, custody and control for that Production and Flowback Water. Similarly, Encana shall maintain all legal and regulatory responsibility, custody and control for its Production and Flowback Water until it is delivered to Caerus. When Caerus will assume all legal and regulatory responsibility, custody and control for that Production and Flowback Water. The Water Custody Transfer Agreement between Caerus and Encana in Appendix A provides the details of this arrangement.

In the event that one party desires to terminate the Water Transfer Agreement, written notice shall be provided to the other party [at least 30 days prior to the effective date of the termination. In addition, the terminating party is also responsible for notifying the COGCC in writing of the termination of the Water Transfer Agreement with the respective operator].

Source, Treatment and Quality of Production Water

The Supplier/Shipper will be responsible for identifying the source of the Production/Flowback Water on the Record of Transfer, which will only include water from facilities permitted by the COGCC including produced water storage tanks, multi-use or production storage pits, and centralized E&P waste management facilities. The majority of natural gas wells in the Piceance Basin are completed in the Williams Fork Formation, and a minority of the wells are completed

in the Iles, Mancos and Niobrara Formations. Varying amounts of formation water are co-produced with the natural gas from within these formations and over the life of the well.

This Reuse Plan recognizes the Colorado State Engineer Office's ("SEO") Rules for Produced Nontributary Ground Water (C.R.S. § 37-90-137(7), 2 CCR 402-17) that govern the administration of wells, including oil and gas wells, that dewater geologic formations by withdrawing nontributary ground water to facilitate or permit the mining of minerals. Only Production/Flowback Water derived from an operator's nontributary oil and gas wells will be allowed as a supply source for a transfer between operators to accommodate reuse under this Reuse Plan. The operator acting as the Supplier/Shipper is responsible for ensuring that only Production and Flowback Water from non-tributary and non-coalbed methane formations is utilized as a source for water transfer and re-use by another operator.

Specifically, SEO Rule 17.7.D delineates geographic areas under which the ground water in certain geologic formations is nontributary. Nontributary ground water in this area of the Piceance Basin includes ground water from the currently producing formations of the Undifferentiated, Middle, and Lower Wasatch Formation, the Iles Formation, the Williams Fork Formation, and the Undifferentiated Mesa Verde Group. The delineated areas and subject formations defined as nontributary may be viewed through Division of Water Resources' public data viewing tools as they are developed and the data files describing the areas are also available for downloading from the Division of Water Resources' website. All Caerus and Encana produced water is withdrawn from these approved nontributary groundwater formations.

Prior to transfer for reuse by another operator, the Supplier/Shipper or Receiver, as mutually agreed upon, shall be responsible for treatment of the Production/Flowback Water which may involve one or more of the following: primary separation at the wellhead, addition of bactericide, removal of any surface accumulations of oil/condensate, and basic separation of solids. Treatment shall be sufficient to allow for the intended reuse of the Production and Flowback Water for makeup fluid to support either drilling, completion, or workover operations for natural gas wells. Each operator will be obligated to provide and maintain documentation of the quality of its Production/Flowback Water and the volumes transferred in accordance with applicable laws and regulations.

Specifically, Caerus and Encana will each be obligated to maintain laboratory analytical results for a representative sample(s) of its Production and Flowback Water. On an annual basis, one or more samples will be collected for the type of source(s) representative of the Production and Flowback Water and analyzed for the following chemical parameters using the appropriate EPA standard analytical method:

- | | |
|-------------------------------------|------------------------|
| • Volatile organic compounds | EPA Method 624 (GC/MS) |
| • Semi-volatile organic compounds | EPA Method 625 (GC/MS) |
| • Dissolved Metals | EPA Method 200.7 (ICP) |
| • Dissolved Inorganics (non-metals) | EPA Method 300.0 (IC) |

- Br, Cl, F, Nitrate/Nitrite, Sulfate
- General water quality parameters
 - Specific Conductance EPA Method 120.1
 - Hardness EPA Method 130.1
 - Total Dissolved Solids EPA Method 160.1
 - pH EPA Method 150.2
 - Alkalinity EPA Method 310.1
- Gross alpha and beta radioactivity EPA Method 900.0

Measurements, Recordkeeping and Reporting

In addition, the party acting as the Supplier/Shipper for each requested transfer of Production/Flowback Water will be responsible for measuring transfer volumes and maintaining records for the volumes transferred in accordance with applicable laws and regulations including COGCC Rule 907.b.(2) which states:

***Waste generator requirements.** Generators of E&P waste that is transported off-site shall maintain, for not less than five (5) years, copies of each invoice, bill, or ticket and such other records as necessary to document the following requirements A through F:*

- A. The date of the transport;*
- B. The identity of the waste generator;*
- C. The identity of the waste transporter;*
- D. The location of the waste pickup site;*
- E. The type and volume of waste; and*
- F. The name and location of the treatment or disposal site.*

Such records shall be signed by the transporter, made available for inspection by the Director during normal business hours, and copies thereof shall be furnished to the Director upon request.

Caerus and Encana will each separately submit an annual report to the COGCC summarizing the transfers of Production/Flowback Water (both as the Supplier/Shipper and the Receiver) during the calendar year and including laboratory analytical results for representative sample(s) of the Production/Flowback Water provided as the Supplier/Shipper. The annual report will include a spreadsheet that summarizes the information contained in the Record(s) of Transfer, and include copies of individual Records of Transfer. The annual report for the previous calendar year will be submitted to the COGCC by April 15 of the following year.

