

December 22, 2022

Nickolas Kuhlmann
Project Manager, Crowley Fuels, LLC
201 Arctic Slope Ave.
Anchorage, AK 99518

Subject: Passive Skimmer Free-Product Recovery Checks, 2021–2022; Middle Tank Farm Rail Line Area, Nenana, Alaska; ADEC File No. 110.38.011

Dear Mr. Kuhlmann:

This letter documents the findings of one year of weekly passive skimmer maintenance for one groundwater monitoring well, MW-13, located at the Rail Line site in Nenana, Alaska. The purpose of this work was to determine: the seasonal presence of light non-aqueous phase liquid (LNAPL, a.k.a. free product) at MW-13; the effectiveness of the current passive skimmer deployed within MW-13 for the collection of LNAPL; develop recommendations based on one year of weekly observations. The work was performed between June 2021 and June 2022. In addition to gauging the water level and measurable LNAPL at MW-13, DNA also conducted gauging work at MW-7R during a portion of this time.

This letter summarizes past work at each well location, discusses the methods used to collect the project data, summarizes the field observations for each well, provides a discussion of the conditions of the passive skimmer, and provides recommendations.

Attached to this letter is a map depicting the locations site wells (Figure 1, Attachment 1), the field notes (Attachment 2), recovered fluid disposal documentation (Attachment 3), tabulation of the collected data for each well (Attachment 4), relevant photographs taking during site visits (Attachment 5), product specifications for the passive skimmer currently used (Attachment 6), graphs of data for MW-7R and MW-13 (Attachment 7), specification for an alternative passive collection system (Attachment 8).

BACKGROUND

Monitoring well MW-13 was installed in June 2013 to a total depth of 20.28 feet below the ground surface (bgs) with a 15-foot well screen extending from 5 feet to 20 feet bgs. In October 2013 and again in September 2014, measurable LNAPL was documented at MW-13. In July 2015, based on the fall 2013 and 2014 presence of measurable LNAPL, a Geotech® Product Recovery Canister (PRC; a.k.a. passive skimmer) was placed in groundwater monitoring well MW13 to collect the accumulated LNAPL/free product.

In 2015 and 2016, MW-13 was periodically checked for the presence of LNAPL in the passive skimmer, and the water and free product mix that collected in the passive skimmer was removed for disposal and the passive skimmer was redeployed. Monitoring of the passive skimmer in July and September of 2017 indicated the continued presence of LNAPL, with a sheen noted in the passive skimmer in July, and 0.075 feet (0.0625 inches) of free product observed in the passive skimmer in September. During the October

2018 sampling event, 0.14 feet (1.68 inches) of measurable free product was present at MW-13 (field notes do not indicate if this is LNAPL in the well casing or free product collected in the passive skimmer). In 2019, the well was not located by the field team and no measurements were made. In 2020, the well was located, and the measured free product thickness within the well casing was 2.52 inches. The passive skimmer was observed in 2020 as not functioning (full of water and no free product) likely due to a failed oleophilic/hydrophobic intake screen. Beginning in June 2021, DNA initiated the year-long recovery checks at MW-13.

STUDY METHODS

DNA performed LNAPL monitoring and PRC passive skimmer free product recovery monitoring at monitoring well MW-13, approximately weekly, from June 21, 2021, through June 24, 2022. LNAPL monitoring was performed by measuring the depth to LNAPL and/or groundwater from the top of the monitoring well casing using a Solinst® Model 122 oil/water interface meter. LNAPL thickness is defined as depth to groundwater from the top of the monitoring well casing minus the depth to LNAPL from the top of the monitoring well casing. The PRC passive skimmer free product monitoring consisted of observing the contents of the collection reservoir and noting if it contained free product. When checking the PRC passive skimmer during weekly monitoring events, the PRC skimmer was removed and observed for free product and water in the collection reservoir, and any liquid (oily water) was drained into a drum. The water level was allowed to equilibrate for approximately 10 minutes, and then depths to LNAPL and groundwater were measured. Staff then adjusted the PRC depth, if needed, and redeployed it in MW-13.

DNA also performed LNAPL monitoring at monitoring well MW-7R, approximately weekly, from October 22, 2021, through June 24, 2022. LNAPL monitoring was performed by measuring the depth to LNAPL and/or groundwater from the top of the monitoring well casing using a Solinst® Model 122 oil/water interface meter. The total depth of MW-7R is 15 feet below the ground surface (bgs), with a screening interval from 5 to 15 feet bgs. LNAPL was first observed at MW-7R in October 2018 (0.02 feet). The monitoring at MW-7R was begun because of the past presence of LNAPL accumulating in the well casing as observed beginning in 2018 and present during annual monitoring activities thereafter. MW-7R is a replacement well for MW-7, replaced on September 21, 2017.

The field team recorded general field notes, free product and groundwater depth measurements, and observations in a field logbook. Field notes are provided as Attachment 2. The field team decontaminated the interface probe following measurements in each monitoring well by spraying with an Alconox® solution and wiping with a paper towel, followed by spraying with deionized water and wiping with another paper towel. The field team disposed of the decontamination waste and protective nitrile gloves in opaque trash bags at the Fairbanks North Star Borough Landfill. The field team drained recovered oily water from the PRC into a labeled, 10-gallon steel drum, which was stored adjacent to MW-13. Upon completion, US Ecology manifested, transported, and disposed/treated of the waste, which was considered hazardous due to benzene concentrations. Attachment 3 contains oily water waste disposal documentation.

FIELD ACTIVITIES

MW-13 Observations

Weekly monitoring for free product and servicing the passive skimmer at monitoring well MW-13 was initiated on June 21, 2021 and completed on June 24, 2022. Measurable free product was observed on nine of 49 days when the well was accessible. The maximum free product thickness was 0.18 foot (2.16 inches) and the average measurable free product thickness was 0.03 foot (0.36 inches). Monitoring well MW-13 tabulated measurements and observations are shown in Attachment 4, Table 1. Measurements could not be made during six site visits during the entire month of April 2022 and the first week of May 2022 because the skimmer was frozen to the side of the well casing and could not be removed.

Between June and August, the field team observed that the skimmer filled with water and not hydrocarbons even though the skimmer target depth was adjusted several times. In discussions with the manufacture (Geotech Environmental Equipment, Inc.), the manufacture recommended replacement of the intake screen and conducting a viscosity test of the LNAPL at MW-13 to select the proper screen mesh size. To accumulate sufficient free-product at MW-13 to conduct a viscosity test and thereby replace the intake membrane with the appropriate screen mesh size, the skimmer at MW-13 was removed on August 27, 2021. During the project time frame, insufficient volume of LNAPL accumulated at MW-13 for conducting the needed viscosity test.

From August 2021 through May 2022, with the PRC suspended above the water table in the well casing, LNAPL measurements reflected true conditions without the influence from the PRC. The field team measured the depth to LNAPL and/or water on 33 days from August 20, 2021, to May 13, 2022, with this configuration. Within this time frame, the field team observed measurable LNAPL on five occasions. The maximum LNAPL thickness was 0.03 foot (0.36 inches). The average measurable LNAPL thickness on those five days was 0.02 foot (0.24 inches).

The field team did not observe any LNAPL thickness greater than 0.01 foot (trace) within the PRC. The photographic log in Attachment 5 documents a typical trace amount of free product accumulated within the PRC collection reservoir. The field team removed a total of 17 liters (4.5 gallons) of fluid (oily water) from the PRC. Most of the fluid collected by the PRC was oily water. The amount of free product removed by the PRC was too low to be measured. It was present as a heavy sheen on the surface of the recovered oily water in the wastewater drum.

MW-7R Observations

The field team measured depth to LNAPL and/or water in MW-7R on 29 days from October 22, 2021, through June 24, 2022, and observed measurable free product on three of those days, which were consecutive. The maximum LNAPL thickness on those three days was 0.43 foot (5.16 inches). The average thickness of LNAPL on those three days was 0.33 foot (3.96 inches). Monitoring well MW-7R tabulated measurements and observations are presented in Attachment 4, Table 2.

PRC Evaluation

The PRC oleophilic intake screen, which is designed to allow free product to pass through it, did not float above the surface of the groundwater, where free product could be captured, if present. DNA investigated

why the PRC collected water when positioned at the correct height for collecting free product within MW-13. Field staff determined that the buoyant assembly directly beneath the oleophilic intake screen, as seen in the PRC specification sheets in Attachment 6, did not float on the water surface. This allowed water to enter the oleophilic intake screen and fill the fluid reservoir. PRC manufacture advised that a new O-ring may be needed between the oleophilic intake screen and buoyant assembly, or the buoyant assembly may have a hairline crack.

The PRC oleophilic intake screen range is less than the range of depths to groundwater at MW-13. The PRC specification sheet states an oleophilic intake screen range of 12 inches. However, we observed that the depth to groundwater fluctuated between 10.18 foot below the top of casing on October 26, 2021, and November 5, 2021, and 2.67 feet below the top of casing on June 5, 2022, a range of 7.51 feet.

CONCLUSIONS AND RECOMMENDATIONS

Measurable LNAPL in MW-13 was observed on nine out of 48 days (18% of days monitored) from June 21, 2021, through June 24, 2022. The maximum free product thickness on those nine days was 0.18 foot (2.16 inches). The average free product thickness on those nine days was 0.03 foot (0.36 inches).

Measurable LNAPL in MW-7R was observed on three out of 33 days (9% of days monitored) from October 22, 2021, through June 24, 2022. The maximum free product thickness on those three days was 0.43 foot (5.16 inches). The average free product thickness on those three days was 0.33 foot (3.96 inches).

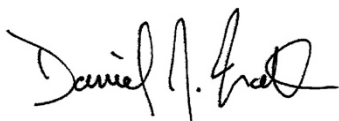
DNA observed that the presence of measurable free product may have been related to periods of decreasing groundwater level. Graphs 1 and 2 in Attachment 7 show that measurable free product was found in MW-13 and MW-7R following some, but not all periods, of decreasing groundwater elevation.

In accordance with 18 AAC 75.325(f), free product must be recovered to the maximum extent practicable using permanent remedies. The PRC may be an inappropriate free product recovery system for MW-13. The groundwater elevation fluctuated at a greater range than the PRC range of operation. Groundwater fluctuated 7.51 feet during the monitoring period. The PRC operates within a range of 12 inches. The buoyant assembly did not appear to be operating correctly during this monitoring period. The understanding of the LNAPL plume and source is not well understood at Nenana, hindering the ability to determine a permanent solution to the periodic presence of LNAPL at MW-7R and MW-13.

DNA recommends higher resolution understanding of contaminant locations to better inform the development site-wide remedial alternatives. We consider the use of a PCR at either well location as not practicable (unsuccessful) and non-permanent.

Sincerely,

DNA Environmental Consultants, LLC



Daniel Frank
Principal

Attachments

1. Site Well Location Map
2. Field Notes
3. Disposal Documents
4. Tables
5. Photograph Log
6. Geotech Passive Skimmer Specifications
7. Graphs
8. Sorbent Sock Specifications

ATTACHMENT 1

Site Well Locations Map



2021-2022 Passive Skimmer Free-Product Recovery
 Rail Line/Middle Tank Farm Site
 Nenana, Alaska

Well Locations

Figure
 1

1 inch equals 0.02 miles

11/01/2022

21.CFS.02.02

DRAWN: ECR

CHKD: DJF

ATTACHMENT 2

Field Notes



Rite in the Rain

ALL-WEATHER

FIELD

Nº 353

Nenana
Petro Trap

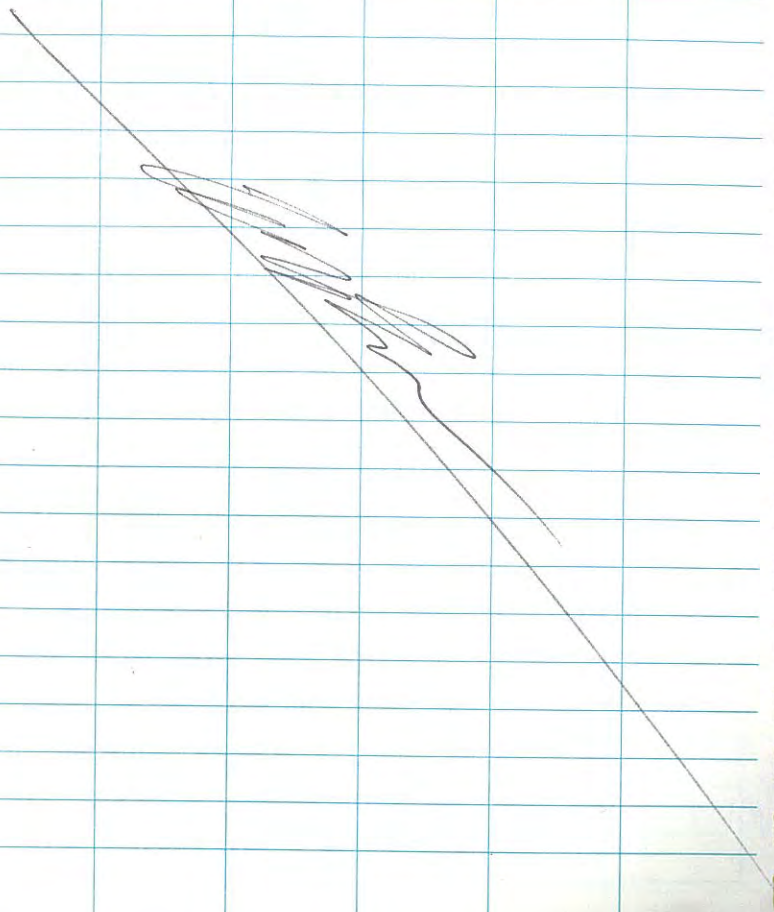
6/28/21

Brann

1330 Arrive on site

1340 PRC is full of water with a sheen.
Strong hydrocarbon smell. No product
measured in well. Measurements recorded
on field form.

1355 off site.



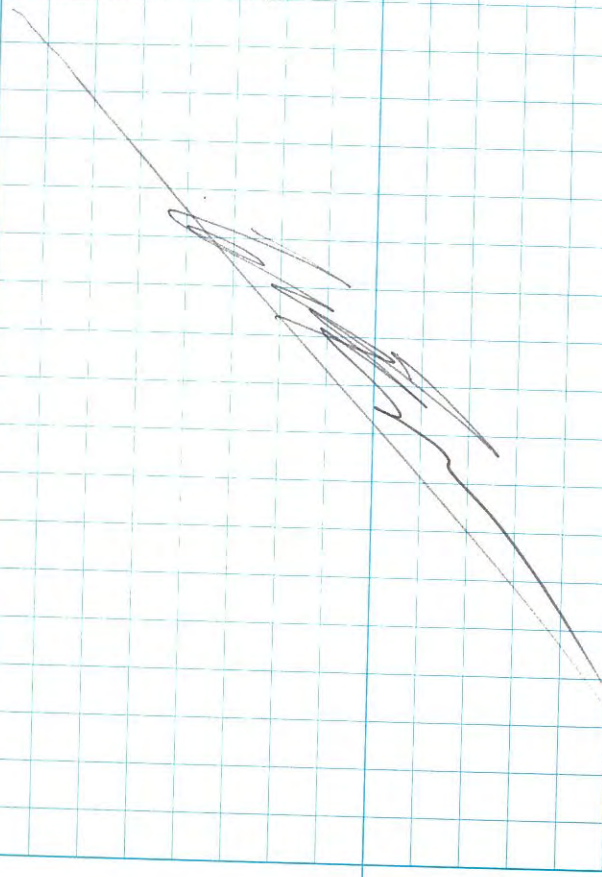
6/28/21

Brann

1215 Arrive on site

1230 PRC is full of water with sheen.
Emptied into drum. O/W probe detected
product but at a less than measurable amount
(< 0.01 ft). Recorded measurements on field
form.

1240 off site



Rite in the Rain.

6/30/21

Braun

1125

Arrive on site

1140

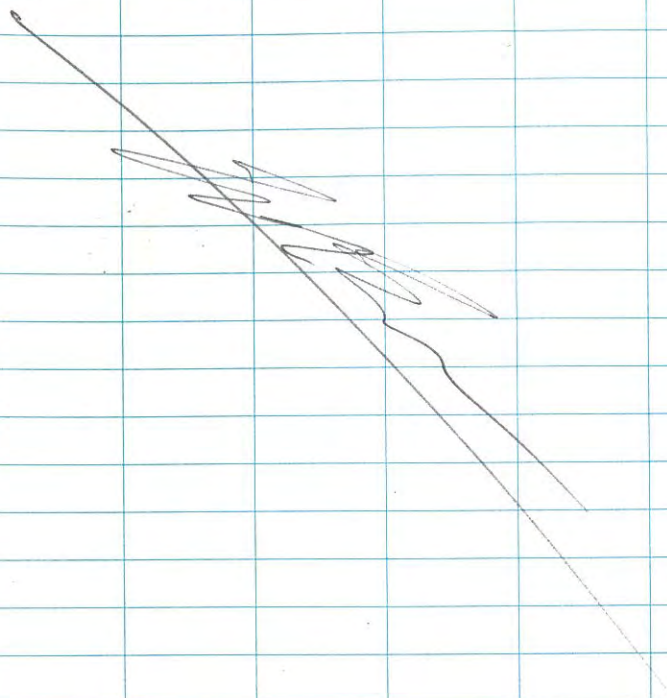
PCR full of water with sheen.

