

August 5, 2020

Frawner Corporation
8123 Hartzell Road
Anchorage, Alaska 99507

Attn: Mr. Randy Allen

**RE: FINAL SOIL AND GROUNDWATER HANDLING, 1717 TIDEWATER ROAD,
ANCHORAGE, ALASKA; HAZARD ID. 25938; ADEC FILE NO. 2100.38.535**

This report presents the results of soil and groundwater handling activities conducted during the repair of a waterline at 1717 Tidewater Road in Anchorage, Alaska. A vicinity map and site plan are included as Figures 1 and 2, respectively.

The purpose of the overall project was to replace a failed 8-inch diameter waterline, which supplied water to a structure located at the Matson Anchorage Terminal. The site is located at the Port of Alaska in the vicinity of several Alaska Department of Environmental Conservation (ADEC)-listed contaminated sites. As a result, it was anticipated that contaminated soil and/or groundwater would be encountered during the waterline repair activities. Mr. Grant Lidren of the ADEC was notified of the proposed waterline repair project on November 25, 2019. Mr. Lidren requested the submittal of a soil and groundwater management plan prior to conducting the waterline repair.

BACKGROUND

Prior to conducting the waterline repair, Shannon & Wilson collected groundwater and soil samples from the vicinity of the proposed waterline excavation. The purpose of the groundwater sample was to evaluate whether water generated during dewatering could be discharged to the Anchorage Water and Wastewater Utility (AWWU) sanitary sewer system. The results of the soil samples were used to evaluate potential disposal options.

A groundwater sample was collected from a pot-hole excavation, advanced west of the structure in the vicinity of the waterline. The sample was analyzed for gasoline range organics (GRO), diesel range organics (DRO), residual range organics (RRO), total suspended solids (TSS), biochemical oxygen demand (BOD), total aromatic hydrocarbons (TAH), oil and grease, total cyanide, mercury, and total metals (arsenic, beryllium, cadmium, chromium, copper, lead, nickel, silver and zinc). The sample contained 3,310 milligrams per liter (mg/L) TSS which exceeds the

AWWU discharge permit level of 1,100 mg/L. The remaining analytes did not exceed the applicable AWWU discharge permit levels. The sample contained 11.4 micrograms per liter ($\mu\text{g/L}$) benzene which exceeds the ADEC Table C cleanup level of 4.6 $\mu\text{g/L}$. The remaining tested analytes did not exceed the applicable ADEC cleanup levels.

Two soil samples were collected from a test pit advanced west of the on-site structure in the vicinity of the waterline. The purpose of the soil samples was to gather data necessary to evaluate potential soil disposal options. The test pit was advanced to approximately 8 feet below ground surface (bgs). Field screening samples were collected from the test pit at approximately 2-foot intervals until groundwater was encountered at approximately at 6 feet bgs. Analytical soil samples were collected from approximately 4.0 to 4.5 feet bgs (Sample SS1) and 6.0 to 6.5 feet bgs (Sample SS2). The soil samples were analyzed for GRO, DRO, RRO, volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs). Sample SS1 contained estimated concentrations (J-flagged) of RRO and toluene less than the applicable cleanup levels. The remaining tested analytes were not detected. Sample SS2 contained concentrations of benzene (0.0797 milligrams per kilogram [mg/kg]) and naphthalene (0.0538 mg/kg) exceeding the ADEC Method Two cleanup levels of 0.022 mg/kg and 0.038 mg/kg, respectively. The remaining tested analytes were either not detected or detected at concentrations less than the most stringent ADEC cleanup levels.

FIELD ACTIVITIES

The project included collecting field screening soil samples; collecting a groundwater sample; and soil and groundwater disposal. Soil and groundwater generated during the project was handled in general accordance with our December 26, 2019 *Environmental Management Plan, 1717 Tidewater Road, Anchorage, Alaska; Hazard I. 25938; ADEC File No. 2100.38.535*. The Environmental Management Plan (EMP) was approved by Mr. Bill O'Connell of the ADEC in an email dated December 30, 2019.

Shannon & Wilson provided Qualified Environmental Professionals (Mr. Jake Tracy and Mr. Alec Rizzo), as defined by 18 Alaska Administrative Code (AAC) 78.088, to conduct field screening, collect the analytical groundwater sample, and document site conditions. Frawner Corporation (Frawner) provided the equipment and personnel to advance and dewater the excavation. Alaska Soil Recycling (ASR) thermally remediated impacted soil generated during the project. The groundwater sample was analyzed by SGS North America Inc. (SGS). Site photographs and field notes are included in Attachments 1 and 2, respectively.

Soil Handling

To repair the waterline, a new line was connected to the existing pipe, west of the on-site structure. The waterline is located about 10 feet bgs. The new portion of waterline was rerouted to enter the northern portion of the structure. To install the new waterline, an approximately 11-foot-deep excavation was advanced (Photo 1). The excavation measured approximately 10 feet wide and 1,345 square feet, at the surface. To connect the waterline beneath the northern portion of the structure, a vac-truck was used to advance an approximately 5-foot-wide, 7-foot-long, by 11-foot-deep excavation. The waterline excavations are shown on Figure 3.

The soil encountered during excavation generally consisted of sand and silt with gravel from the surface to approximately 4 to 5 feet bgs. The remainder of the excavation consisted of silt and clay with organics (Photo 2). Groundwater was observed to seep into the excavation from directly above the silt/clay. Over time, groundwater accumulated in the base of the excavation and required dewatering, as discussed below.

Soil Screening

Excavated soil was "screened" for VOCs using a photoionization detector (PID) between February 20 and March 5, 2020. The PID was calibrated daily with 100 parts per million (ppm) of isobutylene standard gas. Excavated soil was field screened at a frequency of one screening sample per 10 cubic yards of excavated soil. In accordance with the EMP, analytical soil samples were not collected.

Field screening samples were collected directly from the excavator bucket or from the base of the excavation. Soil temperatures were less than 40 degrees Fahrenheit (°F), therefore, the samples were screened using an ADEC-approved headspace screening method. Headspace screening is performed by placing soil in a re-sealable plastic bag to approximately one-half of its capacity using a clean stainless-steel spoon. The samples were warmed for at least 10 minutes, but not more than one hour. The temperature of the samples were consistent and were at least 40 °F prior to screening. To screen, the sample was agitated for about 15 seconds, the seal of the bag was opened slightly, the instrument probe was inserted into the air space above the soil, and the bag held closed around the probe.

Throughout the excavation, staining, hydrocarbon odors, and/or elevated PID readings (greater than 20 ppm) were documented starting at about 1.5 to 2 feet bgs and continued to the base of the excavation. The maximum recorded PID reading was 537 ppm from a sample collected from

about 7 to 9 feet bgs. At depths less than 1.5 to 2 feet bgs, the highest PID reading was 11.6 ppm. Observations of contamination were consistent throughout the excavation, and it appears that the site's soil/water interface (smear zone) is impacted. The source of the contamination was not identified.

Soil Segregation, Excavation Backfilling, and Soil Disposal

Soil with PID readings greater than 20 ppm, staining, or petroleum odors was temporarily stockpiled in a lined area onsite for transport to ASR for thermal remediation (Photo 3). The soil excavated using the vac-truck was also transported to ASR for thermal remediation. Soil with PID readings less than 20 ppm and geotechnically suitable for reuse, was temporarily stockpiled adjacent to the excavation. Soil that was stockpiled greater than one day was covered with a 6-mil liner to prevent precipitation runoff from the stockpile.

Imported bedding material was placed around the new pipe. Excavated material with PID readings less than 20 ppm, no visual or olfactory evidence of contamination, and geotechnically suitable was used to backfill the excavation. The remainder of the excavation was backfilled with imported fill material (Photo 4).

A total of 809.34 tons of soil was transported to ASR for thermal remediation. The ASR receipt for the material is included in Attachment 3.

Groundwater Handling

Groundwater was handled, sampled, and discharged in accordance with the project's AWWU Temporary Industrial Discharge Permit (TIDP 2019-012). During excavation activities, Frawner pumped groundwater from the excavation into an 18,000-gallon, three-chamber weir tank to remove sediment prior to discharge to the AWWU sanitary sewer system.

Water Sampling

Prior to discharge, an analytical water sample was collected from the weir tank, using a disposable bailer. The groundwater sample was delivered to SGS using chain-of-custody procedures. The sample was analyzed for GRO by Alaska Method (AK) 101, DRO by AK 102, RRO by AK 103, TSS by SM21 2540D, BOD by SM21 5210B, TAH by Environmental Protection Agency (EPA) Method 624, oil and grease by EPA Method 1664B, pH by SM21 4500, total cyanide by SM21 4500, mercury by EPA Method 245.1 and total metals (arsenic, beryllium, cadmium, chromium, copper, lead, nickel, silver and zinc).

Groundwater Sample Results

The reported analyte concentrations were compared to the local and site-specific effluent discharge limitations established in Title 26 of the Anchorage Municipal Code (AMC 26.50.060). The water sample did not contain analytes exceeding the discharge limitations. The water sample results were also compared to the groundwater cleanup levels presented in Table C of 18 AAC 75.345. The water sample contained 3.01 µg /L arsenic (estimated) and 27.7 µg/L benzene, which exceed the ADEC cleanup levels of 0.52 µg /L and 4.6 µg /L, respectively. The laboratory report is provided in Attachment 4.

