CON: 12-15
Doc #36612

Phase II Environmental Site Assessment

Canadian Pacific Railway
East of the Intersection of Farson Road and the Railroad Tracks
Farson, Iowa

Prepared for

Canadian Pacific Railway Company

Project B1812348.01
October 21, 2019

Braun Intertec Corporation

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The Science You Build On.

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October 21, 2019

Project B1812348.01

Mr. Scott Zurn
Canadian Pacific Railway Company
120 South 6th Street, Suite 700
Minneapolis, MN 55402

Re: Phase II Environmental Site Assessment
Canadian Pacific Railway
East of the Intersection of Farson Road and the Railroad Tracks
Farson, Iowa

Dear Mr. Zurn:

On behalf of Canadian Pacific Railway Company, Braun Intertec Corporation conducted a Phase II Environmental Site Assessment (ESA) of the above-referenced site (Site) in accordance with the authorized scope of services described in our Work Plan and Cost Proposal dated April 25, 2019. For a complete discussion of our assessment, please refer to the attached Phase II ESA report.

The objective of the Phase II ESA was to investigate the magnitude and extent of the petroleum-impacted soil identified during water well sealing work completed during the fall of 2018.

We appreciate the opportunity to provide our professional services to you for this project. If you have any questions or comments regarding this report or the project in general, please contact Jeremy Hansen at 952.995.2464.

Sincerely,

BRAUN INTERTEC CORPORATION

K. Brook Jacobson
Staff Engineer

Jeremiah R. Hansen
Associate Principal – Senior Scientist

Michael L. Bratrud
Vice President

Attachment:
Phase II Environmental Site Assessment Report

Table of Contents

Description **Page**

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A. Introduction

A.1. Authorization

Braun Intertec Corporation received authorization from Scott Zurn of Canadian Pacific Railway Company (Canadian Pacific) to conduct a Phase II Environmental Site Assessment (ESA) of the former depot dug water supply well area located approximately 740 feet east of the intersection of Farson Road and the railroad tracks, on the north side of the track, in Farson, Iowa (Site), in accordance with the scope of services described in Braun Intertec's Work Plan and Cost Proposal dated April 25, 2019, which was approved by the Iowa Department of Natural Resources (IDNR) in a letter to CP dated May 1, 2019.

A.2. Project Objective

The objective of the Phase II ESA was to investigate the magnitude and extent of the petroleum-impacted soil identified during water well sealing work completed during the fall of 2018.

B. Site Background

B.1. Site Location and Description

The Site is located approximately 740 feet east of the intersection of Farson Road and the railroad tracks, between Railway Street and the railroad tracks (see Figure 1). The Site is located within the southwest quarter of the southwest quarter of Section 16, Township 73 North, Range 12 West, in the city of Farson, Wapello County, Iowa.

The Site area was formerly a railroad depot. No structures remained at the Site. A Site Diagram is included as Figure 2.

The Site is bordered on the north by Railway Street and an agricultural property with residential properties located beyond; on the east by the railroad and green space with agricultural land located beyond; on the south by the railroad with agricultural land located beyond; and the west by the railroad and green space with agricultural land located beyond. Figure 3 shows the land use in the area.

B.2. Previous Site Investigations

In November 2018, Braun Intertec was contracted by Canadian Pacific (CP) to locate and seal a former depot dug water supply well. Excavation activities located the former well and continued to approximately 15 feet below ground surface during the well sealing activities. Based on Site observation, apparent petroleum contaminated soil was encountered. A soil sample, labeled Farson Depot, was collected for laboratory analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), lead, diesel range organics (DRO), and gasoline range organics (GRO). Analytical results indicated that relatively low level petroleum impacts were present particularly DRO was detected at 12 milligrams per kilograms (mg/kg) and GRO was detected at a concentration of 188 mg/kg. The results are summarized on the summary table in Appendix A. CP reported a petroleum release to the IDNR. The IDNR assigned the Site project number #2530 and requested that additional environmental investigation be conducted in email correspondence with CP dated December 3, 2018.

B.3. Published Geologic Information

B.3.a. Topography

According to the United States Geological Survey (USGS) 7.5-minute topographic map series, Farson, Iowa quadrangle, the Site is located at an elevation of approximately 790 to 800 feet above mean sea level.

B.3.b. Geology & Hydrogeology

According to the Iowa Geological Survey there is no published geologic or hydrogeologic information available for Wapello County or for the Farson quadrangle.

C. Scope of Services

The following tasks were conducted at the Site as part of this Phase II ESA:

- Subcontracted a licensed drilling contractor to clear public utilities through the Iowa One Call service.
- Cleared private utilities through the CP Call-Before-You-Dig program.

- Subcontracted a licensed drilling contractor to complete soil borings and install temporary groundwater monitoring wells.

- Conducted a receptor survey for drinking and non-drinking water wells, utilities, structures, and surface waters.

- Advanced five environmental soil borings and collected soil samples.

- Conducted environmental monitoring during drilling and screened soil samples collected from the borings for the presence of organic vapors using a photoionization detector (PID). Made and recorded visual and olfactory observations regarding potential contamination.

- Installed temporary monitoring wells in the soil borings and collected groundwater samples.

- Analyzed representative soil and groundwater samples for the following parameters: volatile petroleum hydrocarbons (benzene, toluene, ethylbenzene, and xylenes), methyl-tertiary butyl ether (MTBE), and total extractable hydrocarbons (THE).

- Analyzed three soil samples for grain size using a hydrometer.

- Evaluated the data and prepared this report.

C.1. Deviations from Work Plan

The locations of the five soil borings were slightly adjusted from the proposed locations due to utility conflicts and access issues.

The proposal stated that the soil borings would be advanced to depths of approximately 35 feet bgs or 5 feet into groundwater, whichever is shallower. The soil present at the Site is primarily clay and groundwater was not observed during drilling. One boring was advanced to 35 feet bgs, while the remaining four borings were advanced to depths between 15 and 20 feet bgs. After the borings were advanced to the termination depths, the drill rods were remove and temporary wells were installed and allowed to remain in place until sufficient groundwater was present for sample collection.

D. Investigation Methods and Procedures

The field work relating to the investigation was conducted on June 3 and 4, 2019. Prior to beginning the field investigation, public utilities were cleared through Iowa One Call and private utilities were cleared through a Canadian Pacific's Call-Before-You-Dig utility locating service.

Field methods and results are discussed in the following sections. A photo log is included as Appendeix B, soil boring logs are provided in Appendix C, and laboratory analytical reports are provided in Appendix D. SOPs used during the investigation were provided in the Work Plan for the investigation.

Five push-probe soil borings, designated GP-1 through GP-5, were advanced at the Site. The soil borings were advanced as follows and are shown on Figure 2:

- Soil boring GP-1 was advanced to a depth of 15 feet bgs in the location of the former depot well, closest to where the soil impacts were previously identified during the well excavation and sealing.

- Soil borings GP-2 through GP-5 were advanced to the north, east, south, and west, respectively, of the former depot well to depths ranging from 15 to 35 feet bgs.

D.1. Receptor Survey

A Receptor Survey was conducted which included a search for potential receptors including drinking and non-drinking water wells, utilities, structures, and surface water receptors. Potential receptors were mapped and recorded.

D.2. Soil Evaluation

D.2.a. Soil borings

Braun Intertec subcontracted Thein Well Company of Spicer, Minnesota to advance five soil borings, designated GP-1 through GP-5, at the Site to depths ranging from 15 to 35 feet bgs.

The soil borings were completed with a hydraulically-driven push-probe sampling rig. To collect the soil samples from the borings, a disposable thin-walled PVC liner was placed inside of a 5-foot long sampling tool. The borehole was then advanced using the sampling tool to a total penetration depth of up to

5 feet. After advancing the tooling, the sampler was removed from the borehole and the soil sample was retrieved from the PVC liner for field screening and classification. The process was then repeated to the termination depths of the borings.

Upon completion, soil borings were sealed in accordance with IDNR regulations.

D.2.b. Soil Classification and Monitoring

Soils samples from the soil borings were visually and manually classified in the field by an environmental technician using ASTM D 2487 "Unified Soils Classification System" and ASTM D 2488 "Recommended Practice for Visual and Manual Description of Soils."

Soil samples retrieved were examined by an environmental technician for unusual staining, odors, and other apparent signs of contamination. In addition, the soil samples were screened for the presence of organic vapors using a PID. The PID was equipped with a 10.6-electron-volt lamp and calibrated to an isobutylene standard. The PID was used to perform a headspace method of field analyses.

D.2.c. Soil Analyses

Select soil samples were collected from the soil borings for laboratory analysis. Soil samples were collected from intervals where indications of contamination were observed in the field. If no indications of contamination were observed, the soil samples were collected from the depth most likely to be impacted based on the potential contaminant source.

Samples were submitted to Pace Analytical Services of Minneapolis, Minnesota and analyzed for the following parameters:

- Volatile petroleum hydrocarbons—benzene, toluene, ethylbenzene, and xylenes (BTEX)—using Iowa Method OA-1
- Methyl tertiary-butyl ether (MTBE) using a gas chromatography/mass spectrometry (GC/MS) version of Iowa Method OA-1
- Semi-volatile petroleum compounds—all grades of diesel fuel, fuel oil, kerosene oil, and mineral spirits—known as total extractable hydrocarbons (TEH) using Iowa Method OA-2

In addition, three representative soil samples from a depth within the water table were submitted for grain size analysis using a hydrometer in order to calculate estimated hydraulic conductivity.

D.3. Groundwater Evaluation

Temporary monitoring wells were installed in the five soil borings to evaluate groundwater conditions at the Site.

After the soil borings were advanced to the termination depths, temporary monitoring wells were constructed in each of the five soil borings using 1-inch-diameter PVC riser and 5-foot long, 10-slot screens. One temporary well (GP-2) was installed on June 3, 2019. However, no water was observed in GP-2 immediately after installation, therefore the temporary well was left in place overnight. The remaining four temporary wells were installed on June 4, 2019 and allowed to remain in place for several hours until sufficient groundwater was present for sample collection. Prior to sampling, static groundwater levels were measured in each temporary monitoring well to the nearest 0.01 foot and recorded. The temporary monitoring wells were sampled using a length of new polyethylene tubing equipped with a check ball valve. Water samples retrieved were examined by the field technician for unusual odors, petroleum-like sheen, and other apparent signs of contamination. The groundwater samples were placed directly into laboratory-supplied containers, preserved appropriately, and submitted to the laboratory for chemical analysis.

Groundwater samples collected from four of the five temporary wells were submitted to Pace and analyzed for the following parameters:

- Volatile petroleum hydrocarbons—BTEX—using Iowa Method OA-1
- MTBE using a GC/MS version of Iowa Method OA-1
- TEH using Iowa Method OA-1

No groundwater sample was collected from GP-2 because it was suspected of being perched groundwater and not a representative sample.

E. Investigation Results

E.1. Receptor Survey

Eleven properties within 1,000 feet of the Site were observed to have a basement based on observations made from public areas during our walking survey.

A well records search was conducted on the Iowa Geological Survey for wells located within 1,000 feet of the Site. Review of the database revealed no documentation of water wells located on the Site. However, one property that fell within 1,000 feet of the Site has a well that is not potable but used for geothermal heating and/or cooling and is not considered to be at risk.

No surface water features were observed within 1,000 feet of the Site, with the exception of two ditches along the railroad tracks in the vicinity of the former depot well which had standing water at the time that was from the recent rain event that occurred. No sheen was observed on the water in the ditch.

E.2. Geologic Conditions

Soil boring logs with descriptions of the various soil strata encountered during the soil boring operations and water level information are contained in Appendix C. The depths shown as changes between the soil types are approximate. The actual changes may be transitional, and the transition depths are likely to be horizontally variable.