Voluntary Standard Operating Procedures and Approval Conditions

- If locations are in a sensitive area because of its proximity to surface water, operator must ensure 110% secondary containment for any volume of fluids contained at the Water Handling Facility site during natural gas development activities and operations; including but not limited to, construction of a berm or diversion dike, diversion/collection trenches within and/or outside of berms/dikes, site grading, or other comparable measures (i.e. Best Management Practices (BMPs) associated with stormwater management) sufficiently protective of nearby surface water. Any berm constructed at the well pad location will be stabilized, inspected at regular intervals (at least every 14 days), and maintained in good condition.
- Operator must implement Best Management Practices to contain any unintentional release of fluids, including any fluids conveyed via temporary surface pipelines.
- Operator shall provide overflow protection for each tank proposed, if tanks are used.
- Operator proposes that the transfer facilities/locations will be in operation for a period less than three (3) years. Should the operation of this facility continue more than three years, a Form 28 shall be submitted and approved before the three-year anniversary date of the first use of the transfer facility/location.

Authorization and Points of Contact

This Production Water Reuse and Waste Minimization Plan for Water Transfers Between Caerus Piceance LLC and Encana Oil and Gas (USA) Inc. is hereby authorized for implementation by:

Caerus Piceance LLC

Per Matt Wurtzbacher

Matthew A. Wurtzbacher
President

Michael Rynearson

Operations Manager

6-5-14

Date

Encana Oil & Gas (USA) Inc.,
acting by and through its authorized agent,
Encana Services Company Ltd.

Janis Stosor

Date

6-5-14

Date

The primary and secondary points of contact representing Caerus are:

Primary

Natalie Naeve
Operations Engineer
Office (720) 880 6331
NNaeve@caerusoilandgas.com
600 17th Street, Suite 1600N
Denver, CO 80202

Secondary

Michael A. Rynearson
Operations Manager
Office (720) 880 6407
MRynearson@caerusoilandgas.com
600 17th Street, Suite 1600N
Denver, CO 80202

The primary and secondary points of contact representing Encana are:

Primary

Secondary

**Louie Gibson
Water Coordinator
Encana Services Company Ltd.,
authorized agent for
Encana Oil and Gas (USA) Inc.
143 Diamond Avenue
Parachute, CO 81635
Office: (970) 285 2611**

Appendix A
Water Custody Transfer Agreement

Purpose and Need

Caerus has a need for up to 900,000 barrels (bbls) of produced water for exploration and production (E&P) operations in Garfield County, Colorado.

Caerus would like to receive water for completion operations. If permitted to do so, water will be delivered from Encana's Facilities via existing 12" water line. Water will be delivered from Encana's Facilities via existing 12" waterline. Custody Transfer Point for water is located at the installed spool; t-valve and 6' water can on Encana's existing water line to Caerus's temporary water line. Encana's can is located (Lat: 30.29'59.32"N / Long: -108.7' 24.33"W) where it will connect to Caerus' proposed surface water line. The Custody Transfer Point will accommodate the transfer of water from Encana's line into Caerus' proposed surface water line which will run from the Custody Transfer Point to the Caerus Mesa H2 797 Pad (Facility ID 439917, located in Sec 2, T7S-R97W, Garfield County, Colorado). Caerus will test and verify compatibility of the produced water provided by Encana. Transfer of produced water would begin upon the date of COGCC approval and terminate after one year with an option for extension.

Produced Fluid Pickup and Transfer Location

Produced water will be collected at Encana's (HIM Upper Pond North COGCC ID: 149013 SENW Sec. 36 T7S-96W) and (North Parachute Ranch EP Waste Management COGCC ID: 12803 SWSW Sec. 30 T5S-R95W) then transferred via Encana's 12" waterline to Encana's installed can and collected from Caerus temporary line. The transferring company (Encana) shall maintain all regulatory responsibility, custody, and control for all water until it is transferred through Encana's can to Caerus' temporary waterline. Caerus will send water through the temporary waterline to the well pad. Caerus will assume all regulatory responsibility, custody, and control of the water. (See attached map for additional detail on the Custody Transfer Point).

From the Custody Transfer Point, Caerus will pump water via a temporary water line to the Caerus Mesa H2 797 Pad (Facility ID 439917, located in Sec 2, T7S-R97W, Garfield County, Colorado) where the water will be beneficially reused for well completions at the site listed below.

- a. Mesa H2 797 Pad (Facility ID 439917 Sec 2, T7S-R97W, Garfield County, CO)

Receipt

Caerus' receiving activities will consist of the following:

Receipt of water will come from Encana's (HIM Upper Pond North COGCC ID: 149013 SENW Sec. 36 T7S-96W) and (North Parachute Ranch EP Waste Management COGCC ID: 12803 SWSW Sec. 30 T5S-R95W). Encana's can will serve as the transfer point to Caerus's temporary line. The destination of the water will be Caerus's well pad Mesa H2 797 (COGCC Facility ID 439917 Sec 2, T7S-R97W) via a temporary water line. Custody Transfer Point is in Garfield County, Colorado. Caerus will assume responsibility of the water at the tie-in of the temporary water line to Encana's can.

The volumes of fluid to be received will be up to 44,000 bbls/day; actual received volumes will be metered at the Custody Transfer Point at coordinates (Lat: 30.29'59.32"N / Long: -108.7' 24.33"W)

Caerus will maintain records with the following information:

- Changes to the approved plan;
- Applicable training requirements for Caerus and its contractors (lock out/ tag out, job hazard analysis at the transfer location, etc.);
- Types and results of internal and contractor audits conducted;
- Tabulated water generator records, if required by Rule 907.b.(2) including:
 - Date of transport
 - Identity of water generator
 - Identity of water transporter
 - Location of the produced water pick up site
 - Type and Volume of water transported
 - Name and Location of receiving point
(Transport tickets will be maintained for each load)
- Summary of spills, incidents or upsets;

Spill Response and Cleanup Measures

Caerus Piceance, LLC (Operator ID: 10456) collection facilities are covered under a Spill Prevention Control and Countermeasure Plan (SPCC).