Oil/water interface probe placed in drum does not read oil. Water in drum

has an obvious sheen and strong hydrocarbon odor. Perhaps some globules forming but not enough to register on the probe.

1145

off site.



DAVIS.

7.1.21

1145

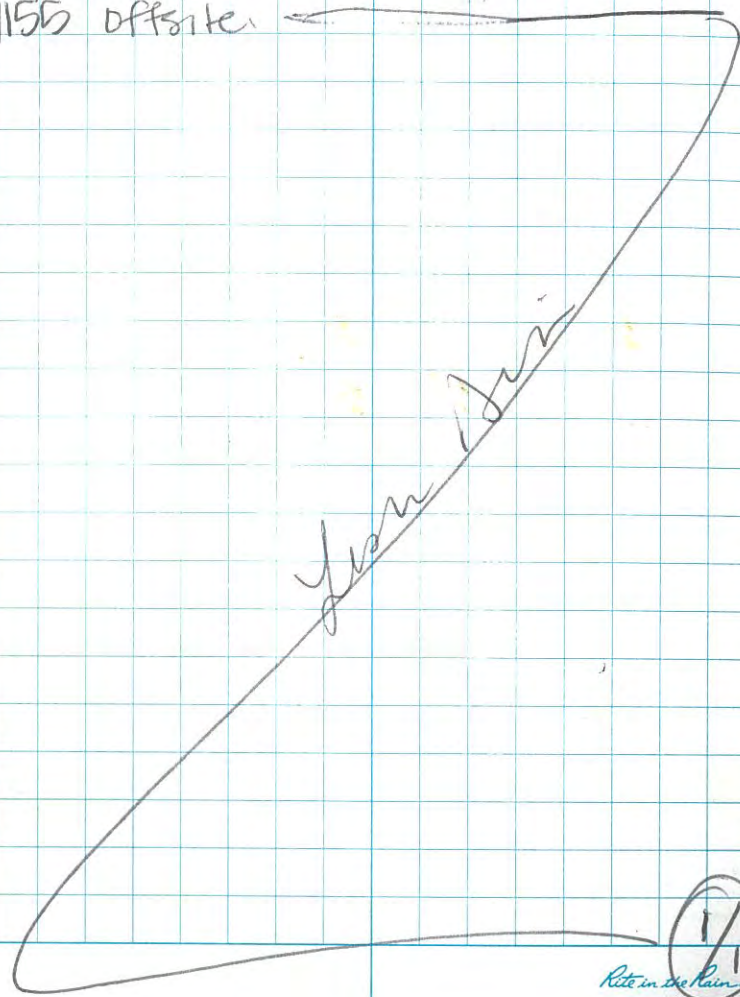
Arrive onsite

PCR full of water w/ slight sheen. No product observed.

Recorded measurements on field form.

1155

offsite.



7/9/12

Nenana Petro Trap

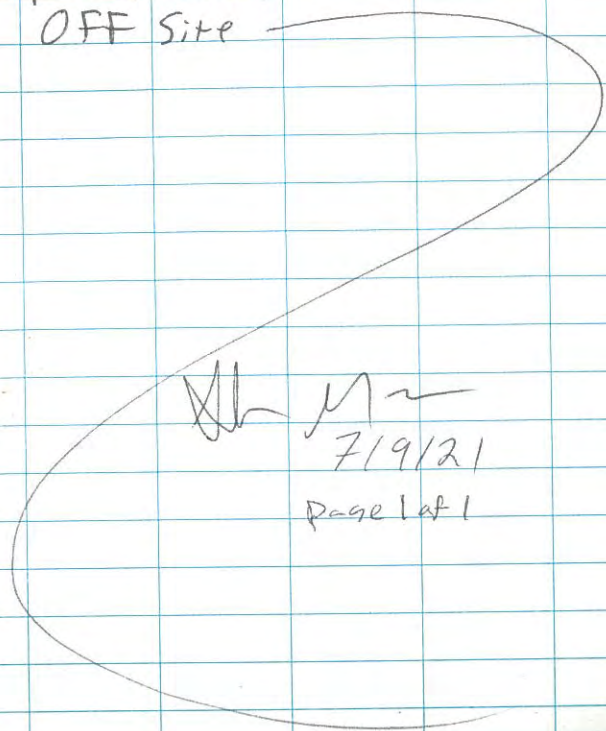
McComb

1043 Arrive on Site

1045 PRC Full of water
Slight Sheen and
Hydrocarbon odor observed
on removed water.

Well gauged with
interface probe with water
at 5.12' BGS and no
Free Product.

1054 OFF Site



JK M-
7/9/12
Page 1 of 1

McComb

Nenana Petro Trap

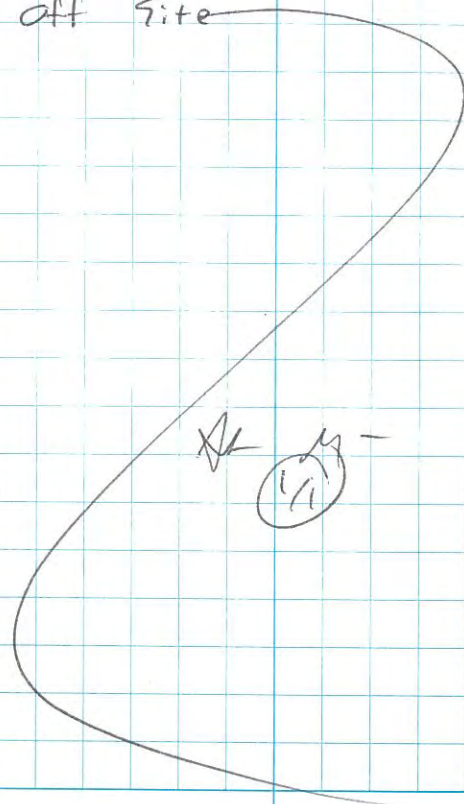
7/14/12

1252 Arrive on site.

1313 PRC Full of water, Strong
Sheen and Strong Hydrocarbon
odor observed well

gauged with product at
6.54' and water at 672'.
Skimmer intake left at
5-6.5'

1317 off site

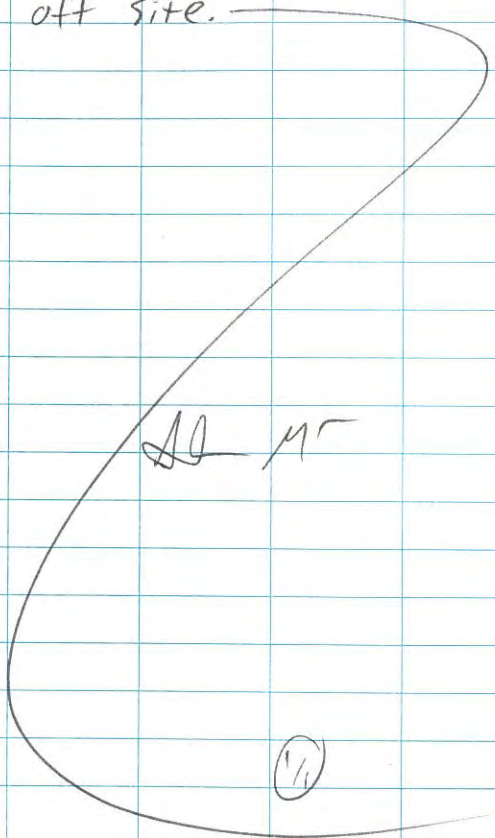


JK M-
(1/1)

7/22/21

Nenana Petro Trap Mcconi

- 1130 Arrive on site
1136 PRC Full of water, slight sheen and hydrocarbon odor observed. On removed water, well gauged at 6.71' with no free product, PRC intake adjusted to 5.5-7'
1150 off site.



60F, OVERCAST

HAGER NENANA PETRO TRAP

7-28-2021

- 1430 HAGER ON SITE
PRC FULL OF WATER. SHEEN OBSERVED IN AT WATER CAPTURED BY PRC
HC ODOR OBSERVED AT WELL HEAD + IN PRC
DTW_{TC} = 4.61' bgs
NO MEASURABLE FREE PRODUCT
ADJUST INTAKE TO 4.5'-6.0' bgs
REDEPLOY PRC

1525 HAGER OFF SITE
(NH) *NOTE: INSUFFICIENT PRODUCT RECOVERED TO PERFORM VISCOSITY TEST (NH)

Nathan Hager

1/1

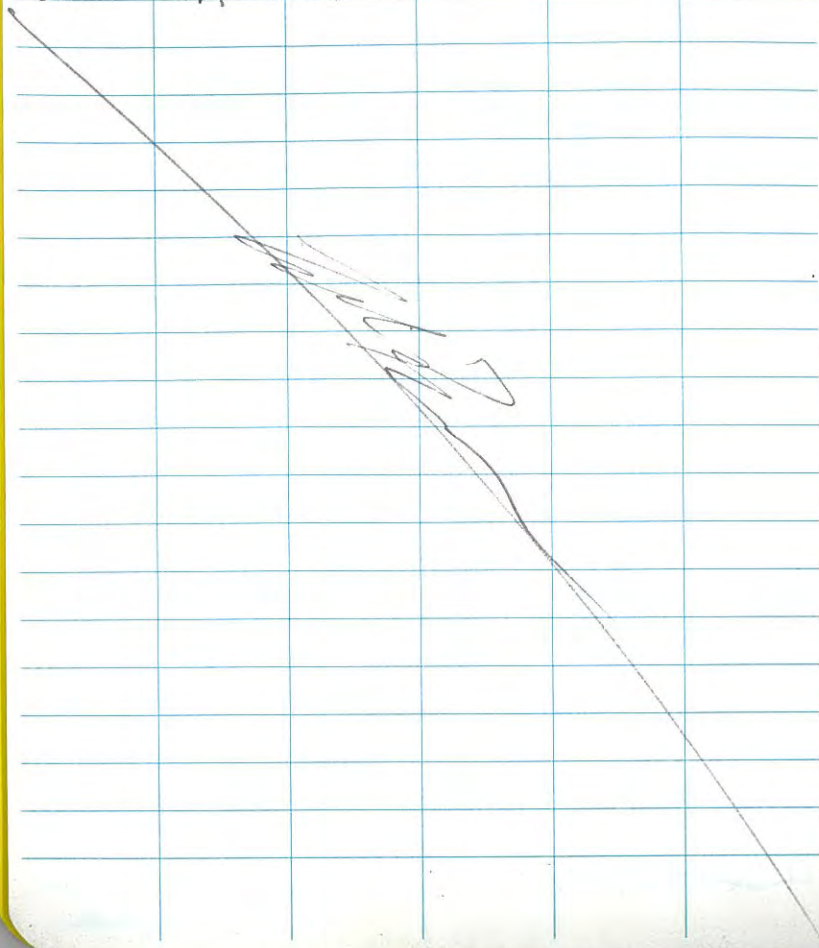
Rite in the Rain

8/6/2021

Nemana Petro Trap
E16416 23

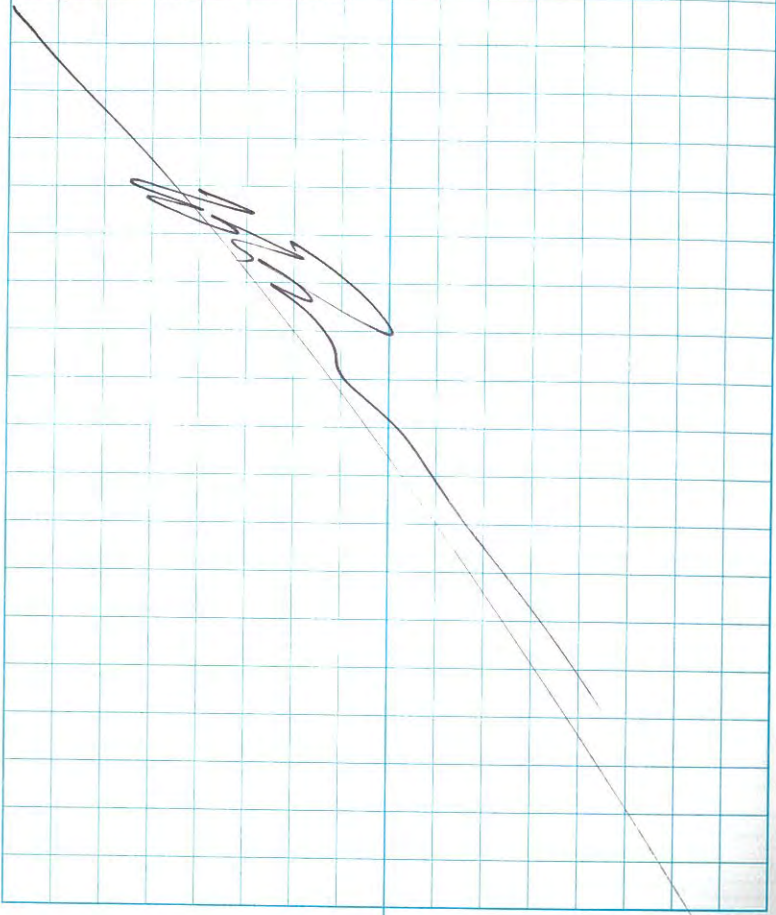
Branan

- 1030 Arrive at site
1040 PRC full of water. Globules of oil observed on surface of water in collection drum. No product measured in well.
1050 off site.



8/13/21

- 1030 Arrive at site
1040 PRC full of water w/ sheen. No product. Raised PRC to above water level to test whether product accumulates before next week.
1055 off site.



8/20/21

Braun

1120 on site. No product accumulated since last week. Left PRC above water column to see how long it takes for product to accumulate.

1145 off site

HAGER

45F RAIN

NEENAWA PETRO TRAP

8-27-21

1150 HAGER ON SITE.

DT PRODUCT = 4.96

DTW = 4.98

CALCULATE ~ 12CC OF PRODUCT IN THE WELL. VISCOSITY TEST KIT INSTRUCTIONS INDICATE 20CC OF PRODUCT IS NECESSARY TO PERFORM VISCOSITY TEST. LEAVE PRC ABOVE \varnothing TO ALLOW PRODUCT TO ACCUMULATE IN ORDER TO PERFORM VISCOSITY TEST.

1230 HAGER OFF SITE, SECURE GATE

~~Matthew Hager~~
8-27-21

(1/1)

09/03/21

60°F Partly Cloudy Meconb

Nenana Petrotrap

1130 on Site, No product accumulated on water column. No product or water in petrotrap.

1155 off site

A-M-
(11)

47° Partly Cloudy

9/10/21

Nenana Petrotrap

1115 On Site, No product accumulated on water column. No product or water in Petrotrap.

1200 off site

A-M-
(11)

9-17-21

SOF, CLEAR
NENANA PETRO TRAP

HAGER

1310 HAGER ON SITE

$DTW_{TDC} = 7.41'$

NO MEASURABLE PRODUCT

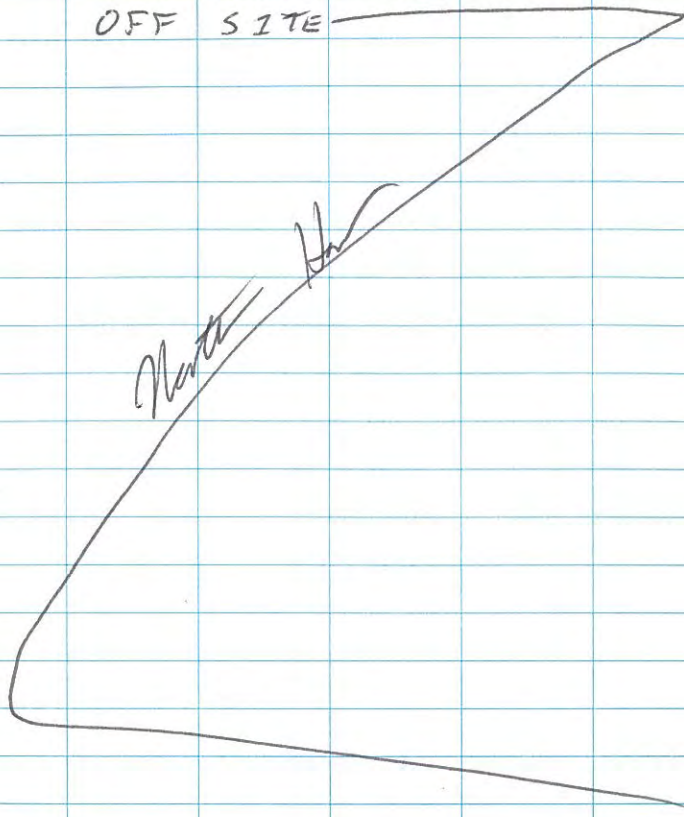
HC ODOR AT WELL CASING

PRC INTAKE REMAINS AT 0.7-2.3

UNTIL ENOUGH PRODUCT ACCUMULATES

TO PERFORM VISCOSITY TEST,

OFF SITE



9-24-21

1710 HAGER ON SITE

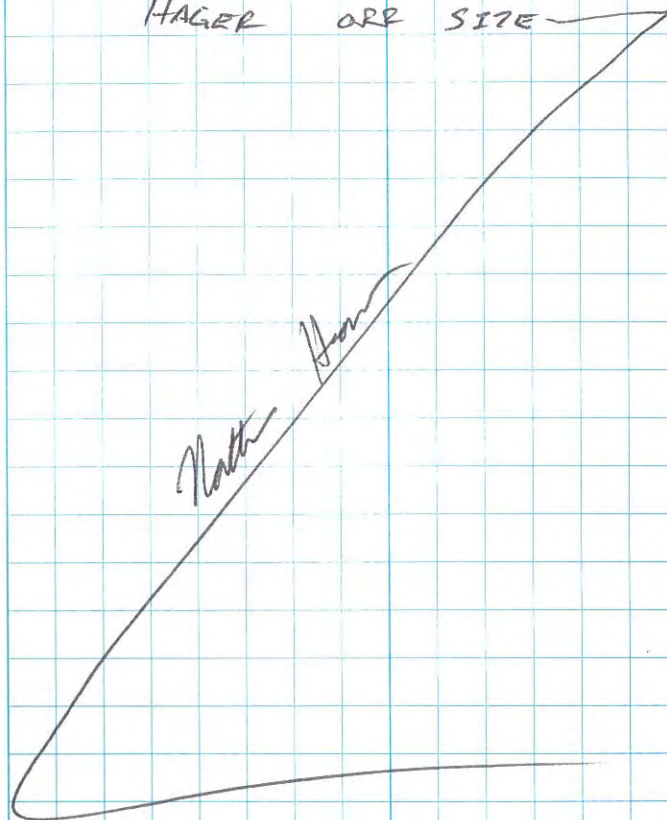
$DTW_{TDC} = 8.27'$

NO MEASURABLE PRODUCT

HC ODOR, NO RECOVERY OF

PRODUCT TO PERFORM VISCOSITY
TEST.

HAGER OFF SITE



10/1/21

NENANA

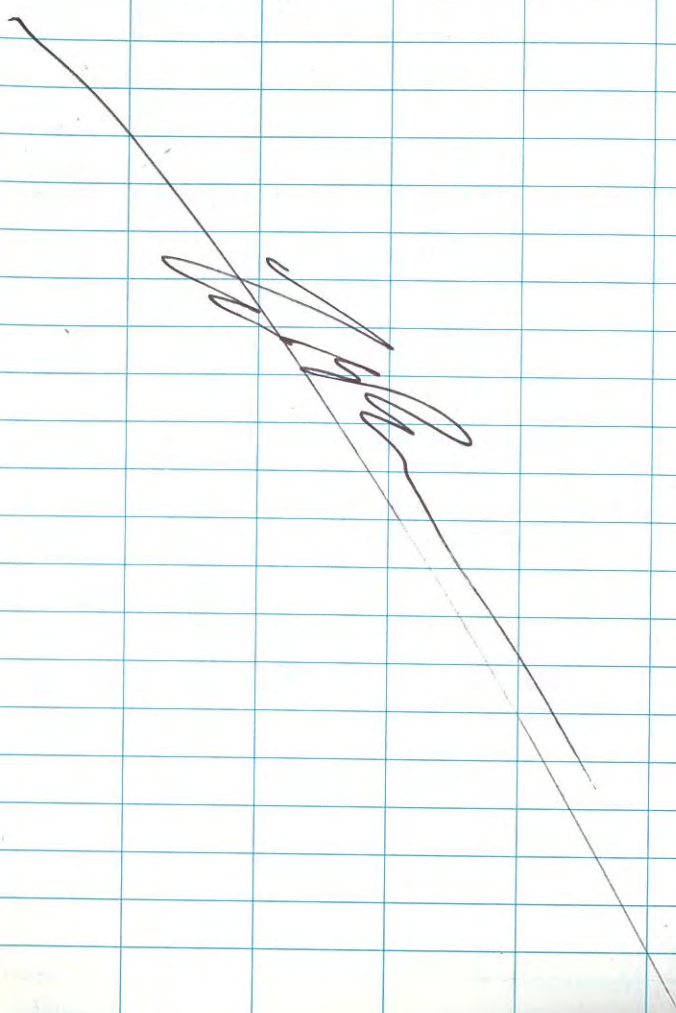
Bann

1135

Arrive on site.
No product measured or
recovered.

1205

off site



HAGER

34F, OVER CAST

NENANA PRC

10-8-21

1000

HAGER AT WAREHOUSE → NENANA

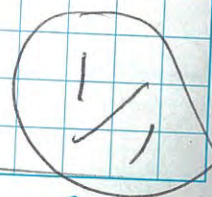
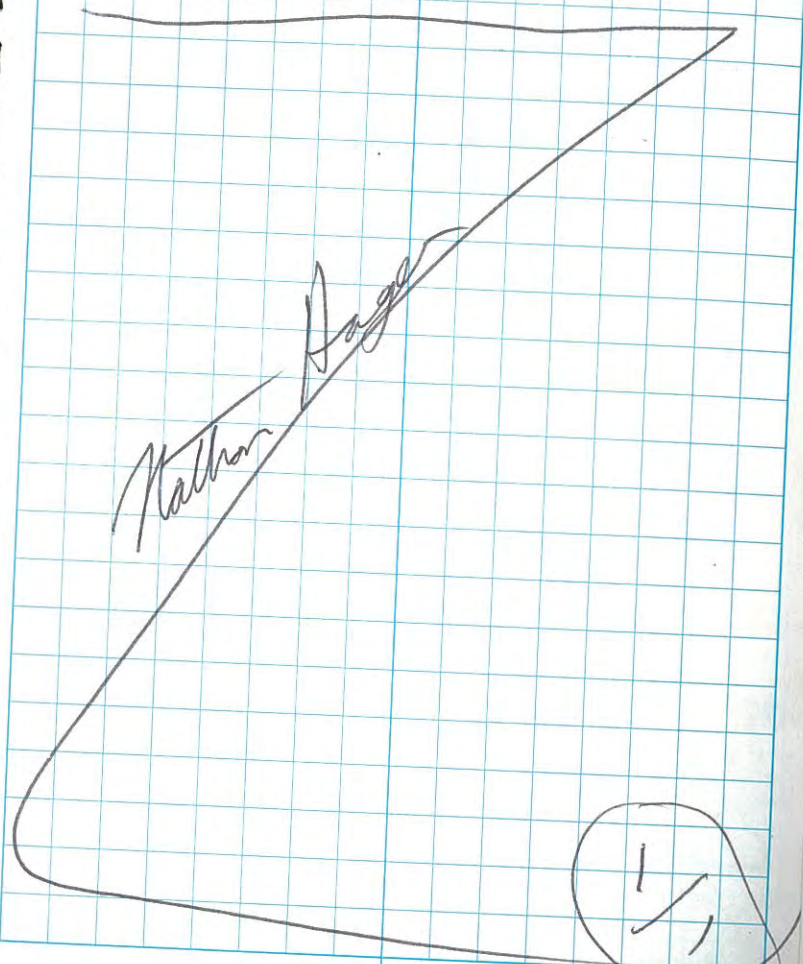
1100

HAGER ON SITE

DTW_{TOL} = 9.22'

NO MEASURABLE NAPL

HAGER → FBX



Rite in the Rain

10-14-2021 NENANA PETRO TRAP HAGER

1230 HAGER ON SITE

DEPTH TO NAPL (TOC) = 9.43

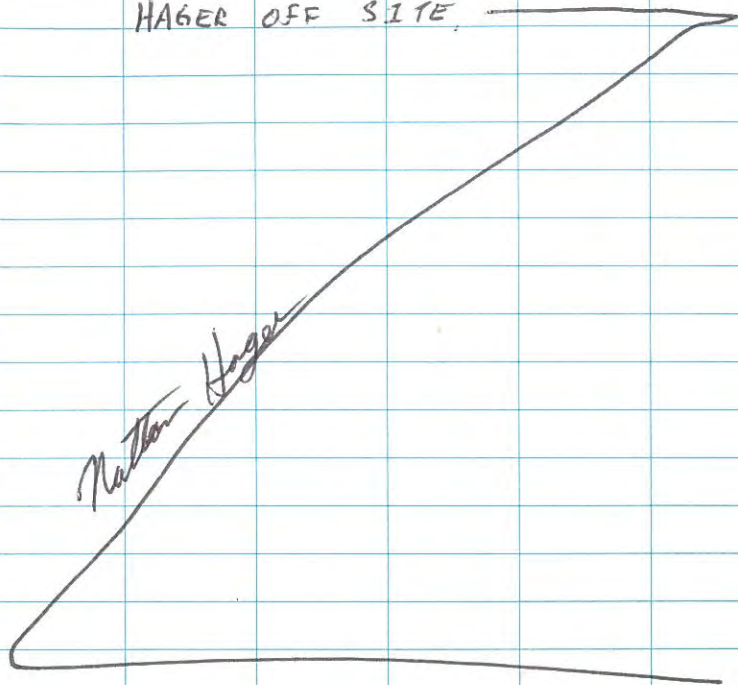
DEPTH TO GW (TOC) = 9.44

INSUFFICIENT PRODUCT TO
PERFORM VISCOSITY TEST

↳ REQUIRES MIN 20CC

OR 3-4 ~~FENTHS~~^{HUNDRETHS} OF A FOOT
OF MEASURABLE PRODUCT

HAGER OFF SITE



(VI)

28F OVERCAST / FLURRIES

HAGER NENANA PETRO TRAP

30F CLEAR

10-22-21

1330 HAGER ON SITE

LOCATE MW-7R

DT.P = 11.34'

DTW = 11.72'

NAPL THICKNESS = 0.43'

TD = 15.2

MW-13

DTW = 9.86'

NO MEASURABLE PRODUCT

CALL A. WELLER TO CONTACT D. FRANK
RE VISCOSITY TEST W/ PRODUCT
RE POSSIBLE TO RECOVER FROM
MW-7R. WAIT ON SITE FOR
FURTHER INSTRUCTION

1505 A. WELLER CALLS, D. FRANK
GREEN LIGHTS VISCOSITY TEST
IN MW-7R

ATTEMPT TO RECOVER LNAPL IN MW-7R
TOTAL DEPTH TOO SHALLOW (TD = 15.2')
PRC HAS 4' RESERVOIR TUBES, RECOVERY
NOT POSSIBLE AT THIS TIME DUE
TO LOW WATER LEVEL. WILL TRY TO
RECOVER NEXT WEEK W/ BAIER

1640 OFF SITE

Nathan Hager

Rite in the Rain

(VI)

10-29-21

NENANA PETRO TRAP

HAGER

1600 ON SITE, GATE STUCK - WALK AROUND

MW-13
 DTP = 10.16'
 DTW = 10.18'
 LNAPL THICKNESS = 0.02'

MW-7
 DTP = 11.⁶~~84~~ (NH)
 DTW = 11.92
 LNAPL THICKNESS = 0.28'

NOT ENOUGH LNAPL IN MW-13
 TO PERFORM VISCOSITY TEST
 RECOVERY IN MW-7 NOT POSSIBLE
 W/ PRC DUE TO I + TD

1630 HAGER OFF SITE

(1/1) Nathan Hager

HAGER

25F OVERCAST
NENANA PETRO TRAP

11-5-21

1430 HAGER ON SITE

MW-13
 DTP = 10.15
 DTW = 10.18
 THICKNESS = 0.03

MW-7
 DTP = 11.62
 DTW = 11.90
 THICKNESS = 0.28'

NO RECOVERY

AHTNA OFF SITE

Nathan Hager

(1/1)
Rite in the Rain

11/12/21

Nenana Petrotrap

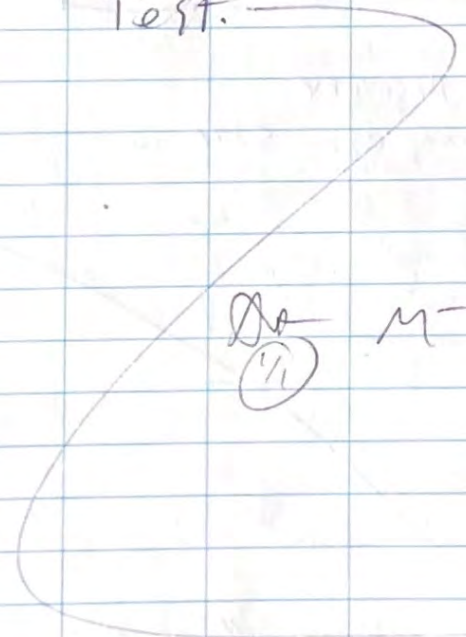
Mccomb

1530 Mccomb on site

MW-13
DTW = 9.26'
No product

MW-7
DTW = 10.63'
No product

1600 Mccomb off site
- Not Enough Product to perform Viscosity Test.



HAGER

~20F

NENANA PETRO TRAP

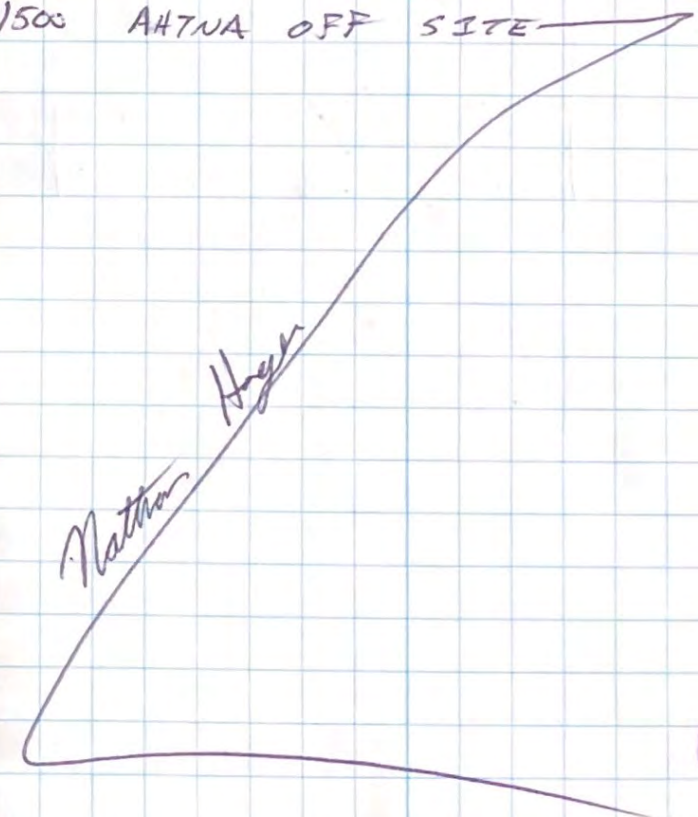
11-19-21

HAGER ON SITE

MW-13 DTW = 9.91'
NO MEASURABLE PRODUCT

MW-7 DTW = 10.38'
PRODUCT DETECTED < 0.01'

1500 AHTNA OFF SITE



11-26-21

N-BT, OVERCAST
NENANA PETRO TRAP

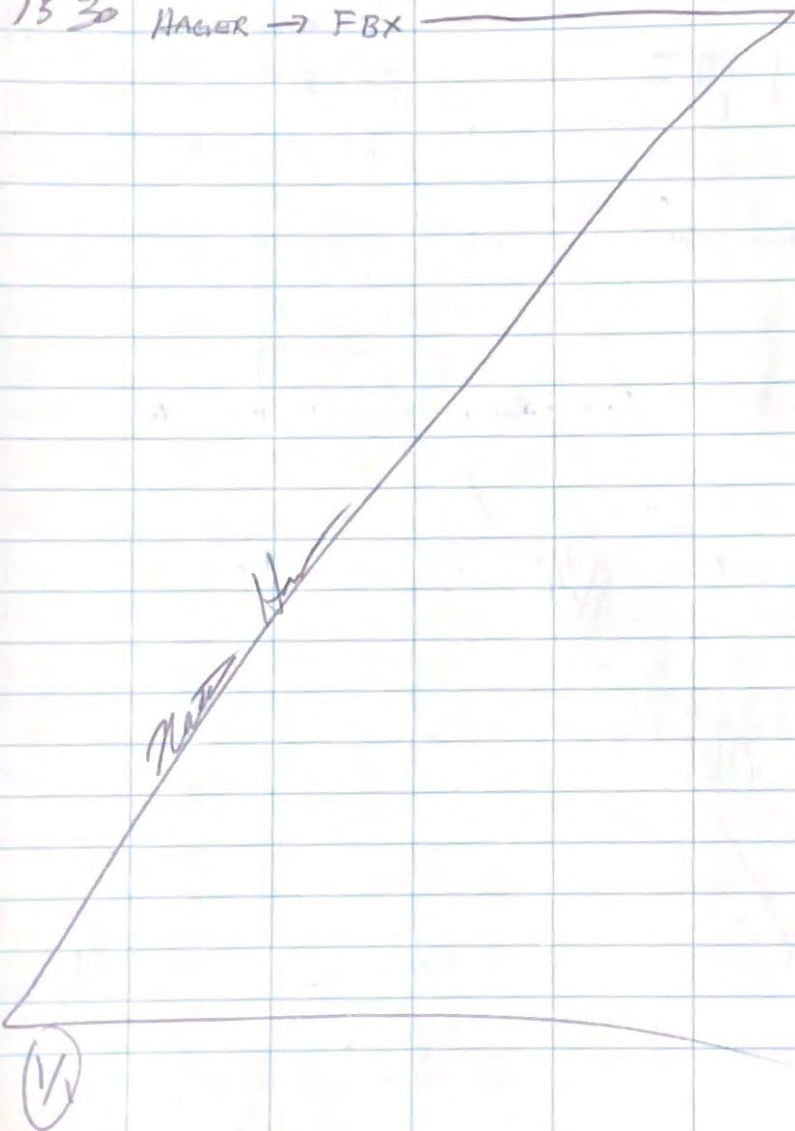
HAGER

1500 HAGER ON SITE

MW-13 DTW = 8.97'

NO PRODUCT MEASURED

1530 HAGER → FBX



-27F, CLEAR

HAGER

NENANA PETRO TRAP

12-5-21

1130 NH → WAREHOUSE. FUEL TRUCK IN ESTER

1200 NH → NENANA

1310 ON SITE

MW-13 DTW_{TOL} = 9.13'

NO MEASURABLE LNAPL

STRONG HC ODOR

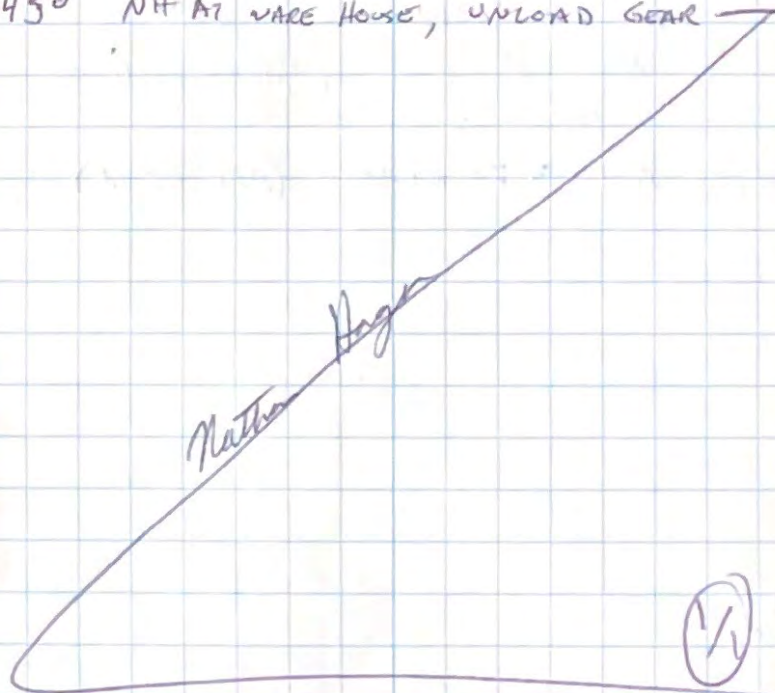
MW-7 DTW_{TOL} = 10.61'

LNAPL DETECTED, < 0.01'

STRONG HC ODOR

1345 NH DEPARTS → FAIRBANKS

1450 NH AT WAREHOUSE, UNLOAD GEAR



12-9-21 N -24F, OVERCAST, 10-15MPH GUSTS
NENANA PETRO TRAP HAGER

1200 NH AT WAREHOUSE, LOAD GEAR

1225 NH DEPARTS → NENANA

1330 FUEL TRUCK IN NENANA

1340 ON SITE

MW-13 COVERED W/ SNOW DRIFT

DIG OUT AROUND WELL

MW-13 DTW_{TOC} = 9.38'

NO PRODUCT MEASURED

STRONG HC ODOR

MW-7 DTW_{TOC} = 10.85'

~~NO~~ NO PRODUCT MEASURED

HC ODOR

1415 NH → FAIRBANKS (OFF SITE) →

Ⓚ

Nathan Hager

HAGER SF SNOW NENANA PETRO TRAP 12-17-21

1230 N. HAGER DEPARTS → NENANA

1330 ON SITE

MW-13

DTP_{TOC} 9.83

DTW_{TOC} 9.84

LNAPL ~ 0.01'

MW-7

DTW_{TOC} 11.31

NO MEASURABLE LNAPL

1400 N HAGER OFF SITE

→ FAIRBANKS, END OF DAY →

Nathan Hager

Ⓚ

12-23-21

NENANA PETRO TRAP

HAGER

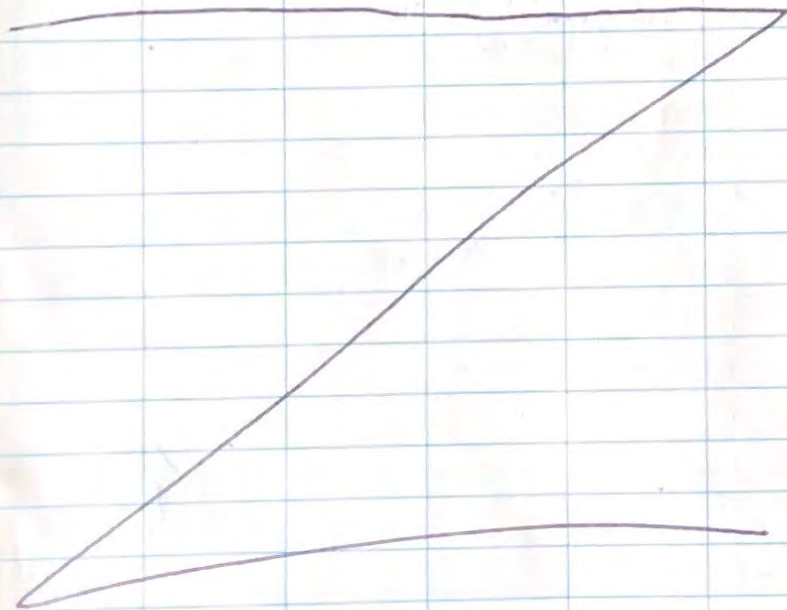
1045 NH @ WAREHOUSE LOAD GEAR

1100 NH → NENANA

MW-13
DTW_{TOC} = 9.67'
NO LNAPL

MW-7
DTW_{TOC} = 11.16
NO LNAPL

1245 NH OFF SITE → FAIRBANKS



-35F
HAGER NENANA PETRO TRAP 1-7-2022

NOTE: NO MEASUREMENTS TAKEN
ON DURING THE WEEK OF 12-27 - 12-31
DUE TO WEATHER + ROAD CONDITIONS.

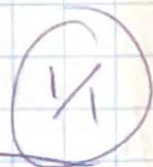
NH36 ON SITE ACCESS SHOWN IN
PARK DOWN ROAD
MW-13 MONUMENT BURIED
IN SNOW DRIFT ~3'-2.5'
DIG OUT MONUMENT

MW-13 DTW_{TOC} = 9.24'
NO LNAPL MEASURED
V STRONG HC ODOR

LEFT MAGNETIC LOCATOR AT WAREHOUSE
- UNABLE TO LOCATE MW-7 IN SNOW.

1525 OFF SITE
NH → FAIRBANKS

Nathan Hager



Return to the Room

1-14-22

-3E P. CLOUDY

NENANA PETRO TRAP

HAGER

1120 N. HAGER ON SITE

MW-13 DTW_{TOC} = 9.12'

NO LNAPL MEASURED

LOCATE MW-7 WITH MAG LOCATOR

CHIP OUT N 2" ICE OVER

MONUMENT

MW-7 DTW_{TOC} = 10.61'

NO LNAPL MEASURED

1210 HAGER OFF SITE

FUEL TRUCK IN NENANA

N. HAGER → FAIRBANKS.

(1/1)

Nathan Hager

HAGER

NENANA PETRO TRAP

1-21-22

1205 N. HAGER ON SITE

UNCOVER MW-13

INTERFACE PROBE BATTERY DEAD

NH → GENERAL STORE

PURCHASE 9V BATTERIES

NH → SITE

MW-13

DTW_{TOC} = 9.19'

NO LNAPL

LOCATE MW-7

MW-7 DTW_{TOC} = 10.68

NO LNAPL

Nathan Hager

(1/1)

Nathan Hager

1-28-22

3F WINDY NSMTH HAGER
NEMANA PETRO TRAP

1320 N HAGER ON SITE

DIG OUT MW-13

MW-13

DTW_{TOC} = 9.27'

NO LNAPL

MW-7

DTW_{TOC} 10.77

1400 NH → FAIR BANKS / OFF SITE

Nathan Hager



2/3/22

1040 Load gear @ Warehouse

1200 On Site for measurements

MW-7

DTW = 11.09 TOC

No product, HC odor

MW-13

DTW = 9.58 TOC

No product, HC odor

1250 OFF SITE

Nathan Hager

2-11-22

OF P, CLOUDY
NENANA PETRO TRAP

HAGER

1055 HAGER ON SITE

DIG OUT MW-13

MW-13

DTW_{TOG} = 9.51' BGS

NO LNAPL MEASURED / DETECTED

MW-7

DTW_{TOG} = 11.02' BGS

NO LNAPL DETECTED / MEASURED

1135 OFF SITE, DEPART FOR FAIRBANKS

FUEL TRUCK IN FAIRBANKS

NH → WAREHOUSE

(1/1)

Nathan Hager

McCumb

Nenana Petro trap

2-18-22

10°F Snowing

1100 McCumb on site. Locate
and dig out MW-7 and MW-13

MW-7

DTW = 10.93' BGS

No Product / HC odor

MW-13

DTW = 9.44' BGS

No Product / HC odor

1145 McCumb off site.

(1/1)

(1/1)

Rita in color

2/25/22

1200

Nenana Petrotrap
McCumb on site

Mound

Locate and dig out MW-7

MW-7

DTW = 10.75' No product

HC odor

MW-13

DTW = 9.26' No product

HC odor

1315

McCumb off site

11

3P 54F, OVERCAST, WIND 15 MPH

HAGER

NENANA PETRO TRAP

3-4-22

1015 HAGER ON SITE

MW-13

DTW_{TOC} = 9.14' BGS

NO LNAPL DETECTED

HC ODOR

MW-7

DTW_{TOC} = 10.82' BGS

NO LNAPL DETECTED

HC ODOR

1110 NH OFF SITE → FBX

Nathan Hager

1/1

Ritterman

3/11/22 Nenana Petrobras McComb

1120 McComb on Site

MW-7 DTW 10.61

No Product, HC odor

MW-13 DTW 9.22

No product, HC odor

1220 McComb off site

11
JFM

McCumb Nenana Petrobras 3/18/22

1200 McCumb on site

MW-7 DTW 10.80

No product, HC odor

MW-13 DTW 9.29

HC odor, No product

1328 McCumb off site

11
JFM

3/25/22 Nenana Petrotrap

McCoub

1055 McCoub on site

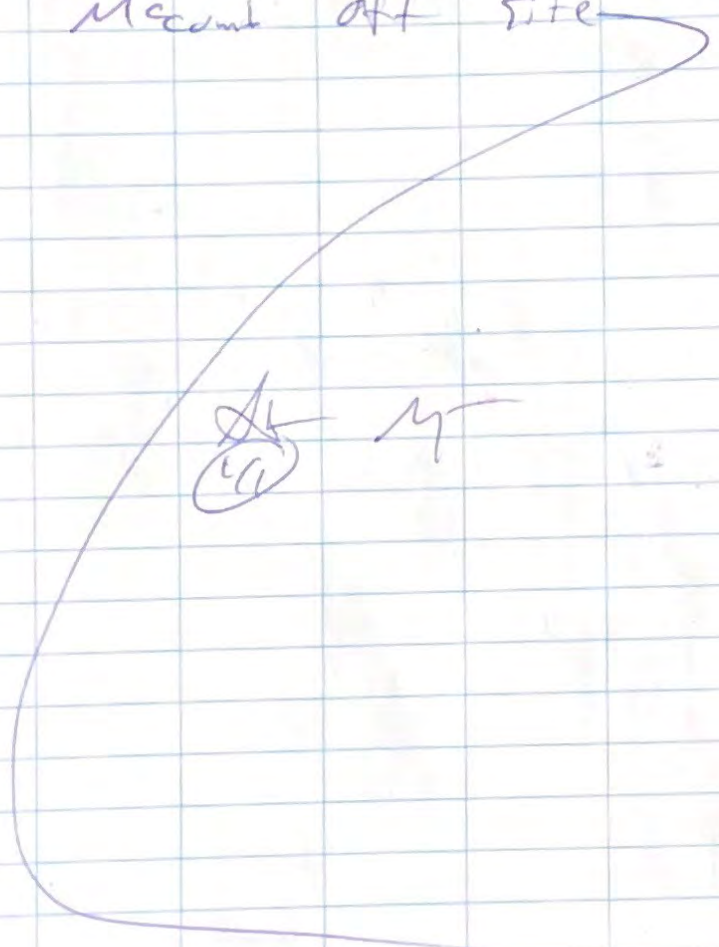
MW-7 DTW 10.88

HC odor No product

MW-13 DTW 9.37

HC odor No product

1152 McCoub off site


40

15°F SUNNY
DAVIS Nenana Petrotrap

4-12-22

1155 DAVIS on site.

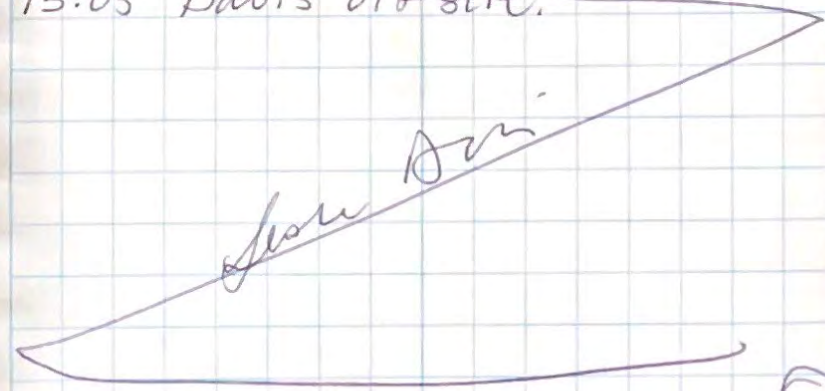
MW-7 DTW: 10.81

HC odor - NO PRODUCT


MW-13 DTW: N/A

* Well cover under 3 inches of ice. Chipped through & opened cover. No bolts on well cover. Well apron/skirt flooded & filled w/ ice. Chipped to well plug. Was able to get well plug loose, but petrotrap/cord was frozen in well. Unable to pull the plug up without damaging cord. Replaced plug as tight as possible. Replaced well cover. Took photos of site.

13:05 DAVIS off site.


Davis

Davis


11

4/6/22 Nenana Petrotrap Mccombs

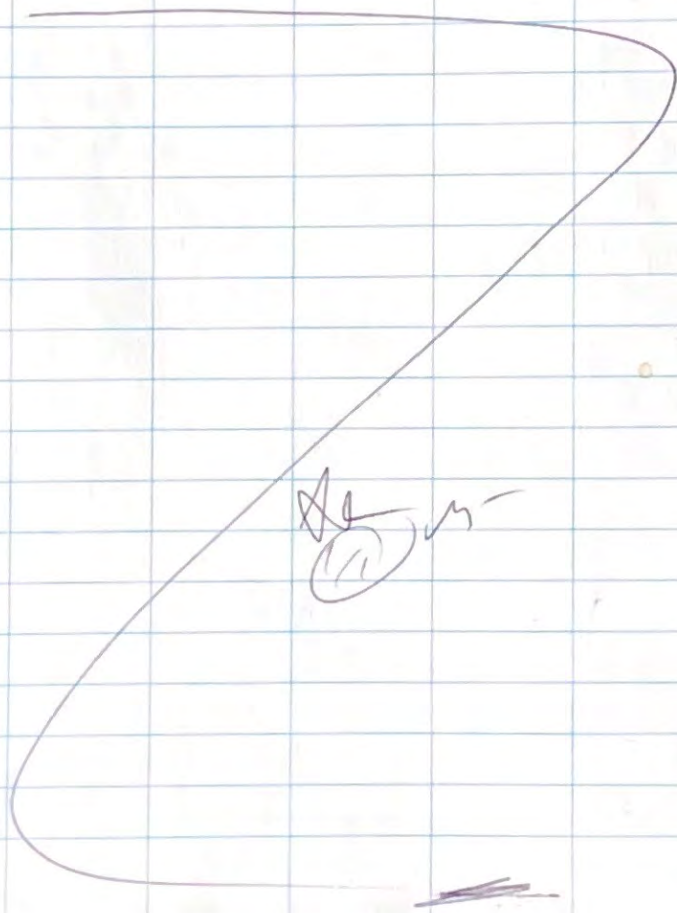
1200 Mccombs on site

MW-7 DTW: 10.80

-No Product, HC odor

MW-13 Well cap / or
Petrotrap Still frozen.

Could not remove cap
to collect DTW measurement.



4/15/22

Nenana

Braun

1045

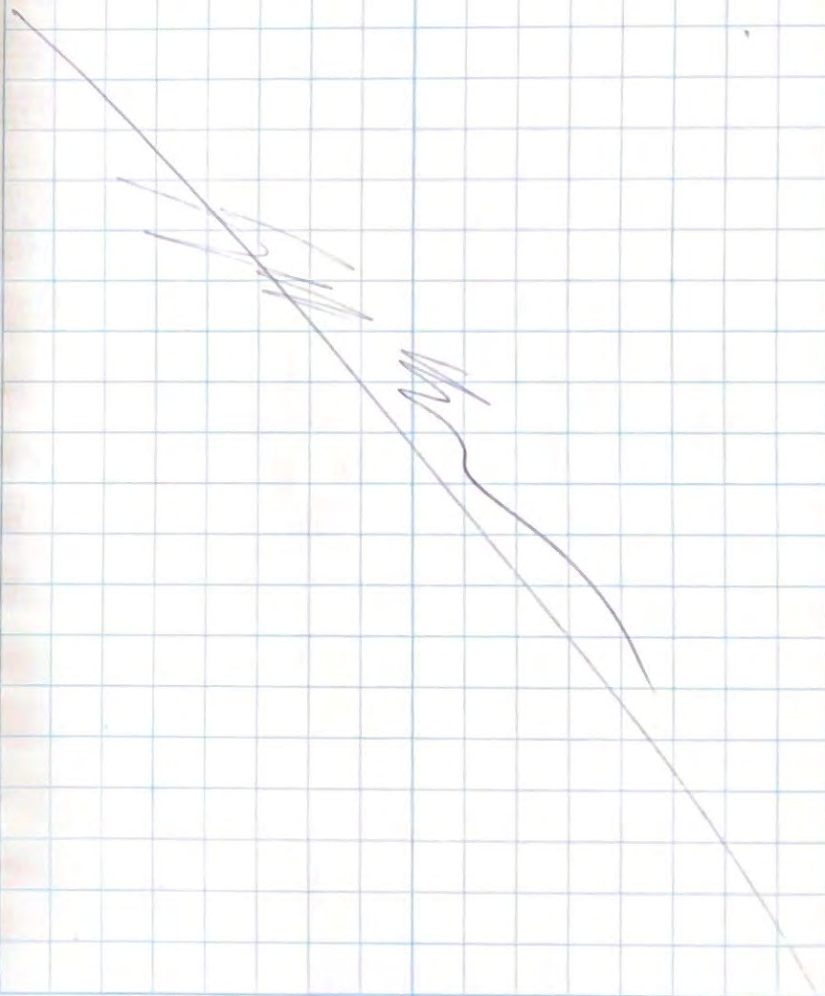
Braun on site

MW-13 well cap / petro trap

still frozen. Could not remove
to collect DTW measurement.

1145

off site



Plot in the Rain

4/22/22

Nenana

Braun

1015

Braun on site

A couple of inches of ~~water~~ ice
over the well cover. Chipped down to
well cover. could not remove.

1100

left site.

Weller

+50°F, Sun

Nenana P-Trap

4/28/22

1400 arrive garage, gear up van

1415 leave garage for Nenana

1515 Arrive at Nenana Site. Park
at gate. Tripod still standing.

1530 MW-7 DTW 10.78' BTOC

Hydrocarbon odor. No lock on

No NAPL

compression cap. Flush well
cover missing one bolt. The
other bolt is a 9/16" hex head

1540 MW-13 is submerged under

~ 1/2" ice which is under

~ 4" water. Did not attempt
to remove flush well cover.

1545 Leave site

1700 Back at Garage

Weller

Ret on the Rain

55°F, clouds

5-8-22 Nenana P-Trap Rhodes

1330 Arrive Ahlma garage, load gear

1340 Depart garage Car Nenana

1440 Arrive @ Nenana Fuel tank
Pump site. Rivers are free of
ice.

1450 MW-7 DTW 9.51' ISTOC,
Hydro carbon odor. No NAPL
detected.

1500 MW-13 IS free of ice, but
submerged. Took well cover
off, could not remove well
cap, frozen in? Did not
pursue removing cap as the
cover/skirt was inundated
w/ water, avoided draining into
casing.

1510 Depart Nenana site.

1620 Arrive @ garage, demob,

W. Rhodes

5/13/22 Nenana

Drum

1000 Arrive at site.

1005 Area around and in MW-13 free
of ice and snow. Measured DTW,
no NAPL. Cover needs new bolts

1025 off site.

Mccomb Nenana Petrostat 5-14-22

1226 On Site Depth to product
* MW-13 DTW 5.90'
DTW 5.89'

- Drained petro trap and
adjusted intake to
5-6.5' below top.

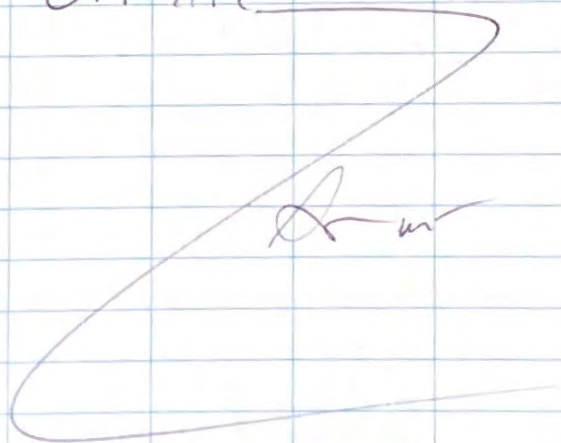
Checked petro trap. Drained
into mason jar. Not
enough product for
viscosity test.

- Replaced Monument
bolts.

* MW-7 DTW 7.40'
No product.

- Replaced 1 bolt

1309 Off site



5/26/22

Nenana

Brown

1040

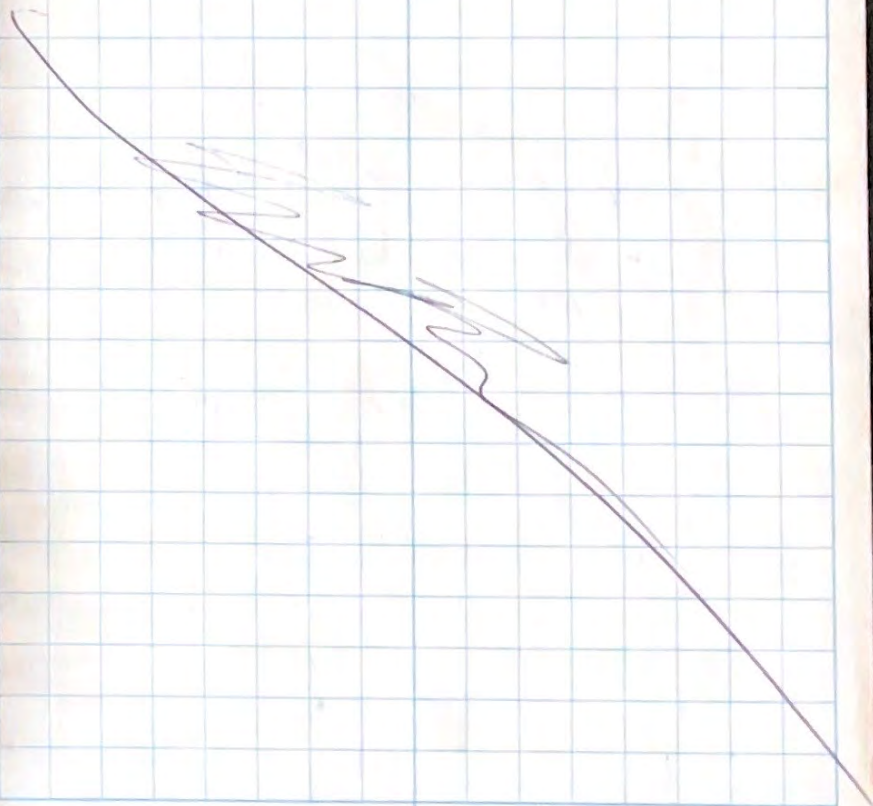
Arrive on site.

MW-13 DTW 4.15'
DTP 4.15'

Immeasurable amount of product.
Emptied trap full of water in drum.

Dipped trap in water column and
pulled back up. No product seen in
trap. Replaced trap at 4-5.5'
off site.

1110



Plot on the Rain

5/31/22 +70°F, Sun
Nenana PetroTrap Weller

1345 Leave Fairbanks in Sprinter Van

1450 Arrive Nenana

1455 Gauge MW-7: DTW 4.76' BTOC

No indication of NAPL, fuel smell
Placed compression cap inside
well cover. It will not fit
on top due to well jacking.
There are two well cover bolts
now.

1505 Tanana River has eroded river
bank near MW-7, under the
railroad tracks. MW-7 is now
~20' from Tanana River.

(See photo, red bucket is on top
of MW-7)

1510 Check MW-13

Depth to Product 3.28' BTOC

DTW 3.28' BTOC

(There appears to be an immeasurable
layer of NAPL on the water)

- fuel smell ← trap was full of water
- emptied trapped water into drum
- Drum is '13 full
- moved oil intake to 2' to 3.5'

(1/2)

Code 344

BTOC

+70°F, Sun
Weller Nenana PetroTrap 5/31/22

- oil intake screen appeared clean
(See photo of additional monitoring
well between active railroad tracks
and MW-7 that is jacked.

- Placed new label made of duct
tape on drum.

1600 offsite

Need to bring

- new non-haz label
- drill motor + casing cutter

1700 Back at Garage



Chris Zwick (signature)

6-8-22 61°F SUNNY HAGER
NENANA PETRO TRAP

1315 N. HAGER ON SITE

MW7R DTW_{TOC} = 4.14
NO MEASURABLE PRODUCT, HC ODOR

TRIM WELL CASING AT MW-11
REMOVE 2 3/4", PICTURE TAKEN

MW-13 DTW_{TOC} = 2.67
DT PRODUCT = 2.67
PRODUCT DETECTED, BUT IMMENSURABLE
STRONG FUEL ODOR, 3.5-2" INTAKE
PETRO TRAP FULL OF WATER

DRAIN WATER INTO DRUM
AFFIX NEW NON-HAZ WASTE
STICKER TO DRUM
TROUBLE SHOOT PRC, SUSPECT
INTAKE IS NOT FLOATING
AT O/W INTERFACE, WATER MAY BE
FILLING IN THROUGH VENT ON TOP
OF UNIT. WATER PRESENT IN DIMPLES
LOCATED AT TOP OF UNIT AFTER
DEPLOYING PRC.

(V2)

Nathan Hager

HAGER 61°F SUNNY
NENANA PETRO TRAP 6-8-22

PRC DEPLOYED FOR ~ 15 MINUTES
RETRIEVE, OBSERVE RESERVOIR ~ 1/2
FULL OF WATER AFTER 15 MINUTES
CLIP 2-3MM WIDE SECTION OF POLY
TUBING TO FLOAT ROD, POSITION
JUST ABOVE INTAKE FLOAT. DEPLOY
PRC & RETRIEVE, POLY RING REMAINS
IN SAME POSITION, POSSIBLE
INDICATION INTAKE FLOAT IS
NO LONGER BOU^YYANT, SATURATED?
DRAIN ACCUMULATED WATER INTO
DRUM, REDEPLOY PRC
1515 NH OFF SITE.

Nathan Hager

(V2)

Nathan Hager

6-15-22 OVERCAST
NENANA PETRO TRAP HAGER

12 45 ON SITE

MW-7 DTW_{TOC} = 5.32'
NO LNAPL DETECTED

MW-13 DT_{PRODUCT} = 3.84
DTW_{TOC} = 3.85
STRONG HC ODOR

OBSERVE THIN LAYER OF
PRODUCT IN PRC, (MOSTLY
WATER). 3-5mm THICK

ADJUST INTAKE DEPTH 3-4.5'

TEST PRC BUOYANCY BY
REMOVING CANNISTER, TAPE/PLUG
BOTTOM OF FLOAT. PLACE
FLOAT / INTAKE ASSEMBLY IN
GRADUATED CYLINDER OF WATER
FLOAT / INTAKE FULLY SUBMERGED
INTAKE FLOAT HAS FAILED &
SHOULD BE REPLACED
REASSEMBLE PRC + DEPLOY
OFF SITE

~~Rather Hager~~

65F SUNNY / SMOKEY
HAGER NENANA PETRO TRAP 6-24-22

11³⁰ N HAGER ON SITE

MW-7 DTW_{TOC} = 4.89'
NO LNAPL MEASURED / DETECTED
HC ODOR

MW-13
REMOVE PRC, CANNISTER FULL
OF WATER, DRAIN INTO DRUM
DTW = 3.42'
NO MEASURABLE LNAPL
HC ODOR

ADJUST PRC TO 0-18" BGS
LEAVE DRAIN VALVE OPEN
LOAD DRUM INTO VAN (~ 1/2 FULL)
REDEPLOY PRC ABOVE ▽
OFF SITE

~~Rather Hager~~

ATTACHMENT 3

Disposal Documents

NON-HAZARDOUS WASTE MANIFEST

183068-LH

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. AKD070052238		Manifest Document No. 183068A	2. Page 1 of 1
3. Generator's Name and Mailing Address CROWLEY MARINE SERVICES 201 ARCTIC SLOPE AVENUE ANCHORAGE, AK 99518		CROWLEY MARINE SERVICES 410 RIVER FRONT RD NENANA, AK 99760		IN CASE OF EMERGENCY CALL	
4. Generator's Phone (907) 832-5505				800-899-4672	
5. Transporter 1 Company Name US ECOLOGY		6. US EPA ID Number MIK593743838		A. State Transporter's ID	
7. Transporter 2 Company Name US Ecology		8. US EPA ID Number MIK593743838		B. Transporter 1 Phone	
9. Designated Facility Name and Site Address US ECOLOGY ALASKA LLC 2020 VIKING DRIVE ANCHORAGE, AK 99501		10. US EPA ID Number AKR000004184		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone 907-258-1558	
11. WASTE DESCRIPTION		Containers		13. Total Quantity	
		No. Type		14. Unit Wt./Vol.	
a. <input checked="" type="checkbox"/> HM UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (BENZENE), 9 , PGIII ERG#171		1 DM		40 P	
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above 1) EA0306 VSQG WATER CONTAMINATED WITH BENZENE (DMSS)		H. Handling Codes for Wastes Listed Above D44685			
15. Special Handling Instructions and Additional Information Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name Andrew Weller		Signature <i>Andrew Weller</i>		Date 09 09 22	
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Nat Nielsen		Signature <i>Nat Nielsen</i>	
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name Porter Martin		Signature <i>Porter Martin</i>	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.		Printed/Typed Name Fatima L Beasley		Signature <i>Fatima L Beasley</i>	
				Date 10 13 22	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY



Bulk Tracking Log for Manifest Number 183068A

Manifest 183068A		Arrived 13-OCT-22		Generator: CROWLEY MARINE SERVICES		TSDF: US ECOLOGY ALASKA LLC			
Document	Profile	Type	Size	Oil Fuel	Water	PFOS Water	Antifreeze	Sludge	Solids
D44685	EA0306	DM	55		10				
Totals:									

OCT 14 2022

PLB



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 DIVISION OF SPILL PREVENTION AND RESPONSE
 Contaminated Sites and Prevention Preparedness and Response Programs
 Contaminated Media Transport and Treatment or Disposal Approval Form**

HAZARD ID # or SPILL ID #		NAME OF CONTAMINATED SITE OR SPILL	
25654		Crowley Nenana Fuel Terminal - Rail Line / Middle Tank Farm	
CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION			
410 River Front Street, Nenana, AK 99760			
CURRENT PHYSICAL LOCATION OF MEDIA		SOURCE OF THE CONTAMINATION (DAY TANK, FIRE TRAINING PIT, LUST, ETC.)	
Nenana, Alaska		petrotrap at MW-13	
CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
POLs in Water (DRO)	<10 gallons	6/2021 - 7/2022	
POST TREATMENT ANALYSIS REQUIRED (such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)			
NA			
COMMENTS OR OTHER IMPORTANT INFORMATION			
US Ecology will transport the 10 gal drum from Nenana to Anchorage for disposal.			

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
US Ecology	2908 Commercial Dr, Anc, AK/Larry Hestilow 907-251-0923
RESPONSIBLE PARTY	ADDRESS/PHONE NUMBER
Crowley Fuels, LLC	201 Arctic Slope Ave, Anc, AK 99518 907-777-5505
WASTE MANAGEMENT CO. / ORGANIZER	ADDRESS/PHONE NUMBER
DNA Environmental	111 W9th Ave. Anc, AK 907-350-4897

*Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.


Daniel Frank
 Name of the Person Requesting Approval (printed)

 Signature

project manager/DNA
 Title/Association
 8-1-2022 907-350-4897
 Date Phone Number

-----DEC USE ONLY-----

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

Laura Jacobs
 DEC Project Manager Name (printed)

 Signature

Environmental Program Specialist III
 Project Manager Title
 August 11, 2022 907-451-2911
 Date Phone Number



CERTIFICATE OF DISPOSAL/RECYCLE

GENERATOR: CROWLEY MARINE SERVICES
410 RIVER FRONT RD
NENANA, AK 99760

DISPOSAL FACILITY: US ECOLOGY ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

EPA ID NUMBER: AKD070052238
MANIFEST/DOCUMENT #: 183068A
DATE OF DISPOSAL/RECYCLE: OCT-13-2022

<u>LINE</u>	<u>WASTE DESCRIPTION</u>	<u>CONTAINERS</u>	<u>TYPE</u>	<u>QUANTITY</u>	<u>UOM</u>
1	VSQG WATER CONTAMINATED WITH BENZENE (DM55)	1	DM	40	P

I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.

PREPARED BY: **PLB** _____

SIGNATURE: Patricia Beasley DATE: OCT 13 2022

ATTACHMENT 4

Tables

TABLE 1: FREE PRODUCT MONITORING LOG – MW-13

Free Product Monitoring Report
Nenana Header and Rail Line Areas
Nenana, Alaska

Event	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Groundwater Elevation (Feet AMSL)	Depth to Water (BGS)	Product Thickness (feet)	Amount of Fluid Removed (liters)	PCR Intake Depth (feet BTOC)	Notes
1	6/21/21	5.42	5.43	351.36	5.68	0.01	1	5-6.5	water w/ sheen in PRC
2	6/28/21	N/A	5.06	351.73	5.31	N/A	1	5-6.5	water w/ sheen in PRC
3	6/29/21	5.26	5.26	351.53	5.51	<0.01	1	5-6.5	water w/ sheen in PRC
4	6/30/21	N/A	5.36	351.43	5.61	N/A	1	5-6.5	water w/ sheen in PRC
5	7/1/21	N/A	5.25	351.54	5.50	N/A	1	5-6.5	water w/ sheen in PRC
6	7/9/21	N/A	5.12	351.67	5.37	N/A	1	5-6.5	water w/ sheen in PRC
7	7/14/21	6.54	6.72	350.07	6.97	0.18	1	5-6.5	water w/ sheen in PRC
8	7/22/21	N/A	6.71	350.08	6.96	N/A	1	5-6.5	water w/ sheen in PRC, intake moved to 5.5'-7' BTOC
9	7/28/21	N/A	4.61	352.18	4.86	N/A	1	5.5-7	water w/ sheen in PRC, intake moved to 4.5'-6' BTOC
10	8/6/21	N/A	4.50	352.29	4.75	N/A	1	4.5-6	water w/ sheen in PRC
11	8/13/21	N/A	4.62	352.17	4.87	N/A	1	4.5-6	water w/ sheen in PRC, moved PRC to above water column
12	8/20/21	N/A	5.27	351.52	5.52	N/A	0	0.7-2.3	Intake set above water level, no recovery
13	8/27/21	4.96	4.98	351.81	5.23	0.02	0	0.7-2.3	Intake set above water level, no recovery. Insufficient LNAPL to perform viscosity test
14	9/3/21	N/A	5.91	350.88	6.16	N/A	0	0.7-2.3	Intake set above water level, no recovery
15	9/10/21	N/A	6.28	350.51	6.53	N/A	0	0.7-2.3	Intake set above water level, no recovery
16	9/17/21	N/A	7.41	349.38	7.66	N/A	0	0.7-2.3	Intake set above water level, no recovery
17	9/24/21	N/A	8.27	348.52	8.52	N/A	0	0.7-2.3	Intake set above water level, no recovery
18	10/1/21	N/A	9.00	347.79	9.25	N/A	0	0.7-2.3	Intake set above water level, no recovery
19	10/8/21	N/A	9.22	347.57	9.47	N/A	0	0.7-2.3	Intake set above water level, no recovery
20	10/14/21	9.43	9.44	347.35	9.69	0.01	0	0.7-2.3	No recovery. Insufficient LNAPL to perform viscosity test
21	10/22/21	N/A	9.86	346.93	10.11	N/A	0	0.7-2.3	Intake set above water level, no recovery
22	10/29/21	10.16	10.18	346.61	10.43	0.02	0	0.7-2.3	Intake set above water level, no recovery
23	11/5/21	10.15	10.18	346.61	10.43	0.03	0	0.7-2.3	Intake set above water level, no recovery
24	11/12/21	N/A	9.26	347.53	9.51	N/A	0	0.7-2.3	Intake set above water level, no recovery
25	11/19/21	N/A	9.91	346.88	10.16	N/A	0	0.7-2.3	Intake set above water level, no recovery
26	11/26/21	N/A	8.97	347.82	9.22	N/A	0	0.7-2.3	Intake set above water level, no recovery
27	12/3/21	N/A	9.13	347.66	9.38	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
28	12/9/21	N/A	9.38	347.41	9.63	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
29	12/17/21	9.83	9.84	346.95	10.09	0.01	0	0.7-2.3	Intake set above water level, no recovery
30	12/23/21	N/A	9.67	347.12	9.92	N/A	0	0.7-2.3	Intake set above water level, no recovery
31	12/31/21	NM	NM	--	--	--	--	--	No measurements due to snowstorm
32	1/7/22	N/A	9.24	347.55	9.49	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
33	1/14/22	N/A	9.12	347.67	9.37	N/A	0	0.7-2.3	Intake set above water level, no recovery
34	1/21/22	N/A	9.19	347.60	9.44	N/A	0	0.7-2.3	Intake set above water level, no recovery
35	1/28/22	N/A	9.27	347.52	9.52	N/A	0	0.7-2.3	Intake set above water level, no recovery
36	2/3/22	N/A	9.58	347.21	9.83	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
37	2/11/22	N/A	9.51	347.28	9.76	N/A	0	0.7-2.3	Intake set above water level, no recovery
38	2/18/22	N/A	9.44	347.35	9.69	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
39	2/25/22	N/A	9.26	347.53	9.51	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
40	3/4/22	N/A	9.14	347.65	9.39	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
41	3/11/22	N/A	9.22	347.57	9.47	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
42	3/18/22	N/A	9.29	347.50	9.54	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
43	3/25/22	N/A	9.37	347.42	9.62	N/A	0	0.7-2.3	Intake set above water level, no recovery. HC odor
44	4/1/22	NM	NM	--	--	NM	0	0.7-2.3	PRC frozen to well casing, not possible to remove PRC without damaging the device. No measurements.
45	4/6/22	NM	NM	--	--	NM	0	0.7-2.3	PRC frozen to well casing, not possible to remove PRC without damaging the device. No measurements.
46	4/15/22	NM	NM	--	--	NM	0	0.7-2.3	PRC frozen to well casing, not possible to remove PRC without damaging the device. No measurements.
47	4/22/22	NM	NM	--	--	NM	0	0.7-2.3	Well cover under ice. Unable to remove. No measurements.
48	4/28/22	NM	NM	--	--	NM	0	0.7-2.3	Well cover submerged under .5" ice, and 4" water. No measurements.
49	5/5/22	NM	NM	--	--	NM	0	0.7-2.3	Well cover free of ice, but remains inundated with water. Unable to remove well plug. PRC likely frozen to well casing. No measurements.
50	5/13/22	N/A	5.38	351.41	5.63	N/A	0	0.7-2.3	Intake set above water level, no recovery
51	5/19/22	5.89	5.90	350.89	6.15	0.01	1	5.0-6.5	Moved PRC intake to 5-6.5' BTOC to try to recover NAPL for viscosity test. Insufficient product recovery to perform viscosity test.
52	5/26/22	4.15	4.15	352.64	4.40	<0.01	1	5.0-6.5	No observable product in PRC. Moved PRC intake to 4-5.5' BTOC.
53	5/31/22	3.28	3.28	353.51	3.53	<0.01	1	4.0-5.5	Trace layer of NAPL. Moved PRC intake to 2-3.5' BTOC.
54	6/8/22	2.67	2.67	354.12	2.92	<0.01	1	2.0-3.5	PRC full of water, HC odor but no observable product in reservoir. Suspect PRC intake below water level.
55	6/15/22	3.84	3.85	352.94	4.10	0.01	1	2.0-3.5	PRC full of water, HC odor but no observable product in reservoir. Confirm PRC intake below water level. Adjust PRC intake to 3-4.5' BTOC.
56	6/24/22	N/A	3.42	353.37	3.67	N/A	1	3.0-4.5	Intake set above water level, no recovery. HC odor. Adjust PRC intake to 0-1.5' BTOC with drain valve open.

Notes: All measurements are in units of feet. Surveyed October 24, 2018 by DesignAlaska for Weston Solutions (Zone4 NAD83); ground elevation at MW-7R is 358.53; top of casing elevation is 358.18.

Key:

BTOC = below top of casing
LNAPL = light non-aqueous phase liquid
HC = hydrocarbon
N/A = not applicable
NM = not measured
PRC = product recovery canister

TABLE 2: FREE PRODUCT MONITORING LOG – MW-7R

Free Product Monitoring Report
Nenana Header and Rail Line Areas
Nenana, Alaska

Event	Date	Depth to Product (feet BTOC)	Depth to Water (feet BTOC)	Groundwater Elevation (Feet AMSL)	Depth to Water (BGS)	Product Thickness (feet)	Amount of Fluid Removed (liters)	PCR Intake Depth (feet BTOC)	Notes
1	10/22/21	11.34	11.77	346.41	12.12	0.43	--	--	
2	10/29/21	11.64	11.92	346.26	12.27	0.28	--	--	
3	11/5/21	11.62	11.90	346.28	12.25	0.28	--	--	
4	11/12/21	N/A	10.63	347.55	10.98	0.00	--	--	No measurable product
5	11/19/21	10.38	10.38	347.80	10.73	0.00	--	--	HC odor. Trace layer of LNAPL.
6	11/26/21	NM	NM	--	--	--	--	--	MW-7 not measured
7	12/3/21	10.61	10.61	347.57	10.96	0.00	--	--	HC odor. Trace layer of LNAPL.
8	12/9/21	N/A	10.85	347.33	11.20	0.00	--	--	No measurable product. HC odor
9	12/17/21	N/A	11.31	346.87	11.66	0.00	--	--	No measurable product
10	12/23/21	N/A	11.16	347.02	11.51	0.00	--	--	No measurable product
11	12/31/21	NM	NM	--	--	--	--	--	No measurements due to snowstorm
12	1/7/22	NM	NM	--	--	--	--	--	Unable to locate well under snow drifts
13	1/14/22	N/A	10.61	347.57	10.96	0.00	--	--	No measurable product
14	1/21/22	N/A	10.68	347.50	11.03	0.00	--	--	No measurable product
15	1/28/22	N/A	10.77	347.41	11.12	0.00	--	--	No measurable product
16	2/3/22	N/A	11.09	347.09	11.44	0.00	--	--	No measurable product. HC odor
17	2/11/22	N/A	11.02	347.16	11.37	0.00	--	--	No measurable product
18	2/18/22	N/A	10.93	347.25	11.28	0.00	--	--	No measurable product. HC odor
19	2/25/22	N/A	10.75	347.43	11.10	0.00	--	--	No measurable product. HC odor
20	3/4/22	N/A	10.82	347.36	11.17	0.00	--	--	No measurable product. HC odor
21	3/11/22	N/A	10.61	347.57	10.96	0.00	--	--	No measurable product. HC odor
22	3/18/22	N/A	10.80	347.38	11.15	0.00	--	--	No measurable product, HC odor
23	3/25/22	N/A	10.88	347.30	11.23	0.00	--	--	No measurable product, HC odor
24	4/1/22	N/A	10.81	347.37	11.16	0.00	--	--	No measurable product, HC odor
25	4/6/22	N/A	10.80	347.38	11.15	0.00	--	--	No measurable product, HC odor
26	4/15/22	NM	NM	--	--	--	--	--	No measurements recorded
27	4/22/22	NM	NM	--	--	--	--	--	No measurements recorded
28	4/28/22	N/A	10.78	347.40	11.13	0.00	--	--	No measurable product, HC odor
29	5/5/22	N/A	9.51	348.67	9.86	0.00	--	--	No measurable product, HC odor
30	5/13/22	NM	NM	--	--	--	--	--	No measurements recorded
31	5/19/22	N/A	7.40	350.78	7.75	0.00	--	--	No measurable product
32	5/26/22	NM	NM	--	--	--	--	--	No measurements recorded
33	5/31/22	N/A	4.76	353.42	5.11	0.00	--	--	No measurable product, HC odor
34	6/8/22	N/A	4.14	354.04	4.49	0.00	--	--	No measurable product, HC odor
35	6/15/22	N/A	5.32	352.86	5.67	0.00	--	--	No measurable product
36	6/24/22	N/A	4.89	353.29	5.24	0.00	--	--	No measurable product, HC odor

Notes: All measurements are in units of feet. Surveyed October 24, 2018 by DesignAlaska for Weston Solutions (Zone4 NAD83); ground elevation at MW-7R is 358.53; top of casing elevation is 358.18.

Key:

- BTOC = below top of casing
- LNAPL = light non-aqueous phase liquid
- HC = hydrocarbon
- N/A = not applicable
- NM = not measured
- PRC = product recovery canister

ATTACHMENT 5

Photograph Log

2021/2022 Free Product Monitoring Photolog
Nenana Header and Rail Line Area Sites



Photograph 1: 7/9/21. Product Recovery Canister at MW-13. View to northeast.



Photograph 2: 4/28/22. Measuring depth to water at MW-7R. View to north.



Photograph 3: 4/28/22. MW-13 under ice/water



Photograph 4: 6/8/22. Trimmed approximately 2.75" of nearby MW-11 casing so that well cover fits.



Photograph 5: 6/15/22. Free product trace layer observed in Product Recovery Canister reservoir.

ATTACHMENT 6

Geotech Passive Skimmer Specifications

Product Recovery Canister

Installation and Operation Manual



Table of Contents

Section 1: System Description	3
Function and Theory	3
System Components	3
Section 2: System Installation and Operation	4
Section 3: System Maintenance	6
Section 4: System Troubleshooting	7
Section 5: System Specifications	9
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Section 7: Replacement Parts List	12
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DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:



WARNING

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



CAUTION

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



NOTE

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

Section 1: System Description

Function and Theory

The Geotech Product Recovery Canister (PRC) is a passive, skimmer device designed to recover light floating hydrocarbons (such as gasoline and diesel fuel) from the ground water in wells that are 2" (5cm) and larger.

Featuring a floating oleophilic/hydrophobic intake assembly, the skimmer can automatically collect and skim floating product down to a sheen. **Standard 2" skimmers provide 12" (30cm) of intake travel and standard 4" skimmers provide up to 16" (40cm) of intake travel**, to accommodate water fluctuations. The unit is suspended in the well at the desired recovery depth by supplied stainless steel suspension cable.

System Components

A PRC consists of two (2) major components; a product skimmer assembly and a collection canister (as shown in Figures 1-1 through 1-3). On the 4" model, the skimmer assembly is protected by a slotted screen that pre-filters the incoming product and protects the intake assembly from damage. The skimmer assembly collects free product and passes it through a coiled hose to the collection canister. Recovered product is evacuated by removing the PRC from the well and opening the drain on the bottom of the device.

Increased capacity collection canisters are available and easily installed by simply unscrewing the collection canister section and replacing it with a larger collection canister and weight assembly. When going from smaller to larger collection canisters, consideration must be made for weight. Going from larger to smaller is not a problem.

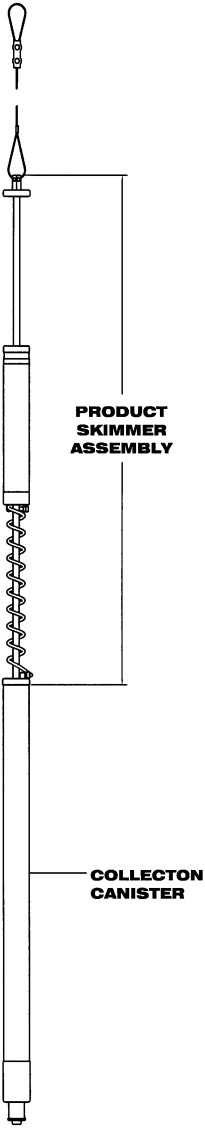


Figure 1-1: 2" PRC Skimmer Assembly

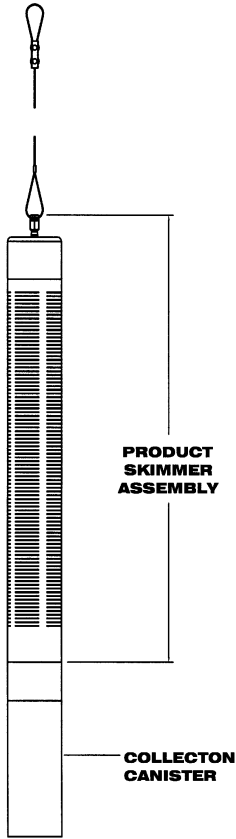


Figure 1-2: 4" PRC Skimmer Assembly 1

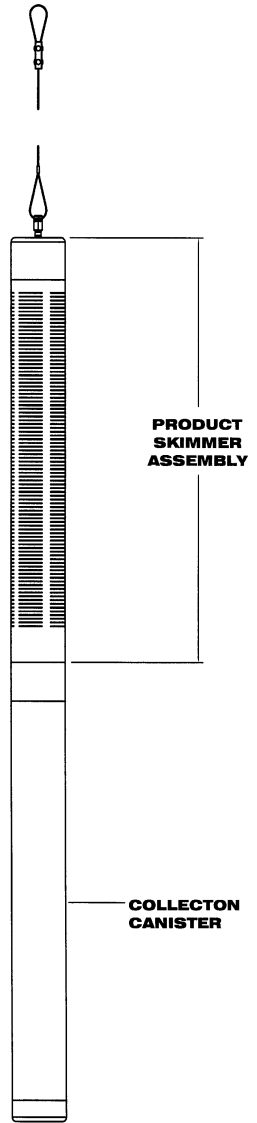


Figure 1-3: 4" PRC Skimmer Assembly 3

Section 2: System Installation and Operation



Prior to installation, the oleophilic/hydrophobic screen intake must be “conditioned”, or primed. To accomplish this, use diesel fuel or similar hydrocarbon to saturate the screen portion of the intake assembly (as shown in the figures found in *Section 7: Replacement Parts List*). The optimum fluid would be the down well hydrocarbons to be recovered. Take care to avoid damaging the intake assembly.

To install the PRC first measure the water and product levels with an Interface Probe (Geotech can provide you with a variety of Interface Probes for all applications).

Typically, the PRC is set so that the intake assembly is placed at the midpoint of its travel to allow for water table fluctuation in both directions (see *Section 6: System Schematic* for an example of a PRC in the well). To set the intake assembly at the midpoint of travel, measure from the top centralizer (2” skimmer), or top cap (4” skimmer) on the PRC and along the suspension cable, the same distance as the water level reading taken with an Interface Probe, then subtract 6” (15cm). Suspend the PRC from the wellhead to this point.

To empty the collection canister, simply pull the PRC up from the well, open the drain valve (by applying a downward pulling force on the valve sleeve – like a water bottle) and transfer the recovered product into an approved container.

When re-installing, verify that the intake assembly will be set within its range of travel (as describe above), and that the drain valve is completely closed to avoid the possibility of water entering the canister. Figure 2-1 shows an example of the drain valve open and closed.

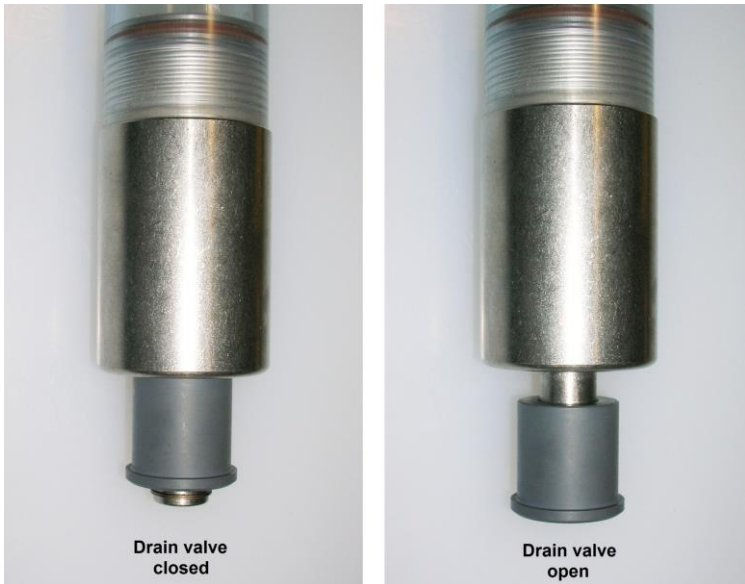


Figure 2-1: Drain valve operation

Section 3: System Maintenance

With proper maintenance, the Geotech PRC will provide years of reliable service. When emptying the canister, these simple maintenance steps can be taken to assure its reliability.

1. Inspect the product skimmer assembly for signs of physical damage. Scrapes or dents in the screen intake may cause the skimmer to take on water. If such damage is found, a new replacement intake assembly may be necessary.
2. Inspect the tubing coil for physical damage or obstructions, such as kinks. Replace the tubing coil as necessary.
3. Inspect the collection canister for physical damage such as cracks. Replace as necessary.
4. To clean the intake assembly screen intake, use a very soft bristle paint brush and fresh diesel fuel or the type of product being recovered. Typically, this type of maintenance should only be performed when the screen is obstructed with emulsified product or other debris. Take care not to dent or scratch the screen intake.
5. Use diesel fuel or similar hydrocarbon to saturate the screen portion of the intake. The optimum fluid would be the down well hydrocarbons to be recovered. Take care to avoid damaging the screen intake.

Section 4: System Troubleshooting

Problem: The PRC recovers only water.

Solutions:

1. The PRC is set too low in the well restricting the travel of the intake assembly.
2. Drain the collection canister completely, allow the screen intake to dry, re-prime the screen, and then reset the PRC so that the water level fluctuation is within the travel range of the intake assembly.

Problem: The water level has risen past the top of the travel range of the intake assembly.

Solution:

Drain the collection canister completely, allow the screen intake to dry, re-prime the screen, and then reset the PRC so that the water level fluctuation is within the travel range of the intake assembly.



If the water level has risen above the travel range of the intake assembly at any time between site visits, the skimmer assembly and collection canister will fill up with water and displace any collected product. It will remain this way until reset, even if the water level falls back within the travel range of the intake assembly.

Problem: The drain valve is not fully closed.

Solution:

Empty the collection canister (as described in *Section 2: System Installation and Operation*), and then close the drain valve by pushing up on the outer sleeve of the drain valve until it stops.

Problem: There is a mechanical malfunction or a leak has developed.

Solution:

Call Geotech Environmental Equipment Inc. at 1-800-833-7958 for assistance.

Problem: The skimmer intake is not recovering product.

Solutions:

1. There is no product to recover.
2. Check, and periodically monitor, the product layer thickness.

Problem: The skimmer is set too high.

Solution:

Recheck the water and product levels and reset the skimmer assembly (use the installation procedures described in *Section 2: System Installation and Operation*).

Problem: The canister vent is blocked.

Solution:

Make sure that the holes in the suspension fitting are clear of debris. The PRC will not operate if these holes are plugged.

Problem: The intake assembly is obstructed or the coiled product hose is kinked.

Solution:

Refer to *Section 3: System Maintenance*.

Section 5: System Specifications

Overall Dimensions		
Size	Volume (L)	Dimensions
2"	0.125	43.5"L (110cm) x 1.75" OD (4.4cm)
	0.25	49.0"L (149cm) x 1.75" OD (4.4cm)
	0.5	59.5"L (151cm) x 1.75" OD (4.4cm)
	1	82.5"L (210cm) x 1.75" OD (4.4cm)
2" (With SS Screen)	0.125	43.5"L (110cm) x 1.88" OD (4.8cm)
	0.25	49.0"L (149cm) x 1.88" OD (4.8cm)
	0.5	59.5"L (151cm) x 1.88" OD (4.8cm)
	1	82.5"L (210cm) x 1.88" OD (4.8cm)
4"	1	37"L (94cm) x 3.5" OD (9cm)
	3	53.0"L (135cm) x 3.5" OD (9cm)
	4	60.0"L (152cm) x 3.5" OD (9cm)

Weight			
Size	Volume (L)	Empty Weight	Full Weight
2"	0.125	2.9lbs (1.3kg)	3.1lbs (1.4kg)
	0.25	3.1lbs (1.4kg)	3.5lbs (1.6kg)
	0.5	3.5lbs (1.6kg)	4.3lbs (2.0kg)
	1	5.2lbs (2.4kg)	6.7lbs (3.0kg)
2" (With SS Screen)	0.125	4.3lbs (2.0kg)	4.5lbs (2.1kg)
	0.25	4.5lbs (2.0kg)	4.9 lbs (2.2kg)
	0.5	4.9lbs (2.2kg)	5.7lbs (2.6kg)
	1	6.6lbs (3.0kg)	8.1lbs (3.7kg)
4"	1	8.0lbs (3.7kg)	9.5 lbs (4.3kg)
	3	15.0lbs (6.8kg)	19.0lbs (8.6kg)
	4	18.0lbs (8.2kg)	25.5lbs (11.6kg)

Overall Volumes		
Size	Volume (L)	Capacity (gallons)
2"	0.125	0.035
	0.25	0.07
	0.5	0.13
	1	0.26
4"	1	0.26
	3	0.8
	4	1.06

Minimum Water Required		
Size	Volume (L)	Depth
2"	0.125	23.5" (60cm)
	0.25	29.0" (74cm)
	0.5	39.5" (100cm)
	1	62.0" (157cm)
4"	1	18.5" (47cm)
	3	35.0" (89cm)
	4	43.0" (109cm)

Section 6: System Schematic

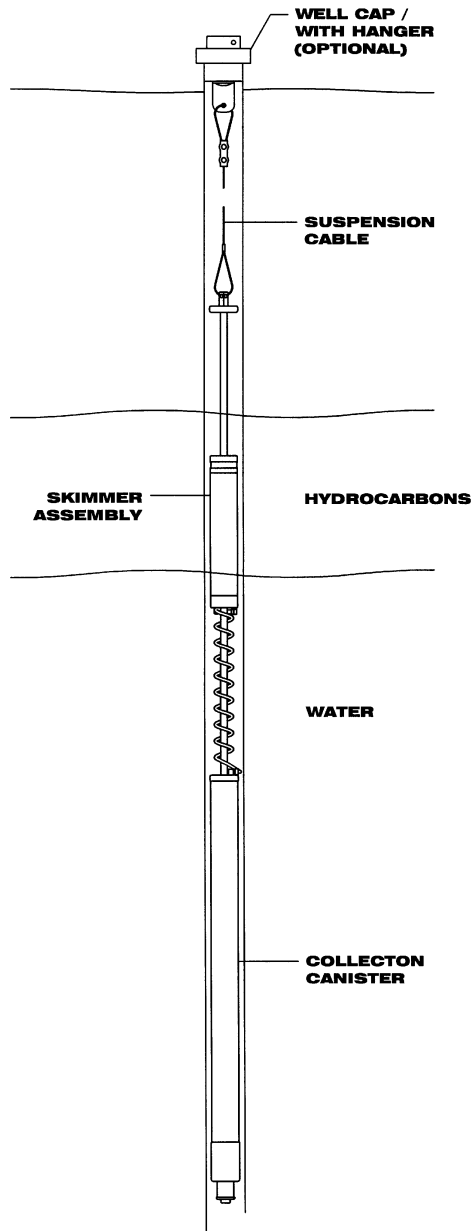


Figure 6-1: PRC Skimmer deployed in well

Section 7: Replacement Parts List

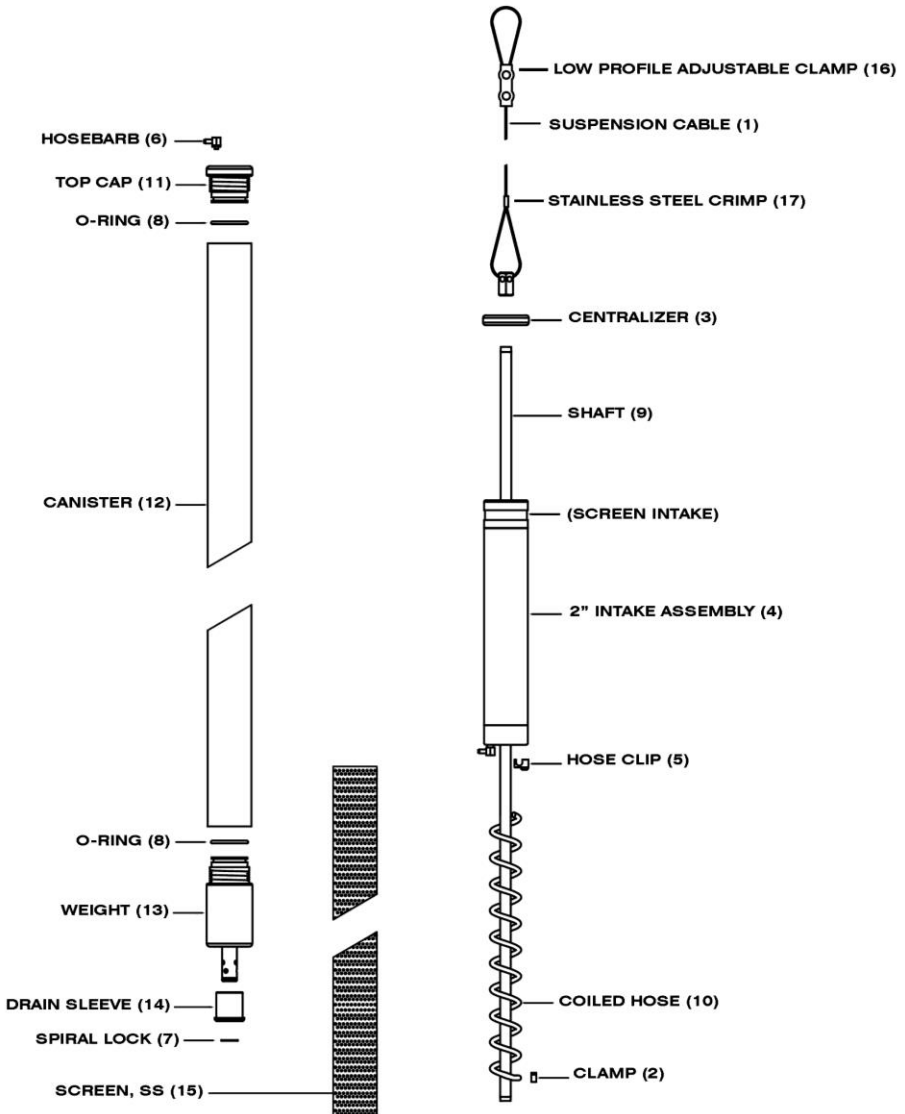


Figure 7-1: Standard 2" PRC Skimmer Assembly

Part numbers for the Standard 2" PRC Skimmer Assembly

Item #	Parts Description	Parts List
1	ASSY,CABLE,SUSPENSION,PRC,25FT	56650305
2	CLAMP,SS,STEPLESS EAR,7MM	16600005
3	CENTRALIZER,PVC,SKIMMER,2"	26650306
	CENTRALIZER,PVC,SCREENED PR2	26600186
4	ASSY,BUOY,SKIMMER,2"100MESH	56650309
	ASSY,BUOY,SKIMMER,2" 60 MESH	56650312
5	HOSE CLIP,SKIMMER FLOAT	26650028
6	HOSEBARB,BRS,1/8"X10-32,90DEG	17500149
7	LOCK,SS,9/16",SPIRAL	16650304
8	O-RING,VITON,#123 (BROWN)	11200299
9	SHAFT,SS,SKIMMER,33.5",PRC	26600002
10	HOSE,COILED,PR2	26650304
11	CAP,PVC,TOP,PRC2	26650315
12	BODY,PVC,CANISTER,0.125L,PRC	26650321
	BODY,PVC,CANISTER,0.25L,PRC	26650307
	BODY,PVC,CANISTER,0.5L,PRC	26650311
	BODY,PVC,CANISTER,1LITER,PRC	26650313
13	ASSY,WEIGHT,SKIMMER,2",INSERT .25/.5L PRC,	56650302
	ASSY,WEIGHT,SKIMMER,2",1L PRC	56650301
14	ASSY,SLEEVE,DRAIN,W/ O-RINGS	56650308
15	SCREEN,SS,1.88"ODX32.7" STRAIGHT WELD	26600188
16	CLAMP,SS6,CABLE,LOW PRFL	16650327
17	CRIMP,SS6,3/16,OVAL SLEEVE	17200189
PRC Accessories (not shown)		
	CAP,EXPANDABLE,LOCKING,2" W/SEAL	17150001
	CAP,EXPANDABLE,LOCKING,4" W/SEAL	17150002
	CAP,EXPANDABLE,LOCKING,6" W/SEAL	17150003
	CAP,EXPANDABLE,LOCKING,8" W/SEAL	17150021
	HANGER,CABLE,SLIP ON,SS4 WELL CAP HANGER(D)	17150004
	CABLE,SS,SUSPENSION,3/32"DI	16650300

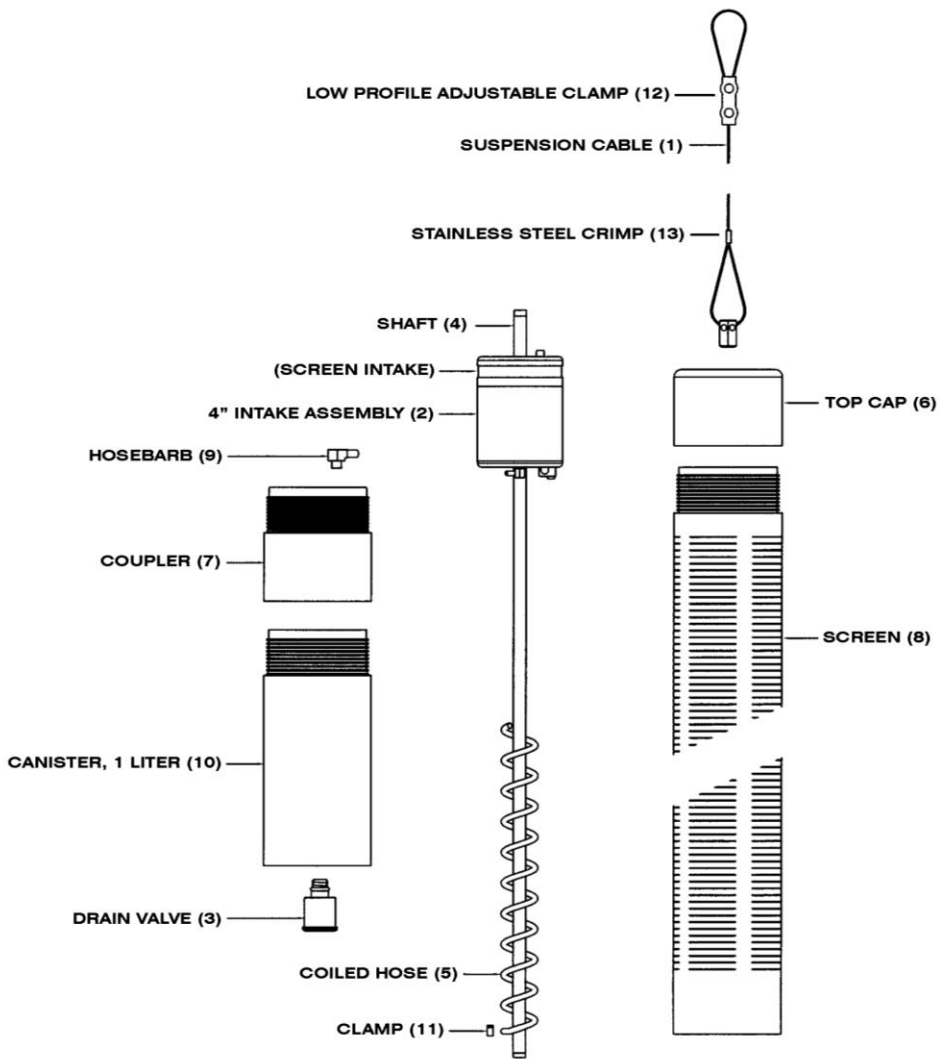


Figure 7-2: Standard 4" PRC Skimmer Assembly (1 Liter)

Part numbers for the Standard 4" PRC Skimmer Assembly (1 Liter)

Item #	Parts Description	Parts List
1	ASSY,CABLE,SUSPENSION,PRC,25FT	56650305
2	ASSY,BUOY,SKIMMER,4"100 MESH	56650310
3	ASSY,DRAIN VALVE,SKIMMER,4" PR4,	56650307
4	SHAFT,SS,SKIMMER,24.5" 2065 REV A	26650305
5	HOSE,COILED,PR4	16650312
6	CAP,PVC,TOP,PRC4	16650313
7	COUPLER,PVC,PRC4	16650316
8	SCREEN,PVC,PRC4	16650317
9	HOSEBARB,BRS,.170"X1/8MPT,90D	17500148
10	CANISTER,1L,PRC4,W/ BTM PLATE	56650311
11	CLAMP,SS,STEPLESS EAR,7MM	16600005
12	CLAMP,SS6,CABLE,LOW PRFL	16650327
13	CRIMP,SS6,3/16,OVAL SLEEVE	17200189
PRC Accessories (not shown)		
	CAP,EXPANDABLE,LOCKING,2" W/SEAL	17150001
	CAP,EXPANDABLE,LOCKING,4" W/SEAL	17150002
	CAP,EXPANDABLE,LOCKING,6" W/SEAL	17150003
	CAP,EXPANDABLE,LOCKING,8" W/SEAL	17150021
	HANGER,CABLE,SLIP ON,SS4 WELL CAP HANGER(D)	17150004
	CABLE,SS,SUSPENSION,3/32"DI	16650300

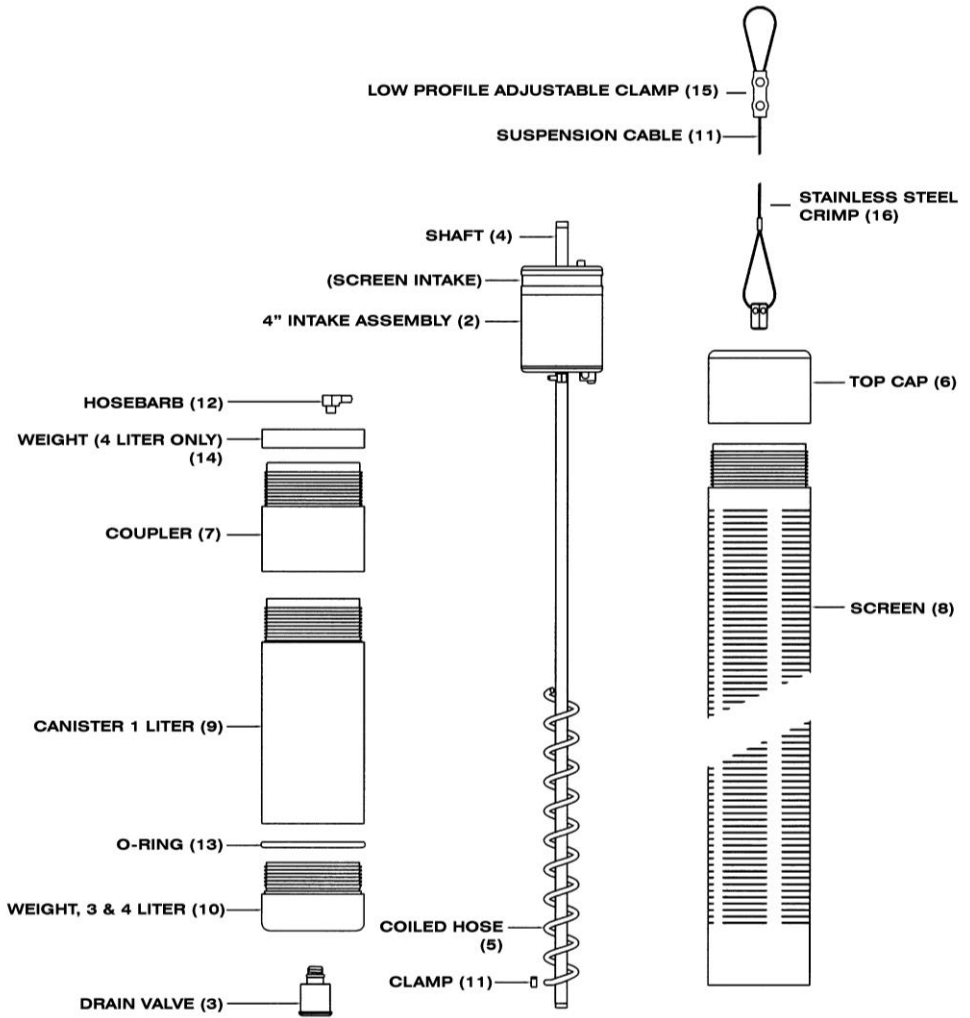


Figure 7-3: Standard 4" PRC Skimmer Assembly (3 & 4 Liter)

Part numbers for the Standard 4" PRC Skimmer Assembly (3 & 4 Liter)

Item #	Parts Description	Parts List
1	ASSY,CABLE,SUSPENSION,PRC,25FT	56650305
2	ASSY,BUOY,SKIMMER,4"100 MESH	56650310
3	ASSY,DRAIN VALVE,SKIMMER,4" PR4,	56650307
4	SHAFT,SS,SKIMMER,24.5" 2065 REV A	26650305
5	HOSE,COILED,PR4	16650312
6	CAP,PVC,TOP,PRC4	16650313
7	COUPLER,PVC,PRC4	16650316
8	SCREEN,PVC,PRC4	16650317
9	CANISTER,PVC,3L,PRC4	16650318
	CANISTER,PVC,4L,PRC4	16650320
10	WEIGHT,SS4,3L&4L,PRC4	16650319
11	CLAMP,SS,STEPLESS EAR,7MM	16600005
12	HOSEBARB,BRS, .170"X1/8MPT,90D (3 LITER)	17500148
	HOSEBARB,BRS,1/8"X1/8"NPT (4 LITER)	16600065
13	O-RING,VITON,#041	16650321
14	WEIGHT,SS4,4L,PRC4	26650318
15	CLAMP,SS6,CABLE,LOW PRFL	16650327
16	CRIMP,SS6,3/16,OVAL SLEEVE	17200189
PRC Accessories (not shown)		
	CAP,EXPANDABLE,LOCKING,2" W/SEAL	17150001
	CAP,EXPANDABLE,LOCKING,4" W/SEAL	17150002
	CAP,EXPANDABLE,LOCKING,6" W/SEAL	17150003
	CAP,EXPANDABLE,LOCKING,8" W/SEAL	17150021
	HANGER,CABLE,SLIP ON,SS4 WELL CAP HANGER(D)	17150004
	CABLE,SS,SUSPENSION,3/32"DI	16650300

REVISION HISTORY

PROJECT #	DESCRIPTION	DATE
1670	General formatting and consistency updates. Added pn 16600065, removed pn 56650303, added 0.0125 specs to system specifications, added revision history – StellaR	6/27/2018
1670	Corrected table title in Section 5: System specifications. Corrected weight for .125 volume – StellaR	6/29/2018
2093	Added PRC Accessories and updated figures 7-1, 7-2, 7-3 to include the stainless steel crimp and low profile adjustable clamp – StellaR	10/27/2020

NOTES

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The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR
SERVICE DEPARTMENT AT 1-800-833-7958.

Model Number: _____

Serial Number: _____

Date of Purchase: _____

Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.

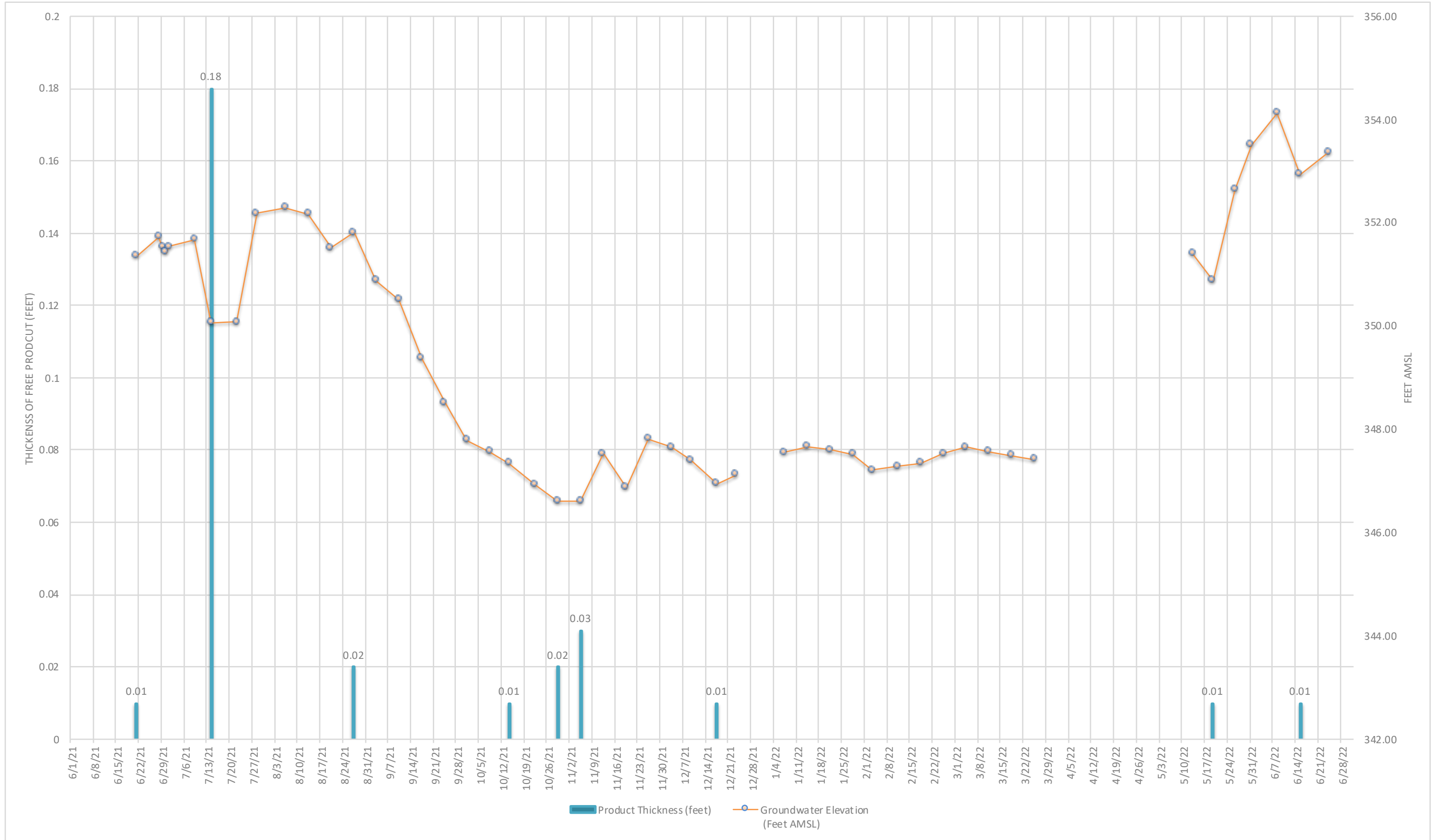
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ATTACHMENT 7

Graphs

GRAPH 1: MW-13 Water Elevation vs. Free Product Thickness

Free Product Monitoring Report
Nenana Header and Rail Line Areas
Nenana, Alaska



GRAPH 2: MW-7R Water Elevation vs. Free Product Thickness

Free Product Monitoring Report
 Nenana Header and Rail Line Areas
 Nenana, Alaska