Groundwater Disposal

Following receipt of the groundwater sample results, approximately 2,300 gallons of water was discharged to the AWWU sanitary sewer system on April 3, 2020.

SUMMARY

During the waterline repair project, approximately 560 cubic yards of material was excavated. Based on field screening results and sensory evidence, contaminated soil was present from about 1.5 to 2 feet bgs, to the base of the excavation. Observations of contamination were consistent throughout the excavation, and it appears that the site's soil/water interface (smear zone) is impacted. Although, the source of the contamination was not identified, there is a potential that an upgradient source(s) has impacted the site.

A total of 809.34 tons of impacted soil was transported to ASR for thermal remediation. The remainder of the soil, excavated from depths less than 1.5 to 2 feet bgs, was used to backfill the excavation. Approximately 2,300 gallons of water was also removed from the excavation and discharged to the AWWU sanitary sewer system.

CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our clients and their representatives in the study of this site. The findings we have presented within this report are based on the limited sampling and analyses that we conducted. The sampling and analyses performed can provide you with only our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site activities. Changes in site conditions can occur over time, due to natural forces or human

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SHANNON & WILSON, INC.

activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

Shannon & Wilson has prepared the documents in Attachment 5, "Important Information About Your Geotechnical/Environmental Report", to assist you and others in understanding the use and limitations of our reports. You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study, except with your permission or as required by law.

We appreciate the opportunity to be of service. Please call the undersigned at (907) 561-2120 with questions or comments concerning this report.

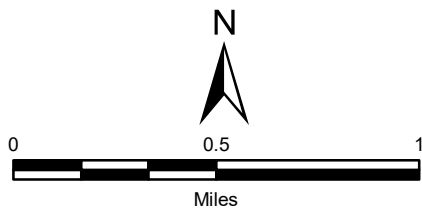
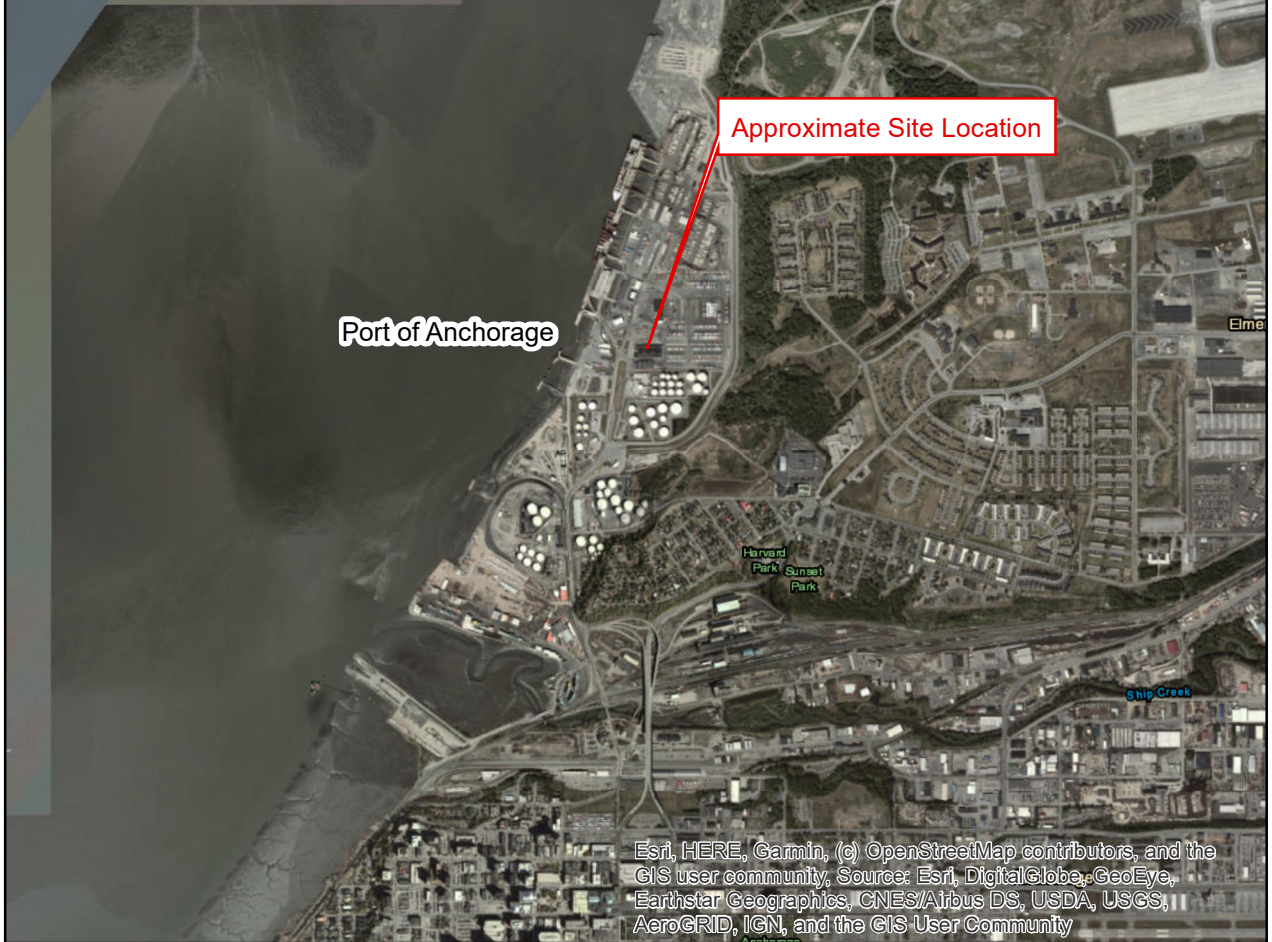
Sincerely,

SHANNON & WILSON, INC.

Dan P. McMahon, PMP
Senior Associate

Encl: Figures 1, 2, and 3; and Attachments 1 through 5

104488-001



1717 Tidewater Road
Anchorage, Alaska

VICINITY MAP

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MAP ADAPTED FROM AERIAL IMAGERY PROVIDED BY GOOGLE EARTH PRO, REPRODUCED BY PERMISSION GRANTED BY GOOGLE EARTH™ MAPPING SERVICE.

LEGEND



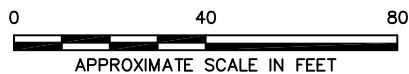
TP1

Approximate Location of Test Pit TP1, advanced on December 5, 2019.



S1

Approximate location of groundwater Sample S1, collected on November 21, 2019.



1717 Tidewater Road
Anchorage, Alaska

Site Plan

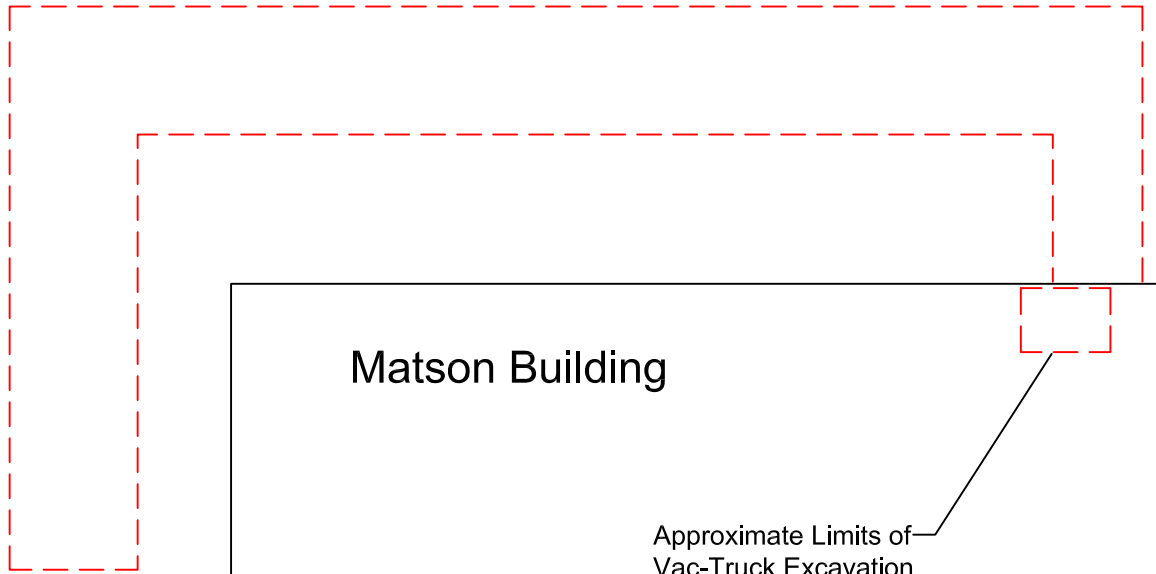
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Geotechnical and Environmental Consultants

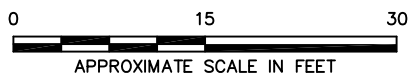
FIG. 2

Approximate Limits of
Waterline Excavation



Matson Building

Approximate Limits of
Vac-Truck Excavation



1717 Tidewater Road
Anchorage, Alaska

Detailed Site Plan

August 2020

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FIG. 3

ATTACHMENT 1
SITE PHOTOGRAPHS



Photo 1: Looking west into the excavation. (February 25, 2020)



Photo 2: Looking west at the excavation sidewall. Gravel, sand, and silt was present from the ground surface to about 4 to 5 feet bgs. The remainder of the excavation consisted of silt with clay and organics. (February 22, 2020)