Encana Oil & Gas (USA) Inc. (Operator ID: 100185) receiving points are also covered under a SPCC plan.

Analytical Data

An analysis representative of the water to be transferred to Caerus will be included as Attachment B prior to transfer of water.

Summary

Origination of water – Encana's Facilities at (HIM Upper Pond North COGCC ID: 149013 SENW Sec. 36 T7S-96W) and (North Parachute Ranch EP Waste Management COGCC ID: 12803 SWSW Sec. 30 T5S-R95W) located in Garfield County.


Destination of water – Caerus Mesa H2 797 Pad (Facility ID 439917 Sec 2, T7S-R97W) located in Garfield County.

Water Transportation – All water transported will be delivered via Caerus's temporary water used and installed by Caerus Piceance, LLC.

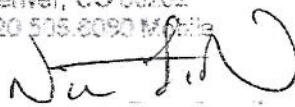
Estimated volume of water transferred – up to 44,000 bbls/day, with total potential volume of 900,000bbls.

Operator Contact Information

Encana Oil & Gas (USA) Inc.
Louie Gibbon
Water Coordinator, Western Operations - Water Management
143 Diamond Ave.
Parachute, CO 81535
970.225.2511 Office
970.953.0143 Mobile

 8-28-2015
Signature/Date

Cactus Piceance LLC
Natalie Noeve
Operations Engineer
600 17th Street, Suite 1500N
Denver, CO 80202
720.515.8090 Mobile

 9-2-2015
Signature/Date



02-Aug-2015

Nathan Allred
Encana Oil and Gas (USA) Inc.
143 Diamond Avenue
Parachute, CO 81635

Re: **Middle Fork Influent-Effluent 7.23.15**

Work Order: **15071486**

Dear Nathan,

ALS Environmental received 3 samples on 25-Jul-2015 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 21.

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

Sincerely,

A handwritten signature in black ink that reads "Les Arnold".

Electronically approved by: Les Arnold

Les Arnold
Senior Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-0263 | PHONE (616) 396-6070 | FAX (616) 399-6185

ALS GROUP (USA) CORP. Part of the ALS Laboratories Group, A1 (a part of) Ecolab's Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Encana Oil and Gas (USA) Inc.
Project: Middle Fork Influent-Effluent 7.23.15
Work Order: 15071486

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
15071486-01	2015.7.23_MDFK_DAF_INF	Wastewater		7/23/2015 11:00	7/25/2015 10:00	<input type="checkbox"/>
15071486-02	2015.7.23_MDFK_DAF_EFF	Wastewater		7/23/2015 11:15	7/25/2015 10:00	<input type="checkbox"/>
15071486-03	Trip Blank	Water		7/23/2015	7/25/2015 10:00	<input type="checkbox"/>

Client: Encana Oil and Gas (USA) Inc.
Project: Middle Fork Influent-Effluent 7.23.15
WorkOrder: 15071486

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter
as noted	
mg/L	Milligrams per Liter

Client: Encana Oil and Gas (USA) Inc.
Project: Middle Fork Influent-Effluent 7.23.15
Work Order: 15071486

Case Narrative

Samples for the above noted Work Order were received on 07/25/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Sample Receiving:

No deviations or anomalies were noted.

Volatile Organics:

Batch R168540A, Method VOC_8260_W, Sample 15071486-02B: The sample ran at a dilution due to the high concentration of target analytes.

No other deviations or anomalies were noted.

Extractable Organics:

No deviations or anomalies were noted.

Metals:

No deviations or anomalies were noted.

Wet Chemistry:

No deviations or anomalies were noted.

ALS Group USA, Corp

Date: 02-Aug-15

Client: Encana Oil and Gas (USA) Inc.
Project: Middle Fork Influent-Effluent 7.23.15
Sample ID: 2015.7.23_MDFK_DAF_INF
Collection Date: 7/23/2015 11:00 AM

Work Order: 15071486
Lab ID: 15071486-01
Matrix: WASTEWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015C		Prep: SW3511 / 7/29/15		Analyst: IT
DRO (C10-C28)	130		0.071	0.50	mg/L	5	7/30/2015 20:13
Surr: 4-Terphenyl-d14	131			31-176	%REC	5	7/30/2015 20:13
ORGANIC COMPOUNDS BY GC-FID							
			Method: SW8015M				Analyst: KYM
Methanol	62		0.41	5.0	mg/L	1	7/31/2015 01:02
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D				Analyst: IT
GRO (C6-C10)	240		0.62	5.0	mg/L	25	7/27/2015 23:54
Surr: Toluene-d8	98.9			70-130	%REC	25	7/27/2015 23:54
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260				Analyst: AK
Benzene	14		0.13	0.50	mg/L	500	7/28/2015 05:43
Ethylbenzene	0.55		0.11	0.50	mg/L	500	7/28/2015 05:43
m,p-Xylene	7.4		0.20	1.0	mg/L	500	7/28/2015 05:43
o-Xylene	1.4		0.11	0.50	mg/L	500	7/28/2015 05:43
Toluene	17		0.098	0.50	mg/L	500	7/28/2015 05:43
Xylenes, Total	8.7		0.31	1.5	mg/L	500	7/28/2015 05:43
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	500	7/28/2015 05:43
Surr: 4-Bromofluorobenzene	99.0			80-110	%REC	500	7/28/2015 05:43
Surr: Dibromofluoromethane	98.6			85-115	%REC	500	7/28/2015 05:43
Surr: Toluene-d8	91.8			85-110	%REC	500	7/28/2015 05:43
SCAN FOR VOLATILE ORGANICS							
			Method: SW8260				Analyst: AK
Scan for Volatile Organics	U		0		as noted	500	7/28/2015 05:43
SULFIDE							
			Method: SW9030B				Analyst: TVD
Sulfide	1.1		0.44	1.0	mg/L	1	7/28/2015 18:42
TOTAL SUSPENDED SOLIDS							
			Method: A2540 D-97		Prep: Water Ext. / 7/28/15		Analyst: EMC
Total Suspended Solids	58		1.8	3.0	mg/L	1	7/28/2015 15:08
VOLATILE SUSPENDED SOLIDS							
			Method: E160.43		Prep: Water Ext. / 7/28/15		Analyst: EMC
Volatile Suspended Solids	26		1.1	3.0	mg/L	1	7/28/2015 15:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Aug-15