Fill soils, consisting primarily of poorly graded sand with gravel, poorly graded gravel, and poorly graded sand with clay, were encountered from the ground surface to depths of 2 to 2.5 feet bgs. No fill soil was observed in borings GP-2 and GP-4. Underlying the fill soil was apparent native soil consisting of lean clay, with some fat clay in boring GP-2 from 12.5 to 15.5 feet bgs.

Groundwater was not observed while drilling. Temporary wells were installed in the five borings and left in place until enough groundwater was present to sample. Groundwater was measured in the temporary wells at depths ranging from 2.35 to 5.3 feet bgs.

E.3. Field Screening

Soil recovered from the soil borings was screened by the field technician for evidence of contamination, including odors, staining, and the presence of debris. PID screening of the soil generally exhibited organic vapor concentrations of less than 5 parts per million (ppm), which are considered to be general background readings, with the exception of boring GP-1 in which PID results of 194.4 ppm from 10 to 12.5 foot bgs and 13.6 ppm from 12.5 to 15 feet bgs were recorded. Soil screening PID results are included on the boring logs in Appendix C. No other indications of contamination was observed in the borings completed.

Groundwater samples were examined by the field technician for indications of contamination, including unusual odors, petroleum-like sheen, and other apparent signs of contamination. No odors, sheens, or other signs of contamination were observed in the groundwater recovered from any of the temporary and/or permanent monitoring wells.

E.4. Soil Analytical Results

This section provides a discussion of soil analytical results. A summary of the soil analytical results is provided in Table 1. The complete laboratory report with chain-of-custody form is included in Appendix D.

The soil analytical results can be compared with the IDNR Statewide Standards for Soil which are also listed on Table 1. The Statewide Standards are allowable risk-based contaminant concentrations derived by the IDNR. Concentrations of contaminants in soil and the Statewide Standard for Soil are expressed in units of mg/kg.

The following provides a summary of the soil analytical results.

- No VOCs were detected at concentrations greater than or equal to the laboratory reporting limits, with the exception of sample GP-1 (10'-12.5') in which ethylbenzene was detected at a concentration of 5.75 mg/kg and total xylenes at 6.22 mg/kg; neither concentration exceeds the Statewide Standards for Soil of 7,600 and 76 mg/kg, respectively.

- TEH as diesel no. 2 was detected in sample GP-1 (10'-12.5') at a concentration of 188 mg/kg and in sample GP-1 (12.5'-15') at 22.6 mg/kg; neither concentration exceeds the Statewide Standards for Soil of 28,000 mg/kg. TEH as diesel no. 2 was not detected at concentrations greater than or equal to the laboratory reporting limits in the other soil samples.

E.4.a. Grain Size Analysis

Three soil samples were analyzed for grain size using a sieve and a hydrometer. Two of the samples were determined to be lean clay and the third fat clay. Based on published information, clays do not have a hydraulic conductivity above 0.44 meters per day (m/day). Therefore, the groundwater analytical results can be compared to the IDNR Statewide Standards for a Non-protected Groundwater Source. The grainsize analysis lab results are included in Appendix D.

E.5. Groundwater Analytical Results

This section provides a discussion of the groundwater analytical results. A summary of the groundwater analytical results is provided in Table 2. The complete laboratory reports with chain-of-custody forms are included in Appendix D.

For comparison purposes, Table 2 includes Statewide Standards for a Protected Groundwater Source and for a Non-protected Groundwater Source from the IDNR. Concentrations of contaminants in water and the Statewide Standards for Groundwater are expressed in units of milligrams per liter (mg/L).

The following provides a summary of the groundwater analytical results.

- No VOCs were detected at concentrations greater than or equal to the laboratory reporting limits, with the exception of the sample from GP-1. Benzene, ethylbenzene, toluene, and xylenes were detected in sample GP-1 at concentrations that exceeded the laboratory reporting limits but that did not exceed Statewide Standards for a Non-protected Groundwater Source.

- TEH as diesel no. 2 was detected in sample GP-1 at a concentration of 32.400 mg/L which exceeded the laboratory reporting limit but does not exceed the Statewide Standards for a Non-protected Groundwater Source of 44 mg/L. TEH as diesel no. 2 was not detected at concentrations greater than or equal to the laboratory reporting limits in the other groundwater samples.

E.6. Quality Assurance/Quality Control

Samples were placed in clean, laboratory supplied containers, preserved, labeled, and transported to the Pace laboratory under refrigerated conditions using chain-of-custody procedures. Analyses were performed using EPA or other recognized standard procedures.

A quality assessment of field procedures and analytical laboratory reports was performed to evaluate potential effects on data quality used to support project objectives. All applicable Braun Intertec SOPs were followed as prescribed unless otherwise noted in this report. Notable findings are provided in more detail below and incorporated, where necessary, into this report.

A water trip blank accompanied the investigative samples and was analyzed for VOCs. No contaminants were detected in the water trip blank at concentrations greater than the laboratory method reporting limits. Data were reviewed prior to release, quality-control guidelines were generally met, and the data are considered usable.

F. Conclusions

Based on the results of the Phase II ESA, a limited area of petroleum soil and groundwater impacts was identified in the area of boring GP-1.

Soil and groundwater samples collected from the four soil borings advanced to the north, east, south, and west of boring GP-1 did not exhibit elevated PID readings or elevated concentrations of impacts. Therefore, the petroleum impacts are limited to the vicinity of boring GP-1 and the clay soil in the area will limit the migration of the impacts.

The receptor survey results did not identify permanent groundwater receptors within 1,000 feet of GP-1. Temporary standing water was observed in the ditch nearby and was the results of recent rain event and is not considered to be a risk. The nearest basement is located approximately 400 feet from GP-1. Based on the limited extent of the impacts and the clay soil present in the area, the risk to the structures with basements appears low.

G. Recommendations

Based on the limited extent of petroleum contamination in the vicinity of boring GP-1, clay soil in the area, the risks associated with the impacts appears low and no further investigation appears warranted at this time. We recommend that this report be submitted to the IDNR and request that the project be closed.

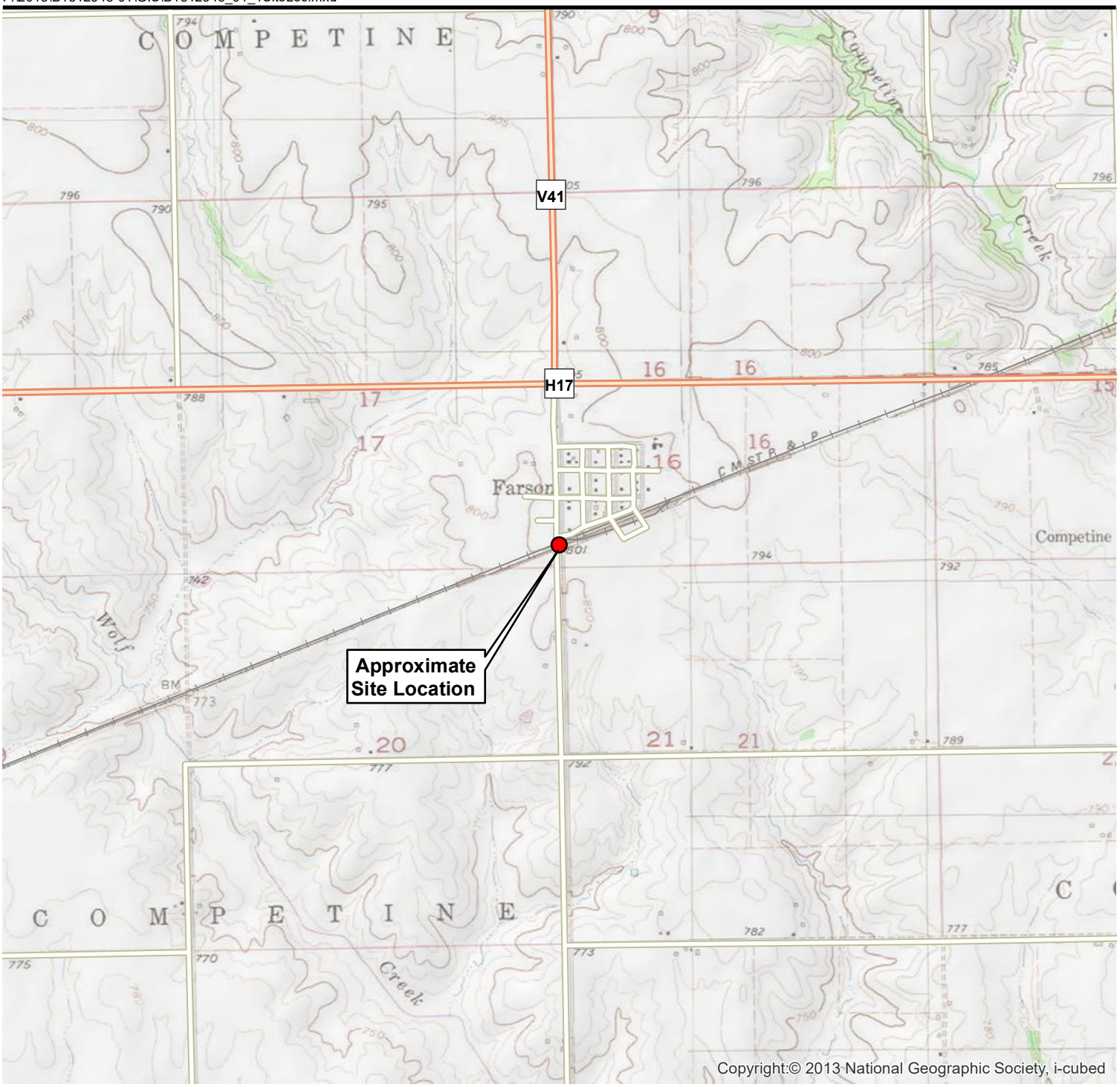
H. Assessment Limitations

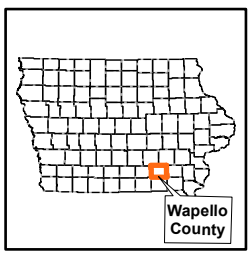
The analyses and conclusions submitted in this report are based on field observations and the results of laboratory analyses of soil and groundwater samples collected from the soil borings completed for this project.

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

Figures

F:\2018\B1812348-01\GIS\B1812348_01_1SiteLoc.mxd





N

0 1,000 2,000 Feet

1 inch = 2,000 feet

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Project No: B1812348.01

Drawing No: B1812348_01_1SiteLoc

Drawn By:	CMF
Date Drawn:	3/13/2019
Checked By:	KBJ
Last Modified:	8/7/2019

Phase II Environmental Site Assessment

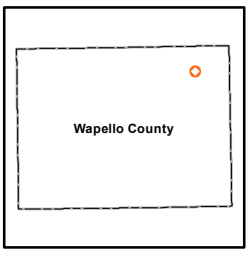
Canadian Pacific Railway Company

Farson, Iowa

Site Location Map

Figure 1

F:\2018\B1812348-01\GIS\B1812348_01_SiteDgrm.mxd



Approximate Former Depot Well

Approximate Soil Boring Location

N

0 40 80

Feet

1 inch = 80 feet

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Project No:
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B1812348_01_SiteDgrm

Drawn By:	CMF
Date Drawn:	3/13/2019
Checked By:	KBJ
Last Modified:	8/1/2019

Former Water Well Investigation and Sealing Report

Canadian Pacific Railway Company

Farson, Iowa

Site Diagram

Figure 2

F:\2018\B1812348-01\GIS\B1812348_01_RecSrvy.mxd

Approximate Location of Former Depot Well

Approximate Location of Geothermal Well

Ditches with ponded water

Structure with basement

1000' Radius

N

0 150 300

Feet

1 inch = 300 feet

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Last Modified:	8/1/2019

Former Water Well Investigation and Sealing Report

Canadian Pacific Railway Company

Farson, Iowa

Receptor Survey

Figure 3

Tables

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Table 1
Soil Analytical Results
Phase II Environmental Site Assessment
Farson, Iowa
Project B1812348.01

Compound/Parameter	CAS No.	GP-1 (7.5'-10')	GP-1 (10'-12.5')	GP-1 (12.5'-15')	GP-2 (7.5'-10')	GP-3 (7.5'-10')	GP-4 (12.5'-15')	GP-5 (7.5'-10')	Iowa DNR Statewide Standard for Soil
		06/04/2019	06/04/2019	06/04/2019	06/03/2019	06/04/2019	06/04/2019	06/04/2019	
Volatile Organic Compounds (VOCs) (mg/kg)									
Benzene	71-43-2	<0.0498	<0.0494	<0.0502	<0.0486	<0.0493	<0.0494	<0.0494	56
Ethylbenzene	100-41-4	<0.0995	**5.75**	<0.100	<0.0973	<0.0986	<0.0988	<0.0987	7,600
Methyl tert-butyl ether (MtBE)	1634-04-4	<0.0498	<0.0494	<0.0502	<0.0486	<0.0493	<0.0494	<0.0494	2,300
Toluene	108-88-3	<0.0995	<0.0987	<0.100	<0.0973	<0.0986	<0.0988	<0.0987	6,100
Xylenes, total	1330-20-7	<0.249	**6.22**	<0.251	<0.243	<0.247	<0.247	<0.247	76
Other Parameters (mg/kg)									
TEH as Diesel No. 2	68334-30-5	<18.8	**188**	**22.6**	<19.2	<19.4	<19.4	<19.4	28,000

Notes

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

NE = Regulatory limit not established for this parameter.