1717 Tidewater Road
Anchorage, Alaska

PHOTOS 1 AND 2

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Photo 3: Looking south at the temporary soil stockpile, prior to transport to ASR. (February 20, 2020)



Photo 4: Looking east at the excavation, following backfilling. (March 5, 2020)

1717 Tidewater Road
Anchorage, Alaska

PHOTOS 3 AND 4

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ATTACHMENT 2

FIELD NOTES

Matson Waterline Replacement 2/19/20

Team: A. Rizzo

0830 Call Jason from Frawner to set up a time to meet onsite. Agree to meet at 9:30 - 10 Am.

0900 Calibrate PID #6 with 100 ppm Isobutylene. Prep for field

0930 Depart StW office for port

0945 Arrive at Port, check in with security.

1000 Arrive onsite. Frawner has not started digging due to malfunctioning equipment.

1010 Jacob Tracy from StW arrives onsite and discuss work plan procedures with contractor.

1025 Depart site. Frawner is going to call when they start digging / producing dirt

1045 Arrive back at office.

1400 AR calls Jason from Frawner to see if StW is needed onsite. Both agree to call in the morning to see progress. *Rite in the Rain.*

2/20/09 Matson Water line Replacement

Team: A. Rizzo, J. Tracy

- 0830 Call Jason from Fawner → agree to meet onsite at 0930,
- 0840 calibrate PID #6 with 100ppm Isobutylene. Prep for field.
- 0945 MR to meet JT onsite. Contractor begins digging. From 0 - 1.5 ft bgs brown gravelly sand with 0.0 ppm reading. obvious color change to grey with strong hydrocarbon odor at 1.5 ft bgs. PID reading from bucket of 30 ppm (North side of building).
- 1015 Begin digging on West side of building organics present from 0 - 1.0 ft bgs. (unusable soil) clean soil 0.6 ppm from 1 - 2 ft bgs. Strong pol odor and discoloration present @ 2 ft.
- 1115 strong pol odor + staining from 2 - 6 ft bgs. PID readings from 95.4 - 133.7 ppm. Soil consists of sand, silt, clay and gravel.

2/20/10 Matson Waterline Replacement

1230 Frauhar finishes widening excavation.
Contractor needs to wait for new
sized excavation box.

1245 New box arrives → continue digging
to set box

1415 Continuous staining, hydrocarbon
odor (strong) @ 8 ft bgs
PID Reading of 320 ppm.
Dark grey clay layer with minor
organics

1440 Dark grey clay @ 9 ft bgs.
Staining, hydrocarbon odor.
High organics present in clay.
PID reading of 297 ppm.

1455 Dark grey clay w/ high organics
HC odor + staining. PID reading
of 405 ppm from 9 - 12 ft
bgs.

2/20/20 Matsun Waterline Replacement

1540 Finish digging for day. Depart site.

1545 Arrive at office, unload, prep for tomorrow's work.

1600 End of day

[Handwritten signature]

2/21/20 Matson Waterline Replacement

Team: A. Rizzo

- 0915 call Jason from Frawner to see when I am needed onsite → agree to have me call back @ 1130 to let them backfill excavation
- 1130 Call Jason → agree to meet onsite at 2-2:30 when they begin digging
- 1330 Calibrate PID #6 with 100 ppm Isobutylene. Prep for field.
- 1400 Depart StW office for site
- 1425 Arrive onsite. Contractors already digging. Visible groundwater interval/lens present above clay layer in trenches ~5 ft bgs. Strong pol/hydrocarbon odor coming from excavation. collect soil sample for PID from excavation → from ~10 ft bgs reading 233 ppm. Frawner continues to remove dirt from bottom of excavations w/ hydrocarbon odor + staining *Note in the Rain.*

2/21/20 Matson waterline Replacement

- 1500 Framer begins extending excavation further east, Take initial surface sample from 0-2 ft bgs reading 1.7 ppm. Soil is gravelly sand, brown.
- 1515 Take sample from 2-4 ft bgs Soil is gravelly sand, moist, Dark gray in color, strong hydrogen sulfide odor + discoloration reading 447 ppm.
- 1530 Framer begins moving box further down / dragging it in excavation to secure sidewalls for pipe/waterline installation.
- 1645 Framer done digging for day. Depart site
- 1820 EOM of day.

7/22/20 Matsen Waterline Replacement

- 0830 Calibrate PID #6 with
100 ppm Toluene, prep for
field
- 0840 Arrive onsite, Frawker advancing
excavation eastward. Screen top
1-2 ft of soil pid range
from 0.8 - 11.6 ppm, GREY
stinky + strong hydrocarbon
odor below 1-2 ft of soil.
Groundwater present at 4-5 ft
bgs in trench/excavation.
- 0920 Soil sample taken from clay,
organic layer reading 537 ppm
(at 7-9 ft bgs)
- 0936 Frawker begins installing more pipe
in excavation.
- 1215 Begin digging/advancing excavation
0-1 ft 6.1 ppm. Sand (brown)
with gravel no HC odor or stinky

2/22/20 Matsch Waterline replacement
At 2 ft bgs, slight H₂S odor,
Minor staining 45.6 ppm. Sandy,
gravel layer.

3-4 ft bgs. H₂S odor, sandy
gravel. Discoloration (staining)
54.6 ppm.

4-6 ft bgs. Dark gray Discoloration,
strong H₂S odor. 196 ppm

6-8 ft bgs. Dark gray clay layer
high organics present closer to 8 ft
bgs. strong H₂S odor. 405 ppm

8-11 ft same Dark clay w/ high
organics until bottom of
excavation. 476 ppm

1315 Framer inserts anchor box
into excavation and begins
backfilling for waterline
installation.

Rite in the Rain.

2/22/20 Watson Waterline Replacement

1415 Begin advancing excavation.
surface 0-1 sample ready
in Brown sand with gravel
1.3 ppm

1430 Francher begins backfilling
excavation around newly installed
water line.

1530 Begin advancing excavation
2 1-2 ft bgs PID ready of
5.6 ppm. Sand with gravel,
Brown.

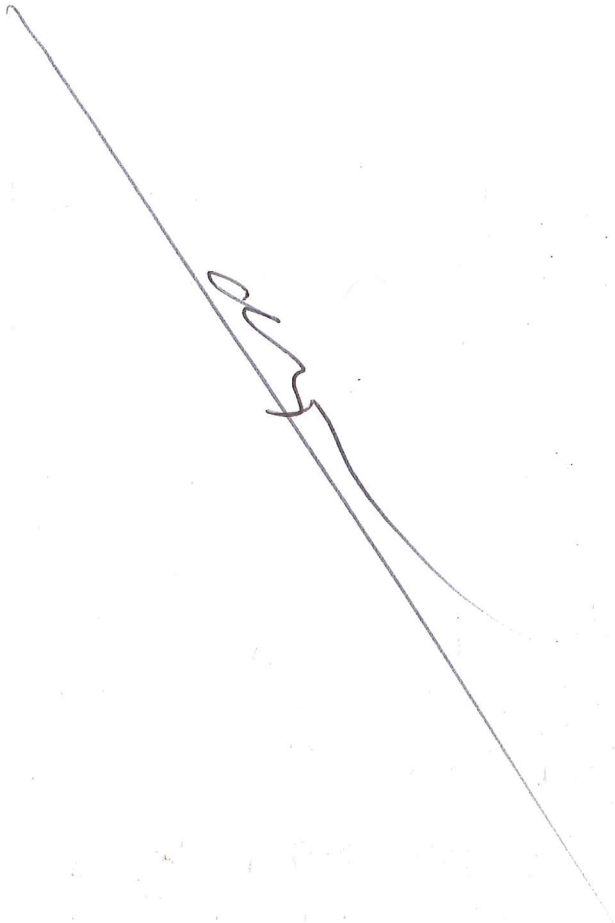
1545 ~ 2-3 ft bgs. He odor +
grey soil present (staining)
PID of 36.7 ppm.

1600 24-5 Dark grey ~~gr~~ clay
rich soil 342 ppm. HC
odor + staining

2/22/20 Matson waterline Replacement

1700 Framer done excavating for
the day. depart site

1730 End of day



2/24/20 Matson Waterline Replacement

0800 Talk with Jim from Frontier,
Agree to meet onsite at 1000.

0915 Calibrate PID #6 w/ 100 ppm
Isobutylene. Prep for field.

0945 Arrive onsite. collect soil reading
from 4-5 ft bgs. 411 ppm.

Strong HC odor & staining (Groundwater
Interface.)

1100 Begin installing waterline pipe.

1300 Backfill trench/excavation

1400 Begin advancing excavation

0-1 ft bgs PID reading of
0.6 ppm, Brown sand w/
gravel.

1-2 ft bgs PID reading of
6.3 ppm. Hydrocarbon odor/
change in color ~ 2 ft bgs.

2/24/20 Matson Waterline Replacement

1445 PID ready at GW interface
of 145 ppm, Clay rich soil.
strong HC odor (Dark gray)
at 4.5 ft bgs.

1520 Discoloration at 27 ft
bgs. PID ready of 127 ppm
in sand w/ gravel. Brown/grey
in color

15
17C

PID ready at GW
interface of 203.6 ppm.
in dark grey clay-rich soil.