Client: Encana Oil and Gas (USA) Inc.
Project: Middle Fork Influent-Effluent 7.23.15
Sample ID: 2015.7.23_MDFK_DAF_EFF
Collection Date: 7/23/2015 11:15 AM

Work Order: 15071486
Lab ID: 15071486-02
Matrix: WASTEWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
				Method: SW8015C		Prep: SW3511 / 7/29/15	Analyst: IT
DRO (C10-C28)	U		0.014	0.10	mg/L	1	7/30/2015 16:43
Surr: 4-Terphenyl-d14	98.8			31-176	%REC	1	7/30/2015 16:43
ORGANIC COMPOUNDS BY GC-FID							
				Method: SW8015M			Analyst: KYM
Methanol	U		0.41	5.0	mg/L	1	7/31/2015 01:16
GASOLINE RANGE ORGANICS BY GC-FID							
				Method: SW8015D			Analyst: IT
GRO (C6-C10)	U		0.025	0.20	mg/L	1	7/30/2015 02:16
Surr: Toluene-d8	97.6			70-130	%REC	1	7/30/2015 02:16
VOLATILE ORGANIC COMPOUNDS							
				Method: SW8260			Analyst: BG
Benzene	U		0.0013	0.0050	mg/L	5	7/31/2015 04:04
Ethylbenzene	U		0.0011	0.0050	mg/L	5	7/31/2015 04:04
m,p-Xylene	U		0.0020	0.010	mg/L	5	7/31/2015 04:04
o-Xylene	U		0.0011	0.0050	mg/L	5	7/31/2015 04:04
Toluene	U		0.00098	0.0050	mg/L	5	7/31/2015 04:04
Xylenes, Total	U		0.0031	0.015	mg/L	5	7/31/2015 04:04
Surr: 1,2-Dichloroethane-d4	99.2			75-120	%REC	5	7/31/2015 04:04
Surr: 4-Bromofluorobenzene	96.4			80-110	%REC	5	7/31/2015 04:04
Surr: Dibromofluoromethane	101			85-115	%REC	5	7/31/2015 04:04
Surr: Toluene-d8	98.3			85-110	%REC	5	7/31/2015 04:04
SCAN FOR VOLATILE ORGANICS							
				Method: SW8260			Analyst: BG
Scan for Volatile Organics	No H2S found		0		as noted	5	7/31/2015 04:04
SULFIDE							
				Method: SW9030B			Analyst: TVD
Sulfide	U		0.44	1.0	mg/L	1	7/28/2015 18:42
TOTAL SUSPENDED SOLIDS							
				Method: A2540 D-97		Prep: Water Ext. / 7/28/15	Analyst: EMC
Total Suspended Solids	U		1.8	3.0	mg/L	1	7/28/2015 15:08
VOLATILE SUSPENDED SOLIDS							
				Method: E160.43		Prep: Water Ext. / 7/28/15	Analyst: EMC
Volatile Suspended Solids	U		1.1	3.0	mg/L	1	7/28/2015 15:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Aug-15

Client: Encana Oil and Gas (USA) Inc.
 Project: Middle Fork Influent-Effluent 7.23.15
 Sample ID: Trip Blank
 Collection Date: 7/23/2015

Work Order: 15071486
 Lab ID: 15071486-03
 Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260			Analyst: AK	
Benzene	U		0.25	1.0	µg/L	1	7/28/2015 01:09
Ethylbenzene	U		0.22	1.0	µg/L	1	7/28/2015 01:09
m,p-Xylene	U		0.40	2.0	µg/L	1	7/28/2015 01:09
o-Xylene	U		0.21	1.0	µg/L	1	7/28/2015 01:09
Toluene	U		0.20	1.0	µg/L	1	7/28/2015 01:09
Xylenes, Total	U		0.62	3.0	µg/L	1	7/28/2015 01:09
Surr: 1,2-Dichloroethane-d4	99.3			75-120	%REC	1	7/28/2015 01:09
Surr: 4-Bromofluorobenzene	102			80-110	%REC	1	7/28/2015 01:09
Surr: Dibromofluoromethane	98.0			85-115	%REC	1	7/28/2015 01:09
Surr: Toluene-d8	94.5			85-110	%REC	1	7/28/2015 01:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 02-Aug-15

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 15071486
 Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: 74179 Instrument ID GC8 Method: SW8015C