TEH = Total extractable hydrocarbons.

[b] = Regulatory limit for combination of m-, p-, and o-xylenes.

Bold - Result above laboratory reporting limit.

Exceeds Iowa DNR Statewide Standard for Soil (no exceedances)

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Table 2
Groundwater Analytical Results
Phase II Environmental Site Assessment
Farson, Iowa
Project B1812348.01

Compound/Parameter	CAS No.	Sample Identifier, Depth to Groundwater, and Date Collected					Iowa DNR Statewide Standards for a Non-protected Groundwater Source (mg/L)
		GP-1	**GP-3**	**GP-4**	**GP-5**	**Trip Blank**	
		4.75'	4.32'	5.3'	3.98'	---	
		06/04/2019	06/04/2019	06/04/2019	06/04/2019	06/04/2019	
Volatile Organic Compounds (VOCs) (mg/L)							
Benzene	71-43-2	**0.0254**	<0.0010	<0.0010	<0.0010	<0.0010	0.064
Ethylbenzene	100-41-4	**3.310**	<0.0010	<0.0010	<0.0010	<0.0010	3.5
Methyl tert-butyl ether (MtBE)	1634-04-4	<.0050	<0.0010	<0.0010	<0.0010	<0.0010	1
Toluene	108-88-3	**0.0640**	<0.0010	<0.0010	<0.0010	<0.0010	5
Xylenes, total	1330-20-7	**3.030**	<0.0030	<0.0030	<0.0030	<0.0030	50
Other Parameters (mg/L)							
TEH as Diesel No. 2	68334-30-5	**32.400**	<0.400	<0.400	<0.400	---	44

Notes

mg/L = Milligrams per liter.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

NE = Regulatory limit not established for this parameter.

TEH = Total extractable hydrocarbons.

No groundwater sample was collected from GP-2.

Bold - Result above laboratory reporting limit.

Exceeds Iowa DNR Statewide Standard for a Non-protected Groundwater Source (no exceedances)

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Appendix A

Previous Investigation Data

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Table 1
Soil Analytical Results
Former Water Well Location Investigation and Sealing Report
Farson, Iowa
Project B1812348.00

Compound/Parameter	CAS No.	Sample Identifier and Date Collected **Farson Depot (12-14')** 11/30/2018	Iowa DNR Statewide Standard (mg/kg)
Volatile Organic Compounds (VOCs) (mg/kg)			
n-Butylbenzene	104-51-8	**0.88**	3,800
sec-Butylbenzene	135-98-8	**0.24**	NE
Ethylbenzene	100-41-4	**1.4**	7,600
Isopropylbenzene (Cumene)	98-82-8	**0.30**	7,600
p-Isopropyltoluene	99-87-6	**0.18**	NE
Naphthalene	91-20-3	**0.46**	1,100
n-Propylbenzene	103-65-1	**1.6**	7,600
1,2,4-Trimethylbenzene	95-63-6	**8.1**	760
1,3,5-Trimethylbenzene	108-67-8	**2.9**	760
Xylenes, total [b]	1330-20-7	**1.6**	15,000 [b]
All other reported VOCs	---	<RL	NE
Semi-Volatile Organic Compounds (SVOCs) (mg/kg)			
All other reported SVOCs	---	<RL	NE
Metals (mg/kg)			
Arsenic, Total	7440-38-2	**5.6**	17
Barium, Total	7440-39-3	**145**	15,000
Cadmium, Total	7440-43-9	<0.19	70
Chromium, Total	7440-47-3	**16.4**	190
Lead, Total	7439-92-1	**10.6**	400
Mercury, Total	7439-97-6	**0.024**	23
Selenium, Total	7782-49-2	<1.3	390
Silver, Total	7440-22-4	<0.63	370
Other Parameters (mg/kg)			
Diesel Range Organics (DRO)	---	**12.0** [T7]	28,000
Gasoline Range Organics (GRO)	---	**188**	NE

Notes

mg/kg = Milligrams per kilogram.

< = Not detected at or above the laboratory reporting limit indicated.

--- = Not analyzed or calculated for this parameter or not applicable.

RL = Reporting limits for other parameters that are not listed individually in this table because their concentrations were below reporting limits provided in the laboratory report.

NE = Regulatory limit not established for this parameter.

cPAH = Individual regulatory limit not established for this carcinogenic PAH; included in BaP equivalent calculation.

[b] = Regulatory limit for combination of m-, p-, and o-Xylenes.

[T7] = Low boiling point hydrocarbons are present in the sample.

Exceeds Iowa Statewide Standard

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Appendix B

Photograph Log

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Photograph #1	Farson, IA Phase II ESA	B1812348.01
Date:	June 3, 2019	BRAUN INTERTEC
Direction:	Facing north	
Subject:	Location of boring GP-2 marked.	

Photograph #2	Farson, IA Phase II ESA	B181234.01
Date:	June 4, 2019	BRAUN INTERTEC
Direction:	Facing south	
Subject:	Location of boring GP-1 marked in foreground, working on boring GP-4.	

Photograph #3	Farson, IA Phase II ESA	B181348.01
Date:	June 4, 2019	BRAUN INTERTEC
Direction:	Facing west	
Subject:	Working on boring GP-3.	

Photograph #4	Farson, IA Phase II ESA	B1812348.01
Date:	June 4, 2019	BRAUN INTERTEC
Direction:	Facing east	
Subject:	Working on Boring GP5. The former depot footing is visible in the foreground.	

Appendix C

Soil Boring Logs

BRAUN INTERTEC

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B1812348.01
Environmental Investigation
Farson, IA
East of Intersection of Farson Road & Railroad Tracks
Farson, Iowa

BORING: **GP-1**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Thein Well Drilling | LOGGED BY: D. Bradshaw | START DATE: 06/04/19 | END DATE: 06/04/19

SURFACE ELEVATION: | RIG: | METHOD: Direct Push | SURFACING: Gravel and vegetation | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
		FILL: POORLY GRADED SAND with GRAVEL (SP), brown, moist				
2.5				0.2		Water not observed at end of drilling
		LEAN CLAY (CL), organic, dark brown, moist, firm				Temporary well installed with screen set from 10 to 15 feet
6.0				0.3		
		LEAN CLAY (CL), mottled brown and gray, hard				
8.0				0.5		Water level measured at 4.75 in temporary well
9.5		LEAN CLAY (CL), mottled gray, moist, hard				
		LEAN CLAY (CL), gray, moist, soft		0.3		Soil sample GP-1 (7.5-10') @ 15:31 collected for analytical testing
11.5						
		LEAN CLAY (CL), gray, moist, firm		194.4		
13.5						Soil sample GP-1 (10-12.5') @ 16:00 collected for analytical testing
15.0		LEAN CLAY (CL), gray and green, moist, hard, petroleum-like odor		13.6		
		END OF BORING				
		Boring then backfilled with bentonite grout				

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B1812348.01
Environmental Investigation
Farson, IA
East of Intersection of Farson Road & Railroad Tracks
Farson, Iowa

BORING: **GP-2**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Thein Well Drilling | LOGGED BY: D. Bradshaw | START DATE: 06/03/19 | END DATE: 06/03/19

SURFACE ELEVATION: | RIG: | METHOD: Direct Push | SURFACING: Gravel and vegetation | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
		LEAN CLAY (CL), with organics, dark brown, moist, firm				Water not observed at end of drilling
2.5				2.5		
		LEAN CLAY (CL), mottled brown, moist, firm				Temporary well installed with screen set from 10 to 20 feet
5.0			5	1.4		Water level measured at 2.35 feet in temporary well the next day
		LEAN CLAY (CL), mottled gray and brown, moist, soft				
8.0				1.1		Water was suspected to be perched water and was not sampled
		LEAN CLAY (CL), gray, moist, very soft				
10.0			10	2.8		
		LEAN CLAY (CL), gray, moist, hard				Soil sample GP-2 (7.5-10') @ 15:21 collected for analytical testing
12.5				0.7		
		FAT CLAY (CH), dark gray, moist, hard				
14.5						
15.5		FAT CLAY (CH), dark gray, moist, hard	15	1.2		
		LEAN CLAY (CL), gray, moist, hard				
				1.7		
20.0				1.7		
		END OF BORING	20			
		Boring then backfilled with bentonite grout				
			25			
			30			

BRAUN INTERTEC
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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B1812348.01
Environmental Investigation
Farson, IA
East of Intersection of Farson Road & Railroad Tracks
Farson, Iowa

BORING: **GP-3**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Thein Well Drilling | LOGGED BY: D. Bradshaw | START DATE: 06/04/19 | END DATE: 06/04/19

SURFACE ELEVATION: | RIG: | METHOD: Direct Push | SURFACING: Gravel | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
2.5		POORLY GRADED SAND with GRAVEL (SP), brown, moist		0.3		Water not observed at end of drilling
5.0		LEAN CLAY (CL), dark brown, moist, firm		0.3		Temporary well installed with screen set from 10 to 15 feet
8.0		LEAN CLAY (CL), mottled brown, moist, firm		0.1		Water level measured at 4.32 feet in temporary well
12.5		LEAN CLAY (CL), mottled gray, moist, soft		0.3		Water sample GP-3 @ 13:10 collected for analytical testing
15.0		LEAN CLAY (CL), dark gray, moist, hard		0.1		Soil sample GP-3 (7.5-10') @ 12:37 collected for analytical testing.
		END OF BORING Boring then backfilled with bentonite grout		0.1		

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B1812348.01
Environmental Investigation
Farson, IA
East of Intersection of Farson Road & Railroad Tracks
Farson, Iowa

BORING: **GP-4**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Thein Well Drilling | LOGGED BY: D. Bradshaw | START DATE: 06/04/19 | END DATE: 06/04/19

SURFACE ELEVATION: | RIG: | METHOD: Direct Push | SURFACING: Gravel | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
0.5		POORLY GRADED GRAVEL (GP), brown, moist				
2.0		POORLY GRADED SAND with GRAVEL (SP), brown, moist				
		LEAN CLAY (CL), with organics, dark brown, moist, firm		0.2		Water not observed at end of drilling.
6.0			5	0.4		Temporary well installed with screen set from 20 to 35 feet
		LEAN CLAY (CL), mottled gray, moist, firm		0.1		Water level measured at 5.30 feet in temporary well
			10	0.2		Water sample GP-4 @ 09:10 collected for analytical testing
13.0				0.1		Soil sample GP-4 (12.5-15') @ 08:26 collected for analytical testing
15.0		LEAN CLAY (CL), mottled brown and dark gray, moist, hard, hard				
15.5		LEAN CLAY (CL), brown, wet, hard	15	0.1		
		LEAN CLAY (CL), brown, moist, hard		1.3		
20.0			20	0.8		
		LEAN CLAY (CL), dark gray, moist, hard		0.3		
25.0			25	0.2		
		LEAN CLAY (CL), dark gray, moist, hard		0.5		
30.0			30	1.0		
32.0		LEAN CLAY (CL), mottled gray, moist, hard				