1605

Depart site → Tractor
done excavating for the

1645
~~1630~~
17C

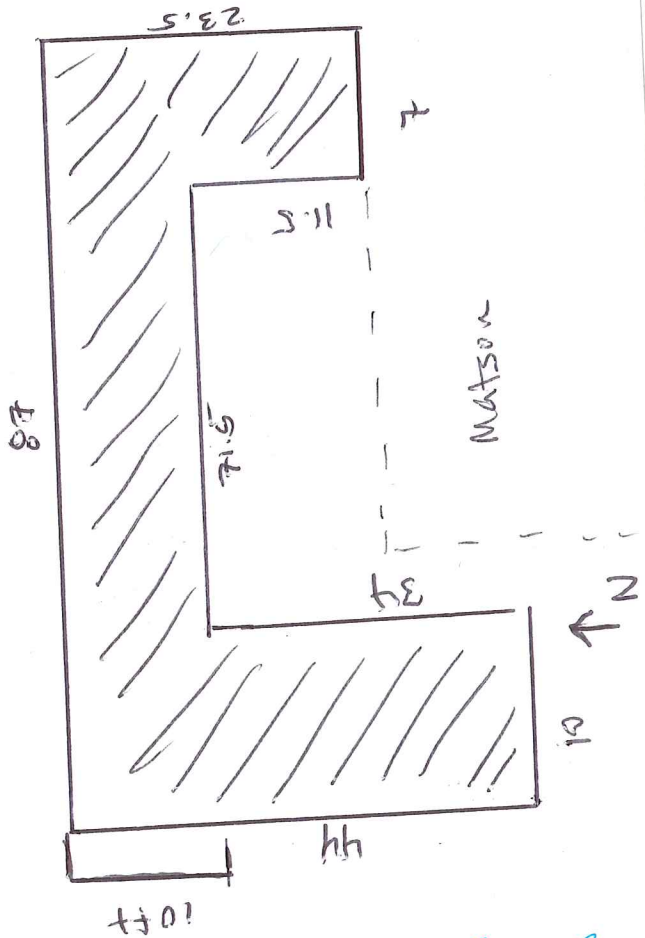
day
End of day

3/2/20 Watson Waterline Replacement

1100 Prep for field

1130 Arrive onsite to measure Excavation and take pictures of progress.

* Not drawn to scale



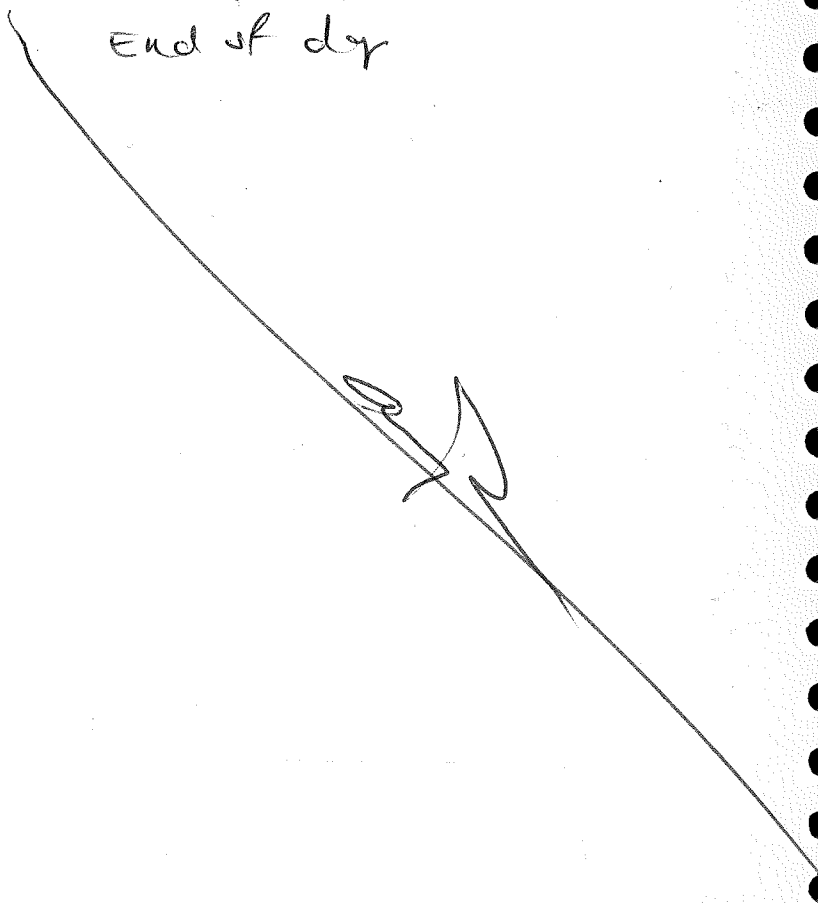
Rite in the Rain

3/2/20 Matson Waterline Replacement

1245 Depart site

1315 Arrive back at office

1400 Finish uploading photos /
making diagram of Excavation
End of day



3/5/20 MATSON Waterline Replacement

- 0730 Arrive at SW office →
calibrate VSI #6 with 100 ppm
Isobutyrate. Prep for sampling
- 0800 Arrive onsite to PID soil from
Excavation located across street for
waterline connection to main.
- 0830 collected soil from vac truck load
PID readings ranged from 0.6 ppm -
5.2 ppm (located head space).
Soil was a brown sand with gravel.
NO POL odor or staining. Saturated
from hydraulic water.
- 0930 Depart site.
- 1000 Arrive at SW office → upload
photos / unload truck
- 1030 End of day

3/7/20 MATSON Waterline

1200 Head to site to sample

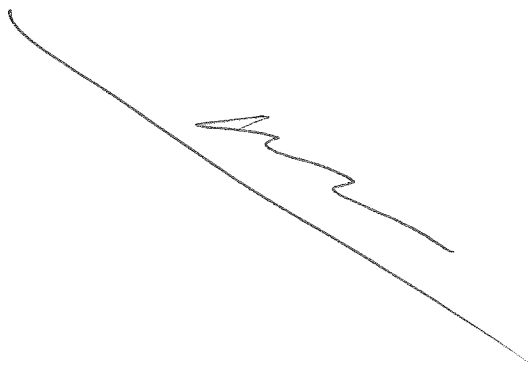
1220 Arrive onsite → prep
for sampling

1250 collect sample from 2nd
chamber. Third chamber
is frozen

1320 Depart site

~~1400~~
KK

1430 Finish sample management
End of day



ATTACHMENT 3
ASR DISPOSAL RECEIPT



A Division of Anchorage Sand & Gravel Co. Inc.
1040 O'Malley Road, Anchorage, Alaska 99515
Phone (907) 349-3333, Fax (907) 344-2844

ASR Received Material Total

Customer: Frawner Corp.
Project: Matson Water Line

ASR Account #: 479060-2000

Date	Truck #	Ticket # Tare	Tare (lbs)	Ticket # Gross	Gross (lbs)	Net (lbs)	Tons	# SS	# Drums
2/28/20	C735	14852	36,480	14891	67,640	31,160	15.58	0	0
		14852	36,480	14851	69,540	33,060	16.53		
		14852	36,480	14855	71,860	35,380	17.69		
		14852	36,480	14858	73,200	36,720	18.36		
		14852	36,480	14864	70,960	34,480	17.24		
		14852	36,480	14867	71,960	35,480	17.74		
		14852	36,480	14872	71,160	34,680	17.34		
		14852	36,480	14879	71,160	34,680	17.34		
		14852	36,480	14887	70,640	34,160	17.08		
2/28/20	C749	14848	34,300	14894	70,680	36,380	18.19		
		14848	34,300	14890	70,780	36,480	18.24		
		14848	34,300	14883	68,660	34,360	17.18		
		14848	34,300	14878	71,280	36,980	18.49		
		14848	34,300	14873	72,360	38,060	19.03		
		14848	34,300	14868	71,920	37,620	18.81		
		14848	34,300	14865	74,220	39,920	19.96		
		14848	34,300	14860	74,060	39,760	19.88		
		14848	34,300	14854	73,000	38,700	19.35		
		14848	34,300	14850	70,540	36,240	18.12		
2/28/20	C768	14846	39,920	14845	71,060	31,140	15.57		
		14846	39,920	14853	77,060	37,140	18.57		
		14846	39,920	14862	79,140	39,220	19.61		
		14846	39,920	14863	80,840	40,920	20.46		
		14846	39,920	14866	76,600	36,680	18.34		
		14846	39,920	14871	78,360	38,440	19.22		
		14846	39,920	14876	77,160	37,240	18.62		
		14846	39,920	14881	78,540	38,620	19.31		
		14846	39,920	14888	76,600	36,680	18.34		
		14846	39,920	14892	78,000	38,080	19.04		
2/28/20	F102	14896	25,740	14849	51,700	25,960	12.98		
		14896	25,740	14847	45,460	19,720	9.86		

Customer: Frawner Corp.
Project: Matson Water Line

ASR Account #: 479060-2000

Date	Truck #	Ticket # Tare	Tare (lbs)	Ticket # Gross	Gross (lbs)	Net (lbs)	Tons	# SS	# Drums
		14896	25,740	14898	47,760	22,020	11.01		
		14896	25,740	14893	54,260	28,520	14.26		
		14896	25,740	14856	52,120	26,380	13.19		
		14896	25,740	14889	52,560	26,820	13.41		
		14896	25,740	14882	52,380	26,640	13.32		
		14896	25,740	14877	51,320	25,580	12.79		
		14896	25,740	14874	53,380	27,640	13.82		
		14896	25,740	14869	54,080	28,340	14.17		
		14896	25,740	14861	53,780	28,040	14.02		
		14896	25,740	14857	52,980	27,240	13.62		
3/6/20	C749	14895	34,480	14958	68,700	34,220	17.11		
		14895	34,480	14965	62,120	27,640	13.82		
		14895	34,480	14968	63,380	28,900	14.45		
		14895	34,480	14969	63,980	29,500	14.75		
		14895	34,480	14974	65,260	30,780	15.39		
3/6/19	F102	14964	24,320	14960	44,720	20,400	10.20		
		14964	24,320	14961	44,300	19,980	9.99		
		14964	24,320	14966	44,160	19,840	9.92		
		14964	24,320	14967	42,660	18,340	9.17		
		14964	24,320	14972	42,040	17,720	8.86		
						0	0.00		
						0	0.00		

Total	809.34	0	0
Billed	685.68		
Remaining	123.66	0	0

ATTACHMENT 4
RESULTS OF ANALYTICAL TESTING BY
SGS NORTH AMERICA INC.