MBLK		Sample ID: DBLKW1-74179-74179			Units: mg/L			Analysis Date: 7/30/2015 01:43 PM		
Client ID:	Run ID: GC8_150730B	SeqNo: 3397483	Prep Date: 7/29/2015	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	0.10								
Surr: 4-Terphenyl-d14	0.09017	0	0.1143	0	78.9	31-176	0			

LCS		Sample ID: DLCSW1-74179-74179			Units: mg/L			Analysis Date: 7/30/2015 02:13 PM		
Client ID:	Run ID: GC8_150730B	SeqNo: 3397484	Prep Date: 7/29/2015	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	6.882	0.10	11.43	0	60.2	35-95	0			
Surr: 4-Terphenyl-d14	0.09653	0	0.1143	0	84.4	31-176	0			

MS		Sample ID: 15071546-01A MS			Units: mg/L			Analysis Date: 7/30/2015 02:43 PM		
Client ID:	Run ID: GC8_150730B	SeqNo: 3397485	Prep Date: 7/29/2015	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	6.907	0.10	11.43	0	60.4	29-96	0			
Surr: 4-Terphenyl-d14	0.06485	0	0.1143	0	56.7	31-176	0			

MSD		Sample ID: 15071546-01A MSD			Units: mg/L			Analysis Date: 7/30/2015 03:13 PM		
Client ID:	Run ID: GC8_150730B	SeqNo: 3397486	Prep Date: 7/29/2015	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	7.071	0.10	11.43	0	61.9	29-96	6.907	2.35	30	
Surr: 4-Terphenyl-d14	0.06667	0	0.1143	0	58.3	31-176	0.06485	2.78	30	

The following samples were analyzed in this batch:

15071486-01A	15071486-02A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168827** Instrument ID **GC5** Method: **SW8015M**

MBLK Sample ID: **MBLKS1-R168827** Units: **mg/Kg** Analysis Date: **7/30/2015 09:31 PM**
 Client ID: Run ID: **GC05_150730B** SeqNo: **3398722** Prep Date: **7/29/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methanol	U	5.0								

LCS Sample ID: **LCSS1-R168827** Units: **mg/Kg** Analysis Date: **7/30/2015 08:34 PM**
 Client ID: Run ID: **GC05_150730B** SeqNo: **3398719** Prep Date: **7/29/2015** DF: **1**

Methanol	495.1	5.0	500		0	99	50-150	0		
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LCS Sample ID: **LCSW1-R168827** Units: **mg/L** Analysis Date: **7/30/2015 11:52 PM**
 Client ID: Run ID: **GC05_150730B** SeqNo: **3398729** Prep Date: **7/29/2015** DF: **1**

Methanol	511.2	5.0	500		0	102	50-150	0		
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MS Sample ID: **15071505-05C MS** Units: **mg/Kg** Analysis Date: **7/30/2015 08:48 PM**
 Client ID: Run ID: **GC05_150730B** SeqNo: **3398720** Prep Date: **7/29/2015** DF: **2**

Methanol	979.9	9.8	1000		0	98	50-150	0		
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MS Sample ID: **15071486-01B MS** Units: **mg/L** Analysis Date: **7/31/2015 12:06 AM**
 Client ID: **2015.7.23_MDFK_DAF_INF** Run ID: **GC05_150730B** SeqNo: **3398730** Prep Date: **7/29/2015** DF: **2**

Methanol	1012	10	1000	61.88	95	50-150	0			
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MSD Sample ID: **15071505-05C MSD** Units: **mg/Kg** Analysis Date: **7/30/2015 09:02 PM**
 Client ID: Run ID: **GC05_150730B** SeqNo: **3398721** Prep Date: **7/29/2015** DF: **2**

Methanol	961.1	9.8	1000		0	96.1	50-150	979.9	1.94	30
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MSD Sample ID: **15071486-01B MSD** Units: **mg/L** Analysis Date: **7/31/2015 12:20 AM**
 Client ID: **2015.7.23_MDFK_DAF_INF** Run ID: **GC05_150730B** SeqNo: **3398731** Prep Date: **7/29/2015** DF: **2**

Methanol	992.4	10	1000	61.88	93.1	50-150	1012	1.97	30	
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168827** Instrument ID **GC5** Method: **SW8015M**

The following samples were analyzed in this batch:

15071486-01B	15071486-02B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 15071486
 Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: R168471 Instrument ID GC9 Method: SW8015D

MBLK		Sample ID: GBLKW1-150727-R168471				Units: µg/L		Analysis Date: 7/27/2015 07:13 PM			
Client ID:		Run ID: GC9_150727A				SeqNo: 3389513		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	U	200									
Surr: Toluene-d8	96.81	0	100	0	96.8	70-130	0				

LCS		Sample ID: GLCSW1-150727-R168471				Units: µg/L		Analysis Date: 7/27/2015 06:48 PM			
Client ID:		Run ID: GC9_150727A				SeqNo: 3389511		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	9934	200	10000	0	99.3	70-130	0				
Surr: Toluene-d8	95.93	0	100	0	95.9	70-130	0				

MS		Sample ID: 15071415-01E MS				Units: µg/L		Analysis Date: 7/28/2015 09:15 AM			
Client ID:		Run ID: GC9_150727A				SeqNo: 3389527		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	12530	200	10000	0	125	70-130	0				
Surr: Toluene-d8	96.38	0	100	0	96.4	70-130	0				

MSD		Sample ID: 15071415-01E MSD				Units: µg/L		Analysis Date: 7/28/2015 09:40 AM			
Client ID:		Run ID: GC9_150727A				SeqNo: 3389529		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	11160	200	10000	0	112	70-130	12530	11.6	30		
Surr: Toluene-d8	93.94	0	100	0	93.9	70-130	96.38	2.56	30		