Continued on next page

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B1812348.01
Environmental Investigation
Farson, IA
East of Intersection of Farson Road & Railroad Tracks
Farson, Iowa

BORING: **GP-4**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Thein Well Drilling | LOGGED BY: D. Bradshaw | START DATE: 06/04/19 | END DATE: 06/04/19

SURFACE ELEVATION: | RIG: | METHOD: Direct Push | SURFACING: Gravel | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
		LEAN CLAY (CL), with Gravel, mottled brown and gray, moist, hard		0.3		
35.0				0.3		
		END OF BORING				
		Boring then backfilled with bentonite grout				

35
40
45
50
55
60

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LOG OF BORING

See Descriptive Terminology sheet for explanation of abbreviations

Project Number B1812348.01
Environmental Investigation
Farson, IA
East of Intersection of Farson Road & Railroad Tracks
Farson, Iowa

BORING: **GP-5**

LOCATION: See attached sketch

NORTHING: | EASTING:

DRILLER: Thein Well Drilling | LOGGED BY: D. Bradshaw | START DATE: 06/04/19 | END DATE: 06/04/19

SURFACE ELEVATION: | RIG: | METHOD: Direct Push | SURFACING: Vegetation and wood debris | WEATHER:

Elev./ Depth ft	Water Level	Description of Materials (Soil-ASTM D2488 or 2487; Rock-USACE EM 1110-1-2908)	Sample	PID ppm	Well Details	Tests or Remarks
		POORLY GRADED SAND with CLAY (SP-SC), dark brown, moist				Water not observed at end of drilling
2.5				0.1		
		LEAN CLAY (CL), dark gray, moist, firm				Temporary well installed with screen set from 10 to 15 feet
4.5						
5.0		LEAN CLAY (CL), gray, moist, firm	5	0.4		Water level measured at 3.98 feet in temporary well.
		LEAN CLAY (CL), with organics, mottled gray, moist, hard				
7.0						
		LEAN CLAY (CL), mottled gray, moist, soft		0.3		Water sample GP-5 @ 14:06 collected for analytical testing
			10	0.2		
12.0						Soil sample GP-5 (7.5-10') @ 14:20 collected for analytical testing
		LEAN CLAY (CL), dark gray, moist, firm		0.2		
15.0				0.2		
			15			
		END OF BORING				
		Boring then backfilled with bentonite grout				
			20			
			25			
			30			

Appendix D

Laboratory Analytical Report

BRAUN INTERTEC

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

June 19, 2019

Jeremy Hansen
Braun Intertec Corp.
11001 Hampshire Ave S
Bloomington, MN 55438

RE: Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Dear Jeremy Hansen:
Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Bob Michels
bob.michels@pacelabs.com
(612)709-5046
Project Manager

Enclosures

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 19-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Missouri SEKS Micro Certification: 10070
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-18-11
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10478177001	**GP-2 (7.5'-10')**	Solid	06/03/19 15:21	06/07/19 10:00
10478177002	**GP-4 (12.5'-15')**	Solid	06/04/19 08:26	06/07/19 10:00
10478177003	**GP-4**	Water	06/04/19 09:10	06/07/19 10:00
10478177004	**GP-3 (7.5'-10')**	Solid	06/04/19 12:37	06/07/19 10:00
10478177005	**GP-3**	Water	06/04/19 13:10	06/07/19 10:00
10478177006	**GP-5 (7.5'-10)**	Solid	06/04/19 14:20	06/07/19 10:00
10478177007	**GP-5**	Water	06/04/19 15:03	06/07/19 10:00
10478177008	**GP-1**	Water	06/04/19 16:20	06/07/19 10:00
10478177009	**GP-1 (7.5'-10')**	Solid	06/04/19 15:31	06/07/19 10:00
10478177010	**GP-1 (10'-12.5')**	Solid	06/04/19 16:00	06/07/19 10:00
10478177011	**GP-1 (12.5'-15')**	Solid	06/04/19 16:01	06/07/19 10:00
10478177012	**Trip Blank**	Water	06/04/19 00:00	06/07/19 10:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE ANALYTE COUNT

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10478177001	**GP-2 (7.5'-10')**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177002	**GP-4 (12.5'-15')**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177003	**GP-4**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
10478177004	**GP-3 (7.5'-10')**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177005	**GP-3**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
10478177006	**GP-5 (7.5'-10)**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177007	**GP-5**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
10478177008	**GP-1**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD, SRM2	8	PASI-K
10478177009	**GP-1 (7.5'-10')**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177010	**GP-1 (10'-12.5')**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177011	**GP-1 (12.5'-15')**	OA2	AHS	3	PASI-K
		EPA 8260/OA1	EMD	8	PASI-K
		ASTM D2974	DWC	1	PASI-K
10478177012	**Trip Blank**	EPA 8260/OA1	EMD	9	PASI-K

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Method: **OA2**
Description: OA2 GCS
Client: Braun Intertec Corporation
Date: June 19, 2019

General Information:
11 samples were analyzed for OA2. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

The samples were prepared in accordance with OA2 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 590068

1M: The sample does not match a profile of laboratory standards. Hydrocarbon fractions are present from the early gasoline to late motor oil range. Quantitation achieved using diesel fuel as a reference standard.

- GP-1 (10'-12.5') (Lab ID: 10478177010)
  - TEH as Diesel No.2

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Method: **EPA 8260/OA1**
Description: 8260/OA1 UST
Client: Braun Intertec Corporation
Date: June 19, 2019

General Information:
7 samples were analyzed for EPA 8260/OA1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 8260/OA1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Method: **EPA 8260/OA1**
Description: 8260/OA1 UST, Water
Client: Braun Intertec Corporation
Date: June 19, 2019

General Information:
5 samples were analyzed for EPA 8260/OA1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 590549

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

QC Batch: 591045

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-2 (7.5'-10') **Lab ID: 10478177001** Collected: 06/03/19 15:21 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	ND	mg/kg	19.2	1	06/12/19 11:08	06/14/19 15:59		
Surrogates								
n-Tetracosane (S)	100	%	63-123	1	06/12/19 11:08	06/14/19 15:59	646-31-1	
p-Terphenyl (S)	87	%	57-123	1	06/12/19 11:08	06/14/19 15:59	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	48.6	1	06/12/19 11:12	06/12/19 19:12	71-43-2	
Toluene	ND	ug/kg	97.3	1	06/12/19 11:12	06/12/19 19:12	108-88-3	
Ethylbenzene	ND	ug/kg	97.3	1	06/12/19 11:12	06/12/19 19:12	100-41-4	
Xylene (Total)	ND	ug/kg	243	1	06/12/19 11:12	06/12/19 19:12	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	48.6	1	06/12/19 11:12	06/12/19 19:12	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	78-118	1	06/12/19 11:12	06/12/19 19:12	17060-07-0	
4-Bromofluorobenzene (S)	102	%	83-119	1	06/12/19 11:12	06/12/19 19:12	460-00-4	
Toluene-d8 (S)	101	%	80-120	1	06/12/19 11:12	06/12/19 19:12	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**22.7**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-4 (12.5'-15') **Lab ID: 10478177002** Collected: 06/04/19 08:26 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	ND	mg/kg	19.4	1	06/12/19 11:08	06/14/19 16:24		
Surrogates								
n-Tetracosane (S)	92	%	63-123	1	06/12/19 11:08	06/14/19 16:24	646-31-1	
p-Terphenyl (S)	82	%	57-123	1	06/12/19 11:08	06/14/19 16:24	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	49.4	1	06/12/19 11:12	06/12/19 19:27	71-43-2	
Toluene	ND	ug/kg	98.8	1	06/12/19 11:12	06/12/19 19:27	108-88-3	
Ethylbenzene	ND	ug/kg	98.8	1	06/12/19 11:12	06/12/19 19:27	100-41-4	
Xylene (Total)	ND	ug/kg	247	1	06/12/19 11:12	06/12/19 19:27	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	49.4	1	06/12/19 11:12	06/12/19 19:27	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	78-118	1	06/12/19 11:12	06/12/19 19:27	17060-07-0	
4-Bromofluorobenzene (S)	102	%	83-119	1	06/12/19 11:12	06/12/19 19:27	460-00-4	
Toluene-d8 (S)	99	%	80-120	1	06/12/19 11:12	06/12/19 19:27	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**21.4**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-4 **Lab ID: 10478177003** Collected: 06/04/19 09:10 Received: 06/07/19 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: OA2							
TEH as Diesel No.2	ND	mg/L	0.40	1	06/11/19 19:31	06/12/19 18:48		
Surrogates								
p-Terphenyl (S)	73	%	45-114	1	06/11/19 19:31	06/12/19 18:48	92-94-4	
n-Tetracosane (S)	64	%	24-120	1	06/11/19 19:31	06/12/19 18:48	646-31-1	
8260/OA1 UST, Water	Analytical Method: EPA 8260/OA1							
Benzene	ND	ug/L	1.0	1		06/13/19 22:31	71-43-2	
Toluene	ND	ug/L	1.0	1		06/13/19 22:31	108-88-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/19 22:31	100-41-4	
Xylene (Total)	ND	ug/L	3.0	1		06/13/19 22:31	1330-20-7	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/19 22:31	1634-04-4	
Surrogates								
Toluene-d8 (S)	98	%	80-120	1		06/13/19 22:31	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		06/13/19 22:31	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	77-122	1		06/13/19 22:31	17060-07-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-3 (7.5'-10') **Lab ID: 10478177004** Collected: 06/04/19 12:37 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	ND	mg/kg	19.4	1	06/12/19 11:08	06/14/19 16:32		
Surrogates								
n-Tetracosane (S)	95	%	63-123	1	06/12/19 11:08	06/14/19 16:32	646-31-1	
p-Terphenyl (S)	83	%	57-123	1	06/12/19 11:08	06/14/19 16:32	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	49.3	1	06/12/19 11:12	06/12/19 19:43	71-43-2	
Toluene	ND	ug/kg	98.6	1	06/12/19 11:12	06/12/19 19:43	108-88-3	
Ethylbenzene	ND	ug/kg	98.6	1	06/12/19 11:12	06/12/19 19:43	100-41-4	
Xylene (Total)	ND	ug/kg	247	1	06/12/19 11:12	06/12/19 19:43	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	49.3	1	06/12/19 11:12	06/12/19 19:43	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	78-118	1	06/12/19 11:12	06/12/19 19:43	17060-07-0	
4-Bromofluorobenzene (S)	99	%	83-119	1	06/12/19 11:12	06/12/19 19:43	460-00-4	
Toluene-d8 (S)	101	%	80-120	1	06/12/19 11:12	06/12/19 19:43	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**24.7**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-3 **Lab ID: 10478177005** Collected: 06/04/19 13:10 Received: 06/07/19 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: OA2							
TEH as Diesel No.2	ND	mg/L	0.40	1	06/11/19 19:31	06/12/19 18:56		
Surrogates								
p-Terphenyl (S)	74	%	45-114	1	06/11/19 19:31	06/12/19 18:56	92-94-4	
n-Tetracosane (S)	66	%	24-120	1	06/11/19 19:31	06/12/19 18:56	646-31-1	
8260/OA1 UST, Water	Analytical Method: EPA 8260/OA1							
Benzene	ND	ug/L	1.0	1		06/13/19 22:47	71-43-2	
Toluene	ND	ug/L	1.0	1		06/13/19 22:47	108-88-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/19 22:47	100-41-4	
Xylene (Total)	ND	ug/L	3.0	1		06/13/19 22:47	1330-20-7	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/19 22:47	1634-04-4	
Surrogates								
Toluene-d8 (S)	97	%	80-120	1		06/13/19 22:47	2037-26-5	
4-Bromofluorobenzene (S)	101	%	80-120	1		06/13/19 22:47	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	77-122	1		06/13/19 22:47	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-5 (7.5'-10) **Lab ID: 10478177006** Collected: 06/04/19 14:20 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	ND	mg/kg	19.4	1	06/12/19 11:08	06/14/19 16:40		
Surrogates								
n-Tetracosane (S)	89	%	63-123	1	06/12/19 11:08	06/14/19 16:40	646-31-1	
p-Terphenyl (S)	79	%	57-123	1	06/12/19 11:08	06/14/19 16:40	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	49.4	1	06/12/19 11:12	06/12/19 19:59	71-43-2	
Toluene	ND	ug/kg	98.7	1	06/12/19 11:12	06/12/19 19:59	108-88-3	
Ethylbenzene	ND	ug/kg	98.7	1	06/12/19 11:12	06/12/19 19:59	100-41-4	
Xylene (Total)	ND	ug/kg	247	1	06/12/19 11:12	06/12/19 19:59	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	49.4	1	06/12/19 11:12	06/12/19 19:59	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	78-118	1	06/12/19 11:12	06/12/19 19:59	17060-07-0	
4-Bromofluorobenzene (S)	102	%	83-119	1	06/12/19 11:12	06/12/19 19:59	460-00-4	
Toluene-d8 (S)	100	%	80-120	1	06/12/19 11:12	06/12/19 19:59	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**23.0**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-5 **Lab ID: 10478177007** Collected: 06/04/19 15:03 Received: 06/07/19 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: OA2							
TEH as Diesel No.2	ND	mg/L	0.40	1	06/11/19 19:31	06/12/19 19:04		
Surrogates								
p-Terphenyl (S)	77	%	45-114	1	06/11/19 19:31	06/12/19 19:04	92-94-4	
n-Tetracosane (S)	68	%	24-120	1	06/11/19 19:31	06/12/19 19:04	646-31-1	
8260/OA1 UST, Water	Analytical Method: EPA 8260/OA1							
Benzene	ND	ug/L	1.0	1		06/13/19 23:02	71-43-2	
Toluene	ND	ug/L	1.0	1		06/13/19 23:02	108-88-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/19 23:02	100-41-4	
Xylene (Total)	ND	ug/L	3.0	1		06/13/19 23:02	1330-20-7	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/19 23:02	1634-04-4	
Surrogates								
Toluene-d8 (S)	97	%	80-120	1		06/13/19 23:02	2037-26-5	
4-Bromofluorobenzene (S)	100	%	80-120	1		06/13/19 23:02	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	77-122	1		06/13/19 23:02	17060-07-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-1 **Lab ID: 10478177008** Collected: 06/04/19 16:20 Received: 06/07/19 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: OA2							
TEH as Diesel No.2	**32.4**	mg/L	4.0	10	06/11/19 19:31	06/12/19 19:21		
Surrogates								
p-Terphenyl (S)	0	%	45-114	10	06/11/19 19:31	06/12/19 19:21	92-94-4	
n-Tetracosane (S)	0	%	24-120	10	06/11/19 19:31	06/12/19 19:21	646-31-1	
8260/OA1 UST, Water	Analytical Method: EPA 8260/OA1							
Benzene	**25.4**	ug/L	5.0	5		06/13/19 23:18	71-43-2	
Toluene	**64.0**	ug/L	5.0	5		06/13/19 23:18	108-88-3	
Ethylbenzene	**3310**	ug/L	50.0	50		06/17/19 11:56	100-41-4	
Xylene (Total)	**3030**	ug/L	150	50		06/17/19 11:56	1330-20-7	
Methyl-tert-butyl ether	ND	ug/L	5.0	5		06/13/19 23:18	1634-04-4	
Surrogates								
Toluene-d8 (S)	97	%	80-120	5		06/13/19 23:18	2037-26-5	
4-Bromofluorobenzene (S)	98	%	80-120	5		06/13/19 23:18	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	77-122	5		06/13/19 23:18	17060-07-0	

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-1 (7.5'-10') **Lab ID: 10478177009** Collected: 06/04/19 15:31 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	ND	mg/kg	18.8	1	06/12/19 11:08	06/14/19 16:49		
Surrogates								
n-Tetracosane (S)	90	%	63-123	1	06/12/19 11:08	06/14/19 16:49	646-31-1	
p-Terphenyl (S)	78	%	57-123	1	06/12/19 11:08	06/14/19 16:49	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	49.8	1	06/12/19 11:12	06/12/19 20:14	71-43-2	
Toluene	ND	ug/kg	99.5	1	06/12/19 11:12	06/12/19 20:14	108-88-3	
Ethylbenzene	ND	ug/kg	99.5	1	06/12/19 11:12	06/12/19 20:14	100-41-4	
Xylene (Total)	ND	ug/kg	249	1	06/12/19 11:12	06/12/19 20:14	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	49.8	1	06/12/19 11:12	06/12/19 20:14	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%	78-118	1	06/12/19 11:12	06/12/19 20:14	17060-07-0	
4-Bromofluorobenzene (S)	102	%	83-119	1	06/12/19 11:12	06/12/19 20:14	460-00-4	
Toluene-d8 (S)	100	%	80-120	1	06/12/19 11:12	06/12/19 20:14	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**21.9**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-1 (10'-12.5') **Lab ID: 10478177010** Collected: 06/04/19 16:00 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	**188**	mg/kg	19.6	1	06/12/19 11:08	06/14/19 16:57		1M
Surrogates								
n-Tetracosane (S)	99	%	63-123	1	06/12/19 11:08	06/14/19 16:57	646-31-1	
p-Terphenyl (S)	83	%	57-123	1	06/12/19 11:08	06/14/19 16:57	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	49.4	1	06/12/19 11:12	06/12/19 20:30	71-43-2	
Toluene	ND	ug/kg	98.7	1	06/12/19 11:12	06/12/19 20:30	108-88-3	
Ethylbenzene	**5750**	ug/kg	98.7	1	06/12/19 11:12	06/12/19 20:30	100-41-4	
Xylene (Total)	**6220**	ug/kg	247	1	06/12/19 11:12	06/12/19 20:30	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	49.4	1	06/12/19 11:12	06/12/19 20:30	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	96	%	78-118	1	06/12/19 11:12	06/12/19 20:30	17060-07-0	
4-Bromofluorobenzene (S)	99	%	83-119	1	06/12/19 11:12	06/12/19 20:30	460-00-4	
Toluene-d8 (S)	96	%	80-120	1	06/12/19 11:12	06/12/19 20:30	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**21.0**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: GP-1 (12.5'-15') **Lab ID: 10478177011** Collected: 06/04/19 16:01 Received: 06/07/19 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
OA2 GCS	Analytical Method: OA2 Preparation Method: EPA 3546							
TEH as Diesel No.2	**22.6**	mg/kg	19.2	1	06/12/19 11:08	06/14/19 17:05		
Surrogates								
n-Tetracosane (S)	103	%	63-123	1	06/12/19 11:08	06/14/19 17:05	646-31-1	
p-Terphenyl (S)	81	%	57-123	1	06/12/19 11:08	06/14/19 17:05	92-94-4	
8260/OA1 UST	Analytical Method: EPA 8260/OA1 Preparation Method: EPA 8260/OA1							
Benzene	ND	ug/kg	50.2	1	06/12/19 11:12	06/12/19 20:46	71-43-2	
Toluene	ND	ug/kg	100	1	06/12/19 11:12	06/12/19 20:46	108-88-3	
Ethylbenzene	ND	ug/kg	100	1	06/12/19 11:12	06/12/19 20:46	100-41-4	
Xylene (Total)	ND	ug/kg	251	1	06/12/19 11:12	06/12/19 20:46	1330-20-7	
Methyl-tert-butyl ether	ND	ug/kg	50.2	1	06/12/19 11:12	06/12/19 20:46	1634-04-4	
Surrogates								
1,2-Dichloroethane-d4 (S)	95	%	78-118	1	06/12/19 11:12	06/12/19 20:46	17060-07-0	
4-Bromofluorobenzene (S)	100	%	83-119	1	06/12/19 11:12	06/12/19 20:46	460-00-4	
Toluene-d8 (S)	100	%	80-120	1	06/12/19 11:12	06/12/19 20:46	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974							
Percent Moisture	**21.5**	%	0.50	1		06/13/19 11:04		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Sample: Trip Blank **Lab ID: 10478177012** Collected: 06/04/19 00:00 Received: 06/07/19 10:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/OA1 UST, Water	Analytical Method: EPA 8260/OA1							
Benzene	ND	ug/L	1.0	1		06/13/19 19:53	71-43-2	
Toluene	ND	ug/L	1.0	1		06/13/19 19:53	108-88-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/19 19:53	100-41-4	
Xylene (Total)	ND	ug/L	3.0	1		06/13/19 19:53	1330-20-7	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/19 19:53	1634-04-4	
Surrogates								
Toluene-d8 (S)	98	%	80-120	1		06/13/19 19:53	2037-26-5	
4-Bromofluorobenzene (S)	99	%	80-120	1		06/13/19 19:53	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	77-122	1		06/13/19 19:53	17060-07-0	
Preservation pH	**1.0**		0.10	1		06/13/19 19:53		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

QC Batch: 590135 Analysis Method: EPA 8260/OA1
QC Batch Method: EPA 8260/OA1 Analysis Description: 8260/OA1 UST
Associated Lab Samples: 10478177001, 10478177002, 10478177004, 10478177006, 10478177009, 10478177010, 10478177011

METHOD BLANK: 2419350 Matrix: Solid
Associated Lab Samples: 10478177001, 10478177002, 10478177004, 10478177006, 10478177009, 10478177010, 10478177011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	50.2	06/12/19 18:25	
Ethylbenzene	ug/kg	ND	100	06/12/19 18:25	
Methyl-tert-butyl ether	ug/kg	ND	50.2	06/12/19 18:25	
Toluene	ug/kg	ND	100	06/12/19 18:25	
Xylene (Total)	ug/kg	ND	251	06/12/19 18:25	
1,2-Dichloroethane-d4 (S)	%	94	78-118	06/12/19 18:25	
4-Bromofluorobenzene (S)	%	101	83-119	06/12/19 18:25	
Toluene-d8 (S)	%	101	80-120	06/12/19 18:25	

LABORATORY CONTROL SAMPLE: 2419351

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	2000	1960	98	73-117	
Ethylbenzene	ug/kg	2000	1970	98	73-121	
Methyl-tert-butyl ether	ug/kg	2000	1820	91	73-129	
Toluene	ug/kg	2000	1990	100	77-119	
Xylene (Total)	ug/kg	6000	5990	100	76-119	
1,2-Dichloroethane-d4 (S)	%			97	78-118	
4-Bromofluorobenzene (S)	%			99	83-119	
Toluene-d8 (S)	%			100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2419352 2419353

Parameter	Units	60305063002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	559	3400	3400	3580	3600	89	89	17-134	1	53	
Ethylbenzene	ug/kg	101J	3400	3400	3000	3050	85	86	10-137	1	60	
Methyl-tert-butyl ether	ug/kg	<85.2	3400	3400	2880	2960	84	87	31-126	3	42	
Toluene	ug/kg	109J	3400	3400	2970	3000	84	85	13-131	1	60	
Xylene (Total)	ug/kg	386J	10200	10200	9320	9420	87	88	10-137	1	58	
1,2-Dichloroethane-d4 (S)	%						98	97	78-118		13	
4-Bromofluorobenzene (S)	%						105	104	83-119		23	
Toluene-d8 (S)	%						92	95	80-120			