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907)433-3223

Report Number: **1200921**

Client Project: **104488 Matson Waterline**

Dear Dan McMahon,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1200921**
Project Name/Site: **104488 Matson Waterline**
Project Contact: **Dan McMahon**

Refer to sample receipt form for information on sample condition.

104488-S2 (1200921001) PS

AK102/103 - Surrogate recoveries for 5a-androstane and n-triacontane does not meet QC criteria. The sample was re-extracted outside of hold time with surrogate recoveries within criteria. Results are comparable. In hold data is reported.

AK102 - LCS/LCSD recoveries for diesel range organics does not meet QC criteria. The sample was re-extracted outside of hold time with LCS/LCSD recoveries within criteria. Results are comparable. In hold data is reported.

1200912002DUP (1553097) DUP

2540D - Total Suspended Solids - Sample duplicate RPD was outside of acceptance limits. Refer to LCS/LCSD RPD for batch precision.

LCS for HBN 1804977 [XXX/42855 (1553170) LCS

AK102 - LCS recovery for diesel range organics does not meet QC criteria.

LCSD for HBN 1804977 [XXX/4285 (1553171) LCSD

AK102 - LCS recovery for diesel range organics does not meet QC criteria.

AK103 - Surrogate recovery for n-triacontane does not meet QC criteria.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 03/30/2020 6:06:11PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
104488-S2	1200921001	03/07/2020	03/09/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
EPA 602/624	602 Aromatics by 624 (W)
SM21 5210B	Biochemical Oxygen Demand SM21 5210B
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
EP245.1	Mercury EPA 245.1 for non drinking water
EP200.8	Metals in Drinking Water by ICP-MS DISSO
EP200.8	Metals in Water by 200.8 ICP-MS
EPA 1664B	Oil & Grease HEM by EPA 1664
SM21 4500-H B	pH Analysis
SM21 4500-CN C,E	Total Cyanide SM4500 (W)
SM21 2540D	Total Suspended Solids SM20 2540D

Print Date: 03/30/2020 6:06:15PM

Detectable Results Summary

Client Sample ID: **104488-S2**

Lab Sample ID: 1200921001

**Dissolved Metals by ICP/MS
Metals by ICP/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Zinc	18.3	ug/L
Arsenic	3.01J	ug/L
Copper	16.0	ug/L
Lead	3.46	ug/L
Nickel	6.24	ug/L
Zinc	18.3	ug/L

**Microbiology Laboratory
Semivolatile Organic Fuels**

Biochemical Oxygen Demand	2.68	mg/L
Diesel Range Organics	0.485J	mg/L
Residual Range Organics	0.309J	mg/L
Gasoline Range Organics	0.859	mg/L

**Volatile Fuels
Volatile GC/MS**

Benzene	27.7	ug/L
Ethylbenzene	10.0	ug/L
o-Xylene	16.2	ug/L
P & M -Xylene	39.2	ug/L
Toluene	20.5	ug/L

Waters Department

Cyanide	0.0021J	mg/L
Oil & Grease HEM	4.43	mg/L
pH	7.7	pH units
Total Suspended Solids	229	mg/L

Results of 104488-S2

Client Sample ID: **104488-S2**
 Client Project ID: **104488 Matson Waterline**
 Lab Sample ID: 1200921001
 Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Dissolved Metals by ICP/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Zinc	18.3	10.0	3.10	ug/L	1		03/11/20 16:46

Batch Information

Analytical Batch: MMS10755
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 03/11/20 15:38
 Container ID: 1200921001-N

Prep Batch: MX33186
 Prep Method: E200.2
 Prep Date/Time: 03/10/20 12:13
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Analytical Batch: MMS10755
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 03/11/20 16:46
 Container ID: 1200921001-N

Prep Batch: MX33186
 Prep Method: E200.2
 Prep Date/Time: 03/10/20 12:13
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of 104488-S2

Client Sample ID: **104488-S2**
 Client Project ID: **104488 Matson Waterline**
 Lab Sample ID: 1200921001
 Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals by ICP/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Arsenic	3.01 J	5.00	1.50	ug/L	1		03/11/20 15:38
Beryllium	0.200 U	0.400	0.130	ug/L	1		03/11/20 15:38
Cadmium	0.250 U	0.500	0.150	ug/L	1		03/11/20 15:38
Chromium	1.00 U	2.00	0.800	ug/L	1		03/11/20 15:38
Copper	16.0	1.00	0.310	ug/L	1		03/11/20 15:38
Lead	3.46	0.200	0.0700	ug/L	1		03/11/20 15:38
Nickel	6.24	2.00	0.620	ug/L	1		03/11/20 15:38
Silver	0.500 U	1.00	0.310	ug/L	1		03/11/20 15:38
Zinc	18.3	10.0	3.10	ug/L	1		03/11/20 16:46

Batch Information

Analytical Batch: MMS10755
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 03/11/20 15:38
 Container ID: 1200921001-N

Prep Batch: MXX33186
 Prep Method: E200.2
 Prep Date/Time: 03/10/20 12:13
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Analytical Batch: MMS10755
 Analytical Method: EP200.8
 Analyst: BMZ
 Analytical Date/Time: 03/11/20 16:46
 Container ID: 1200921001-N

Prep Batch: MXX33186
 Prep Method: E200.2
 Prep Date/Time: 03/10/20 12:13
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Results of 104488-S2

Client Sample ID: **104488-S2**
 Client Project ID: **104488 Matson Waterline**
 Lab Sample ID: 1200921001
 Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Metals Department

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Mercury	0.500 U	1.00	0.400	ug/L	1		03/13/20 16:12

Batch Information

Analytical Batch: MCV6118
 Analytical Method: EP245.1
 Analyst: VAB
 Analytical Date/Time: 03/13/20 16:12
 Container ID: 1200921001-N

Prep Batch: MX33193
 Prep Method: METHOD
 Prep Date/Time: 03/13/20 12:18
 Prep Initial Wt./Vol.: 25 mL
 Prep Extract Vol: 50 mL

Results of 104488-S2

Client Sample ID: **104488-S2**
 Client Project ID: **104488 Matson Waterline**
 Lab Sample ID: 1200921001
 Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Microbiology Laboratory

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Biochemical Oxygen Demand	2.68		2.00	2.00	mg/L	1		03/09/20 12:33

Batch Information

Analytical Batch: BOD6552
 Analytical Method: SM21 5210B
 Analyst: A.L
 Analytical Date/Time: 03/09/20 12:33
 Container ID: 1200921001-G



Results of 104488-S2

Client Sample ID: 104488-S2
Client Project ID: 104488 Matson Waterline
Lab Sample ID: 1200921001
Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15560
Analytical Method: AK102
Analyst: JMG
Analytical Date/Time: 03/25/20 20:28
Container ID: 1200921001-D

Prep Batch: XXX42855
Prep Method: SW3535A
Prep Date/Time: 03/11/20 10:13
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15560
Analytical Method: AK103
Analyst: JMG
Analytical Date/Time: 03/25/20 20:28
Container ID: 1200921001-D

Prep Batch: XXX42855
Prep Method: SW3535A
Prep Date/Time: 03/11/20 10:13
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of 104488-S2

Client Sample ID: **104488-S2**
 Client Project ID: **104488 Matson Waterline**
 Lab Sample ID: 1200921001
 Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.859	0.100	0.0310	mg/L	1		03/11/20 19:12
Surrogates							
4-Bromofluorobenzene (surr)	117	50-150		%	1		03/11/20 19:12

Batch Information

Analytical Batch: VFC15095
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 03/11/20 19:12
 Container ID: 1200921001-A

Prep Batch: VXX35473
 Prep Method: SW5030B
 Prep Date/Time: 03/11/20 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 104488-S2

Client Sample ID: **104488-S2**
 Client Project ID: **104488 Matson Waterline**
 Lab Sample ID: 1200921001
 Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
 Received Date: 03/09/20 08:26
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	27.7		0.400	0.120	ug/L	1		03/10/20 18:56
Ethylbenzene	10.0		1.00	0.310	ug/L	1		03/10/20 18:56
o-Xylene	16.2		1.00	0.310	ug/L	1		03/10/20 18:56
P & M -Xylene	39.2		2.00	0.620	ug/L	1		03/10/20 18:56
Toluene	20.5		1.00	0.310	ug/L	1		03/10/20 18:56