The following samples were analyzed in this batch:

15071486-01B	15071486-02B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168655** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: GBLKW1-150729-R168655				Units: µg/L		Analysis Date: 7/29/2015 06:23 PM			
Client ID:		Run ID: GC9_150729A				SeqNo: 3394809		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	U	200									
<i>Surr: Toluene-d8</i>	91.81	0	100	0	91.8	70-130	0				

LCS		Sample ID: GLCSW1-150729-R168655				Units: µg/L		Analysis Date: 7/29/2015 05:58 PM			
Client ID:		Run ID: GC9_150729A				SeqNo: 3394808		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	9620	200	10000	0	96.2	70-130	0				
<i>Surr: Toluene-d8</i>	93.17	0	100	0	93.2	70-130	0				

MS		Sample ID: 15071546-01B MS				Units: µg/L		Analysis Date: 7/29/2015 09:17 PM			
Client ID:		Run ID: GC9_150729A				SeqNo: 3394820		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	9147	200	10000	0	91.5	70-130	0				
<i>Surr: Toluene-d8</i>	96.87	0	100	0	96.9	70-130	0				

MSD		Sample ID: 15071546-01B MSD				Units: µg/L		Analysis Date: 7/29/2015 09:42 PM			
Client ID:		Run ID: GC9_150729A				SeqNo: 3394821		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	9157	200	10000	0	91.6	70-130	9147	0.106	30		
<i>Surr: Toluene-d8</i>	98.07	0	100	0	98.1	70-130	96.87	1.23	30		

The following samples were analyzed in this batch:

15071486-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168383A** Instrument ID **VMS7** Method: **SW8260**

MBLK		Sample ID: VBLKW2-150727-R168383A				Units: µg/L		Analysis Date: 7/28/2015 12:45 PM		
Client ID:		Run ID: VMS7_150727B		SeqNo: 3390010	Prep Date:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Ethylbenzene	U	1.0								
m,p-Xylene	U	2.0								
o-Xylene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 1,2-Dichloroethane-d4	19.64	0	20	0	98.2	75-120	0			
Surr: 4-Bromofluorobenzene	19.81	0	20	0	99	80-110	0			
Surr: Dibromofluoromethane	19.39	0	20	0	97	85-115	0			
Surr: Toluene-d8	18.81	0	20	0	94	85-110	0			

LCS		Sample ID: VLCSW3-150727-R168383A				Units: µg/L		Analysis Date: 7/28/2015 09:29 AM		
Client ID:		Run ID: VMS7_150727B		SeqNo: 3390007	Prep Date:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	19.2	1.0	20	0	96	85-125	0			
Ethylbenzene	17.56	1.0	20	0	87.8	85-125	0			
m,p-Xylene	35.55	2.0	40	0	88.9	75-130	0			
o-Xylene	17.53	1.0	20	0	87.6	80-125	0			
Toluene	17.77	1.0	20	0	88.8	85-125	0			
Xylenes, Total	53.08	3.0	60	0	88.5	80-126	0			
Surr: 1,2-Dichloroethane-d4	20.02	0	20	0	100	75-120	0			
Surr: 4-Bromofluorobenzene	20.69	0	20	0	103	80-110	0			
Surr: Dibromofluoromethane	20.19	0	20	0	101	85-115	0			
Surr: Toluene-d8	18.5	0	20	0	92.5	85-110	0			

MS		Sample ID: 15071252-14A MS				Units: µg/L		Analysis Date: 7/28/2015 09:54 AM		
Client ID:		Run ID: VMS7_150727B		SeqNo: 3390008	Prep Date:		DF: 100			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	2139	100	2000	0	107	85-125	0			
Ethylbenzene	2023	100	2000	0	101	85-125	0			
m,p-Xylene	4073	200	4000	0	102	75-130	0			
o-Xylene	2030	100	2000	0	102	80-125	0			
Toluene	2025	100	2000	0	101	85-125	0			
Xylenes, Total	6103	300	6000	0	102	80-126	0			
Surr: 1,2-Dichloroethane-d4	2006	0	2000	0	100	75-120	0			
Surr: 4-Bromofluorobenzene	2102	0	2000	0	105	80-110	0			
Surr: Dibromofluoromethane	1969	0	2000	0	98.4	85-115	0			
Surr: Toluene-d8	1886	0	2000	0	94.3	85-110	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168383A** Instrument ID **VMS7** Method: **SW8260**

MSD		Sample ID: 15071252-14A MSD			Units: µg/L		Analysis Date: 7/28/2015 10:19 AM			
Client ID:		Run ID: VMS7_150727B			SeqNo: 3390009		Prep Date:		DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	2192	100	2000	0	110	85-125	2139	2.45	30	
Ethylbenzene	2049	100	2000	0	102	85-125	2023	1.28	30	
m,p-Xylene	4194	200	4000	0	105	75-130	4073	2.93	30	
o-Xylene	2063	100	2000	0	103	80-125	2030	1.61	30	
Toluene	2138	100	2000	0	107	85-125	2025	5.43	30	
Xylenes, Total	6257	300	6000	0	104	80-126	6103	2.49	30	
Surr: 1,2-Dichloroethane-d4	2020	0	2000	0	101	75-120	2006	0.695	30	
Surr: 4-Bromofluorobenzene	2112	0	2000	0	106	80-110	2102	0.475	30	
Surr: Dibromofluoromethane	1988	0	2000	0	99.4	85-115	1969	0.96	30	
Surr: Toluene-d8	1918	0	2000	0	95.9	85-110	1886	1.68	30	

The following samples were analyzed in this batch:

15071486-01B	15071486-02B	15071486-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
 Work Order: 15071486
 Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168790A** Instrument ID **VMS7** Method: **SW8260**

MBLK		Sample ID: VBLKW2-150730-R168790A				Units: µg/L		Analysis Date: 7/31/2015 02:48 AM			
Client ID:		Run ID: VMS7_150730B				SeqNo: 3397969		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	U	1.0									
Ethylbenzene	U	1.0									
m,p-Xylene	U	2.0									
o-Xylene	U	1.0									
Toluene	U	1.0									
Xylenes, Total	U	3.0									
Surr: 1,2-Dichloroethane-d4	19.81	0	20	0	99	75-120	0				
Surr: 4-Bromofluorobenzene	19.48	0	20	0	97.4	80-110	0				
Surr: Dibromofluoromethane	19.77	0	20	0	98.8	85-115	0				
Surr: Toluene-d8	19.56	0	20	0	97.8	85-110	0				

LCS		Sample ID: VLCSW2-150730-R168790A				Units: µg/L		Analysis Date: 7/31/2015 01:30 AM			
Client ID:		Run ID: VMS7_150730B				SeqNo: 3397968		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	17.95	1.0	20	0	89.8	85-125	0				
Ethylbenzene	17.76	1.0	20	0	88.8	85-125	0				
m,p-Xylene	35.12	2.0	40	0	87.8	75-130	0				
o-Xylene	17.22	1.0	20	0	86.1	80-125	0				
Toluene	17.73	1.0	20	0	88.6	85-125	0				
Xylenes, Total	52.34	3.0	60	0	87.2	80-126	0				
Surr: 1,2-Dichloroethane-d4	19.47	0	20	0	97.4	75-120	0				
Surr: 4-Bromofluorobenzene	19.8	0	20	0	99	80-110	0				
Surr: Dibromofluoromethane	19.97	0	20	0	99.8	85-115	0				
Surr: Toluene-d8	19.65	0	20	0	98.2	85-110	0				

MS		Sample ID: 15071486-02B MS				Units: µg/L		Analysis Date: 7/31/2015 11:36 AM			
Client ID: 2015.7.23_MDFK_DAF_EFF		Run ID: VMS7_150730B				SeqNo: 3398010		Prep Date:		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	92.4	5.0	100	0	92.4	85-125	0				
Ethylbenzene	89.4	5.0	100	0	89.4	85-125	0				
m,p-Xylene	179.6	10	200	0	89.8	75-130	0				
o-Xylene	87.85	5.0	100	0	87.8	80-125	0				
Toluene	91.45	5.0	100	0	91.4	85-125	0				
Xylenes, Total	267.5	15	300	0	89.2	80-126	0				
Surr: 1,2-Dichloroethane-d4	98.25	0	100	0	98.2	75-120	0				
Surr: 4-Bromofluorobenzene	99.35	0	100	0	99.4	80-110	0				
Surr: Dibromofluoromethane	101	0	100	0	101	85-115	0				
Surr: Toluene-d8	98.25	0	100	0	98.2	85-110	0				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168790A** Instrument ID **VMS7** Method: **SW8260**

MSD		Sample ID: 15071486-02B MSD			Units: µg/L		Analysis Date: 7/31/2015 12:01 PM			
Client ID: 2015.7.23_MDFK_DAF_EFF		Run ID: VMS7_150730B			SeqNo: 3398015		Prep Date:		DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	93.85	5.0	100	0	93.8	85-125	92.4	1.56	30	
Ethylbenzene	91.1	5.0	100	0	91.1	85-125	89.4	1.88	30	
m,p-Xylene	182.1	10	200	0	91	75-130	179.6	1.35	30	
o-Xylene	89.05	5.0	100	0	89	80-125	87.85	1.36	30	
Toluene	92.95	5.0	100	0	93	85-125	91.45	1.63	30	
Xylenes, Total	271.2	15	300	0	90.4	80-126	267.5	1.36	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	97.4	0	100	0	97.4	75-120	98.25	0.869	30	
<i>Surr: 4-Bromofluorobenzene</i>	101.2	0	100	0	101	80-110	99.35	1.8	30	
<i>Surr: Dibromofluoromethane</i>	100.9	0	100	0	101	85-115	101	0.0495	30	
<i>Surr: Toluene-d8</i>	98.95	0	100	0	99	85-110	98.25	0.71	30	

The following samples were analyzed in this batch:

15071486-02B

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **74115** Instrument ID **WETCHEM** Method: **A2540 D-97**

MBLK	Sample ID: MBLK-74115-74115	Units: mg/L	Analysis Date: 7/28/2015 03:08 PM							
Client ID:	Run ID: WETCHEM_150728F	SeqNo: 3390417	Prep Date: 7/28/2015	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Suspended Solids	U	2.4								

MBLK	Sample ID: MBLK-74115-74115	Units: mg/L	Analysis Date: 7/28/2015 03:08 PM							
Client ID:	Run ID: WETCHEM_150728F	SeqNo: 3390433	Prep Date: 7/28/2015	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Volatile Suspended Solids	U	2.4								

The following samples were analyzed in this batch:

15071486-01C	15071486-02C
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Encana Oil and Gas (USA) Inc.
Work Order: 15071486
Project: Middle Fork Influent-Effluent 7.23.15

QC BATCH REPORT

Batch ID: **R168532** Instrument ID **WETCHEM** Method: **E376.1**

MBLK		Sample ID: MB-R168532-R168532				Units: mg/L		Analysis Date: 7/28/2015 06:42 PM			
Client ID:		Run ID: WETCHEM_150728M				SeqNo: 3390784		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfide	U	1.0									