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

QC Batch: 590549 Analysis Method: EPA 8260/OA1
QC Batch Method: EPA 8260/OA1 Analysis Description: 8260/OA1 UST-WATER
Associated Lab Samples: 10478177003, 10478177005, 10478177007, 10478177008, 10478177012

METHOD BLANK: 2420791 Matrix: Water
Associated Lab Samples: 10478177003, 10478177005, 10478177007, 10478177008, 10478177012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	06/13/19 19:37	
Ethylbenzene	ug/L	ND	1.0	06/13/19 19:37	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/13/19 19:37	
Toluene	ug/L	ND	1.0	06/13/19 19:37	
Xylene (Total)	ug/L	ND	3.0	06/13/19 19:37	
1,2-Dichloroethane-d4 (S)	%	97	77-122	06/13/19 19:37	
4-Bromofluorobenzene (S)	%	100	80-120	06/13/19 19:37	
Toluene-d8 (S)	%	101	80-120	06/13/19 19:37	

LABORATORY CONTROL SAMPLE: 2420792

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	19.0	95	80-112	
Ethylbenzene	ug/L	20	18.7	94	83-113	
Methyl-tert-butyl ether	ug/L	20	17.6	88	67-125	
Toluene	ug/L	20	18.3	92	80-112	
Xylene (Total)	ug/L	60	55.7	93	84-112	
1,2-Dichloroethane-d4 (S)	%			98	77-122	
4-Bromofluorobenzene (S)	%			98	80-120	
Toluene-d8 (S)	%			97	80-120	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

QC Batch: 591045
QC Batch Method: EPA 8260/OA1
Analysis Method: EPA 8260/OA1
Analysis Description: 8260/OA1 UST-WATER
Associated Lab Samples: 10478177008

METHOD BLANK: 2422795 Matrix: Water
Associated Lab Samples: 10478177008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/L	ND	1.0	06/17/19 11:26	
Xylene (Total)	ug/L	ND	3.0	06/17/19 11:26	
1,2-Dichloroethane-d4 (S)	%	95	77-122	06/17/19 11:26	
4-Bromofluorobenzene (S)	%	97	80-120	06/17/19 11:26	
Toluene-d8 (S)	%	102	80-120	06/17/19 11:26	

LABORATORY CONTROL SAMPLE: 2422796

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Ethylbenzene	ug/L	20	21.5	107	83-113	
Xylene (Total)	ug/L	60	64.4	107	84-112	
1,2-Dichloroethane-d4 (S)	%			96	77-122	
4-Bromofluorobenzene (S)	%			95	80-120	
Toluene-d8 (S)	%			101	80-120	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

QC Batch: 590068 Analysis Method: OA2
QC Batch Method: EPA 3546 Analysis Description: OA2 GCS
Associated Lab Samples: 10478177001, 10478177002, 10478177004, 10478177006, 10478177009, 10478177010, 10478177011

METHOD BLANK: 2419053 Matrix: Solid
Associated Lab Samples: 10478177001, 10478177002, 10478177004, 10478177006, 10478177009, 10478177010, 10478177011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TEH as Diesel No.2	mg/kg	ND	9.8	06/14/19 15:42	
n-Tetracosane (S)	%	101	63-123	06/14/19 15:42	
p-Terphenyl (S)	%	83	57-123	06/14/19 15:42	

LABORATORY CONTROL SAMPLE: 2419054

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TEH as Diesel No.2	mg/kg	81.9	77.9	95	77-126	
n-Tetracosane (S)	%			110	63-123	
p-Terphenyl (S)	%			93	57-123	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2419055 2419056

Parameter	Units	10478177001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TEH as Diesel No.2	mg/kg	ND	207	212	187	204	84	90	60-140	9	33	
n-Tetracosane (S)	%						99	100	63-123			
p-Terphenyl (S)	%						86	90	57-123			

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

QC Batch: 589968 Analysis Method: OA2
QC Batch Method: OA2 Analysis Description: OA2 GCS
Associated Lab Samples: 10478177003, 10478177005, 10478177007, 10478177008

METHOD BLANK: 2418749 Matrix: Water
Associated Lab Samples: 10478177003, 10478177005, 10478177007, 10478177008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TEH as Diesel No.2	mg/L	ND	0.40	06/12/19 18:31	
n-Tetracosane (S)	%	68	24-120	06/12/19 18:31	
p-Terphenyl (S)	%	75	45-114	06/12/19 18:31	

LABORATORY CONTROL SAMPLE: 2418750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TEH as Diesel No.2	mg/L	5	3.5	69	57-109	
n-Tetracosane (S)	%			66	24-120	
p-Terphenyl (S)	%			75	45-114	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

QC Batch: 590393 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10478177001, 10478177002, 10478177004, 10478177006, 10478177009, 10478177010, 10478177011

METHOD BLANK: 2420459 Matrix: Solid
Associated Lab Samples: 10478177001, 10478177002, 10478177004, 10478177006, 10478177009, 10478177010, 10478177011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	06/13/19 11:04	

SAMPLE DUPLICATE: 2420460

Parameter	Units	10478177001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.7	22.2	2	20	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

BATCH QUALIFIERS

Batch: 590549

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 591045

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	The sample does not match a profile of laboratory standards. Hydrocarbon fractions are present from the early gasoline to late motor oil range. Quantitation achieved using diesel fuel as a reference standard.

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: B1812348.01 CP Farson - LSI
Pace Project No.: 10478177

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10478177001	**GP-2 (7.5'-10')**	EPA 3546	590068	OA2	590762
10478177002	**GP-4 (12.5'-15')**	EPA 3546	590068	OA2	590762
10478177004	**GP-3 (7.5'-10')**	EPA 3546	590068	OA2	590762
10478177006	**GP-5 (7.5'-10)**	EPA 3546	590068	OA2	590762
10478177009	**GP-1 (7.5'-10')**	EPA 3546	590068	OA2	590762
10478177010	**GP-1 (10'-12.5')**	EPA 3546	590068	OA2	590762
10478177011	**GP-1 (12.5'-15')**	EPA 3546	590068	OA2	590762
10478177003	**GP-4**	OA2	589968	OA2	590298
10478177005	**GP-3**	OA2	589968	OA2	590298
10478177007	**GP-5**	OA2	589968	OA2	590298
10478177008	**GP-1**	OA2	589968	OA2	590298
10478177001	**GP-2 (7.5'-10')**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177002	**GP-4 (12.5'-15')**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177004	**GP-3 (7.5'-10')**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177006	**GP-5 (7.5'-10)**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177009	**GP-1 (7.5'-10')**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177010	**GP-1 (10'-12.5')**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177011	**GP-1 (12.5'-15')**	EPA 8260/OA1	590135	EPA 8260/OA1	590231
10478177003	**GP-4**	EPA 8260/OA1	590549		
10478177005	**GP-3**	EPA 8260/OA1	590549		
10478177007	**GP-5**	EPA 8260/OA1	590549		
10478177008	**GP-1**	EPA 8260/OA1	590549		
10478177008	**GP-1**	EPA 8260/OA1	591045		
10478177012	**Trip Blank**	EPA 8260/OA1	590549		
10478177001	**GP-2 (7.5'-10')**	ASTM D2974	590393		
10478177002	**GP-4 (12.5'-15')**	ASTM D2974	590393		
10478177004	**GP-3 (7.5'-10')**	ASTM D2974	590393		
10478177006	**GP-5 (7.5'-10)**	ASTM D2974	590393		
10478177009	**GP-1 (7.5'-10')**	ASTM D2974	590393		
10478177010	**GP-1 (10'-12.5')**	ASTM D2974	590393		
10478177011	**GP-1 (12.5'-15')**	ASTM D2974	590393		

Cooler 1 of 2 (1L GW samples)

Page 1 of 1

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

WO#: 10478177

10478177

(Please Print Clearly)	
Company Name:	Braun Intertec
Branch/Location:	La Crosse, WI
Project Contact:	Jeremy Hanson
Phone:	952-995-2464
Project Number:	B1812348.01
Project Name:	CP Farson - LSI
Project State:	IA
Sampled By (Print):	David Bradshaw
Sampled By (Sign):	Dm M. Bradshaw
PO #:	B1812348.01
Regulatory Program:	

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: OA-1 (MTBE BETX)	Analyses Requested: OA-2 (TEH)	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
	GP-2 (7.5'-10')	6-3-19	15:21	S			X	X		
	~~GP-2~~		~~15:45~~	~~GW~~			~~X~~			
	GP-4 (12.5'-15')	6-4-19	08:26	S			X	X		
	GP-4		09:10	GW			X	X		
	GP-3 (7.5'-10')		12:37	S			X	X		
	GP-3		13:10	GW			X	X		
	GP-5 (7.5'-10')		14:20	S			X	X		
	GP-5		15:03	GW			X	X		
	GP-1		16:20	GW			X	X	odor	
	GP-1 (7.5'-10')		15:31	S			X	X		
	GP-1 (10'-12.5')		16:00	S			X	X	Hold+(195 PID)	
	GP-1 (12.5'-15')		16:01	S			X	X	Hold+(13.6 PID)	
	Trip Blank		—	GW			X			

Invoice To Contact:	Jeremy Hanson
Invoice To Company:	Braun Intertec
Invoice To Address:	11001 Hampshire Ave. S. Bloomington, MN 55438
Invoice To Phone:	952-995-2464
Mail To Address:	

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
D. Bradshaw	6/5/19 17:00	Pace	6/6/19 0940

PACE Project No.

Receipt Temp = 4.6 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present intact / Not Intact

Version 6.0 06/14/06

ORIGINAL

Page 8 of 39

Cooler 2 of 2 (Soil + 40mL GW samples) + Trip Blank

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

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www.pacelabs.com

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	Braun Intertec
Branch/Location:	La Crosse, WI
Project Contact:	Jeremy Hanson
Phone:	952-995-2464
Project Number:	B1812348.01
Project Name:	CP Farson - LSI
Project State:	IA
Sampled By (Print):	David Bradshaw
Sampled By (Sign):	David M. Bradshaw
PO #:	B1812348.01
Regulatory Program:	

Quote #:	
Mail To Contact:	
Mail To Company:	
Mail To Address:	
Invoice To Contact:	Jeremy Hanson
Invoice To Company:	Braun Intertec
Invoice To Address:	11001 Hampshire Ave. S. Bloomington, MN 55438
Invoice To Phone:	952-995-2464

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested: OA-1 (MTBE BETX)	Analyses Requested: OA-2 (TEH)	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
	GP-2 (7.5'-10')	6-3-19	15:21	S			X	X		
	~~GP-2~~						X			
	GP-4 (12.5'-15')	6-4-19	08:26	S			X	X		
	GP-4		09:10	GW			X	X		
	GP-3 (7.5'-10')		12:37	S			X	X		
	GP-3		13:10	GW			X	X		
	GP-5 (7.5'-10')		14:20	S			X	X		
	GP-5		15:03	GW			X	X		
	GP-1		16:20	GW			X	X	odor	
	GP-1 (7.5'-10')		15:31	S			X	X		
	GP-1 (10'-12.5')		16:00	S			X	X	Hold + (195 PID)	
	GP-1 (12.5'-15')		16:01	S			X	X	Hold + (13.6 PID)	
	Trip Blank		—	GW			X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
D. Bradshaw	6/5/19 17:00	PACE	6/7/19

PACE Project No.

Receipt Temp = 4.2 °C

Sample Receipt pH OK / Adjusted

Cooler Custody Seal Present / Not Present Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

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Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 09May2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.28**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Braun Intertec

Project #: WO#: 10478177

PM: BM2 Due Date: 06/14/19

CLIENT: Braun-BLM

Courier: ☒Fed Ex ☐UPS ☐USPS ☐Client ☐Pace ☐SpeeDee ☐Commercial **See Exception** ☐

Tracking Number: 4486 7787 3445 3434

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Packing Material: ☒Bubble Wrap ☒Bubble Bags ☐None ☒Other: PB **Temp Blank?** ☐Yes ☒No

Thermometer: ☒T1(0461) ☐T2(1336) ☐T3(0459) ☒T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** _____ °C **Average Corrected Temp (no temp blank only):** 4.2, 4.6 °C **See Exceptions** ☐

Correction Factor: -0.1 TRUE **Cooler Temp Corrected w/temp blank:** _____ °C

USDA Regulated Soil: (☒ N/A, water sample/Other: _____) **Date/Initials of Person Examining Contents:** DLR 6/7/19

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒Yes	☐No		1. Coolers arrived two different dates see exceptions
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☒Water ☒Soil ☐Oil ☐Other				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide)	☐Yes	☐No	☒N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒Yes	☐No	☐N/A	Positive for Res. Chlorine? ☐Yes ☐No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐Yes	☐No	☐N/A	13. BM 6/11/19 **See Exception** ☒
Trip Blank Present?	☒Yes	☐No	☐N/A	14.
Trip Blank Custody Seals Present?	☒Yes	☐No	☐N/A	Pace Trip Blank Lot # (if purchased):

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐Yes ☐No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** _____

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

Labeled by: _____

Pace Analytical	Document Name: SCUR Exception Form – Coolers Above 6°C	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: F-MN-C-298-Rev.02	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp
5.4	5.3	4.6
4.4	4.3	
4.6	4.5	
4.3	4.2	

Tracking Number/Temperature

Other Issues

Issue Type: Coolers arrived ~~different Sample ID ok 2 ice~~

	Container Type	# of Containers
Arrived on 6/6/19 0940	AGIU	8
Arrived on 6/7/19 1000	JGFU	14
" "	VG9H	14

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Pace Analytical	Document Name: **SCUR Exception Form – Coolers Above 6°C**	Document Revised: 08Apr2019 Page 1 of 1
	Document No.: **F-MN-C-298-Rev.02**	Issuing Authority: Pace Minnesota Quality Office

During sample triage, this form is to be placed in each cooler that arrives above 6.0 degrees Celsius

SCUR Exceptions: **Workorder #:**

Out of Temp Sample IDs	Container Type	# of Containers

PM Notified? ☐Yes ☐No

If yes, indicate who was contacted/date/time.
If no, indicate reason why.

Multiple Cooler Project? ☐Yes ☐No
If you answered yes, fill out information to the left.

No Temp Blank

Read Temp	Corrected Temp	Average Temp
4.7	4.7	4.2
3.6	3.6	
5.1	5.1	
3.4	3.4	

Tracking Number/Temperature	

Other Issues

Issue Type: Sample ID	Container Type	# of Containers

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preserv.	pH Upon Receipt	Date Adjusted	Time Adjusted	Amount Added (mL)	Lot # Added	pH After	In Compliance after addition?	Initials
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	
								☐Yes ☐No	

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
GP-4	0	3	0	3	Y
GP-3	2	1	0	3	Y
GP-5	0	0	3	3	Y
GP-1	0	0	3	3	Y
Trip Blanks	0	0	2	2	N

Pace Analytical	Document Name: Pending Log-in Process	Document Revised: 07Feb2019 Page 1 of 1
	Document No.: F-MN-C-097 Rev.05	Issuing Authority: Pace Minnesota Quality Office

C-10 1342

SR Tech CC Date Initiated 6/6/19 PM BM2 Client Name Braun Intertec Profile # _____ Pink shelf ☐ #1 ☐ #2

Issue Type (check all that apply)*	Client Name/Project Name on containers (if no COC)
[ ] COC Issue Date/Time Received 6/6/19	
EPIC Issue (check one) [ ] Client not in Epic [ ] Profile not in Epic [ ] Add acode [X] Other	**Resolution** Second cooler arrived PM/Date _____

Sample Line Item	BP1U	BP2U	BP3U	BP3S	BP3N	AG1U	AG1H	AG3S	AGIT	JGFU	JGCU	BJFU	WPDU	VG9M	VG9H	GN	SP5T	DWC
X	Check the box to the left to indicate that the container(s) received for line items 1 - 4 are identical to the container(s) documented for line item 1 for this CoC.																	
1									2									
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

Comments:
Unsure if samples are direct ship

Logged in by (initial) _____ **Date** _____ **WO** _____

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

Pace Analytical®
www.pacelabs.com

State Of Origin: MN
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 6/7/2019 **Results Requested By:** 6/14/2019

Workorder: 10478177 **Workorder Name:** B1812348.01 CP Farson - LSI

Report To	Subcontract To
Bob Michels Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)709-5046	Pace Analytical Kansas 9608 Loiret Blvd Lenexa, KS 66219 Phone (913)599-5665

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers						Requested Analysis: OA-1 (MTBE BTEX)	Requested Analysis: OA-2 (TEH)											LAB USE ONLY
1	GP-2 (7.5'-10')	PS	6/3/2019 15:21	10478177001	Solid		3					X	X		2JGFU									001
2	GP-4 (12.5'-15')	PS	6/4/2019 08:26	10478177002	Solid		3					X	X		↓									002
3	GP-4	PS	6/4/2019 09:10	10478177003	Water	3	2					X	X		~~3JG9H~~ 3VG9H 2AG1U									003
4	GP-3 (7.5'-10')	PS	6/4/2019 12:37	10478177004	Solid		3					X	X		2JGFU									004
5	GP-3	PS	6/4/2019 13:10	10478177005	Water	3	2					X	X		3VG9H 2AG1U									005
6	GP-5 (7.5'-10)	PS	6/4/2019 14:20	10478177006	Solid		3					X	X		2JGFU									006
7	GP-5	PS	6/4/2019 15:03	10478177007	Water	3	2					X	X		3VG9H 2AG1U									007
8	GP-1	PS	6/4/2019 16:20	10478177008	Water	3	2					X	X		3VG9H 2AG1U									008
9	GP-1 (7.5'-10')	PS	6/4/2019 15:31	10478177009	Solid		3					X	X		2JGFU									009
10	GP-1 (10'-12.5')	PS	6/4/2019 16:00	10478177010	Solid		3					X	X		↓									010
11	GP-1 (12.5'-15')	PS	6/4/2019 16:01	10478177011	Solid		3					X	X		↓									011
12	Trip Blank	PS	6/4/2019 00:00	10478177012	Water	2						X			2VG9H									012

0030338

Transfers	Released By	Date/Time	Received By	Date/Time
1			Pace	6/11/19 0815
2				
3				

Comments

Cooler Temperature on Receipt 1.2 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

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

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60305338

60305338

Client Name: Pace Minn

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

Tracking #: 4638 0197 1961 Pace Shipping Label Used? Yes ☑ No ☐

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

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

Thermometer Used: T-248 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.3 **Corr. Factor** -0.1 **Corrected** 1.2

Date and initials of person examining contents: 6/11/19 dls

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☑Yes ☐No ☐N/A	3-day
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: Wt + SL	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☑Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☑No ☐N/A	
Samples from USDA Regulated Area: State MT	☐Yes ☑No ☐N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

BRAUN INTERTEC
The Science You Build On.

Hydrometer And Sieve Analysis

ASTM D422

6/27/2019

11001 Hampshire Avenue S
Minneapolis, MN 55438
Phone: 952-995-2000

Client:

Canadian Pacific Railway Company
120 South Sixth Street, Suite 900
Minneapolis, MN 55402

Project:

B1812348.01
Farson, IA
East of Intersection of Farson Road and the R...
Farson, IA

Sample Information

Sample Number: 249133
Depth (ft): 15
Boring Number: GP-2
Sampled By: Streier, Jim
Sample Date: 06/27/2019
Received Date: 06/27/2019
Lab: 11001 Hampshire Ave S, Bloomington, MN, 55438
Tested Date: 06/27/2019
Tested By: Streier, Jim

Laboratory Data

Sieve Analysis

Sieve Size	Percent Passing	Specifications
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.8	-
425 µm (No. 40)	99.2	-
250 µm (No. 60)	97.7	-
150 µm (No. 100)	96.2	-
75 µm (No. 200)	94.5	-

Hydrometer Analysis

Diameter Of Soil Particle (µm)	Percent Passing	Specifications
26.5	86.3	-
17.4	78.3	-
10.6	66.9	-
7.5	61.3	-
5.3	58.3	-
2.7	54.3	-
1.2	49.9	-

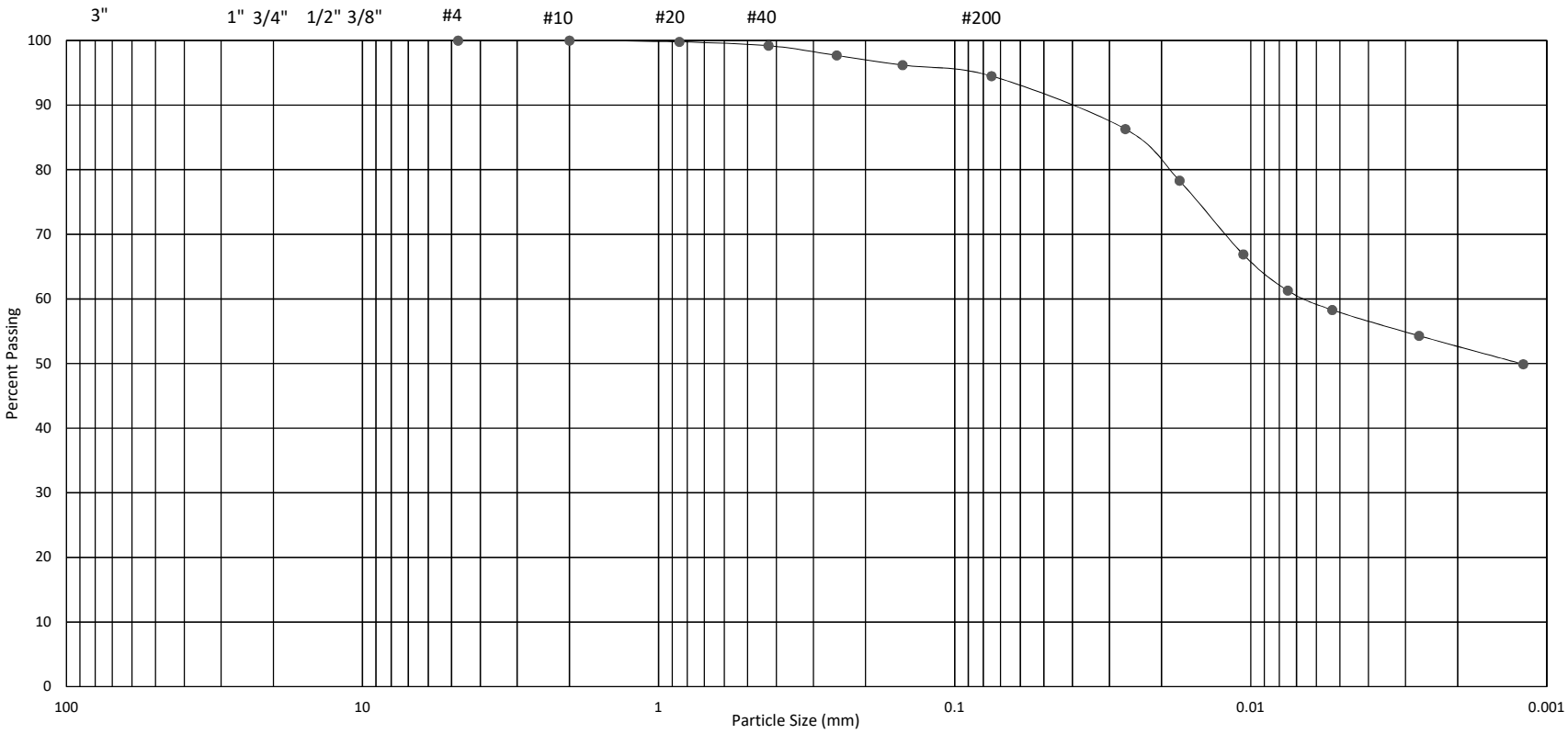
Soil Classification: CL Lean clay

General

See 249133.pdf in the documents section at the end of this report.

Grain Size Accumulation Curve (ASTM)

Gravel		Sand			Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



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The Science You Build On.

Project Number	B1812348.01
Sample Number	249133
Boring Number	GP-2
Depth	15-20'

Gravel	0.0		
Sand	5.5		
Silt	38.0		
Clay	56.5		
D60=	0.007	Cu=	n/a
D30=	n/a	Cc=	n/a
D10=	n/a		

Classification

LEAN CLAY(CL)

BRAUN INTERTEC
The Science You Build On.

Hydrometer And Sieve Analysis

ASTM D422

6/27/2019

11001 Hampshire Avenue S
Minneapolis, MN 55438
Phone: 952-995-2000

Client:

Canadian Pacific Railway Company
120 South Sixth Street, Suite 900
Minneapolis, MN 55402

Project:

B1812348.01
Farson, IA
East of Intersection of Farson Road and the R...
Farson, IA

Sample Information

Sample Number: 249134
Sampled By: Streier, Jim
Sample Date: 06/27/2019
Received Date: 06/27/2019
Lab: 11001 Hampshire Ave S, Bloomington, MN, 55438
Tested Date: 06/27/2019
Tested By: Streier, Jim

Laboratory Data

Sieve Analysis

Sieve Size	Percent Passing	Specifications
4.75 mm (No. 4)	100.0	-
2 mm (No. 10)	99.9	-
850 µm (No. 20)	99.4	-
425 µm (No. 40)	97.7	-
250 µm (No. 60)	94.1	-
150 µm (No. 100)	90.4	-
75 µm (No. 200)	86.4	-

Hydrometer Analysis

Diameter Of Soil Particle (µm)	Percent Passing	Specifications
26.5	78.3	-
17.4	71.3	-
10.2	61.4	-
7.6	57.0	-
5.4	53.8	-
2.7	49.3	-
1.1	45.5	-

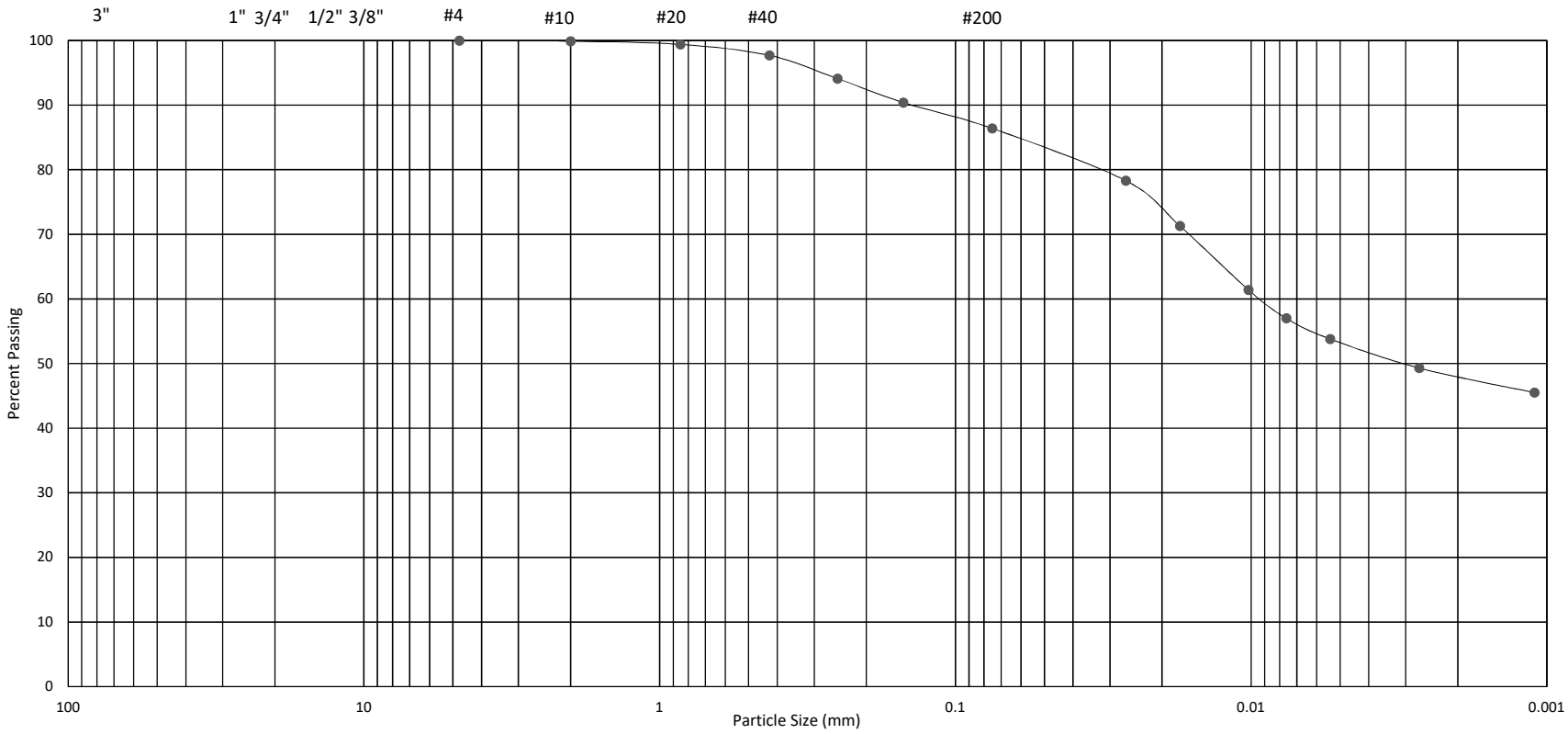
Soil Classification: CL Lean clay

General

See 249134.pdf in the documents section at the end of this report.

Grain Size Accumulation Curve (ASTM)

Gravel		Sand			Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



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Project Number	B1812348.01
Sample Number	249134
Boring Number	GP-4
Depth	25-30'

Gravel	0.0		
Sand	13.6		
Silt	34.7		
Clay	51.7		
D60=	0.009	Cu=	n/a
D30=	n/a	Cc=	n/a
D10=	n/a		

Classification

LEAN CLAY(CL)

BRAUN INTERTEC
The Science You Build On.

Hydrometer And Sieve Analysis

ASTM D422

6/27/2019

11001 Hampshire Avenue S
Minneapolis, MN 55438
Phone: 952-995-2000

Client:

Canadian Pacific Railway Company
120 South Sixth Street, Suite 900
Minneapolis, MN 55402

Project:

B1812348.01
Farson, IA
East of Intersection of Farson Road and the R...
Farson, IA

Sample Information

Sample Number: 249135
Sampled By: Streier, Jim
Sample Date: 06/27/2019
Received Date: 06/27/2019
Lab: 11001 Hampshire Ave S, Bloomington, MN, 55438
Tested Date: 06/27/2019
Tested By: Streier, Jim

Laboratory Data

Sieve Analysis

Sieve Size	Percent Passing	Specifications
2 mm (No. 10)	100.0	-
850 µm (No. 20)	99.9	-
425 µm (No. 40)	99.6	-
250 µm (No. 60)	98.9	-
150 µm (No. 100)	98.2	-
75 µm (No. 200)	97.4	-

Hydrometer Analysis

Diameter Of Soil Particle (µm)	Percent Passing	Specifications
25.9	90.7	-
16.7	87.4	-
10.4	69.7	-
7.5	62.5	-
5.3	59.7	-
2.7	55.0	-
1.1	50.5	-

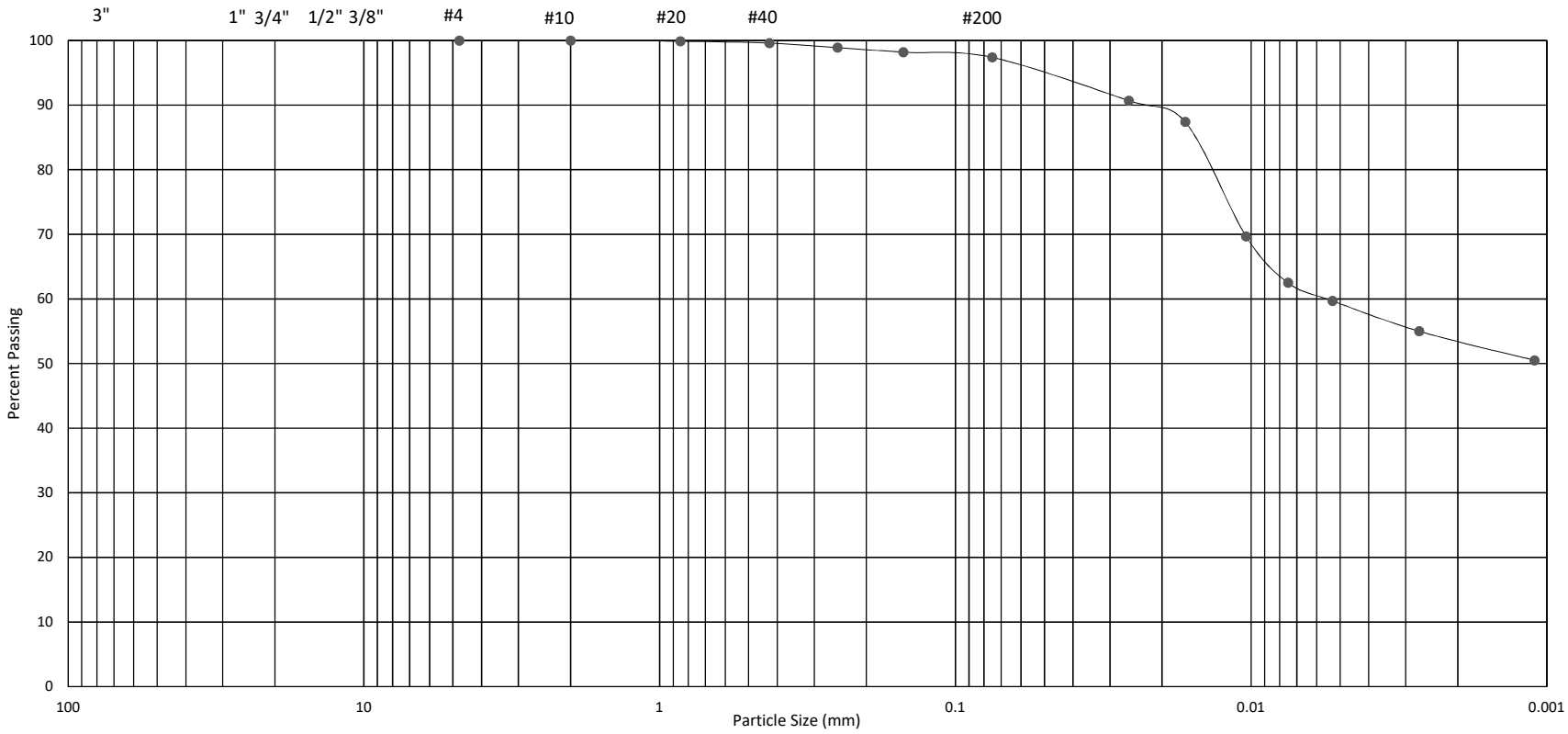
Soil Classification: CH Fat clay

General

See 249135.pdf in the documents section at the end of this report.

Grain Size Accumulation Curve (ASTM)

Gravel		Sand			Fines	
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay



BRAUN INTERTEC
The Science You Build On.

Project Number	B1812348.01
Sample Number	249135
Boring Number	GP-3
Depth	10-15'

Gravel	0.0		
Sand	2.6		
Silt	39.9		
Clay	57.5		
D60=	0.006	Cu=	n/a
D30=	n/a	Cc=	n/a
D10=	n/a		

Classification

FAT CLAY(CH)