Surrogates

1,2-Dichloroethane-D4 (surr)	99.4		81-118		%	1		03/10/20 18:56
4-Bromofluorobenzene (surr)	101		85-114		%	1		03/10/20 18:56
Toluene-d8 (surr)	101		89-112		%	1		03/10/20 18:56

Batch Information

Analytical Batch: VMS19831
 Analytical Method: EPA 602/624
 Analyst: NRB
 Analytical Date/Time: 03/10/20 18:56
 Container ID: 1200921001-H

Prep Batch: VXX35474
 Prep Method: SW5030B
 Prep Date/Time: 03/10/20 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 104488-S2

Client Sample ID: 104488-S2
Client Project ID: 104488 Matson Waterline
Lab Sample ID: 1200921001
Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Oil & Grease HEM, 4.43, 4.12, 1.03, mg/L, 1, 03/12/20 09:10

Batch Information

Analytical Batch: THOG1333
Analytical Method: EPA 1664B
Analyst: EWW
Analytical Date/Time: 03/12/20 09:10
Container ID: 1200921001-K

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Total Suspended Solids, 229, 5.00, 1.55, mg/L, 1, 03/10/20 14:27

Batch Information

Analytical Batch: STS6617
Analytical Method: SM21 2540D
Analyst: EWW
Analytical Date/Time: 03/10/20 14:27
Container ID: 1200921001-F

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: Cyanide, 0.0021 J, 0.0050, 0.0020, mg/L, 1, 03/17/20 11:03

Batch Information

Analytical Batch: WDA4752
Analytical Method: SM21 4500-CN C,E
Analyst: DMM
Analytical Date/Time: 03/17/20 11:03
Container ID: 1200921001-M
Prep Batch: WXX13224
Prep Method: METHOD
Prep Date/Time: 03/16/20 17:07
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row 1: pH, 7.7, 0.100, 0.100, pH units, 1, 03/09/20 15:44

Print Date: 03/30/2020 6:06:18PM

J flagging is activated



Results of 104488-S2

Client Sample ID: **104488-S2**
Client Project ID: **104488 Matson Waterline**
Lab Sample ID: 1200921001
Lab Project ID: 1200921

Collection Date: 03/07/20 12:50
Received Date: 03/09/20 08:26
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Waters Department

Batch Information

Analytical Batch: WTI5361
Analytical Method: SM21 4500-H B
Analyst: EWW
Analytical Date/Time: 03/09/20 15:44
Container ID: 1200921001-O

Method Blank

Blank ID: MB for HBN 1805005 [BOD/6552]

Blank Lab ID: 1553263

QC for Samples:
1200921001

Matrix: Water (Surface, Eff., Ground)

Results by SM21 5210B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Biochemical Oxygen Demand	2.00U	2.00	2.00	mg/L

Batch Information

Analytical Batch: BOD6552
Analytical Method: SM21 5210B
Instrument:
Analyst: A.L
Analytical Date/Time: 3/9/2020 12:33:02PM

Print Date: 03/30/2020 6:06:21PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [BOD6552]
Blank Spike Lab ID: 1553264
Date Analyzed: 03/09/2020 12:33

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by SM21 5210B

Parameter	Blank Spike (mg/L)			CL (84.6-115.4
	Spike	Result	Rec (%)	
Biochemical Oxygen Demand	198	192	97	

Batch Information

Analytical Batch: **BOD6552**
Analytical Method: **SM21 5210B**
Instrument:
Analyst: **A.L**

Method Blank

Blank ID: MB for HBN 1804972 [MXX/33186]
 Blank Lab ID: 1553153

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200921001

Results by EP200.8

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Arsenic	2.50U	5.00	1.50	ug/L
Beryllium	0.200U	0.400	0.130	ug/L
Cadmium	0.250U	0.500	0.150	ug/L
Chromium	1.00U	2.00	0.800	ug/L
Copper	0.500U	1.00	0.310	ug/L
Lead	0.100U	0.200	0.0700	ug/L
Nickel	1.00U	2.00	0.620	ug/L
Silver	0.500U	1.00	0.310	ug/L
Zinc	3.51J	10.0	3.10	ug/L

Batch Information

Analytical Batch: MMS10755
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: BMZ
 Analytical Date/Time: 3/11/2020 2:47:41PM

Prep Batch: MXX33186
 Prep Method: E200.2
 Prep Date/Time: 3/10/2020 12:13:48PM
 Prep Initial Wt./Vol.: 20 mL
 Prep Extract Vol: 50 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [MXX33186]

Blank Spike Lab ID: 1553154

Date Analyzed: 03/11/2020 14:50

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP200.8

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Arsenic	1000	1050	105	(85-115)
Beryllium	100	111	111	(85-115)
Cadmium	100	108	108	(85-115)
Chromium	400	418	105	(85-115)
Copper	1000	990	99	(85-115)
Lead	1000	1080	108	(85-115)
Nickel	1000	959	96	(85-115)
Silver	100	112	112	(85-115)
Zinc	1000	1010	101	(85-115)

Batch Information

Analytical Batch: **MMS10755**

Analytical Method: **EP200.8**

Instrument: **Perkin Elmer Nexlon P5**

Analyst: **BMZ**

Prep Batch: **MXX33186**

Prep Method: **E200.2**

Prep Date/Time: **03/10/2020 12:13**

Spike Init Wt./Vol.: 1000 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1553156
 MS Sample ID: 1553158 MS
 MSD Sample ID:

Analysis Date: 03/11/2020 14:53
 Analysis Date: 03/11/2020 14:56
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	2.50U	1000	1070	107				70-130		
Beryllium	0.200U	100	104	104				70-130		
Cadmium	0.250U	100	106	106				70-130		
Chromium	1.00U	400	421	105				70-130		
Copper	27.5	1000	1040	101				70-130		
Lead	0.584	1000	1090	108				70-130		
Nickel	1.42J	1000	970	97				70-130		
Silver	0.500U	100	109	109				70-130		
Zinc	43.1	1000	1030	99				70-130		

Batch Information

Analytical Batch: MMS10755
 Analytical Method: EP200.8
 Instrument: Perkin Elmer Nexlon P5
 Analyst: BMZ
 Analytical Date/Time: 3/11/2020 2:56:38PM

Prep Batch: MXX33186
 Prep Method: DW Digest for Metals on ICP-MS
 Prep Date/Time: 3/10/2020 12:13:48PM
 Prep Initial Wt./Vol.: 20.00mL
 Prep Extract Vol: 50.00mL



Matrix Spike Summary

Original Sample ID: 1553157
MS Sample ID: 1553159 MS
MSD Sample ID:

Analysis Date: 03/11/2020 15:20
Analysis Date: 03/11/2020 15:23
Analysis Date:
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP200.8

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Arsenic	2.50U	1000	1070	107				70-130		
Beryllium	0.200U	100	124	124				70-130		
Cadmium	0.250U	100	106	106				70-130		
Chromium	1.00U	400	423	106				70-130		
Copper	32.6	1000	1050	102				70-130		
Lead	0.229	1000	1050	105				70-130		
Nickel	1.52J	1000	978	98				70-130		
Silver	0.500U	100	111	111				70-130		
Zinc	99.4	1000	1060	96				70-130		

Batch Information

Analytical Batch: MMS10755
Analytical Method: EP200.8
Instrument: Perkin Elmer Nexlon P5
Analyst: BMZ
Analytical Date/Time: 3/11/2020 3:23:38PM

Prep Batch: MXX33186
Prep Method: DW Digest for Metals on ICP-MS
Prep Date/Time: 3/10/2020 12:13:48PM
Prep Initial Wt./Vol.: 20.00mL
Prep Extract Vol: 50.00mL

Print Date: 03/30/2020 6:06:29PM

Method Blank

Blank ID: MB for HBN 1805066 [MXX/33193]

Blank Lab ID: 1553483

QC for Samples:

1200921001

Matrix: Water (Surface, Eff., Ground)

Results by EP245.1

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Mercury	0.500U	1.00	0.400	ug/L

Batch Information

Analytical Batch: MCV6118

Analytical Method: EP245.1

Instrument: PSA Millennium mercury AA

Analyst: VAB

Analytical Date/Time: 3/13/2020 3:31:59PM

Prep Batch: MXX33193

Prep Method: METHOD

Prep Date/Time: 3/13/2020 12:18:20PM

Prep Initial Wt./Vol.: 25 mL

Prep Extract Vol: 50 mL

Print Date: 03/30/2020 6:06:31PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [MXX33193]

Blank Spike Lab ID: 1553482

Date Analyzed: 03/13/2020 15:34

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP245.1

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Mercury	4	4.00	100	(85-115)

Batch Information

Analytical Batch: **MCV6118**

Analytical Method: **EP245.1**

Instrument: **PSA Millennium mercury AA**

Analyst: **VAB**

Prep Batch: **MXX33193**

Prep Method: **METHOD**

Prep Date/Time: **03/13/2020 12:18**

Spike Init Wt./Vol.: 4 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [MXX33193]
 Blank Spike Lab ID: 1553484
 Date Analyzed: 03/13/2020 15:37

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP245.1

Parameter	Blank Spike (ug/L)			CL (85-115)
	Spike	Result	Rec (%)	
Mercury	4	3.92	98	