MBLK		Sample ID: MB-R168532-R168532				Units: mg/L		Analysis Date: 7/28/2015 06:42 PM			
Client ID:		Run ID: WETCHEM_150728M				SeqNo: 3390787		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfide	U	1.0									

LCS		Sample ID: LCS-R168532-R168532				Units: mg/L		Analysis Date: 7/28/2015 06:42 PM			
Client ID:		Run ID: WETCHEM_150728M				SeqNo: 3390785		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfide	10.02	1.0	10.75		0	93.2	60-140	0			

LCS		Sample ID: LCS-R168532-R168532				Units: mg/L		Analysis Date: 7/28/2015 06:42 PM			
Client ID:		Run ID: WETCHEM_150728M				SeqNo: 3390788		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfide	10.02	1.0	10.75		0	93.2	60-140	0			

The following samples were analyzed in this batch:

15071486-01D	15071486-02D
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Environmental

Cincinnati, OH
+1 513 733 5336
Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

Chain of Custody Form

Page of

COC ID: 25465

Houston, TX
+1 281 530 5656
Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903
Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168
York, PA
+1 717 505 5280

ALS Project Manager: _____

ALS Work Order #: 15071486

Customer Information		Project Information		Parameter/Method Request for Analysis											
Purchase Order		Project Name	Middle Fork Influent-Effluent	A	DRO (C10-C28)										
Work Order		Project Number		B	GRO (C6-C10)										
Company Name	Encana Oil and Gas (USA) Inc	Bill To Company	Trihydro Corporation	C	BTEX										
Send Report To	Nathan Alfred	Invoice Attn	Accounts Payable	D	Methanol										
Address	2717 County Road 215, Suite 100	Address	1252 Commerce Drive	E	VSS, TSS										
City/State/Zip	Parachute, CO 81635	City/State/Zip	Laramie, WY 82070	F	T Sulfide										
Phone	(970) 285-2707	Phone	(307) 745-7474	G	Volatiles Scan for Hydrogen Sulfide										
Fax		Fax	(307) 745-7729	H											
e-Mail Address		e-Mail Address		I											
				J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	2015-7-23-MDFK DAF INF	7/23/15	11:00			10	X	X	X	X	X	X	X				
2	2015-7-23-MDFK DAF EFF	7/23/15	11:15			10	X	X	X	X	X	X	X				
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign <u>Lewis Murray</u>		Shipment Method		Required Turnaround Time: (Check Box) <input type="checkbox"/> Other				Results Due Date:			
				<input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 3 Wk Days <input type="checkbox"/> 24 Hour							
Relinquished by: <u>Lewis Murray</u>	Date: 7/23/15	Time: 13:25	Received by: <u>MM</u>	Notes:							
Relinquished by: <u>MM</u>	Date: 7-23-15	Time: 1400	Received by (Laboratory): <u>[Signature]</u>	Cooler ID	Cooler Temp	QC Packages: (Check One Box Below)					
Logged by (Laboratory): <u>DES</u>	Date: 7/23/15	Time: 1000	Checked by (Laboratory): <u>[Signature]</u>		5.8	<input type="checkbox"/> Level II Std OC	<input type="checkbox"/> TRRP Checklist				
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₈ 6-NaHSO ₄ 7-Other 8-4°C 9-6035						<input type="checkbox"/> Level III Std OC/Raw Data	<input type="checkbox"/> TRRP Level IV				
						<input type="checkbox"/> Level IV SW846/CLP					
						<input type="checkbox"/> Other					

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

ORIGIN ID: RILA (616) 298-1033
NICK MARTINEZ
ALS ENVIRONMENTAL PARACHUTE
PARACHUTE SERVICE CENTER
127 EAST 1ST ST
PARACHUTE, CO 81635
UNITED STATES US

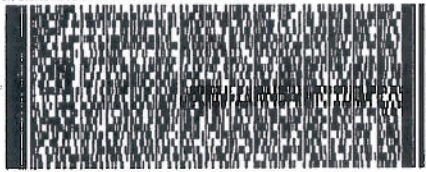
SHIP DATE: 24 JUL 15
ACTWGT: 40.00 LB
CAD: 2294840/NET3870
DIMS: 24.2x26.15 IN
BILL SENDER

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL HOLLAND LAB
3352 128TH AVE

HOLLAND MI 49424

(616) 396-6070 REF: 072415-1
RV DEPT:
PO PARACHUTE

536.DY1A15G1D0



FedEx
Express



REL#
3785348

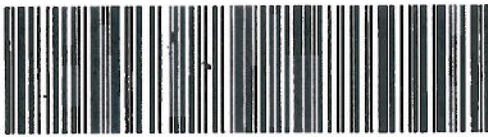
2 of 2
SATURDAY 12:00P
PRIORITY OVERNIGHT

MP68
0263 **7741 3493 4152**
Mstr# 7741 3493 4509

0201

XO HLMA

MI-US **49424**
GRR



After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g., jewelry, precious metals, negotiable instruments and other items listed in our Service Guide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

15071486

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ENCANA2**

Date/Time Received: **25-Jul-15 10:00**

Work Order: **15071486**

Received by: **DS**

Checklist completed by *Diane Shaw*
eSignature

27-Jul-15
Date

Reviewed by: *Chad Whelton*
eSignature

27-Jul-15
Date

Matrices: **Wastewater**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	5.8 c SR2		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	7/27/2015 10:21:11 AM		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:			

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