Batch Information

Analytical Batch: **MCV6118**
 Analytical Method: **EP245.1**
 Instrument: **PSA Millennium mercury AA**
 Analyst: **VAB**

Prep Batch: **MXX33193**
 Prep Method: **METHOD**
 Prep Date/Time: **03/13/2020 12:18**
 Spike Init Wt./Vol.: 4 ug/L Extract Vol: 50 mL
 Dupe Init Wt./Vol.: Extract Vol:

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [MXX33193]

Blank Spike Lab ID: 1553485

Date Analyzed: 03/13/2020 15:42

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP245.1

Parameter	Blank Spike (ug/L)			CL (85-115)
	Spike	Result	Rec (%)	
Mercury	4	3.79	95	

Batch Information

Analytical Batch: **MCV6118**

Analytical Method: **EP245.1**

Instrument: **PSA Millennium mercury AA**

Analyst: **VAB**

Prep Batch: **MXX33193**

Prep Method: **METHOD**

Prep Date/Time: **03/13/2020 12:18**

Spike Init Wt./Vol.: 4 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [MXX33193]

Blank Spike Lab ID: 1553486

Date Analyzed: 03/13/2020 15:45

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP245.1

Parameter	Blank Spike (ug/L)			CL
	Spike	Result	Rec (%)	
Mercury	4	3.56	89	(85-115)

Batch Information

Analytical Batch: **MCV6118**

Analytical Method: **EP245.1**

Instrument: **PSA Millennium mercury AA**

Analyst: **VAB**

Prep Batch: **MXX33193**

Prep Method: **METHOD**

Prep Date/Time: **03/13/2020 12:18**

Spike Init Wt./Vol.: 4 ug/L Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Matrix Spike Summary

Original Sample ID: 1209089001
 MS Sample ID: 1553487 MS
 MSD Sample ID:

Analysis Date: 03/13/2020 16:27
 Analysis Date: 03/13/2020 16:30
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EP245.1

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Mercury	0.500U	8.00	6.21	78				70-130		

Batch Information

Analytical Batch: MCV6118
 Analytical Method: EP245.1
 Instrument: PSA Millennium mercury AA
 Analyst: VAB
 Analytical Date/Time: 3/13/2020 4:30:21PM

Prep Batch: MXX33193
 Prep Method: Digestion Mercury 245.1 (W)
 Prep Date/Time: 3/13/2020 12:18:20PM
 Prep Initial Wt./Vol.: 25.00mL
 Prep Extract Vol: 50.00mL

Print Date: 03/30/2020 6:06:35PM



Method Blank

Blank ID: MB for HBN 1804959 [STS/6617]

Blank Lab ID: 1553094

QC for Samples:
1200921001

Matrix: Water (Surface, Eff., Ground)

Results by SM21 2540D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Suspended Solids	0.500U	1.00	0.310	mg/L

Batch Information

Analytical Batch: STS6617
Analytical Method: SM21 2540D
Instrument:
Analyst: EWW
Analytical Date/Time: 3/10/2020 2:27:45PM

Print Date: 03/30/2020 6:06:36PM

Duplicate Sample Summary

Original Sample ID: 1200912002

Duplicate Sample ID: 1553097

QC for Samples:

1200921001

Analysis Date: 03/10/2020 14:27

Matrix: Water (Surface, Eff., Ground)

Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	432	404	mg/L	6.70*	(< 5)

Batch Information

Analytical Batch: STS6617

Analytical Method: SM21 2540D

Instrument:

Analyst: EWW

Print Date: 03/30/2020 6:06:38PM

Duplicate Sample Summary

Original Sample ID: 1200921001

Duplicate Sample ID: 1553098

QC for Samples:

1200921001

Analysis Date: 03/10/2020 14:27

Matrix: Water (Surface, Eff., Ground)

Results by SM21 2540D

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Suspended Solids	229	223	mg/L	2.90	(< 5)

Batch Information

Analytical Batch: STS6617

Analytical Method: SM21 2540D

Instrument:

Analyst: EWW

Print Date: 03/30/2020 6:06:38PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [STS6617]
Blank Spike Lab ID: 1553095
Date Analyzed: 03/10/2020 14:27

Spike Duplicate ID: LCSD for HBN 1200921 [STS6617]
Spike Duplicate Lab ID: 1553096
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by SM21 2540D

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Total Suspended Solids	25	23.7	95	25	24.9	100	(75-125)	4.90	(< 5)

Batch Information

Analytical Batch: STS6617
Analytical Method: SM21 2540D
Instrument:
Analyst: EWW

Print Date: 03/30/2020 6:06:39PM

Method Blank

Blank ID: MB for HBN 1805011 [THOG/1333]

Blank Lab ID: 1553295

QC for Samples:

1200921001

Matrix: Water (Surface, Eff., Ground)

Results by EPA 1664B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Oil & Grease HEM	3.70J	4.00	1.00	mg/L

Batch Information

Analytical Batch: THOG1333

Analytical Method: EPA 1664B

Instrument:

Analyst: EWW

Analytical Date/Time: 3/12/2020 9:10:47AM

Print Date: 03/30/2020 6:06:41PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [THOG1333]
 Blank Spike Lab ID: 1553296
 Date Analyzed: 03/12/2020 09:10

Spike Duplicate ID: LCSD for HBN 1200921
 [THOG1333]
 Spike Duplicate Lab ID: 1553297
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EPA 1664B

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Oil & Grease HEM	40	41.6	104	40	38.3	96	(78-114)	8.30	(< 18)

Batch Information

Analytical Batch: **THOG1333**
 Analytical Method: **EPA 1664B**
 Instrument:
 Analyst: **EWV**

Print Date: 03/30/2020 6:06:44PM

Matrix Spike Summary

Original Sample ID: 1553298
 MS Sample ID: 1553299 MS
 MSD Sample ID:

Analysis Date: 03/12/2020 9:10
 Analysis Date: 03/12/2020 9:10
 Analysis Date:
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EPA 1664B

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Oil & Grease HEM	18.4	46.0	57.6	85				78-114		

Batch Information

Analytical Batch: THOG1333
 Analytical Method: EPA 1664B
 Instrument:
 Analyst: EWW
 Analytical Date/Time: 3/12/2020 9:10:47AM

Method Blank

Blank ID: MB for HBN 1805016 [VXX/35473]
 Blank Lab ID: 1553311

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200921001

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	69.5	50-150		%

Batch Information

Analytical Batch: VFC15095
 Analytical Method: AK101
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 3/11/2020 12:50:00PM

Prep Batch: VXX35473
 Prep Method: SW5030B
 Prep Date/Time: 3/11/2020 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 03/30/2020 6:06:47PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [VXX35473]
 Blank Spike Lab ID: 1553312
 Date Analyzed: 03/11/2020 13:42

Spike Duplicate ID: LCSD for HBN 1200921 [VXX35473]
 Spike Duplicate Lab ID: 1553313
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.878	88	1.00	0.940	94	(60-120)	6.90	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	79.2	79	0.0500	76.1	76	(50-150)	4.00	

Batch Information

Analytical Batch: **VFC15095**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX35473**
 Prep Method: **SW5030B**
 Prep Date/Time: **03/11/2020 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 03/30/2020 6:06:49PM

Method Blank

Blank ID: MB for HBN 1805018 [VXX/35474]
 Blank Lab ID: 1553317

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200921001

Results by EPA 602/624

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	100	85-114		%
Toluene-d8 (surr)	100	89-112		%

Batch Information

Analytical Batch: VMS19831
 Analytical Method: EPA 602/624
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 3/10/2020 2:31:00PM

Prep Batch: VXX35474
 Prep Method: SW5030B
 Prep Date/Time: 3/10/2020 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [VXX35474]
 Blank Spike Lab ID: 1553318
 Date Analyzed: 03/10/2020 14:46

Spike Duplicate ID: LCSD for HBN 1200921 [VXX35474]
 Spike Duplicate Lab ID: 1553319
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by EPA 602/624

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	29.3	98	30	29.9	100	(79-120)	2.10	(< 20)
Ethylbenzene	30	30.1	100	30	30.5	102	(79-121)	1.60	(< 20)
o-Xylene	30	30.2	101	30	30.6	102	(78-122)	1.20	(< 20)
P & M -Xylene	60	61.2	102	60	61.2	102	(80-121)	0.15	(< 20)
Toluene	30	29.1	97	30	29.5	98	(80-121)	1.30	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	97.5	98	30	97.9	98	(81-118)	0.42	
4-Bromofluorobenzene (surr)	30	99.2	99	30	99.8	100	(85-114)	0.53	
Toluene-d8 (surr)	30	100	100	30	101	101	(89-112)	0.42	

Batch Information

Analytical Batch: **VMS19831**
 Analytical Method: **EPA 602/624**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX35474**
 Prep Method: **SW5030B**
 Prep Date/Time: **03/10/2020 06:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Duplicate Sample Summary

Original Sample ID: 1200830001

Duplicate Sample ID: 1553063

QC for Samples:

1200921001

Analysis Date: 03/09/2020 14:00

Matrix: Drinking Water

Results by SM21 4500-H B

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
pH	6.7	6.70	pH units	0.00	(< 5)

Batch Information

Analytical Batch: WTI5361

Analytical Method: SM21 4500-H B

Instrument: Titration

Analyst: EWW

Print Date: 03/30/2020 6:06:55PM

Duplicate Sample Summary

Original Sample ID: 1200890001

Duplicate Sample ID: 1553074

QC for Samples:

1200921001

Analysis Date: 03/09/2020 14:57

Matrix: Drinking Water

Results by SM21 4500-H B

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
pH	7.2	7.20	pH units	0.00	(< 5)

Batch Information

Analytical Batch: WTI5361

Analytical Method: SM21 4500-H B

Instrument: Titration

Analyst: EWW

Print Date: 03/30/2020 6:06:55PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [WTI5361]
Blank Spike Lab ID: 1553060
Date Analyzed: 03/09/2020 11:04

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by SM21 4500-H B

Parameter	Blank Spike (pH units)			CL (99-101)
	Spike	Result	Rec (%)	
pH	6.99	7.01	100	

Batch Information

Analytical Batch: **WTI5361**
Analytical Method: **SM21 4500-H B**
Instrument: **Titration**
Analyst: **EWV**

Print Date: 03/30/2020 6:06:57PM

Method Blank

Blank ID: MB for HBN 1805123 [WXX/13224]

Blank Lab ID: 1553691

QC for Samples:

1200921001

Matrix: Water (Surface, Eff., Ground)

Results by SM21 4500-CN C,E

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Cyanide	0.0026J	0.0050	0.0020	mg/L

Batch Information

Analytical Batch: WDA4752
Analytical Method: SM21 4500-CN C,E
Instrument: Discrete Analyzer 3
Analyst: DMM
Analytical Date/Time: 3/17/2020 10:44:23AM

Prep Batch: WXX13224
Prep Method: METHOD
Prep Date/Time: 3/16/2020 5:07:00PM
Prep Initial Wt./Vol.: 6 mL
Prep Extract Vol: 6 mL

Print Date: 03/30/2020 6:06:59PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [WXX13224]
 Blank Spike Lab ID: 1553692
 Date Analyzed: 03/17/2020 10:46

Spike Duplicate ID: LCSD for HBN 1200921 [WXX13224]
 Spike Duplicate Lab ID: 1553693
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by SM21 4500-CN C,E

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Cyanide	0.05	0.055	109	0.05	0.052	105	(75-125)	3.90	(< 25)

Batch Information

Analytical Batch: **WDA4752**
 Analytical Method: **SM21 4500-CN C,E**
 Instrument: **Discrete Analyzer 3**
 Analyst: **DMM**

Prep Batch: **WXX13224**
 Prep Method: **METHOD**
 Prep Date/Time: **03/16/2020 17:07**
 Spike Init Wt./Vol.: 0.05 mg/L Extract Vol: 6 mL
 Dupe Init Wt./Vol.: 0.05 mg/L Extract Vol: 6 mL

Matrix Spike Summary

Original Sample ID: 1201022003
 MS Sample ID: 1553695 MS
 MSD Sample ID: 1553696 MSD

Analysis Date: 03/17/2020 11:24
 Analysis Date: 03/17/2020 11:20
 Analysis Date: 03/17/2020 11:22
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by SM21 4500-CN C,E

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Cyanide	0.0050U	0.050	.054	109	0.050	0.052	104	75-125	4.50	(< 25)

Batch Information

Analytical Batch: WDA4752
 Analytical Method: SM21 4500-CN C,E
 Instrument: Discrete Analyzer 3
 Analyst: DMM
 Analytical Date/Time: 3/17/2020 11:20:57AM

Prep Batch: WXX13224
 Prep Method: Cyanide Distillation
 Prep Date/Time: 3/16/2020 5:07:00PM
 Prep Initial Wt./Vol.: 6.00mL
 Prep Extract Vol: 6.00mL

Print Date: 03/30/2020 6:07:02PM

Method Blank

Blank ID: MB for HBN 1804977 [XXX/42855]

Blank Lab ID: 1553169

QC for Samples:

1200921001

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.253J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	70.1	60-120		%

Batch Information

Analytical Batch: XFC15560

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: JMG

Analytical Date/Time: 3/25/2020 4:37:00PM

Prep Batch: XXX42855

Prep Method: SW3535A

Prep Date/Time: 3/11/2020 10:13:05AM

Prep Initial Wt./Vol.: 250 mL

Prep Extract Vol: 1 mL

Print Date: 03/30/2020 6:07:04PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [XXX42855]
 Blank Spike Lab ID: 1553170
 Date Analyzed: 03/25/2020 16:57

Spike Duplicate ID: LCSD for HBN 1200921 [XXX42855]
 Spike Duplicate Lab ID: 1553171
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	13.3	67	* 20	12.6	63	* (75-125)	5.10	(< 20)
Surrogates									
5a Androstane (surr)	0.4	76.6	77	0.4	71.7	72	(60-120)	6.60	

Batch Information

Analytical Batch: **XFC15560**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX42855**
 Prep Method: **SW3535A**
 Prep Date/Time: **03/11/2020 10:13**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Method Blank

Blank ID: MB for HBN 1804977 [XXX/42855]
 Blank Lab ID: 1553169

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1200921001

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.174J	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	73	60-120		%

Batch Information

Analytical Batch: XFC15560
 Analytical Method: AK103
 Instrument: Agilent 7890B F
 Analyst: JMG
 Analytical Date/Time: 3/25/2020 4:37:00PM

Prep Batch: XXX42855
 Prep Method: SW3535A
 Prep Date/Time: 3/11/2020 10:13:05AM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 03/30/2020 6:07:08PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1200921 [XXX42855]
 Blank Spike Lab ID: 1553170
 Date Analyzed: 03/25/2020 16:57

Spike Duplicate ID: LCSD for HBN 1200921 [XXX42855]
 Spike Duplicate Lab ID: 1553171
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1200921001

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	15.2	76	20	14.1	71	(60-120)	7.60	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	69.4	69	0.4	59.2	59	* (60-120)	15.80	

Batch Information

Analytical Batch: **XFC15560**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B F**
 Analyst: **JMG**

Prep Batch: **XXX42855**
 Prep Method: **SW3535A**
 Prep Date/Time: **03/11/2020 10:13**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 03/30/2020 6:07:10PM



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1200921



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CLIENT: MATSON					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page <u>1</u> of <u>1</u>								
CONTACT: Dan McMahon					PHONE #: 907-433-3223					Section 3										Preservative			
PROJECT NAME: Matson Waterline					PROJECT/PWSID/PERMIT#: 104488					# CONTAINERS													
REPORTS TO: Shannon + Wilson					E-MAIL: DXM@shannonwilson.com					Comp										Analysis*		NOTE:	
INVOICE TO: Shannon & Wilson					QUOTE #: 3653009M					MI (Multi-incremental)										PIT		*The following analyses require specific method and/or compound list: BTEX, Metals, PFAS	
RESERVED for lab use																	REMARKS/LOC ID						
Section 1		SAMPLE IDENTIFICATION			DATE mm/dd/yy		TIME HH:MM		MATRIX/MATRIX CODE		# CONTAINERS		Comp		MI								
		(A-D) 104488-S2			3/7/20		12:50		GW		15		Grab		X		X						
Section 2																							
Section 5		Relinquished By: (1)			Date		Time		Received By:		Section 4		DOD Project? Yes No		Data Deliverable Requirements:								
		<i>[Signature]</i>			3/9/20		0700		<i>[Signature]</i>														
		Relinquished By: (2)			Date		Time		Received By:		Cooler ID:		Requested Turnaround Time and/or Special Instructions:										
		<i>[Signature]</i>			3/9/20		0826		<i>[Signature]</i>														
		Relinquished By: (3)			Date		Time		Received By:		Temp Blank °C:		Chain of Custody Seal: (Circle)										
		<i>[Signature]</i>							<i>[Signature]</i>		1.6 D14		INTACT BROKEN ABSENT										
		Relinquished By: (4)			Date		Time		Received For Laboratory By:		or Ambient []		Delivery Method: Hand Delivery [X] Commercial Delivery []										
		<i>[Signature]</i>			3/9/2020		0526		<i>[Signature]</i>														

http://www.sgs.com/terms-and-conditions



e-Sample Receipt Form

SGS Workorder #:

1200921



1 2 0 0 9 2 1

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
<input type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 1.6 °C Therm. ID: D44
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?		
	N/A	
If <0°C, were sample containers ice free?		
	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		
Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Were samples received within holding time?	Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were proper containers (type/mass/volume/preservative***) used?	Yes	Yes ***Exemption permitted for metals (e.g, 200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	No	Missing trip blanks.Proceeding.
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1200921001-A	HCL to pH < 2	OK			
1200921001-B	HCL to pH < 2	OK			
1200921001-C	HCL to pH < 2	OK			
1200921001-D	HCL to pH < 2	OK			
1200921001-E	HCL to pH < 2	OK			
1200921001-F	No Preservative Required	OK			
1200921001-G	No Preservative Required	OK			
1200921001-H	HCL to pH < 2	OK			
1200921001-I	HCL to pH < 2	OK			
1200921001-J	HCL to pH < 2	OK			
1200921001-K	HCL to pH < 2	OK			
1200921001-L	HCL to pH < 2	OK			
1200921001-M	NaOH to pH > 10	OK			
1200921001-N	HNO3 to pH < 2	OK			
1200921001-O	No Preservative Required	OK			

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

ATTACHMENT 5

**IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL/ENVIRONMENTAL REPORT**



Date: August 2020
To: Frawner Corporation

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland