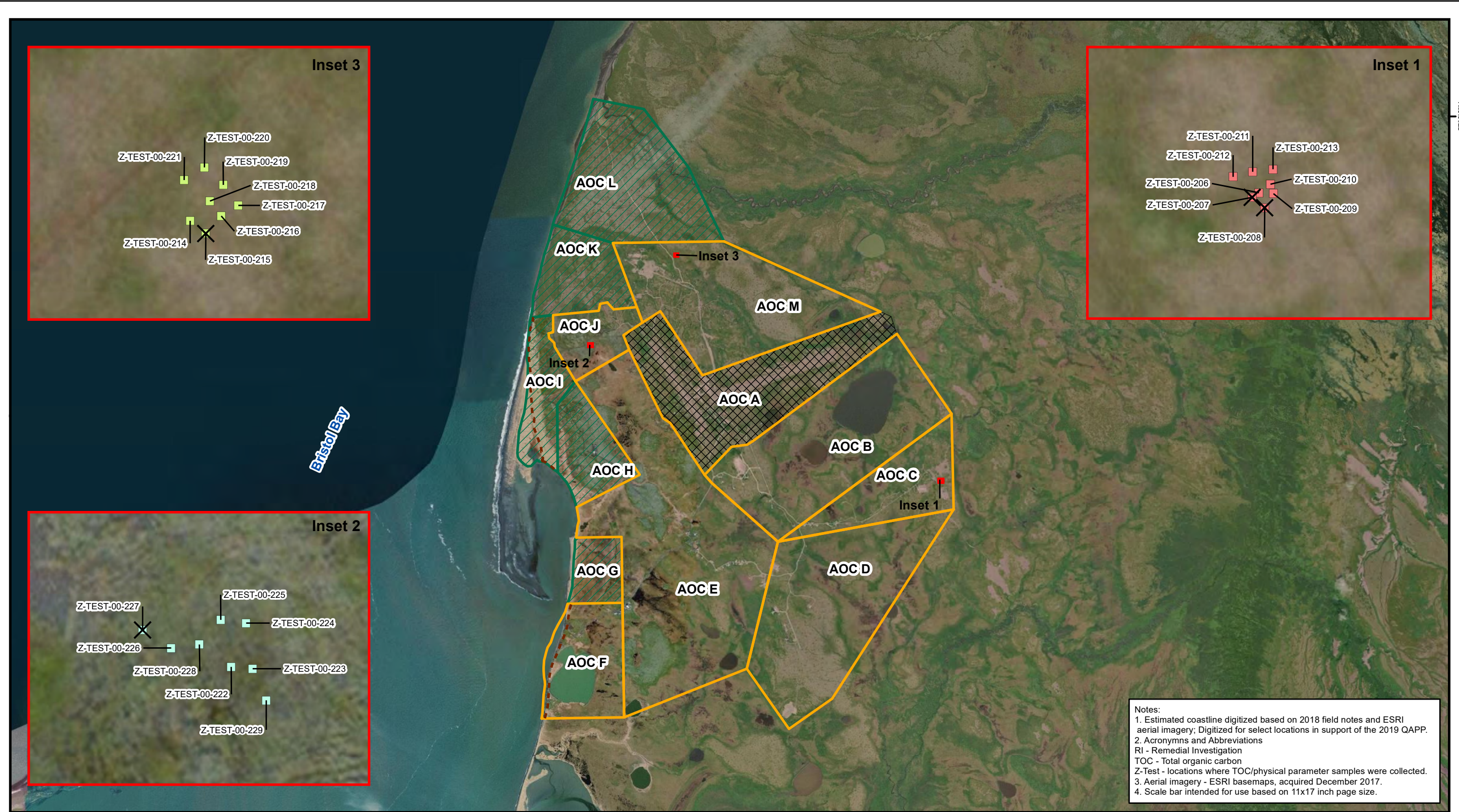


57°00'N



Notes:
 1. Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
 2. Acronyms and Abbreviations
 RI - Remedial Investigation
 TOC - Total organic carbon
 Z-Test - locations where TOC/physical parameter samples were collected.
 3. Aerial imagery - ESRI basemaps, acquired December 2017.
 4. Scale bar intended for use based on 11x17 inch page size.

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Legend

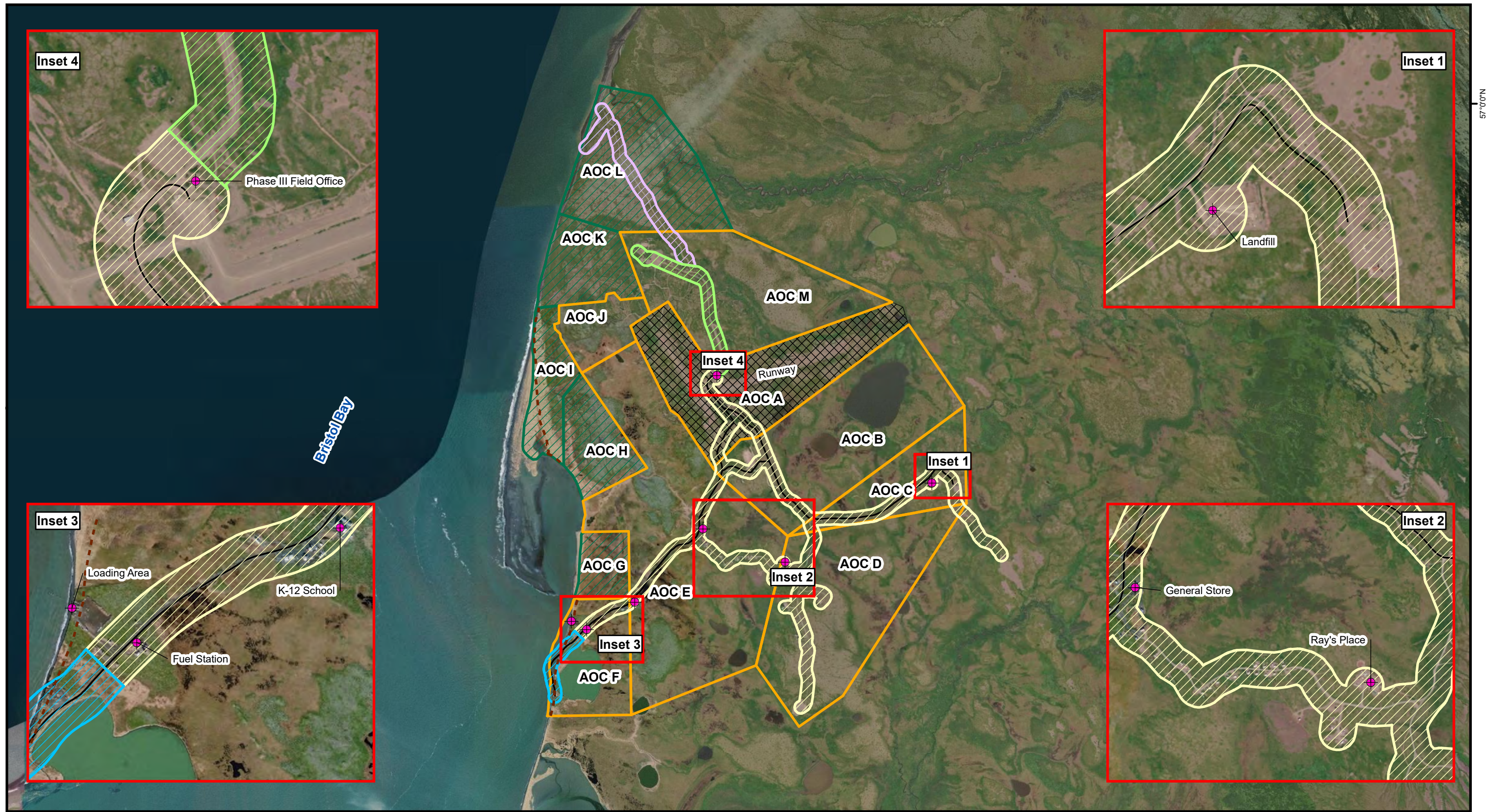
Estimated coastline	Soil Sample Type	TOC Status	Project Area
Alluvial or Outwash	Marine Terrace Deposit	Physical Parameters Collected	Included in Phase III RI
Silty Sand with Gravel / Volcanic Tuff		Not Included in Phase III RI	Not Included in RI

1 inch = 1 miles
 WGS 1984 UTM Zone 4N



SOIL PARAMETERS OVERVIEW REMEDIAL INVESTIGATION PHASE III FINAL REPORT - FORT MORROW PORT HEIDEN, ALASKA		
DATE: 12 AUG 2020	PROJECT MANAGER: A. OLSON	FIGURE NO.: 42

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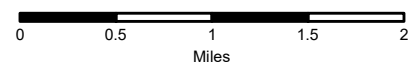
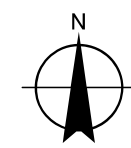
57°00'N

Legend

Port Heiden Community Places	Included in Phase III RI	Historical Area
Alaska Roads	Not Included in Phase III RI	Industrial/Recreational Area
	Not Included in RI	Recreational Area
		Residential/Industrial Area

Notes:

1. Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
2. Land Use area defined based on 350 foot buffer of digitized Alaska Roads. Locations are approximate.
3. Aerial imagery - ESRI basemaps, acquired December 2017; Alaska Roads - DOT road system, acquired December 2017.
4. Scale bar intended for use based on 11x17 inch page size.



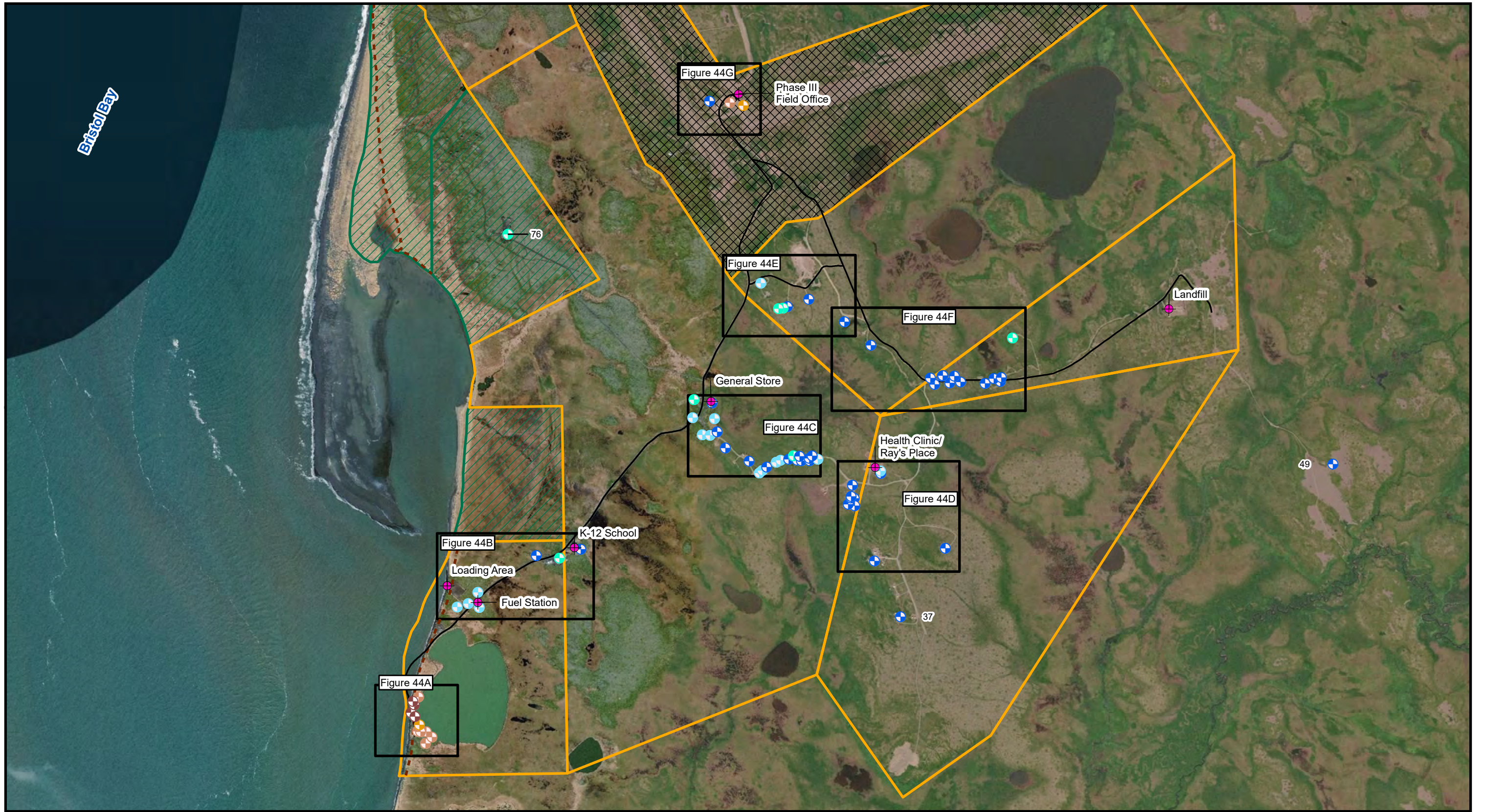
1 inch = 1 miles
WGS 1984 UTM Zone 4N



PORT HEIDEN COMMUNITY PLACES
REMEDIAL INVESTIGATION PHASE III
FINAL REPORT - FORT MORROW
PORT HEIDEN, ALASKA

DATE: 12 AUG 2020	PROJECT MANAGER: A. OLSON	FIGURE NO.: 43
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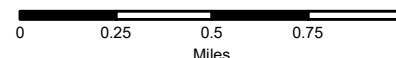


Legend

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> Community Places Estimated coastline Alaska Roads Subset Figure Extent | <p>Well Status</p> <ul style="list-style-type: none"> Present - In Use At Time of Survey Present - Not In Use Present - Use Unknown Not Located - Area Eroded Into Ocean Not Located - Groundscar Identified; No Well Observed Not Located - Pre-Existing Location Identified; No Well Observed | <p>Project Area</p> <ul style="list-style-type: none"> Included in Phase III RI Not Included in Phase III RI Not Included in RI |
|---|--|--|

Notes:

1. Wells 37, 49, 76 presented here and do not have their own inset.
2. Community Drinking Water Wells location captured by mapping grade GPS.
3. Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
4. Aerial imagery - ESRI basemaps, acquired December 2017; Alaska Roads - DOT road system, acquired December 2017.
5. Scale bar intended for use based on 11x17 inch page size.

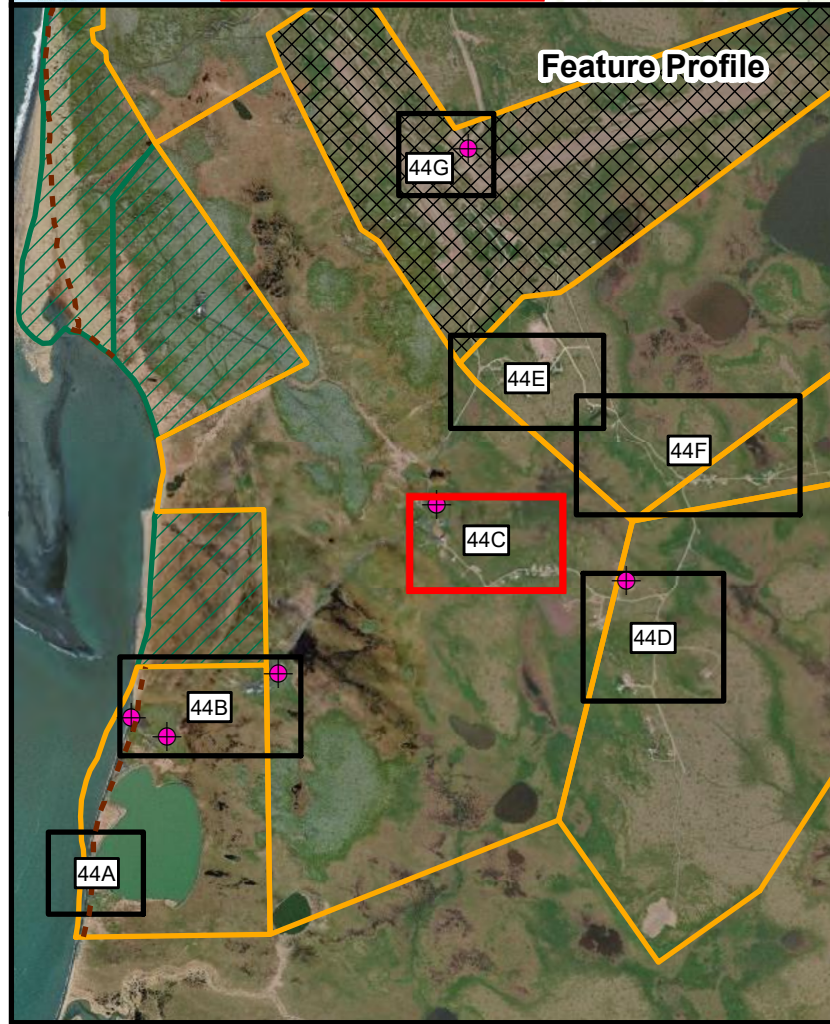
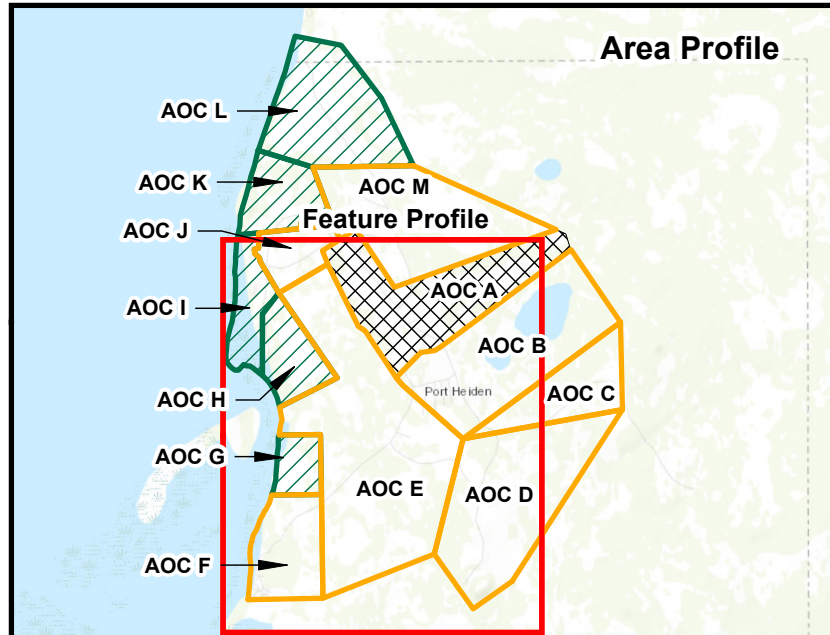


1 in = 0.5 miles
WGS 1984 UTM Zone 4N



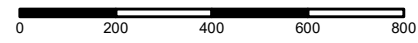
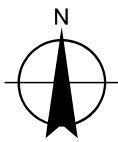
COMMUNITY DRINKING WATER WELL SURVEY
OVERVIEW
REMEDIAL INVESTIGATION PHASE III
FINAL REPORT - FORT MORROW
PORT HEIDEN, ALASKA

DATE: 12 AUG 2020	PROJECT MANAGER: A. OLSON	FIGURE NO.: 44
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Legend	
	Community Places
	Well Status
	Present - In Use At Time of Survey
	Present - Not In Use
	Present - Use Unknown
	Alaska Roads
	Subset Figure Extent
	Project Area
	Included in Phase III RI
	Not Included in Phase III RI
	Not Included in RI

Notes:
 1. Community Drinking Water Wells location captured by mapping grade GPS.
 2. Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
 3. Aerial imagery - ESRI basemaps, acquired December 2017; Alaska Roads - DOT road system, acquired December 2017.
 4. Scale bar intended for use based on 11x17 inch page size.



1 inch = 400 feet
 WGS 1984 UTM Zone 4N



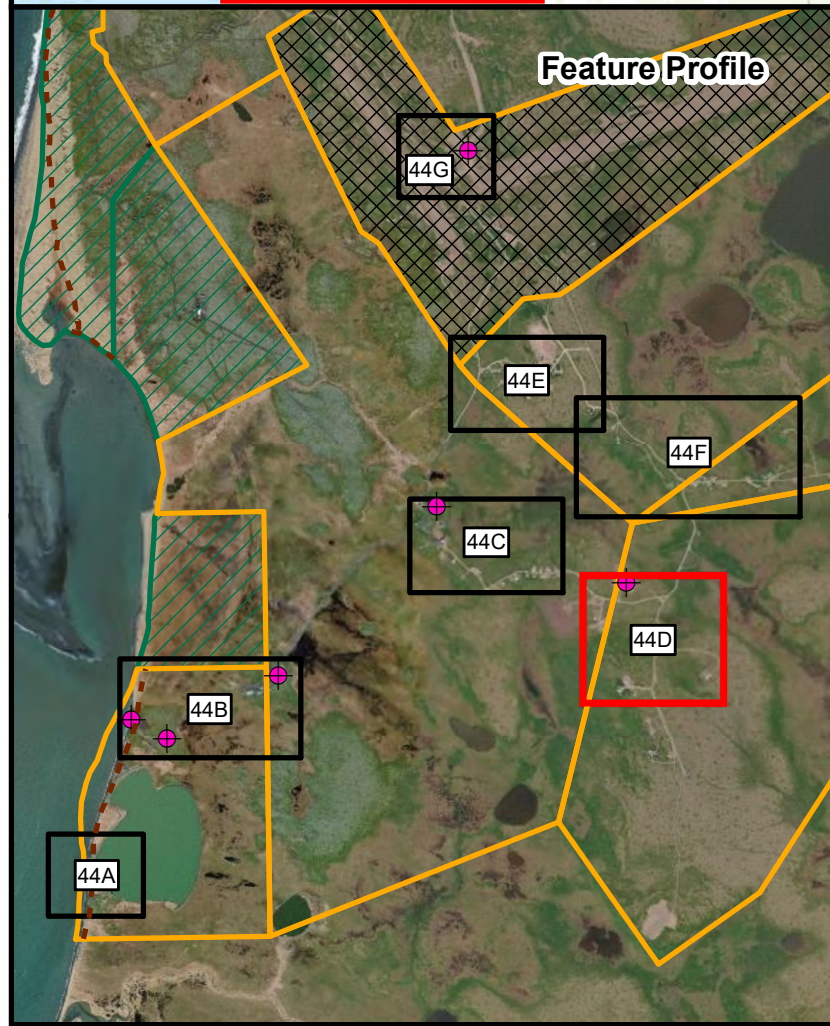
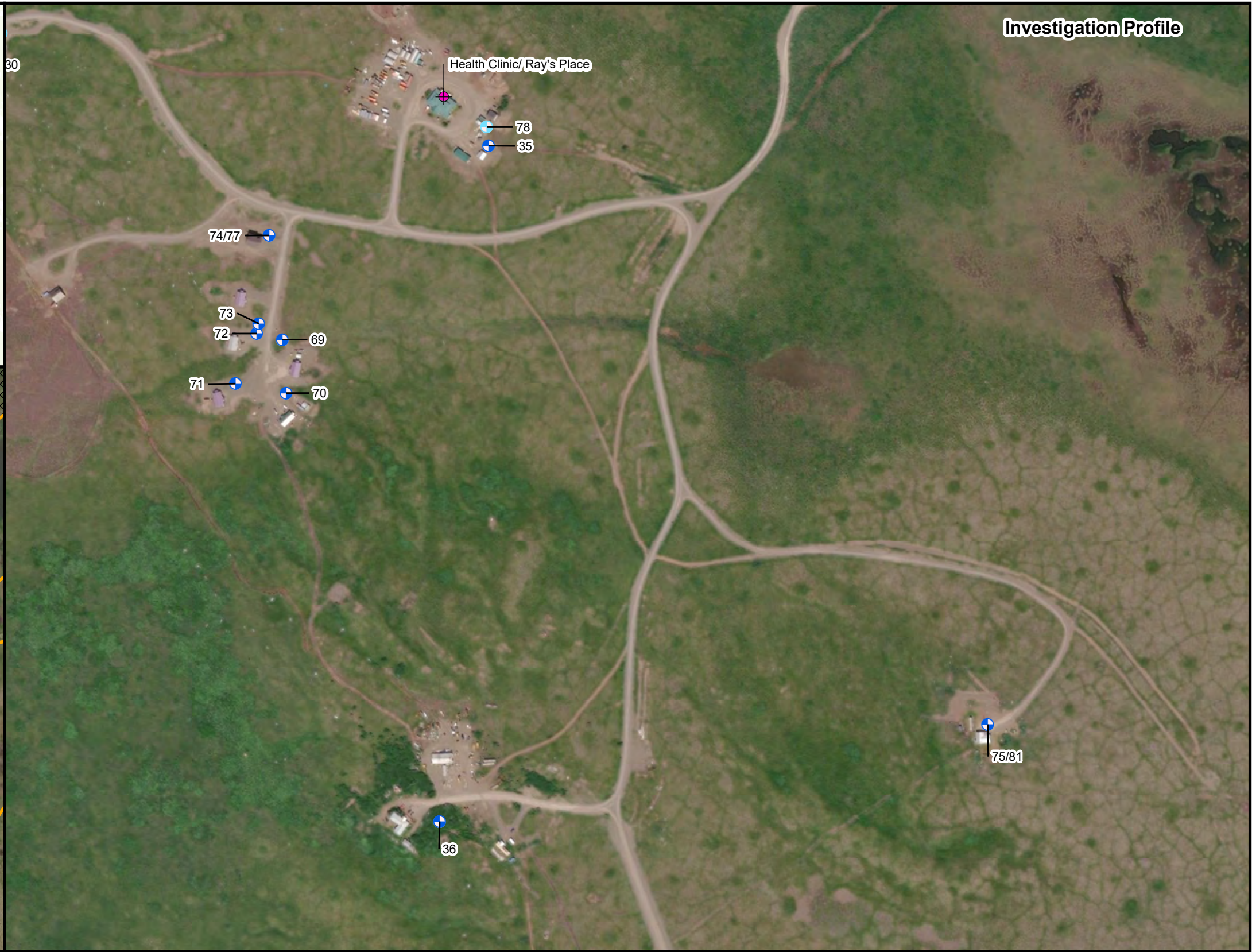
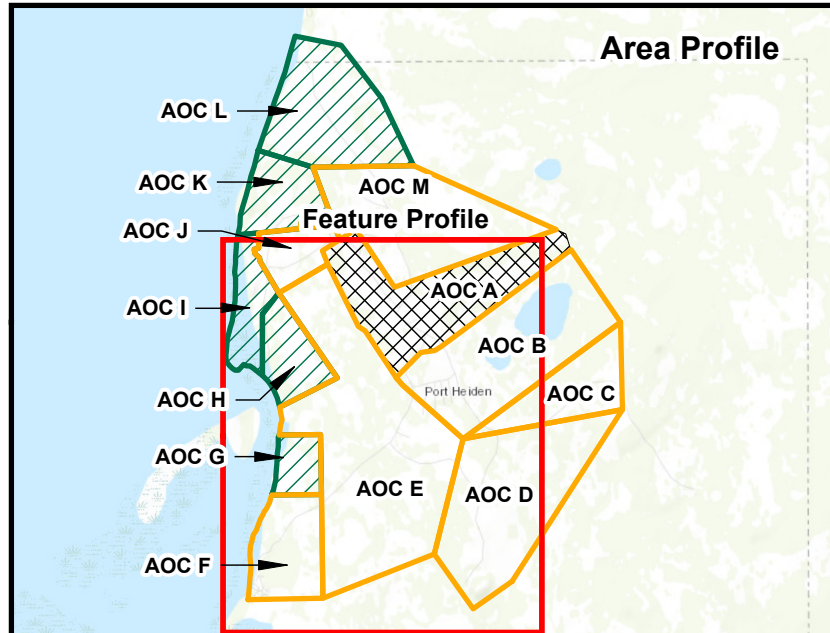
COMMUNITY DRINKING WATER WELL SURVEY
 OLD HUD
 REMEDIAL INVESTIGATION PHASE III
 FINAL REPORT - FORT MORROW
 PORT HEIDEN, ALASKA

DATE:
 12 AUG 2020

PROJECT MANAGER:
 A. OLSON

FIGURE NO.:
 44C

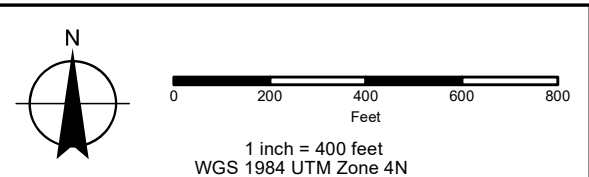
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Legend	
Community Places	Well Status
Subset Figure Extent	Present - In Use At Time of Survey
Project Area	Present - Not In Use
Included in Phase III RI	Not Included in Phase III RI
Not Included in Phase III RI	Not Included in RI

Notes:

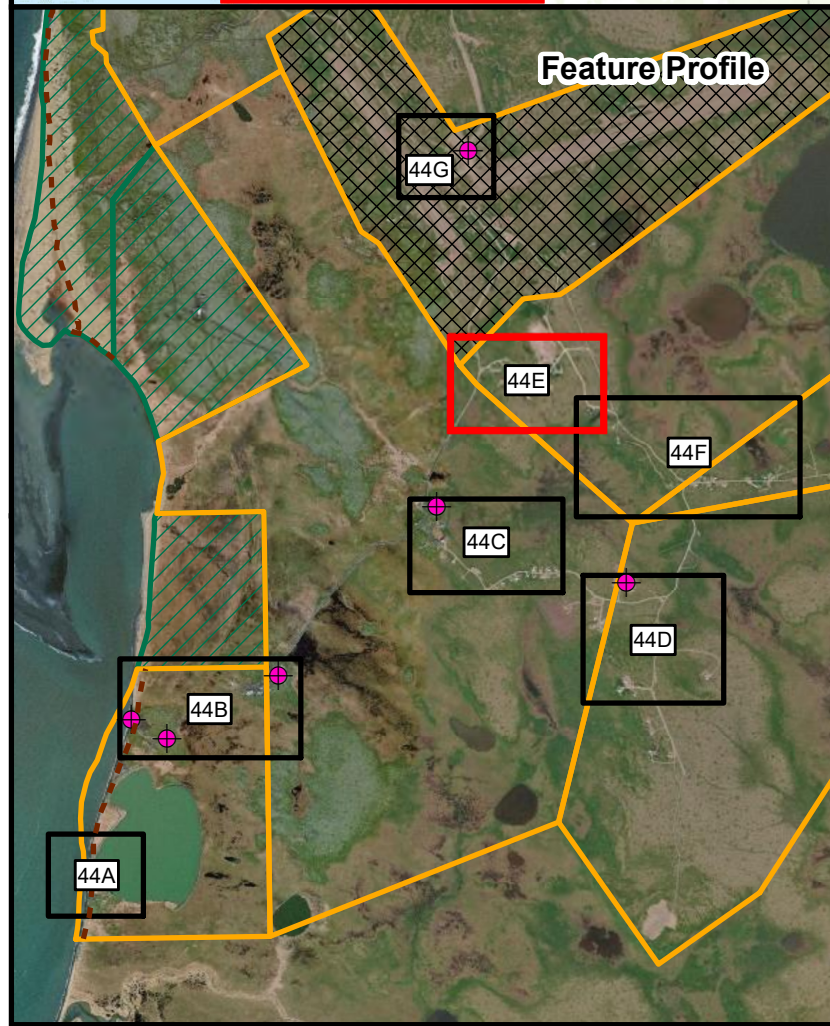
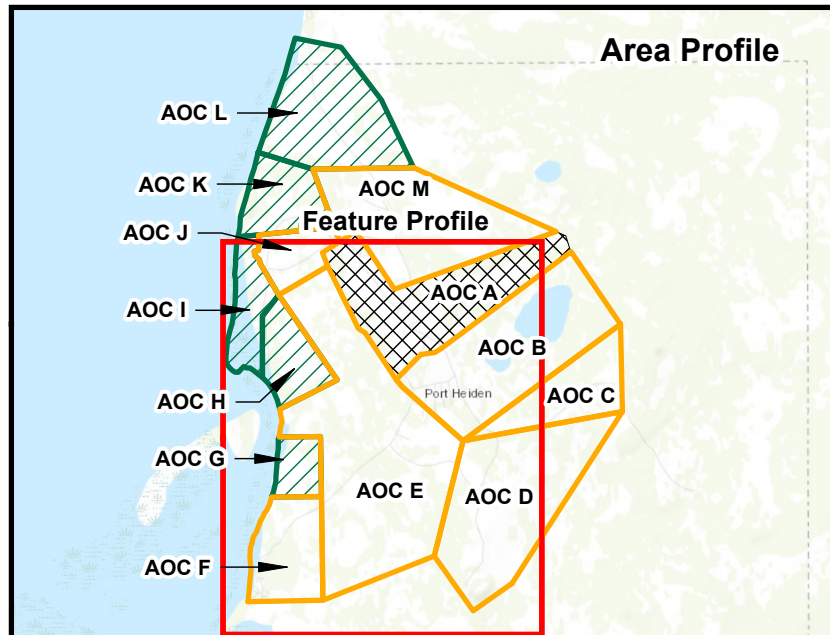
- Community Drinking Water Wells location captured by mapping grade GPS.
- Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
- Aerial imagery - ESRI basemaps, acquired December 2017; Alaska Roads - DOT road system, acquired December 2017.
- Scale bar intended for use based on 11x17 inch page size.



COMMUNITY DRINKING WATER WELL SURVEY RAY'S PLACE/LITTLE HUD REMEDIAL INVESTIGATION PHASE III FINAL REPORT - FORT MORROW PORT HEIDEN, ALASKA		
DATE: 12 AUG 2020	PROJECT MANAGER: A. OLSON	FIGURE NO.: 44D

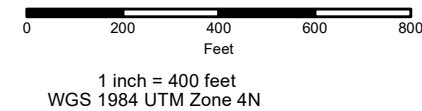
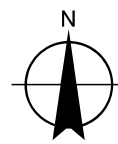
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C:\Users\kholmes\Desktop\FortMorrow2020\FM_PHIII\FM_2019Rpt_MXD10\Fig44X_FM_2019Rpt_CommWells_Mpbk.mxd kholmes



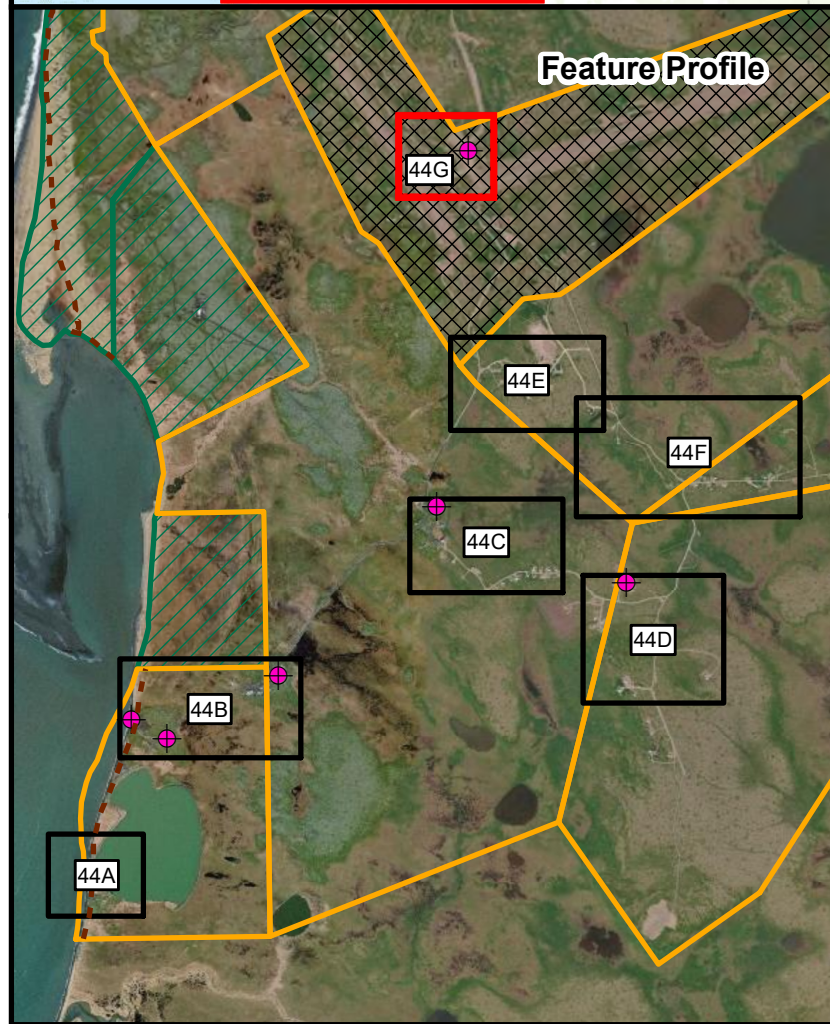
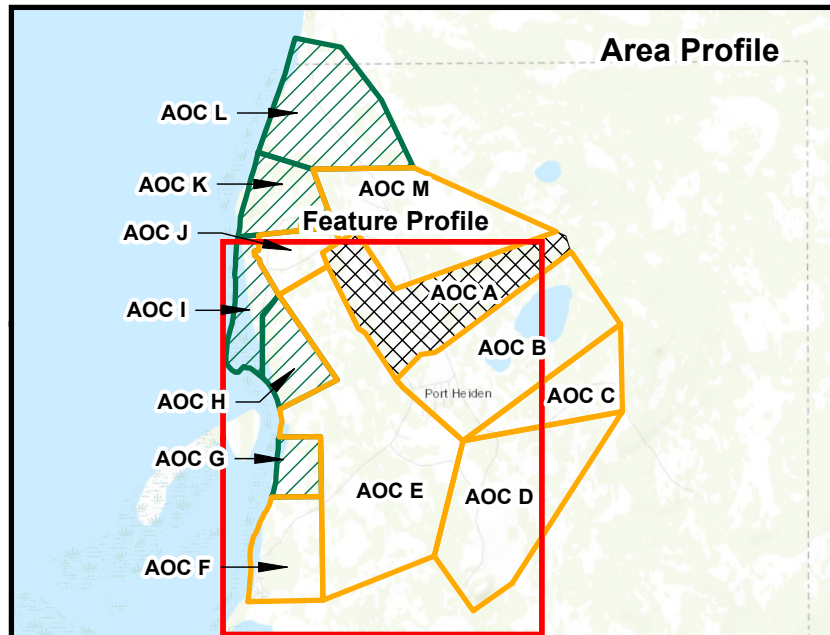
Legend		
	Community Places	
	Well Status	
	Present - In Use At Time of Survey	
	Present - Not In Use	
	Present - Use Unknown	
	Alaska Roads	
	Subset Figure Extent	
	Project Area	
	Included in Phase III RI	
	Not Included in Phase III RI	
	Not Included in RI	

Notes:
 1. Community Drinking Water Wells location captured by mapping grade GPS.
 2. Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
 3. Aerial imagery - ESRI basemaps, acquired December 2017; Alaska Roads - DOT road system, acquired December 2017.
 4. Scale bar intended for use based on 11x17 inch page size.



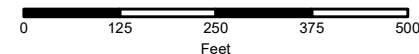
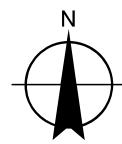
COMMUNITY DRINKING WATER WELL SURVEY GRAVEL PIT REMEDIAL INVESTIGATION PHASE III FINAL REPORT - FORT MORROW PORT HEIDEN, ALASKA		
DATE: 12 AUG 2020	PROJECT MANAGER: A. OLSON	FIGURE NO.: 44E

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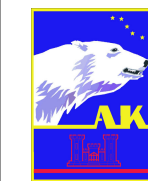


Legend	
Community Places	Well Status
Alaska Roads	Present - In Use At Time of Survey
Subset Figure Extent	Not Located - Groundscar Identified; No Well Observed
Project Area	Not Located - Pre-Existing Location Identified; No Well Observed
Included in Phase III RI	Not Included in Phase III RI
Not Included in Phase III RI	Not Included in RI

Notes:
 1. Community Drinking Water Wells location captured by mapping grade GPS.
 2. Estimated coastline digitized based on 2018 field notes and ESRI aerial imagery; Digitized for select locations in support of the 2019 QAPP.
 3. Aerial imagery - ESRI basemaps, acquired December 2017; Alaska Roads - DOT road system, acquired December 2017.
 4. Scale bar intended for use based on 11x17 inch page size.



1 inch = 250 feet
 WGS 1984 UTM Zone 4N



COMMUNITY DRINKING WATER WELL SURVEY AIRPORT REMEDIATION INVESTIGATION PHASE III FINAL REPORT - FORT MORROW PORT HEIDEN, ALASKA		
DATE: 12 AUG 2020	PROJECT MANAGER: A. OLSON	FIGURE NO.: 44G

APPENDIX A

FIELD DOCUMENTATION

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Drill / Derek



2019

Rite in the Rain

ALL-WEATHER

FIELD

Nº 353N

PH Fort Murren

Phase III RI

Part I

M. Ebert

F. Restrepo

7/2/2014

Partly Cloudy
45°

800 Arrive at Red Building. Have
safety meeting.

1030 Leave Red Building to start
Soil Borings

1100 Staked out UV038 Boring location
at B-DA-005 for Drillers

1120 arrive at C-DB-001 start
to find UV-001 location
for Boring

1150 Take sample 19-FM-C-DB-001-DT-01-5-1
at 1150

1300 Start Drilling at B-DA-005 at
location 007.

1343 Take sample at ^{MS} 19-FM-B-DA-005-DT-007
-7-8.5 at 1343 and Duplicate
19-FM-B-DA-005-DT-907-7-8.5
at 1443

1545 Arrive at C-ST-011

1600 Take sample 19-FM-C-ST-011-DT-001-5-25
at 1600

1610 arrive at C-GS-001

1620 Sample 19-FM-C-GS-001-DT-001-5-3

ME taken at 1620.

~~154~~ 1720 arrive at J-wh-003

1435 (for go to write sample times.) Sample taken.

19-FM-B-DA-003-DT-018-05-2 at 1435

note on the rain

M. Ebert
E. Restrepo

PH Ft Morrow
7/2/2019

Sunny
60°F

1805 Sample 19-FM-J-WH-003-DT-004-12-13
taken at 1805

1845 Took survey check shot
at FM-RI-J1

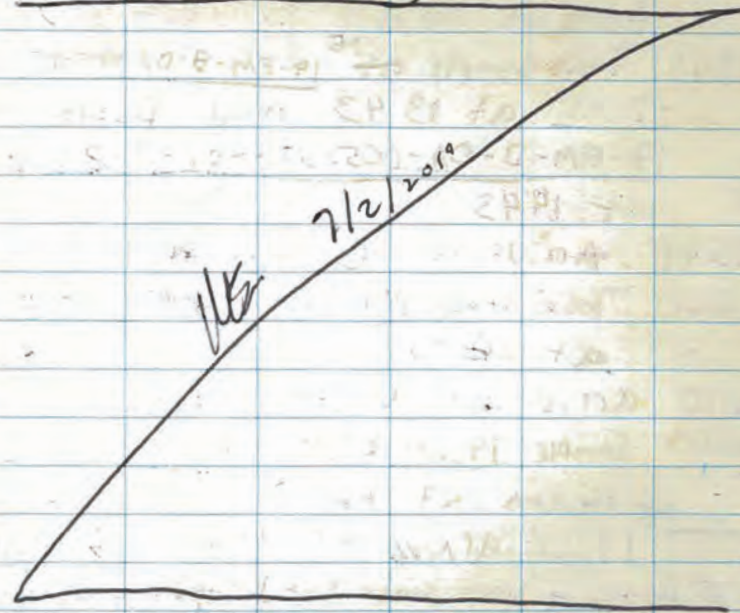
1910 arrive at C-ST-001

1920 take sample 19-FM-C-ST-001-DT-001-2-4
at

1940 arrive at C-QT-003

1945 Sample 19-FM-C-QT-003-DT-001-2-1
taken at 1945

2010 Arrive Back at Red Building
End of Day



M. Ebert
E. Restrepo

PH Ft Morrow
7/3/2019

Sunny
50°F

800 Arrive at Red building. Have
Safety meeting

930 Arrive at M-DA-006 to drill
4 holes with Geo Probe

1000 Take sample 19-FM-M-DA-006-DT-004-2-3
at 1000

1014 Take sample 19-FM-M-DA-006-DT-003-2-4
at 1014 and DUPLICATE sample
19-FM-M-DA-006-DT-003-2-4 at
1114

1035 Take sample 19-FM-M-DA-006-DT-002-9-10
at 1035

1055 Take sample 19-FM-M-DA-006-DT-001-9.5-5
at 1055

1120 Arrive at M-DA-003 location 1

1140 Take sample 19-FM-DA-003-DT-001-5.5-5
at 1140

1200 Stake out location at M-PR-001

1220 Stake out location at M-WH-004

1255 Stake out location at M-PH-001

1445 Arrive at M-PR-001. Begin drilling
at 0001 to 10 ft

1510 TOOK SAMPLE 19-FM-M-PR-001-DT-006-9-10
at 1510. Took an Extra sample at Highest
PID Reading from 8-9 FT See next page

Return to the Rain

M. Ebert
F. Restrepo

PH Ft Marrow
7/3/19

Sunny Breezy
60°F

1510 (continued) Sample name 19-FM-M-PR-001-DT-006-8-9

1530 Arrive at M-WH-004 and begin
drilling at UV 003

1550 take sample 19-FM-M-WH-004-DT-001-5-5-6-3
at 1550

1715 arrive at M-PH-001 and begin drilling
at UV 005

1745 Take sample ~~19-FM-M~~^{ME}
19-FM-M-PH-001-DT-001-8-5-4-5 at 1745

1840 Arrive at E-DS-001 and begin
hand Augering UV 008

1855 Take sample 19-FM-E-DS-001-DT-002-0-1-5
at 1855

1920 Take sample 19-FM-E-DS-001-DT-002-3-4
at 1920

1930 Arrive Back at Red Building
Finish up End of Day tasks

~~Hand Aug~~ 7/3/19

M. Ebert
F. Restrepo

Ft Marrow RT III
7-4-19

Sunny
Dew 75°F

800 Arrive at Red Building and hold
safety meeting.

1100 Arrive at C-DB-001 and begin
to stake out ISM DU corners

1200 Begin to take surface samples
within DU

1300 Finish surface ISM sampling
at 40 random locations within
DU samples. Include:

- 19-FM-C-DB-001-DT-002-0-2
- 19-FM-C-DB-001-DT-902-0-2
- 19-FM-C-DB-001-DT-602-0-2

1510 Arrive Back at C-DB-001 begin
sub surface ISM sampling

1800 Finish subsurface ISM sampling
sample names are:

- 19-FM-C-DB-001-DT-002-2-15 IM/ASD
- 19-FM-C-DB-001-DT-R02-2-15
- 19-FM-C-DB-001-DT-T02-2-15

~~ME~~

ME

1830 Arrive Back at Red Building
and finish End of Day tasks

~~Hand Aug~~ 7-4-19

M. Ebert
6 F. Restrepo

Ft Morrow
7/5/19

Sunny
65

800 Arrive at red Building and
Discover 2 FADS and 2
laptops have been stolen from
the office. Held safety meeting.

1000 Started getting a cooler
ready to ship with samples
from 7/3

1100 Sent cooler out on lake
clark flight. cooler is
going to Anchorage.

1400 Arrive At C-DB-001 and
reason for subsurface
sample

1600 Finish 1st replicate consisting
of 10 Randomly Placed Bore
Holes within the DU. Began
Drilling next 10 Randomly
Placed holes. Took sample

1555 → 19-FM-C-DB-001-DT-902-2-15

1735 Finish 2nd Replicate of ISM
Sub surface samples take sample.

19-FM-C-DB-001-DT-602-2-15

sample taken at 1730. All
30 holes had no fuel odor.

two holes had debris (wood, glass,
painted wood.)

F Restrepo
M. Ebert

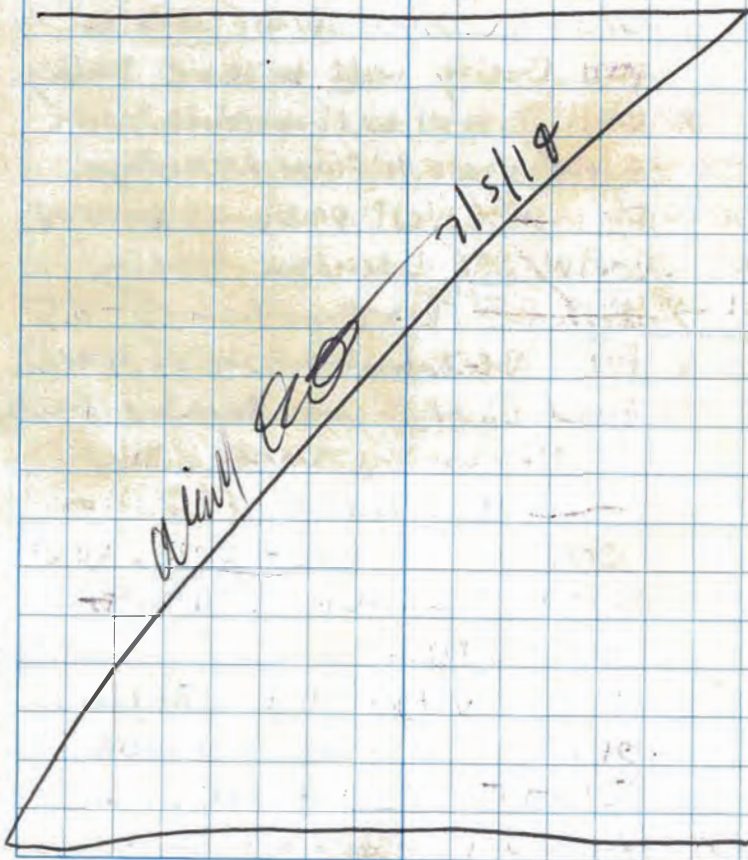
Ft Morrow
7/5/19

Sunny
70

1735 (continued) One hole was Ran yesterday
(7/4) and one ~~hole~~^{ME} at location 012

The other Hole with debris was from
Today and is not associated with
a location/Boring.

1800 Arrive Back at Building
and clean up EOD



8 MEbert
F Restrepo

Ft Morris
7/6/14

Sunny
65

800 Arrive at red building and
held safety meeting.

900 Calibrate PID

Zero cal: 0.00

Span cal: 100.0

440 Arrive at C-LT-002 set up
Drill and UVOST on C-MW-008

Location. UVOST probe and a
Soil Boring will be done today
Well Install will be done when
supplies arrive from Anchorage.

1050 First ^{ME} UVOST probe at potential
C-MW-008 Location. Had a

Fuel ^{ME} Signature High RE Reading from 5-8.5
above the RE threshold. A step out is needed.

A new location was decided roughly
15 ft to the north. This

~~Failed~~ ^{ME} Dirty location is location

008 at site C-LT-002. Next
potential location will be ^{ME}

Location 010.

1115 Begin UVOST Probe at location
010 as a potential location
for ME C-MW-008

1200 No Fuel signatures at

F Restrepo
M Ebert

Ft Morris
7-6-14

Sunny
65

location 010 so a Soil Boring
was conducted and a well
will be installed when supplies
arrive.

1215 Set up for Next UVOST probe
at C-LT-002 Location 006
as a potential location for
C-MW-006.

1245 Location 006 Had a small possible
Fuel signature above the RE
Threshold. A step out was ~~ME~~
recommended so a new location
will be used roughly 20 ft
East of the ^{ME} Location 006.

This new location will be
Location 011.

1330 No Fuel signatures at location
011 this will be the location
for C-MW-006. Soil Boring
was conducted at 011
and well will be installed when
supplies are available.

1400 Sample 19-FM-C-LT-002-DT-010-16-17
at 1400 and duplicate
19-FM-C-LT-002-DT-010-16-17 at

1410

Rite in the Rain

10

M Ebert
F. RestrepoFt Monmouth
7/6/2019Sunny
70°

1415 TAKE sample 19-FM-C-LT-002-DT-011-17-18
at 1415.

1530 set up at C-LT-002 location
^{ME}009 for potential E-MW-009
location.

1600 Small fuel signature was found
around 10.75 ft bgs at location
009. A step out was necessary.
^{ME}Potential well location was
moved 20 ft south of
location 009. This new location
is ^{ME}012.

1640 location 012 showed fuel signatures
as well. A second step out is
necessary. fuel signature was at
roughly 9.5 ft bgs. 2nd step
out will be 20 ft south of
location 012. New location
will be 013.

1720 there is still slight possible fuel at 11.2
ft bgs signature but it is ^{FE} at low RE
so we are going ahead with a
boring at this location (013) to
investigate this anomaly.

1740 Investigation of the soil

M Ebert
F. RestrepoFt Monmouth
7/6/2019Sunny
70°

11

Boring at location 013 revealed
NO odor or staining. I was decided
Boring ^{ME} location was suitable for
well installation ^{ME} when supplies
were available. 19-FM-C-LT-002-DT-013-12-13@1740

1755 set up and began WOST
Screening at location 007 at
site C-LT-002.

1810 Fuel signature was found at around
4 feet bgs. A step out is needed.
A new location was picked 20 ft
to the west of location 007

This new location will be 014.
~~1850~~ ^{ME}1830 ^{ME}WOST probe showed NO
fuel signatures so a boring was
advanced. Boring showed no odor
or staining. Boring is suitable for
well.

1915 sample 19-FM-C-LT-002-DT-014-11.5-12.5
was taken at 1915 with
MS/MS D

2000 Arrive Back at red Building
Do End of day tasks **EOD**

~~cont. see 7/6/19~~

12 M. Ernst
F. Restrepo

Ft Morrow
7/7/2014

Sunny
50°

- 800 Arrive at red Building, Hold Safety meeting.
- 820 Calibrate PID Zero cal - 0.0ppm
to ME Span cal - 100.0ppm
- 1010 Arrive at C-LT-002 and set up for delineation of the fuel signature found yesterday at location 008. 3 Step outs will be done at a minimum. If further fuel signatures are found more step outs will be done.
- 1035 Begin Drilling at Step out location 015
- 1050 ~~Very small possible fuel signature showed up with step out 10-15 ft to the south of location 015. This new location will be location~~
- 1100 Move to Eastern Step out location ~~to ME~~ 016. Begin U-VOST Probe
- 1130 No fuel signatures at location 016. This location is clear.
- 1140 Further Discussion with The Dakota contractor on the small possible fuel signature at location 015

F. Restrepo
M. Ernst

Ft Morrow
7/7/17

Sunny
65°

13

- has led to the conclusion that a further step out to the south of location 015 is not necessary.
- 1145 Set up at next delineation location 017 and begin U-VOST Probe.
- 1215 Location 017 showed NO fuel signatures. This location is clean.
- 1220 Set up and started a soil Boring at location 008 to take a characterization sample from the fuel signature from 6.0-7.5 ft bgs
- 1235 Take sample 19-FM-C-LT-002-DT-008-6.8-7.5 at 1235 and take duplicate 19-FM-C-LT-002-DT-008-6-7.5 at 1245
- 1240 Start Lateral Compaction Boring at location 15.
- 1310 Take sample 19-FM-C-LT-002-DT-015-8-7 at 1310
- 1250 Take lateral sample 19-FM-C-LT-002-DT-008-10-12 at 1250
- 1510 Begin U-VOST Probe at location 018 To close the special data

Rite in the Rain

14

M Ebert
F RestrepoFt Morrow
7/7/19Sunny
70°

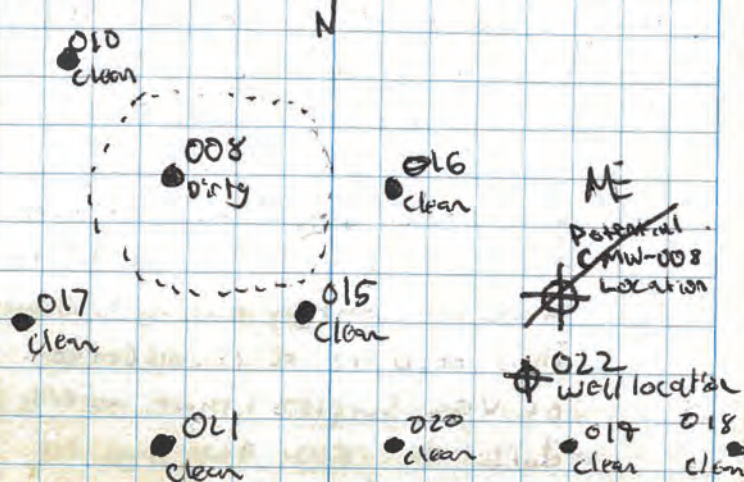
gap between two possibly separate contaminant plumes at this site (C-LT-002). 4 of these UVOST probes will be conducted. One plume located around C-MW-001 and the 2nd plume that was located yesterday and ~~ME~~ centered around location 008 and was delineated today.

1515 location 018 had no fuel signatures and is clean. Moving on to next location (019)

1530 location 019 had no fuel signatures and is clean. Moving on to the next location (020)

1600 location 020 had no fuel signatures and is considered clean. Moving on to the next location (021)

1645 location 021 had an anomalous wave form ^{at 1 ft}. Unsure if it is fuel. Conducting a 5 ft boring to investigate this signature

M. Ebert
F. RestrepoFt Morrow
7/7/19Sunny
70° 15

1700 Investigated soil boring NO fuel odor or staining at the 4 ft. Screened the signature depth with a PID and got 0.5 PPM. Took a sample 19-FM-C-LT-002-OT-021-44.5 at 1650.

~~ME 1745~~
~~F 1745~~ Arrive Back at red Building. Do End of Day Tasks

1645 7/17/19

16 M Ebert

Ft Morrow
7/8/2019Sunny
55°

- 800 Hold safety meeting at red building
- 815 Calibrate PID Zero cal - 0.0 ppm
Span cal - 100.0 ppm
- 830 Due to changing lab's The method that was used during the 1st two days of sampling was not comparable. This requires a recollection of VOC samples that were taken during the first two days of sampling (7/2-7/3)
- 910 Arrive at C-LT-002 and decided the location for C-MW-008. The location for this well will be location 022.
- 920 Conduct Boring at location 022. No fuel ^{ME} odor or staining in soil core. PID screening revealed 0.0 ppm throughout the Boring. Boring is clean.
- 935 Take sample 14-FM-C-LT-002-DT-022-16-17 at 935 at groundwater interface. GW was at 16 ft
- 1310 Arrive at B-DA-005 for sample recollection at location 007

M Ebert

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7/8/19Sunny
65° 17

- From 7-8.5 Ft BGS
- 1320 sample taken 19-FM-B-DA-005-DT-007-7-8.5 at 1320 from 7-8.5 Ft BGS
- 1350 Arrive at J-WH-003 to resample location 004 at 12-13 Ft BGS
- 1410 Take sample 19-FM-J-WH-003-DT-004-12-13 at 1410 from 12-13 Ft BGS.
- 1445 Arrive at M-DA-006 to resample locations 002 001
- 1500 Take sample 19-FM-M-DA-006-DT-001-4.5-5 ^{ME} at 1500 from 4.5-5 Ft BGS
- 1510 Take sample 19-FM-M-DA-006-DT-002-9-10 at 1510 from 9-10 Ft BGS
- 1520 Arrive at M-DA-003 to resample location 001
- 1535 Take sample 19-FM-M-DA-003-DT-001-5.5-6.5 at 1535 from 5.5-6.5 Ft BGS
- 1545 Arrive at M-PR-001 to resample location 006.
- 1605 Take sample 19-FM-M-PR-001-DT-006-8-9 at 1605 from 8-9 Ft BGS
- 1610 Take sample 19-FM-M-PR-001-DT-006-9-10 ^{ME} at 1610 from 9-10 Ft BGS

Rite in the Rain.

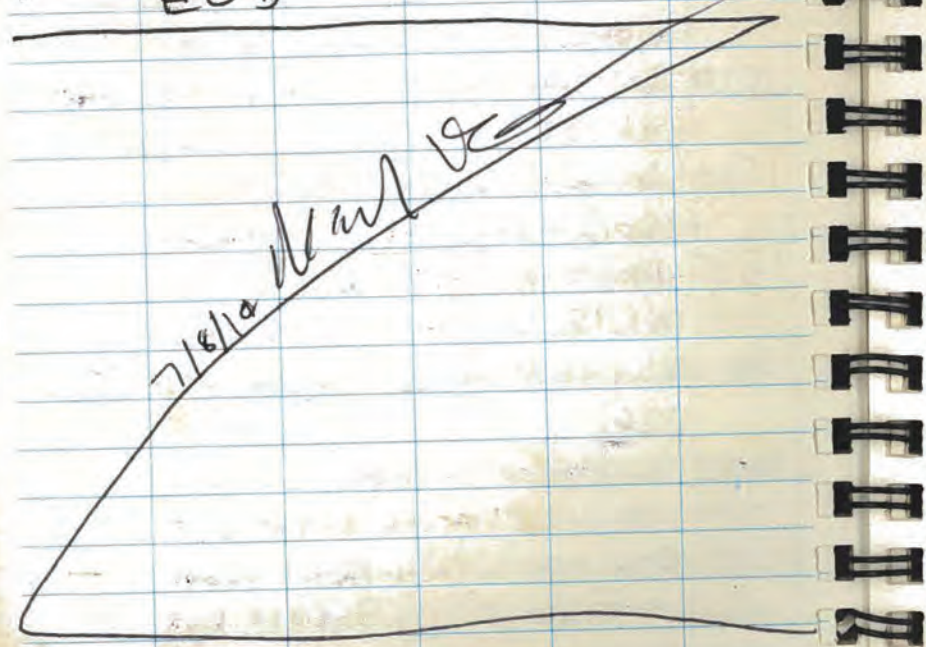
1620 Arrive at M-WH-004 to
resample location 001 from 5.5-6.5

1630 Sample 19-FM-M-WH-004-DT-001-S.S-C.S
at 1630

1645 Arrive at ~~M~~^{ME} M-PH-001 to ~~to~~^{ME}
resample location 001 from
8.5-9.5 Ft bgs

1700 Take Sample 18-FM-M-PH-001-DT-001-S.S-9.5
at 1700

1715 Arrive at red Building and
Begin packing sample containers.
EOD



800 Arrive at Red Building Hold
Safety meeting

830 Calibrate PID ~~to~~^{ME} zero cal = 0.0 ppm
Span cal = 100.0 ppm

930 Arrive at B-DA-004. Set up at this
potential location for ~~ME~~^{ME} B-MW-014
at location 014.

1030 In the iPad All locations for
B-DA-004 were logged under
B-DA-003. ~~If~~^{ME} Any reference to
this site will now be B-DA-003/004

1045 NO fuel signatures at location 014.
Location is clear. ~~to~~^{ME} B-MW-14
will be installed at this location at
a later date. Boring to 20 Ft will
now be conducted.

1115 Take Sample 19-FM-B-DA-003-DT-14-12-13
at 1115 at ground water
Interface from 12-13 ft bgs

1120 Set up at location 009 to JVOST
screen for well B-MW-004.

1145. ~~to~~^{ME} There was one anomalous
signature in the first 5 ft.
will inspect core. Most likely
not coal. Will use this ~~spot~~^{ME}

20 M. Ebert
R. Olson

P. Morrow
7/9/19

Sunny
65

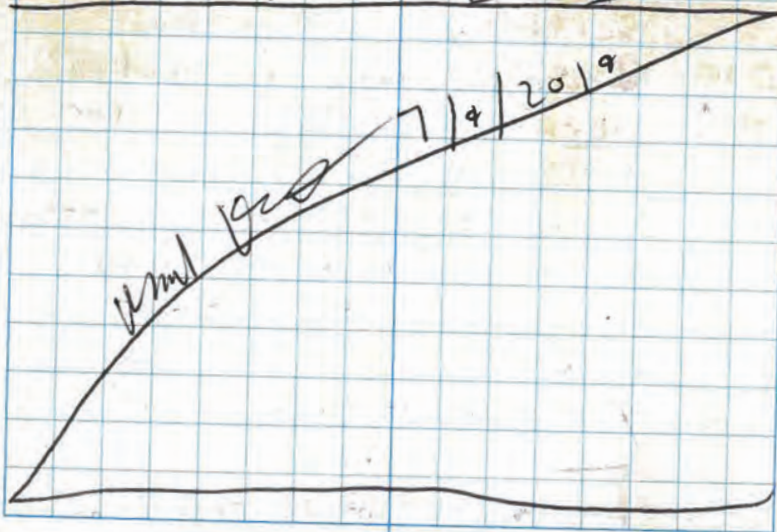
- location w/ 11 BG used for
B-MW-009. Take sample at 1445
19-FM-B-PA-003-DT-009-16.5-17.5
- 1405 Set up at location 010 for
potential location for ^{ME}B-MW-010
- 1445 No fuel signatures at location
010. B-MW-010 will be installed
at this location.
- 1500 Take sample 19-FM-B-^{ME}PA-003-DT-010-16-17
at 1500 at Ground water
interface. From 16-17 ft.
- 1510 Set up at location 011 for
potential location for
B-MW-011.
- 1530 No fuel signatures at
location 011 this is a
suitable location for B-MW-011.
- 1545 Take sample 19-FM-B-PA-003-DT-011-11-12
at 1545 ^{ME} from 11-12 ft Bgs
at the ground water interface
- 1615 Set up at location 016, potential
location for B-MW-016.
- 1635 No fuel signatures at ^{ME} location
016. This will be the location
for B-MW-016.
- 1655 Take sample 19-FM-B-PA-003-DT-016-7-8
at 1555. at ground water interface from 7-8

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7/9/19

Sunny
65 21

- 1735 Set up at location 017
The potential location for B-MW-017
Begin Uvost probe screening.
- 1800 No fuel signatures at location 017
Boing is clean and suitable for
B-MW-017. Begin soil boring to
20 ft.
- 1820 Take sample 19-FM-B-PA-003-DT-017-6.5-6.5
at 1820 ^{ME} and duplicate sample
19-FM-B-PA-003-DT-017-5.5-6.5
at 1825. Both were taken at the
groundwater interface from 5.5-6.5
- 1900 Arrive Back at red Building Do End
of day tasks. EOD



Rite in the Rain

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F Restrepo

Ft Morrow
7/10/14

Sunny
55°

- 800 Arrive at the red Building and
Hold safety meeting.
- 845 Set up at B-DA-003 location
007. potential location for
B-MW-007.
- 930 No fuel signature at location
007. Suitable location for
B-MW-007.
- 955 Take sample 19-FM-B-DA-003-DT-007-11-2
at 955 from 11-12 Ft Bgs
at the groundwater Interface
- 1020 Arrive and set up at location
008, potential location for
B-MW-008. Begin UVOST
Screening.
- 1050 No fuel signature at location
008. Location is suitable for
B-MW-008.
- 1110 Take sample 19-FM-B-DA-003-DT-008-7-7.5-8.5
at 1110 from 7.5 Ft Bgs. to 8.5
Ft Bgs. at the groundwater
Interface
- 1200 ^{ME} Set up at B-DA-005 location
~~same~~ ^{ME} 007 to resample. Duplicate
was missed in the initial
Resampling

M Ebert
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7/10/14

Sunny
65° 23

- 1215 Resample 19-FM-B-DA-005-DT-007-7-8.5
at 8.5^{ME} to 8.5 at 1215 and Duplicate
19-FM-B-DA-005-DT-007-7-8.5 at
1220
- 1400 Arrive At location 015 in
B-DA-003 and set up for UVOST
Screening
- 1430 No fuel signatures at location
015. This is an adequate ^{ME} location
for well B-MW-015.
- 1440 Take sample 19-FM-B-DA-003-DT-015-7-8
at 1440 ^{ME} from 7-8 Ft Bgs at
the groundwater Interface
- 1510 Set up at location 012, potential
Location for B-MW-012.
- 1530 UVOST screening shows No fuel
Signatures. Location 012 is suitable
location for ^{ME} B-MW-012.
- 1550 Take sample 19-FM-B-DA-003-DT-012-5.5-6.5
at 1550. from 5.5-6.5 at the
groundwater Interface.
- 1600 Set up at location 013 potential
location for B-MW-013.
- 1640 No fuel signature at location 013
Location is suitable for well,

Return to the Rain

24 M Ebert
F Restrepo

Ft Morrow
7/10/14

1715 Take sample 19-FM-B-DH-003-DT-013-6-7
at 1715 from C-7 ft Bgs at
the groundwater interface and
Duplicate 19-FM-B-DH-003-DT-013-6-7
at 1725.

1800 Use loader driven by Jeff
to Mob Drill rig to C-Street

1845 Begin UVOs + screening of location
001. Ashley Olson joins
team for drilling observation.

1900 Fuel Signature detected from
0.9 to 5.0 ft bgs. location
is Dirty and will need to
be delineated tomorrow.

1920 Arrive Back at Red Building
Do End of Day tasks
EOD

M. Ebert
7/10/14

M Ebert
F Restrepo

Ft Morrow
7/11/14

Partly cloudy
80°F 25

800 Arrive at Red Building. Hold
Safety meeting

930 Arrive at C-Street. Calibrate PTD
Zero Cal - 0.0 ppm
Span Cal - 100.0 ppm

940 Set up rig at location 002
for UVOs + screening of
the fuel signature found
at location 001. location 002
is roughly 20 ft west of
001.

1040. Location 002 Had No clear
fuel signatures from 0.9-5.0 ft
Bgs. However there was a small
anomalous wave form at 1.0 ft
Bgs. It is not considered to
be fuel by Andy. Most likely a
rock. ~~or that we saw~~ This signature
is similar to other non-fuel
signatures that have been seen
before.

1045 Start UVOs screening at location 003,
roughly 20 ft north of location 001
location 003 is about 1.5-2 ft
higher in elevation than location 001

Rite in the Rain

26

M. Ebert

Fort Morrow
7/11/18clouds
50°

1100 No fuel signature at location 003. North most probe considered clear.

1105 set up at location 004. This is the East step out from location 001, roughly 20 ft East. Location 003 is roughly ^{NE} 4 ft higher in Elevation than location 001.

1135 No ~~location~~ ^{ME} fuel signatures at location 004. There was one anomalous signature that is not suspected to be fuel at 5.0 ft Bgs. It is a single data point and is similar to the non-fuel signals that have been seen.

1140 set up at location 005. The location is 20 ft south of location 001. Location 005 is roughly 6 ft higher in elevation than location 001.

1230 No fuel signature at location 005. Location is clear. ^{ME}

1245 set up at location 002 to take a lateral comparison

M Ebert
F Rbst/100
A 01504Fort Morrow
7/11/18Partly cloudy
65°

Sample from 9.5 to 10.5 ft Bgs where the anomalous signature was located. This will confirm No-fuel

1315 Upon inspection of the Boring at location 002 there was a confining layer at 6.5 ft Bgs so sample depth was changed

^{ME} to 6-7 ft Bgs. Sample was ~~520~~ taken 19-FM-C-ST-001-DT-002-6-7 at 1305.

1320- Begin Boring at location 001.
-1335 Sample taken at the Highest PID location from 3-4 ft. Sample is 19-FM-C-ST-001-DT-001-3-4 at 1330. Vertical delineation sample was taken from 6-7 at the top of the confining layer. Sample 19-FM-C-ST-001-DT-001-6-7 taken at 1335.

1620 Arrive and set up at J-WH-003 and noticed some inaccuracies with the special data for the historical data points. Specifically the point for ^{ME}

Rite in the Rain

28

M. Ebert
F. Restrepo
A. OlsonFt Morrow
7/11/19Partly
cloudy
69

Well JTW-003. The well ~~is~~^{is} ~~at~~^{at} location 015 is off on the I pad and figure.

1630 Advance urost screening probe at possible location 007

1650 Fuel signature was found from 8.5 to 10 ft. ~~but it is~~ From 10-13 ft bgs there is a fuel signature. Location 007 is considered dirty. When a boring is done the 8.5-10 ft section will be investigated.

1710 Due to fuel being found at 007 a step out was made roughly 15 ft to the Southeast of location 007. This location is location 010

1720 Location 010 had a similar signature ^{as} location 007 from 8.5-10. And a fuel signature from 10-12 ft Bgs. A further stepout is needed

1730 Rig was moved 15 ft East of location 010. This new location

29

M. Ebert
F. Restrepo
A. OlsonFt Morrow
7/11/19
60

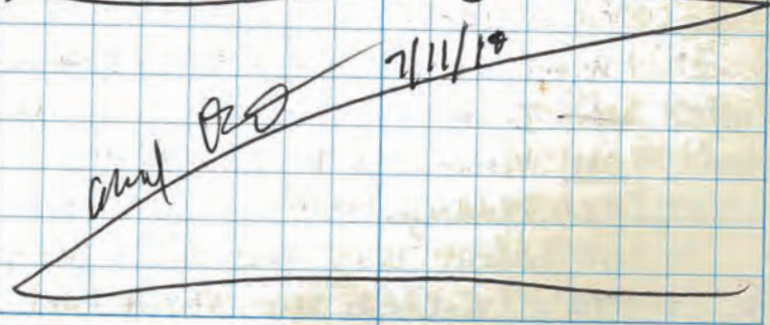
Partly Sunny

is location 011.

1755 Fuel signatures were found at location 011. No further step outs are necessary. The east/Southeast boundary are known based on historical urost and soil sample data. We are going to take a boring here tomorrow to investigate weather. The High RE at 8.5-10 is weathered fuel or an anomalous signal such as vegetation/soil

1822 A duplicate was meant to be taken at this site but more contamination was found and we ran out time.

1900 Arrive Back at The Red Building
Do End of Day tasks. EOD



Rite in the Rain

30 M Ebert
F. Restrepo

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7/12/14
Cloudy
SS

- 800 Arrive at red Building and
Hold safety meeting
- 830 Calibrate PID Zero cal - 0.00ppm
Span cal - 120.0ppm
- 915 Arrive At J-WH-003 and
Set up Rig at location 012
for UVOST screening.
- 1000 UVOST screening ^{at 012} shows the
some High RE signal that was
seen yesterday at ~~at~~ ^{ME} 8.5-10
ft Bgs at locations 007, 010 and
011. It is not known if
this is ~~for~~ ^{ME} weathered fuel or
a High RE soil. A Boring will
be conducted at location 011
to investigate this anomalous
signature.
- 1005 Begin Boring at 011 to sample
from 10-11 and investigate
High RE signature from 8.5 to 10.
- 1040 ~~ME~~ Inspection of the Boring at
011 yielded no fuel smell or
PID readings. a 4 in section
of wood was found at 10 ft.
This yielded the small fuel
signature at 10 ft shown by

M Ebert
F. Restrepo

Ft Morrow
7/12/14
Cloudy
SS

31

- EX-SITU Emulation by our UVOST
contractor Andy. The soil that
yielded the High RE was a silty
sand. Andy suggests that it is
~~ME~~ possibly weathered fuel ~~and is~~
~~MOB~~ ~~Rig~~ to location 007 to
~~conduct~~
Take Sample 19-FM-J-WH-003-DT-010-8-9
at 1020 and take Sample
19-FM-J-WH-003-DT-011-10-11 at
1025.
- 1100 Mob Rig to location 007 to
conduct Boring.
- 1150 Inspection of the Boring
yielded no odor or ~~PI~~ ^{ME} PID
Readings. Wood was found at
10-11 ft. Sample 19-FM-J-WH-003-
DT-007-10.5-12.5 was taken at 1140
and duplicate 19-FM-J-WH-003-DT
-907-10.5-12.5 taken at 1145.
These samples were taken at the
Highest RE in the Boring. Vertical
Sample 19-FM-J-WH-003-DT-007-
15-16 was taken at 1150 and
was taken at least 2 ft Below

Rite in the Rain.

32

F Restrepo
M EbertFt Morrow
7/12/19Cloudy
SS

- End of possible contamination,
1155 Set up at location 009
To UVOST screen.
- 1205 location 009 Resulted in
the same possible weathered
fuel signature from roughly 10.5-
14.9 ft Bgs. This location is
2 ft higher ^{in Elevation} than location 007.
- 1345 Arrive and setup at location
006 for UVOST screening.
- 1440 UVOST screening at location
006 showed the same High
RE signature from 13-17.5
ft Bgs. The signature that
was distinctive of wood was
also present at 14.9 ft Bgs.
No step outs will be done
contamination is further delineated
by historical UVOST.
- 1455 Set up rig at location 005
for UVOST screening. This
location along with location 006
is 3-4 ft higher in Elevation
than 007.
- 1515 UVOST screening at location 005
showed same signature as

M. Ebert
F RestrepoFt Morrow
7/12/19Partly
Cloudy
SS 33

- previous Borings at this site
from the possible weathered fuel
signature was from 12.6-16.1 ft
BGS, with the "wood" signal
from 14.1-15.0 ft Bgs. No stepouts
are necessary due to historical
UVOSTS.
- 1525 Move over to location 008
for UVOST screening. 008
is 7-8 ft higher in Elevation
than location 007.
- 1630 UVOST screening at location 008
showed the possible weathered
fuel and wood signatures
from roughly 15-19 ft Bgs.
- 1745 Begin Advancing UVOST Probe at
location 013. This location is
8-9 ft higher in Elevation than
location 007.
- 1800 UVOST screening yielded a significantly
lower ^{RE} signature (2.3%)
than previous Borings at 16.5-18
ft Bgs. This signature was similar
to the possibly weathered fuel ^{RE}
signature but a much lower

Rite in the Rain

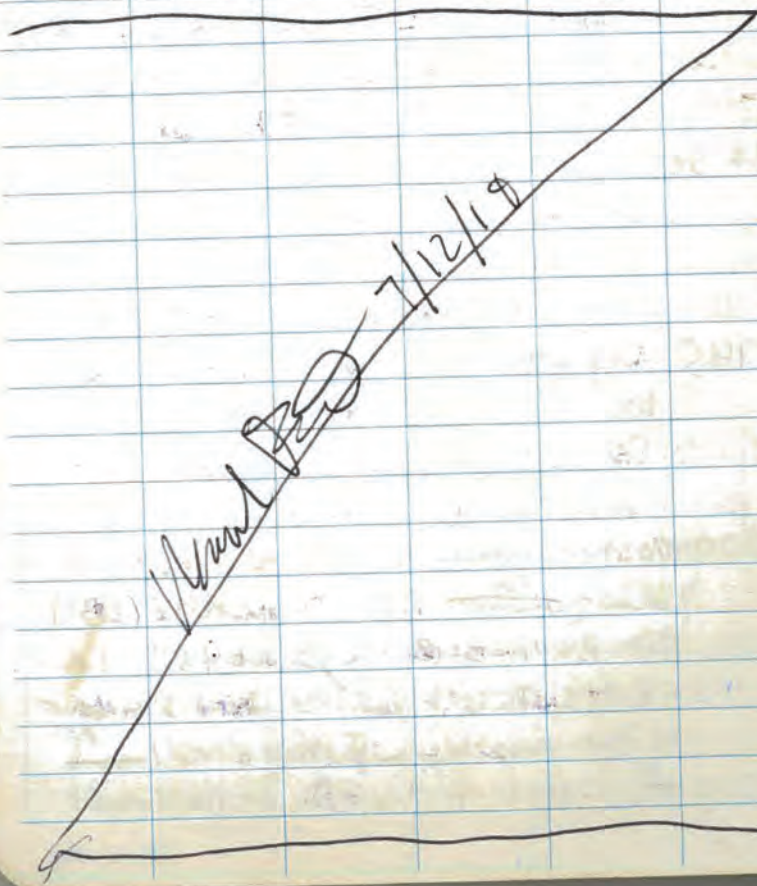
34

M. Ebert
E. RestrepoFt Morrow
7/12/19Cloudy
55°

GRE.

1820 Observation of the Soil-Boring
Yielded NO fuel odor or
PID Readings. A lateral sample
19-FM-J-WH-002-013-16.5-17.5
was taken at 1820.

1900 Arrive at Red Building to
EOD tasks. EOD

M. Ebert
E. RestrepoFt Morrow
7/13/19Cloudy
60° 35

- 800 Arrive at Red Building
Hold Safety meeting.
- 900 Arrive at J-WH-002 To
begin UVOST Screening Site.
- 915 Set up at location 007 To begin
UVOST. Delimitation of remaining
contamination AT THIS SITE
- 950 UVOST Screening at location 007
revealed fuel signatures from
1.4-5 Ft Bgs. The majority
of the contamination is from
1.4-2.5 Ft Bgs. The remaining
contamination appears to have
leached downward to roughly
5 Ft Bgs. A step out will
be performed about 15-20
ft east of location 007.
This new location will be 008
- 1000 Begin Advancing UVOST probe
at location 008
- 1020 No fuel signature at location
008. location is clean
- 1025 Set up Rig at location 006
for UVOST Delimitation.
- 1050 No Contamination/Fuel signatures

Rite in the Rain

36 M Ebert
~~ME~~

Ft Morrow
7/13/19

Cloudy
Fairy 60°

- At location 006 location
is clean.
- 1100 Move Rig to location 005 for
UVOST screening.
- 1135 UVOST screening at location
005 showed a very slight
possible fuel signature that
was 2 data points at 2.98
ft Bgs. This is believed
to be the very edge of
contamination.
- 1140 Move Rig and set up at
location 003 for UVOST ^{ME}
delineation.
- 1205 UVOST screening at location
003 showed a small possible
fuel signature from 0.6-1.8
ft Bgs. A step out ^{ME}
necessary.
- 1400 Set up at location 004 for
UVOST screening. This location
is 10 ft ^{ME} higher in elevation
than location 005 at the floor
of the excavation.
- 1420 UVOST screening at location 004
showed no fuel signatures.

M Ebert

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7/13/19

Cloudy and
raining
60° 37

- A Boring will be conducted here
to take a lateral sample from
11-12 ft Bgs. This was a
section of higher RE but no
fuel signature.
- 1440 Sample 19-FM-J-WH-002-DT-004-11-12
at 1440
- 1445 Set up at location 009 for
step out from location 003
- 1515 No fuel signatures at location
009.
- 1520 Mob to and set up at location
010 to delineate and sample.
- 1540 No fuel signatures at location 010
location is clean. Lateral sample
will be taken here with boring.
- 1620 Take sample 19-FM-J-WH-002-DT-005-15-25
at 1620, lateral delineation sample
- 1630 Move rig over to location 007
to do boring for source sample
characterization sample and for
a vertical ^{ME} delineation
sample
- 1640 Take sample 19-FM-J-WH-002-DT-007-15-25
at 1640 and take duplicate

Rite in the Rain

- Sample 19-FM-J-WH-002-DT-907-LS-2.5
at 1645. Take vertical
delineation sample 19-FM-J-WH-
002-DT-007-8-9 at 1700
- 1725 Arrive at site J-SP-002 location
001 Set up rig for uVost probe
- 1750 No fuel signatures at location
001.
- 1755 Move rig over to location 002
for uVost screening
- 1815 Location 002's clean -
Mov'g to try to find a dirty
Spot at location 003.
- 1830 Location 003 Had no fuel
Signatures.
- 1930 Stake out some well locations
At M-GS-043.
- 2030 Arrive Back at Red Building
End of Day tasks. **EOD**

~~WME~~
7/13/14

- 800 Arrive at red Building Hold
Safety meeting
- 815 Calibrate PID Zero cal - 0.0 ppm
Span cal - 100.00
- 900 Arrive at J-SP-002 location
004. One of the Drillers noticed
^{ME} test That the Extension Cylinder
bracket on the Rig was cracked
at the welding points. Drillers
said the site could be finished
safely but it must be welded
As soon as we finish the site.
- 915 Begin uVost probe at 004.
- 930 Fuel signature was found from
.5-2.5 Ft Bgs at location
004. A Boring will be conducted
At this location to sample. A
source can firmation sample and
A vertical delineation sample
will be taken.
- 1020 Inspection of the Boring at 004
resulted in No clear fuel odor or
PID Readings. A sample was taken from
.5-1.5 Ft Bgs (19-FM-J-SP-002-DT-004-5-LS)
at 1020 and a duplicate

40 M Ebert

Fort Morrow
7/14/19

cloudy
rainy 60°

19-FM-J-SP-002-DT-904-B-1.5 was taken at 1025. A vertical Delimitation Sample (19-FM-J-SP-002-DT-004-8-9) was taken at 1035 from 8-9 FT.

1040 Begin soil Boring at location 001 for A lateral delimitation Sample.

1055 Inspection of the core from location 001 yields A PID Reading from 0.5-1.5 Ft BGS of 5.2 ppm. The reading could not be repeated and may be a false positive. A confirmation sample was taken at the depth of the PID Reading to verify (19-FM-J-SP-002-DT-001-0.5-1.5) at 1055. The UVOST screening at this location showed No fuel signature and No fuel odor was detected on inspection of the core.

1105 A lateral Delimitation Sample was taken (19-FM-J-SP-002-DT-001-11-12) at 1105 from 11-12 ft BGS.

M Ebert

Fort Morrow
7/14/19

cloudy
rainy 60° 41

1130 Drillers Attempt to fix Drill rig with welder Borrowed from the village.

1500 Drill is fixed and Moved to M-PR-005 for UVOST screening and Soil Boring for well install. Set up at location ~~013~~ ^{ME} 013.

1520 No fuel signatures at location 013. There was a section of higher Re (1.5-2%) but it did not have a fuel odor form. Most likely a High organic paleosol. This section was from roughly 11.5-16 ft BGS.

1525 Begin Boring for GW Interface Sample and core log for M-MW-013.

1545 ^{ME} Inspection of the core yielded A PID Reading of 5.2 at 14-14.5 ft BGS. Section was Organic rich and had a strong Decaying organic smell. No fuel smell was noticed.

1550 Take Sample 19-FM-M-PR-005-DT-013-10.5-11.5 at 1550 at the

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7/14/19

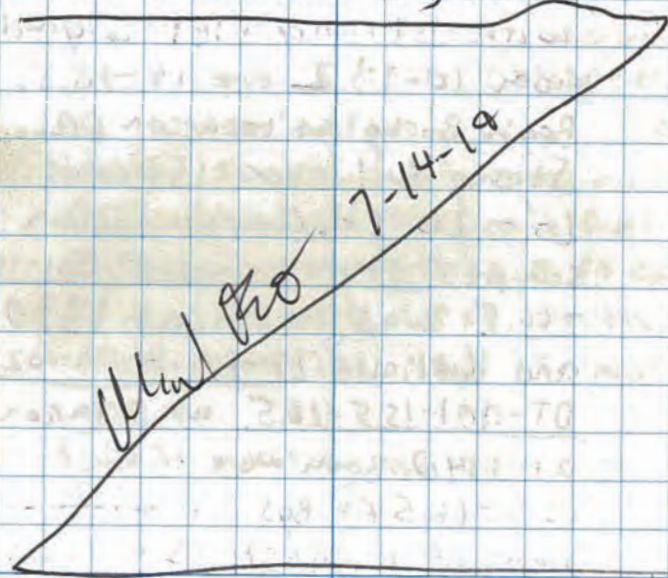
Rainy

- ground water interface from 10.5 to 11.5 Ft Bgs.
- 1620 Set up at location 006 to uVost probe for the location for M-MW-006.
- 1640 UVost shows no fuel signatures. There is a High RE section from roughly 18-24 ft. This signature is likely a High organic soil layer.
- 1650 Begin Boring for location 006.
- 1715 Inspection of the Boring showed groundwater to be at 14 ft. Sample 19-FM-M-PR-005-DT-006-13.5-14.5 was taken at the Groundwater interface from 13.5-14.5 ft Bgs. The High RE section was revealed as a Peat Rich section of the soil. Sample 19-FM-M-PR-005-DT-18-19 was taken at 1740 to characterize the Peat section.
- 1750 Set up and begin UVost at location 007 for screening for M-MW-007

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7/14/19

Rain! 43

- 1800 ~~Begin~~ ^{NE} UVost showed NO fuel signatures. The High RE did show up around 18-24 ft Most likely Peaty layer from 006.
- 1810 Begin Boring at location 007
- 1830 Sample 19-FM-M-PR-005-DT-007-10.5-11.5 was taken at 1830 at the ground water interface from 10.5-11.5. A PLO reading of 1.3 was observed at this Depth
- 1900 Arrive back at the red building and do end of day tasks. EOD



44 M Ebert,

Ft Morrow
7/15/19

Cloudy
Sunny

- 800 Arrive at red Building and
Hold safety meeting.
- 830 Calibrate PID zero cal - 0.0ppm
Span cal - 100.0ppm
- 1000 Arrive at M-UN-002 and
Set up at location ~~002~~ 001.
- 1030 Notice the UVOST has moisture
in the window. Andy leaves to
fix it.
- 1210 Andy is back from fixing the
UVOST. Set up at location 001.
- 1230 UVOS Screening showed 2
areas of Very High RE
with strong fuel signatures
from 10-13.2 and 14-16.5.
- 1240 Begin Boring at location 001.
Strong fuel odor is present from
10-20 ft. Characterization
sample 19-FM-M-UN-002-DT-001-15.5
-16.5 was taken at 1330
and duplicate 19-FM-M-UN-002-
DT-001-15.5-16.5 was taken
at 1340. Both were taken from
15.5-16.5 ft Bgs at ~~the~~ ^{the} ~~area~~
area of highest PID Reading

M Ebert

Ft Morrow
7/15/19

Cloudy

45

- 1530 Continue Boring at location 001
To find ground water. Ground
water is present at around ~~15~~ 21
ft. Hydrocarbon Sheen is present
on soil/gw Interface. Sample
19-FM-M-UN-002-DT-001-21-22 taken
at ~~15.5~~ ²¹⁻²² ft at ground water interface
from 21-22 ft
- 1545 UVOST screen to 30 ft at location
001. UVOST logs ^{log} looked similar
to the previous one done today
at this location
- 1630 Move rig to location 003,
15 ~~ft~~ ^{ft} North of the location
001. Begin UVOST delineation
of contamination.
- 1705 UVOST screening of location
003 showed a small fuel
signature from 13.3-13.9 ft Bgs.
Will step out 18 ft North.
New location will be location
004
- 1800 UVOST Screening at 004 revealed
Very small fuel signatures from 11.9
-18 ft Bgs. These detections

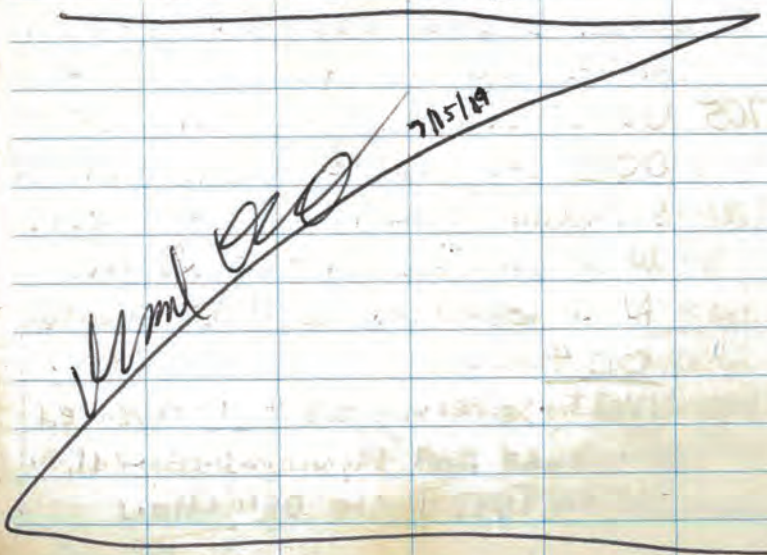
Rite in the Rain

are 1-2 datapoints a piece. This suggests that the contamination may be following small sand lenses in the soil. An additional step out (Location 005) will be done.

1820 Begin UVOST screening location 005.

1830 UVOST Screening revealed No fuel signatures at location 005. Moving on to Next Step out Direction at location 006.

1900 Arrive Back at Red Building Do EOD Tasks



800 Arrive at red Building Hold Safety meeting

830 calibrate PID zero cal - 0.0ppm
Span cal - 100ppm

900 Arrive at M-UN-002 to continue with delineation at location 006

1000 No fuel signatures at location 006. South extent delineated. Moving on to Eastern Delineation at location 007.

1015 Set up drill rig at location 007

1100 UVOST screening revealed 3 separate small sections of possible fuel signatures. 1.8-2.8 ft Bgs, 11.2-11.9 ft Bgs, and 23.5-23.8 ft Bgs. The shallow signal was the strongest with the other two being fairly minor. A step out will be necessary 20 ft to the east at location 008

1115 Begin UVOST screening at 008

1135 UVOST screening revealed 2 distinct fuel signatures from 14.9-15.5 and 19.2-19.62. These signatures are very slight but a step will be performed at location 009

Rate in the rain.

1145 Set up Rig at location 009.

1220 UVOST screening Revealed one possible fuel signature^{ME} at the probable Groundwater Interface. Possible that this is fuel sitting on the groundwater. There are also 2 other anomalous signals that are very low RE^{ME} and most likely not fuels.

1410 Set up rig^{ME} at location 012 to collect to the South East. Andy noticed the UVOST window was cracked and he repaired it.

1440 Begin UVOST screening at 010

1450 During Drill by at location 012 we hit a Hard Refusal at 8ft Dgs and could not push further.

Moving to the south by about 10-15 ft to location 011. Buried object may be concrete pad. NO fuel signatures were found.

1530 UVOST screening at location 011 hit refusal at 16.8 ft Dgs. No fuel signatures were found.

1600 Begin drilling at location 012. A stepout to the North East of location 001.

1620 UVOST screening of location 012 Revealed NO fuel signatures. Advancing a Boring at this location to take a lateral sample^{ME} at Groundwater Interface.

1635 Take sample 19-FM-M-UN-002-DT-012-25-8.5 at 1635 at the groundwater interface from 7.5-8.5. Was not able to recover the 20-25 core. The sieve clogged in the Drill Rod lodging the core in the red soil was very rocky. Going to attempt to take a deeper lateral sample at location 005.

1740

~~1720~~^{ME}

Begin Boring at 005

1805 Take sample 19-FM-M-UN-002-DT-005-22-23 at 1805 and duplicate 19-FM-M-UN-002-DT-905-22-23 at 1810

1845 Arrive at Red Building. EOD

7/16/19

Michael Ebert
Rite in the Rain

50

M Ebert

Ft Morrow
7/17/18cloudy
Cozy

800 Arrive at red Building Hold safety

Meeting.

900 Arrive at M-UN-002 calibrate

PID. Zero cal - 0.00

Span cal - 100.0

910 Set up at location 009 to do
a boring for sample.1000 drilled down to 30 ft
and could not find ground
water. It seems to be intermittent
in this area not continuous.1030 Took sample 19-FM-M-UN-002-DT-008
-22.5-23.5 at 1025 and

Duplicate 19-FM-M-UN-002-DT-004-22.5

-23.5 at 1031. This depth was
chosen because this was the
depth of ground water at
other borings in this area.1100 Begin Uvost Probe at location
014, a south east step out1130 Uvost hit refusal at 18.5 ft
soil seems very rocky and it
is giving some anomalous
signature s. A boring will be
advanced to confirm signatures
are rocks and to take a

M Ebert

Ft Morrow
7/17/18cloudy
windy

51

lateral sample.

1210 Inspection of the Boring at location
014 Revealed No fuel odor, PID
readings or visible staining. The
soil was extremely rocky and
was very difficult to drill
through. Groundwater was not able
to be reached. ~~to~~ ^{at} When attempts
to drill from 20-25 ft. Sluff was
encountered at 12 ft Bgs.
Sluff created extremely difficult
drilling and risked a non-representative
sample from 20-25 ft. Sample
19-FM-M-UN-002-DT-014-19-20 at 1210
from 19-20. This depth was chosen
because this was a contaminated depth
at location 001 near the bottom
of contamination. This was also
the most favorable soil to sample in the
core due to large rocks being in the core.

1220 Set up at location 005 for
Uvost delineation.1245 Uvost Screening Revealed No fuel signatures
High RF sections were most likely rocks
Location is considered clean

Rite in the Rain.

M Ebert

Ft Mallow
7/17/14

Cloudy
windy

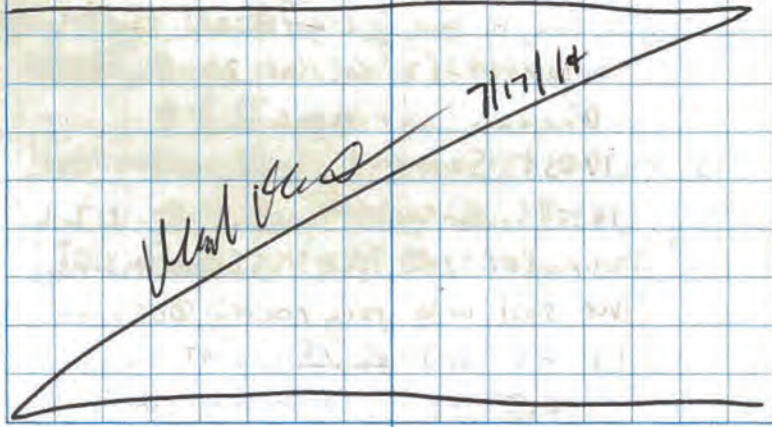
- 1500 Start Boring at location 018
- 1515 Take sample 19-FM-M-UN-002-DT-015
-14-15 at 1515.
- 1545 Take sample 19-FM-M-UN-002-DT-015-22-23 at 1545. Drilling
ME At this ~~location~~^{ME} location was difficult due to large rocks in soil samples were taken to characterize the anomalous signatures on the UVOST log that were thought to be rocks. The depths of the signatures appear to correlate with the depths of the rocks. Andy will run emulations of the rocks to characterize their signature.
- 1600 Begin UVOST screening at location 016.
- 1615 No fuel signatures at 016 location clean
- 1620 set up at location 017
- 1645 No fuel signatures at 017 location is clean
- 1650 Begin Boring for lateral sample at gw Interface

M Ebert

Ft Mallow
7/17/14

cloudy
windy 53

- 1720 Take sample 19-FM-M-UN-002-DT-017-~~22-23~~¹⁷⁻¹⁸ at 1715 at the groundwater Interface from ~~22-23~~¹⁷⁻¹⁸ ft Bgs. No fuel. Odor of staining noted and No PID Readings
- 1730 Begin advancing UVOST probe at location 018
- 1745 No fuel signatures at location 018 location is clean
- 1755 Begin advancing UVOST probe at 019.
- 1820 location 019 was clean, No fuel signatures.
- 1900 Arrive Back at res Building. DO EOD ~~same~~ tasks. EOD



- 800 Arrive at Red Building Hold
Safety Meeting.
- 900 Arrive at M-VN-002 and set
up Drill Rig.
- 930 Start UVOST screening at location
020
- 950 Hit Rock at about 16 ft Bgs during
screening and met Refusal. Moving
location 020 north by about 5 ft.
- 1010 location 020 was clear. Begin
Boring for lateral sample
- 1130 Take sample 19-FM-M-VN-002-DI-
020-20-21 at 1130 at the top
ground water interface from 20-21
ft Bgs. There was another shallow
GW interface from 12-17 ft Bgs
although the soil ^{was} drier significantly
between 12-20. at 20 the soil
became wet again.
- 1145 UVOST Screen at location 021
- 1210 UVOST screening at location 021
revealed NO fuel signatures.
The soil was very rocky past about
12 ft and ^{the} UVOST log shows
broken rocks. Refusal was met
at 21 ft Bgs. location is clear

- 1410 Set up Rig at location 022 for
UVOST Screening.
- 1430 location 022 Had no fuel
signatures. location is clear.
- ~~1445~~ ¹⁴⁴⁵ Set up at location 023 for
UVOST screening.
- ~~1500~~ ~~set up at location 024 for~~
~~UVOST screening~~
- 1500 location 023 has No fuel
signatures. location is clear.
- 1520 Set up at location 024 for
UVOST screening.
- 1545 UVOST screening revealed a
large fuel signature with a
max BRE of 213 from 12.8
-16.5 ft Bgs. Stopping out to
location 025.
- ~~1615~~ ¹⁶¹⁵ Begin UVOST screening at location
025.
- 1650 No fuel signatures at location
025. Moving to location 026.
- 1700 Begin UVOST screening at location
026.
- 1730 No fuel signatures at location
026. location is clear.

56 M Ebert

FT Morrow
7/18/19

cloudy
windy

- 1740 Setup Rig and Begin UVOST
Screening at location 027
- 1800 UVOST screening revealed No
fuel signatures at location 027
location is clean
- 1805 set up at location 028 for
UVOST screening
- 1830 UVOST screening revealed No
clear fuel signatures. There
was one anomalous signature
at 17-18 ft Bgs. This is most
likely a rock but a bery
will be done tomorrow to
confirm
- 1900 arrive Back at Red Building
do EOD Tasks. EOD

~~Final Log~~
7/18/19

M Ebert

FT Morrow
7/19/19

cloudy
rainy

57

- 800 Arrive At Red Building
Hold Safety Meeting.
- 815 Calibrate PID zero cal 0.00ppm
Span cal 100.0ppm
- 900 set up rig at location 028 at
M-UN-002 for Boring to investigate
anomalous signature from 17-18
ft Bgs from yesterday.
- 930 Take sample 19-FM-M-UN-002-DT-
028-17-18 at 930. There
was a large shattered rock
at this depth that was most
likely causing the anomalous signature.
- 1030 Begin to Mob the rig to M-PR-001
to install 4 wells.
- 1115 Begin UVOST Probe at M-PR-001
location 004 potential location
for M-MW-004.
- 1130 UVOST screening revealed no fuel
signatures. The High RE section
in the UVOST log is most likely
a Paleosol. Will inspect in Boring
- 1135 Begin Boring at location 004
- 1210 Sample 19-FM-M-PR-001-DT-004-9.5-10.5
Taken at GW Interface from

Rate in the Rain.

58 M Ebert

Pt Morrow
7/19/18

At ME
Cloudy

9.5-10.5 at 1210

1420 Set up Rig at location 005
to do UVOST Screening and Boring
for ~~ME~~ MW-005.

1500 UVOST screening Revealed No
fuel signatures. location ⁰⁰⁵ is clean.

1505 Begin Boring at location 005

1530 Take sample ~~at ME~~ ~~FM-005~~

19-FM-M-PR-001-DT-005-9-10 at

1530 at the groundwater
Interface from 9-10 ft Bgs.

1845 Set up Rig at location 003
for UVOST screening and Boring
ME for M-MW-003.

1541605 UVOST screening Revealed no
fuel signatures. location 003 is
clean.

1610 Start Boring at location 003

1645 Take sample 19-FM-M-PR-001-DT-
003-12.5-13.5 at 1645 at the
groundwater Interface front ^{PR}
12.5-13.5 ft Bgs.

1715 Set up Rig at location ~~006~~ ⁰⁰⁷ for
UVOST Screening and Boring for
M-MW-006.

M Ebert

FT Morrow
7/19/18

ME Cloudy
rainy 59

1730 ^{ME} UVOST screening Revealed A fuel
Signature from 6.1-10.7 ft
Bgs. This location is HOT. With
A MAX RE OF 3.5.

1740 Begin Boring at location
007.

1800 Inspection of the core from 007
Revealed strong fuel odor and
staining with ^{ME} with High (>350ppm)
PID Readings from 6-12 ft Bgs.
PID Gave Error on this interval
of 15000 over This is assumed
as a very High PID Reading.
GW Interface Appears contaminated.

1805 Take sample 19-FM-M-PR-001-DT-
007-9.5-10.5 at 1805 and duplicate
19-FM-M-PR-001-DT-907-9.5-10.5
at 1820. Both were taken at
The gw Interface at 9.5-10.5
ft Bgs.

1800 Arrive Back at Red Building
Do End of Day Tasks
EOD

7/19/18

[Signature]

Rate in the Rain

60 M. Ebert
L. Lucasson Ft Morrow 7/20/14 Cloudy
rainy

800 Arrive at Red Building Hold

Safety Meeting.

815 Calibrate PID using different
PID than normal. Using Ahtna
Owned PID. Zero Cal - 0.0 ppm
Span Cal - 100.0 ppm

915 Arrive at M-GS-033/M-PR-005
and set up Drill Rig at location
032. All locations collected
today at this site are under
M-PR-005 in the Road.

0945 Begin UOST screening at location
032. The goal for today is
to verify the extent of the
peat layer that was found
and verify that it is what
is causing the "possible contamination
or fuel signatures" that the
UOST shows.

1000 UOST screening revealed no peat
layer here at 032. A Boring will
be conducted and samples will be
taken at the gw interface and
at the depth of the peat layer
or ~~highest~~ ^{to} at other borings or the
highest PID reading.

M. Ebert
L. Lucasson Ft Morrow 7/20/14 Cloudy
rainy 61

1015 Begin Boring at 032.

1045 Take sample ~~at~~ ^{at} 19-FM-M-PR-005-DT-032-8.5-10.5 at 1045 at the
groundwater interface. Groundwater
only exists in this Boring ~~total~~ ^{ME}
from 8.5-10.5 ft Bgs Below is Not
Saturated.

1050 Take Sample 19-FM-M-PR-005-DT-032-21-22 ^{ME/MSD} at 1050. This
depth was where the peat exists
in other borings. No peat was
found in this Boring.

1100 Set up at location 033 for
UOST and Boring

1120 UOST screening shows possible
peat from 17-23.

1130 ~~Bg~~ ^{ME} Begin Boring at 033.

1145 Take sample 19-FM-M-PR-005-DT-033-10-11
at 1145 at the groundwater interface
from 10-11 ft Bgs.

1155 Take sample 19-FM-M-PR-005-DT-033-19-20 ^{ME} at 19-20 ft Bgs at 1155
and duplicate 19-FM-M-PR-005-DT-933-19-20 ^{ME} at 1200. This ~~sample~~ ^{ME} Both
were taken at the depth of the

Rite in the Rain

62 M. E. Bort
L. L. Uchissen

Ft Morrow
7/20/14

Cloudy
raining

- highest %RE in the vrost log. This depth was almost all peat 90-100% organic matter.
- 1210 Begin vrost at location 034.
- 1230 vrost screeny Revealed possible peat layer from ~~14.8-23~~ ^{18.8-23} ft Bgs. There was an anomalous waveform from 12.5-13.8 that will be inspected in the Boring. Most likely Rocks.
- 1400 Begin Boring at 034.
- 1430 Take sample 19-FM-M-PR-005-DT-034-15-16 at 1430 at the ground water interface from 15-16 ft. Sample 19-FM-M-PR-005-DT-034-19-20 taken at depth of highest %RE. Sample was taken at 1435 from 19-20 ft. Boring Revealed ~~the~~ ^{4E} A peat layer from 17-24 ft Bgs. The anomalous signature seemed to be a gravel layer. Andy took a sample for Evaluation.
- 1445 Begin vrost at location 035
See Part 2 of Field Book

Drill/Derek



2019

Rite in the Rain

ALL-WEATHER
UNIVERSAL

Nº 373N

PH Fort Morrow

Phase III RI

Part 2



Name

Address

Phone

Email

Projects



RiteintheRain.com

MEbert
2 L. Lugasser

Ft Morrow
7/20/19

Cloudy
rainy

Duplicate were taken at depths
of highest % RE in the peat
lay 6'.

1700 Begin UVOST screening at location
037

1720 UVOST screening revealed no
fuel signatures. A possible peat
layer at 16-20 ft Bgs. with
a Max RE at 16.12.

1750 Sample 19-FM-M-PR-005-DI-037-11-12
at 1740 at the ground water
interface from 11-12 ft. Take

sample 19-FM-M-PR-005-DI-037-17-18
at 1745 from 17-18 ft. Comparison
of the peat in the core and stuff
from above in the bucket. It
difficult to determine where the
highest % RE section was. In the core
the top of the peat was at roughly
17 ft Bgs due to compression of
the soil. The top of the peat
layer in the core is assumed
to be where the highest % RE was
based on the UVOST log.

1800 Start UVOST at location 038

Scale: 1 square =

M Ebert

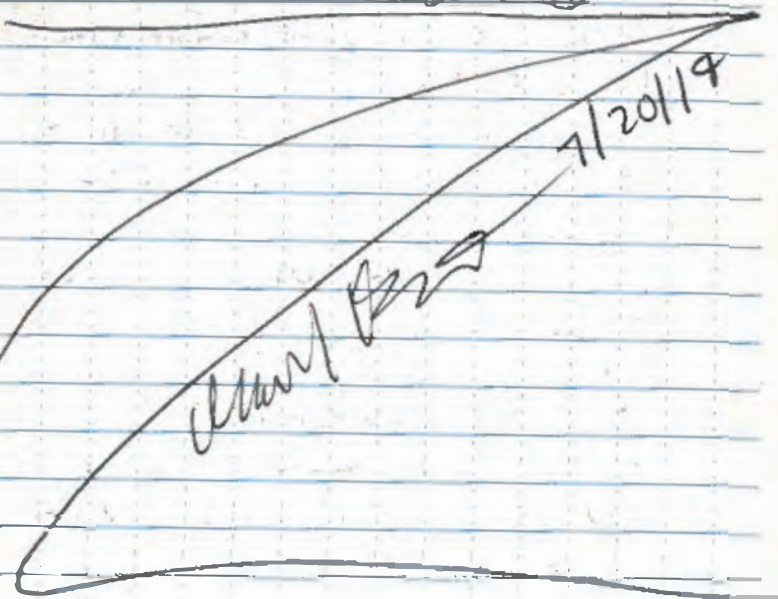
Ft Morrow
7/20/19

Cloudy
rainy

~~1815~~
~~1815~~ UVOST screening ~~revealed~~ ^{PE} Revealed
NO fuel signatures. Potential peat
1840 layers from 14-18 ft Bgs

~~1840~~ Sample 19-FM-M-PR-005-DI-038-12-0
taken at ~~1830~~ 1830 at the
GW interface from 12-13 ft Bgs.
Sample 19-FM-M-PR-005-DI-038-14-15
taken at 1840 at depth with
its unique wave form. Unique waveform
is the peat layer.

1900 Arrive Back at Red Building
Do EOD Tasks. EOD



Scale: 1 square =

Plot in the Rain.

M Ebert Ft Marrow Cloudy
7/21/19

800 Arrive at red Building Hold

Safety Meeting.

8th real. waste PID zero cal - 0.0 ppm
spn cal - 100.0 ppm

930 Begin drilling at M-PR-005
location 013 for Discrete Post
Sample from 14-15 ft Bgs.

945 Take sample 19-FM-M-PR-005-DT-013-14-15
at 945 from 14-15 ft bgs. Take another
19-FM-M-PR-005-DT-913-14-15 at
956.

1025 Set up rig for sampling at location
007 for a peat sample from
19-20 ft Bgs

1040 Take sample 19-FM-M-PR-005-DT-007
-19-20 at 1040 from 19-20
ft Bgs.

1130 Arrive at M-PR-001 To begin setting
wells.

1200 Set Rig up at location 004 to
Install M-MW-004

1300 well M-MW-004 successfully installed
TD - 16.5 ft screened Interval -
16-6 ft bgs. Stick up height 2.0
ft above ground surface. Water Level

Scale: 1 square = _____

M Ebert Ft Marrow Sunny
L Hoffmann 7/21/19

11.08 ft BTOC.

1440 Set up for well install at location
005 for ~~new~~ M-MW-005

1600 1st Attempt at installing M-MW-005
Resulted in 6 ft of Heave
across the whole screened interval
from 15.5 to 9.5. Will attempt
a second time to install the
well

1705 2nd attempt was successful.
M-MW-005 installed
~~TD - 15.58 ft Bgs~~ SI - 15.58 - 5.58 ft
TD 16.08 ft Bgs
DTW - 11.44 ft BTOC
Stick up Height - 2.94 ft AGS

1720 Set up at location 003 for installation
of M-MW-003.

1830 M-MW-003 installed.
TD - 17.96 ft Bgs SI - 17.46 - 7.46 ft Bgs
DTW - 12.36 ft Bgs
Stick up Height - 2.9 ft AGS

1900 Arrive Back at Red Building

EOD

Cloudy 7/21/19

Scale: 1 square = _____

Return to Pen.

6 M. Ebert

Ft Morrow
7/22/14

Clouds

800 Red Build by Safety Meeting

1015 Arrive at M-PR-001 to install

Final well at location 006/007

This well is at the source of
the contamination and is contaminated.

All soil cuttings will be drummed
for ~~waste~~ and tested as waste.

1130 Well ~~M-PR-001~~ M-MW-006

Installed TD = 15.73 ft bgs

SI = 15.23 - 5.23 ft bgs DTW = 9.15 ft bgs

Stick up Height = 2.7

1500 Arrive at B-DA-003/004 to

Begin installing wells. Set up
at location 015 to install

B-MW-015

1600 Finished installing B-MW-015

TD = 14.0 ft bgs DTW = 9.46 ft bgs

Screened interval = 13.5 - 3.5 ft bgs

Stick up Height = 2.63 ft bgs

1620 Begin augering at location 008

for B-MW-008

1730 Finished installing ~~M-PR-001~~ B-MW-008

TD = 14.52 ft bgs DTW = 11.7 ft bgs

SI = 14.02 - 4.02 ft bgs

Stick up Height 2.28 ft bgs

Scale: 1 square = _____

M. Ebert

Ft Morrow
7/22/14

Sunny 7

1740 Begin augering ~~at~~ ^{at} location
007 for ~~M-PR-001~~ B-MW-007

1690 Finished installing B-MW-007

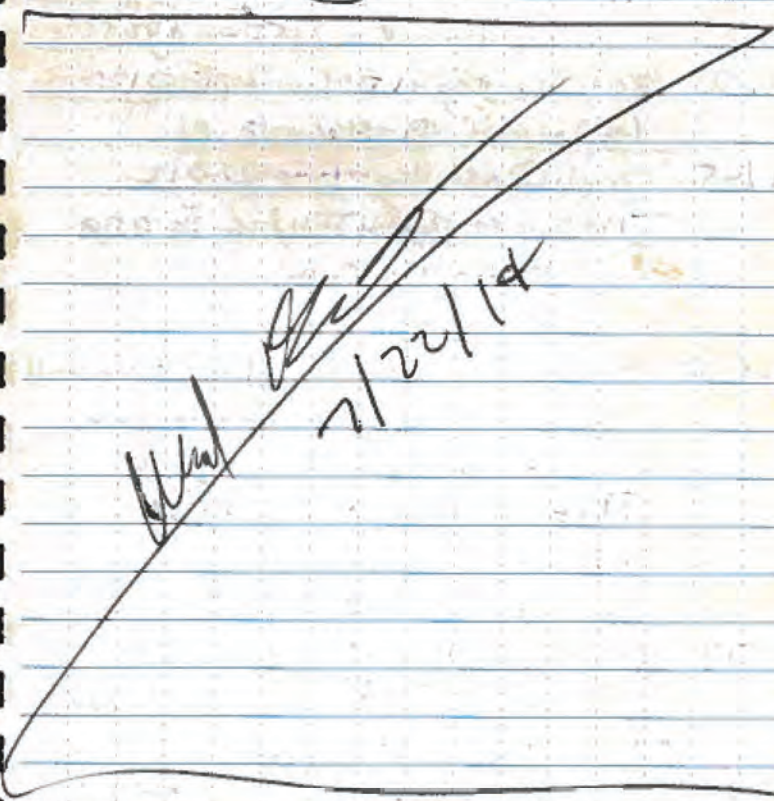
TD = 18.15 ft bgs DTW = 13.1 ft bgs

SI = 17.65 - 7.65 ft bgs

Stick up Height = 2.7 ft bgs

1930 Arrive Back at red Build by

EOD



Scale: 1 square = _____

Ret in the Rain

8 M Ebert

Ft Morrow
7/23/14

Sunny

800 Arrive at 101 Building and
Hold safety Meeting930 Arrive at B-DA-003~~004~~ and set
up at location 013 to install
B-MW-013.1030 Finish installing B-MW-013.
TD = 13.5 Ft Bgs DTW = 7.85 Ft Bgs
SI = 13 - 3 Ft Bgs

Stick up Height = 2.5 Ft Ags

1100 Set up rig at location 012
to install B-MW-012.1145 Finish installing B-MW-012
TD = 12.9 Ft Bgs DTW = 6.36 Ft Bgs
SI = 12.4 - 2.4 Ft Bgs

Stick up Height = 2.32 Ft Ags

1205 Set up at location 017 to install
B-MW-017.1250 Finish well B-MW-017
TD = 12.6^{Ft} Bgs DTW = 8.49 Ft Bgs
SI = 12.1 - 2.1 Ft Bgs

Stick up Height = 2.62 Ft Ags

1512 Arrive at M-UN-002 and
Set up at location 008 to sample
at 15-16 and 17-20 Ft Bgs

1650 Drilling at 008 was difficult

Scale: 1 square =

M Ebert

Ft Morrow
7/23/14

Sunny

all a Macro core Steel was ^{WE} ~~to~~lodged in a Sample Rod and it is
not coming out. Drilling conditions
are unfavorable. Moving on to location
004 for now.1655 Start Drilling at location 004
for characterization sample
and vertical1720 Finish Boring at 004. No PID Readings
or Fuel odor observed. Sample
19-FM-M-UN-002-DT-004-12-13 taken
at 1710 at UVOST log anomalies.
Sample 19-FM-M-UN-002-DT-004-22-24
taken at 1720 as a vertical
vertical, at GW Interface.
Soil was only wet NOT saturated1730 Start Boring at location 003.
1620 Inspection of the Boring revealed
Strong ^{WE} fuel odor and High
PID Readings from 13 - 22 Ft Bgs.
Sample ^{WE} 19-FM-M-UN-002-DT-003-13.5-14.5
taken at 1740 at UVOST fuel signature
Depth. Sample 19-FM-M-UN-002-DT-003-24-25
at 1810 and Duplicate 19-FM-M-UN-002-DT
903-24-25 at 1820.

Scale: 1 square =

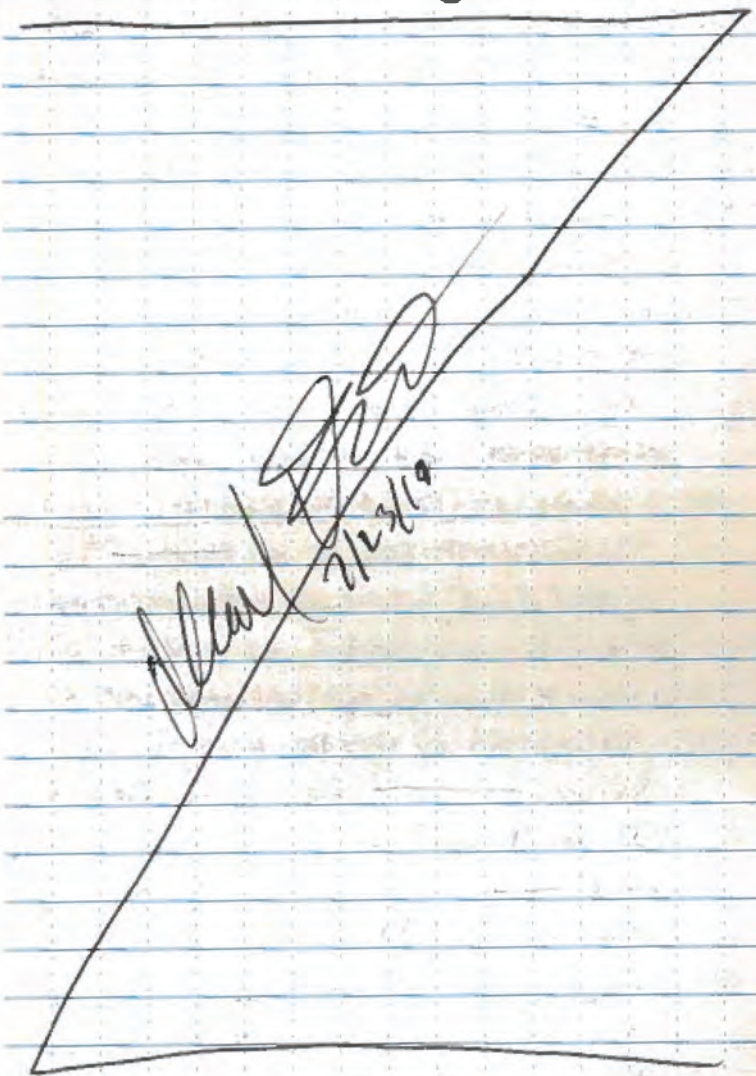
Return to Rain.

10 M Ebert

Ft Morrow
7/23/19

Sunny

1845 Arrive Back at Red Building
Do End of Day tasks



Scale: 1 square = _____

M Ebert

Ft Morrow
7/26/19

Partly cloudy
11

800 Arrive at Red Building and hold
Safety Meeting

830 Calibrate PID zero cal - 0.0ppm
Span cal - 100.0ppm

900 Arrive at M-UN-002 set up for
Boring at location 024.

940 Inspection of the Boring ~~showed~~^{revealed}
Revealed strong fuel odor and
High PID (>300ppm). Fuel contamination
Matched water depth exactly.

found saturated soil at 13.5-15ft
and fuel contamination began at

same depth. Took sample 17-FM-MUN
-002-DT-024-13.5-15 at 940 and

Duplicate 17-FM-MUN-002-DT-024-13.5-15
at 945 at the ground water

interface from 13.5-15 ft.

950 While Boring 15-20 ft Bys there
was zero recovery. Sand liquified
in the Barrel and ~~leaked~~^{leaked} out

back into hole. Moved the
rig over ~~2~~¹⁰ ft ~~and began~~^{to try}

to get better recovery at 15-20
ft. This location seems to have

more water than any other location

Scale: 1 square = _____

Rite in the Rain.

12 M Ebert

Ft Morrow
7/24/14

Partly
cloudy

At this site. Recommend installing
source well here at 022.

1030 2nd attempt at a recovery at 15-
20 ft BGS was successful a full
recovery was obtained. The entire
core was completely liquified.
The only reason we got any recovery
was a rock lodged into the cutting
shoe at 20 ft. Strong fuel odor
and high PID readings near
top of core with less odor
and lower PID readings at
bottom of core.

1050 Set up Rig at location 002
for sandblasting

1130 Begin At location 007 ~~at 10-15 ft~~ ^{ME}
~~in the top 0-10 ft was difficult~~ ^{ME}
was difficult and got the 5^{ft} 10-15
and 15-20 core sections stuck in the
Drill rods due to large rocks.
Only got core from 0-10 ft.
Still got the necessary samples
sample 19-FM-M-UN-002-DT-007-1.5-3 was
taken at 1115 at High % RE Section
in UVEST log. Sample 19-FM-M-

Scale: 1 square =

M Ebert

Ft Morrow
7/24/14

13

-UN-002-DT-007-9-10 was taken
at 1200 and was taken at the
lowest depth in the core recovered
for a vertical sample.

1210 Begin Drilling at location 022.

1250 Take sample ~~19-FM-M-UN-002-DT-022-6-8~~
at 1250 at the groundwater interface
from 6-8 ft BGS. Soil never
got saturated but stayed consistently
wet down to 20 ft BGS. The core
sleeve got stuck in the sample
rod from 20-25 due to large
rock lodged in the drill rod. NO
Return.

1500 Arrive at B-DA-003/9 to install
more wells. Set up at location 011.
To install B-MW-011.

1630 Finish installing B-MW-011
TD = 16.78^{ft} DTW = 14.10 ft B to C
SP = 16.28 - 6.28 ft BGS
Stick up height = 2.5 ft Ags

1715 Begin test augering at location
010 for B-MW-010.

1815 Finish install B-MW-010
TD = 22.36 ft BGS DTW - No WLM

Scale: 1 square =

Return to Rain.

M Ebert

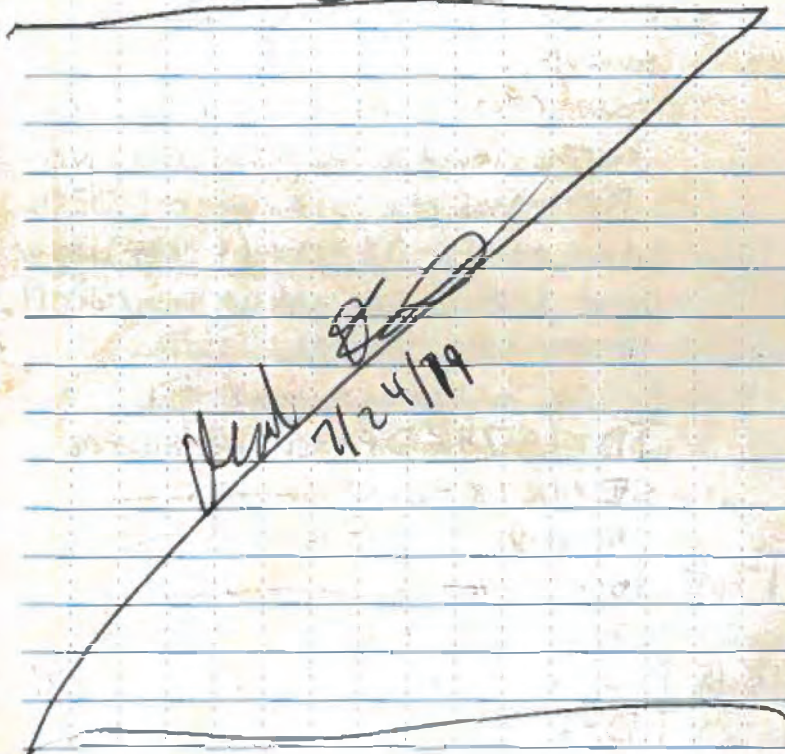
1 ft morning partly cloudy
7/24/14

SI = 21.86 - 11.86 Ft Bgs

Stick up Height = 2.6 Ft Age

1830 Arrive at Red Building Ao
R&RS.2000 Take equipment Blank of
Autra pump2130 Take equipment Blank of
ITT pump

EOD



Scale: 1 square = _____

M Ebert

1 ft morning
7/25/14

partly cloudy

800 Hold safety meeting at
Red Building915 Arrive at B-DH-003/act to install
well at location 009.1023 Finish installing B-MW-009
TD = 23.5 Ft Bgs DTW = 12.94 Ft Bgs

SI = 23 - 13 Ft Bgs

Stick up Height = 2.57 Ft Age

1100 Begin Drilling at location ~~014~~ 014
To install ~~B-MW-014~~ B-MW-014.1145 Finish installing B-MW-014
TD = 17.82 Ft Bgs DTW = 15.85 Ft Bgs

SI = 12.38 - 7.38 Ft Bgs

Stick up Height = 3.0

1215 Set up at location 016 to
install well B-MW-016.

1300 Finish well B-MW-016.

TD = 14.55 Ft Bgs DTW = 11.11 Ft Bgs

SI = 14.05 - 4.05 Ft Bgs

Stick up Height = 2.62

1545 Arrive at C-ST-001 start

Boring for a lateral sample

from 7-8 at location 005

1600 take sample 19-FM-C-ST-001-OT-005
- 7-8 at 1600

Scale: 1 square = _____

Return to Rain

16 M Ebert Ft Morrow cloudy
7/25/14 rainy

1645 Arrive at C-LT-002 to
install wells. Set up Rig at
location 002 to do Boring
then well install

1735 Take sample 18-FM-C-LT-002-
DT-009-10.5-11.5 at 1735
and Duplicate 18-FM-C-LT-002
DT-909-10.5-11.5 at 1741.
Both taken at the groundwater
Interface

1755 Finish installing ~~A-MW-009~~ B-MW-009
TD=18.2 Ft Bgs DTW=15.65 Ft Bgs
SI=17.7-7.7 Ft Bgs
Stick up Height = 2.72 Ft Ags

1805 Set up at location 011 to
install B-MW-011

1900 Finish installing B-MW well
TD=23.3^{23.3} Ft Bgs DTW
SI=23.3-13.8^{12.8} Ft Bgs
Stick up Height = 3.04 Ft Ags

2000 Arrive Back at Red Building
and do EOD Tasks, EOD

~~Real 80 7/25/14~~

17 M Ebert Ft Morrow cloudy
7/26/14

800 ~~ms~~^{ME} Arrive At Red Building and
Hold safety meeting C-MW-009

915 Arrive at C-LT-002 Well ~~B-MW-009~~
had less than a foot of water
in it so it will be re-installed.
Well ~~B-MW-011~~ had more water
than expected so it was pulled
up 6 inches.

1115 Finish + installing ~~B-MW-009~~ C-MW-009
TD=22.5 Ft Bgs DTW=21.3 Ft Bgs
SI=22-12 Ft Bgs
Stick up Height = 2.9 Ft Ags

1130 Started Drilling at location 022
for ~~B-MW-022~~ C-MW-022.

1215 Finished installing C-MW-022
TD=22.7 Ft Bgs DTW=
SI=22.1-12.1 Ft Bgs
Stick up Height = 3.1 Ft Ags

1250 Set up at location 014 to install
~~B-MW-014~~ C-MW-014

1410 Finish installing ~~B-MW-014~~ C-MW-014
TD=22.2^{22.2} Ft Bgs DTW = WLM Not Working
SI=21.7-11.7 Ft Bgs
Stick up Height = 2.7 Ft Ags

1530 Arrive South east of C-LT-002

18 M Ebert Ft Marrow Sunny
7/26/14

To do Background TOC and
Physical Parameters. These
are done at locations 206-213
+H^{NE} 1630 Start Boring at location 206.
The soil types that are
Present are A Very Dark
Brown, Homogeneous, loose, moist
Silty sand with gravel. Also,
A Tan and Brown, well graded
Homogeneous, stiff, saturated,
Silty sand with pumice gravel.
The first soil represent the
marine terrace deposits and the second

1704 A Volcanic Tuff.
+H^{NE} 1630 Take sample 19-FM-2-Test-00-
MGS DT-206-7-8 at 1704

1710 Take sample 19-FM-2-Test-00-DT
-206-14-15 at 1710 Tuff

1726 Take sample 19-FM-2-Test-00-
[PP] DT-207-7-8 at 1726 MGS

17263 Take sample 19-FM-2-Test-00-DT
-207-14-15 at 17263 Tuff

1748 Take sample 19-FM-2-Test-00-
[PP] DT-208-12.5-13 at 1748 Tuff

1747 Take sample 19-FM-2-Test
MGS = silty sand with gravel

Scale: 1 square =

M Ebert Ft Marrow Sunny
7/26/14 19

-00-DT-208-7-8 at 1747 MGS

1758 Take sample 19-FM-2-Test-

00-DT-209-7-8 at 1758 MGS

1801 Take sample 19-FM-2-Test-00-DT-
209-14-15 at 1801 Tuff

1812 Take sample 19-FM-2-Test-00-DT
-210-7-8 at 1812 MGS

1815 Take sample 19-FM-2-Test-00-DT
-210-14-15 at 1815 Tuff

1829 Take sample 19-FM-2-Test-00-DT
-211-7-8 at 1829 MGS

1831 Take sample 19-FM-2-Test-00-DT
-211-14-15 at 1831 Tuff

1839 Take sample 19-FM-2-Test-00-DT
-212-7-8 at 1839 MGS

1841 Take sample 19-FM-2-Test-00-DT-
-212-14-15 at 1841 Tuff

1845 Take sample 19-FM-2-Test-00-DT
-213-7-8 at 1845 MGS

1850 Take sample 19-FM-2-Test-00-DT
-213-^{NE}14-15 at 1850 Tuff

2000 Arrive at Rod Building

~~2000~~ ~~Wind~~ ~~ME~~
~~NOT~~
~~EOD~~

Scale: 1 square =

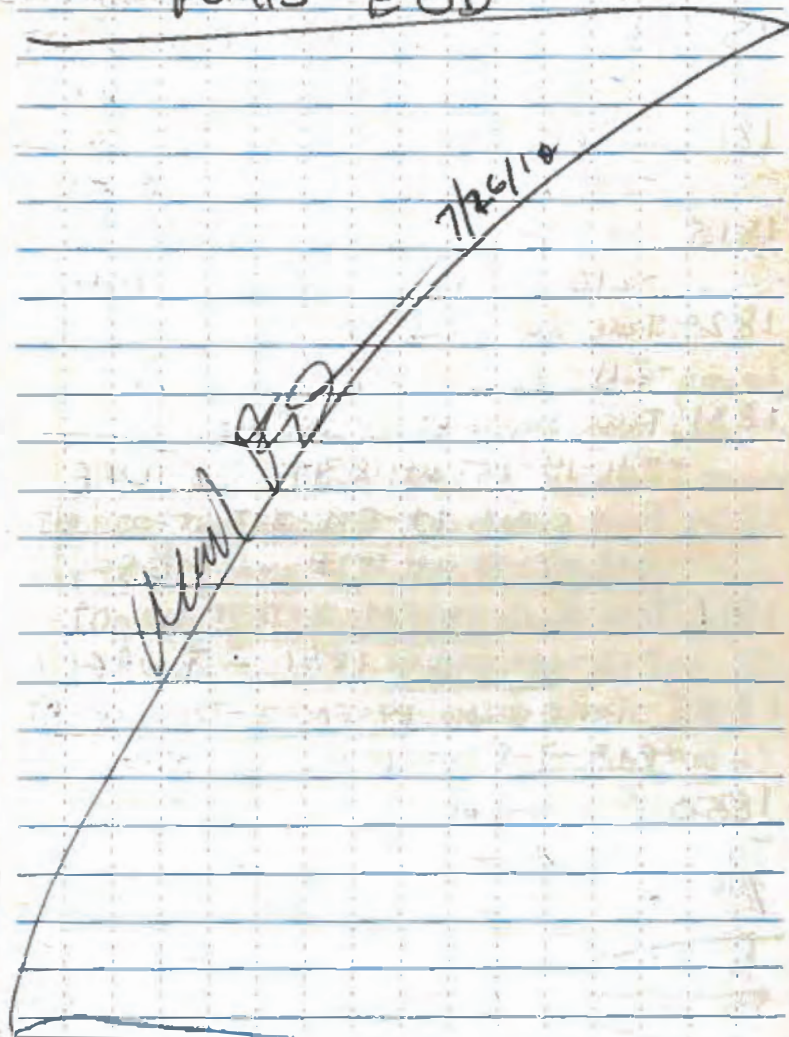
Return to Rain

M. Ewert
20

FT Morrow
7/26/18

Partly
cloudy

2200 Take on Equipment Blanks
for each of the 2 Marscan
PUMPS EOD



Scale: 1 square =

M. Ewert

FT Morrow
7/27/18

Partly cloudy
21

800 Arrive at red Building ^{SE}
Hold Safety ~~Meeting~~ ^{Meeting}
900 Mob Drill To M-UN-002
To install wells. Not enough time
Before Driller changeover so
Heading back to red Building.
1000 Take Equipment Blanks on
Both of the Bladder Pumps
1215 Arrive Back at M-UN-002
To install wells. set up drill
at location 017.
1415 Finish installing well M-~~UN~~^{MW}-017
TD=24.4 FT Bgs DTW=23.9 FT Bgs
SI=23.9-13.9 FT Bgs
Stickup Height = 1.0 FT Bgs
1430 Set up at location 020 for
Installation of M-MW-020
1700 Finish installing M-MW-020
TD=26.55 FT Bgs DTW=Now
SI 26.05 - ~~16.05~~^{16.05}
Stick up Height = 2.26
1720 Start Boring at location 027.
1830 Take Sample 19-FM ~~UN-002~~^{UN-002}-DT-027-27-28
at 1830 with MS/MSD at the groundwater
Interface from 27-28.

Scale: 1 square =

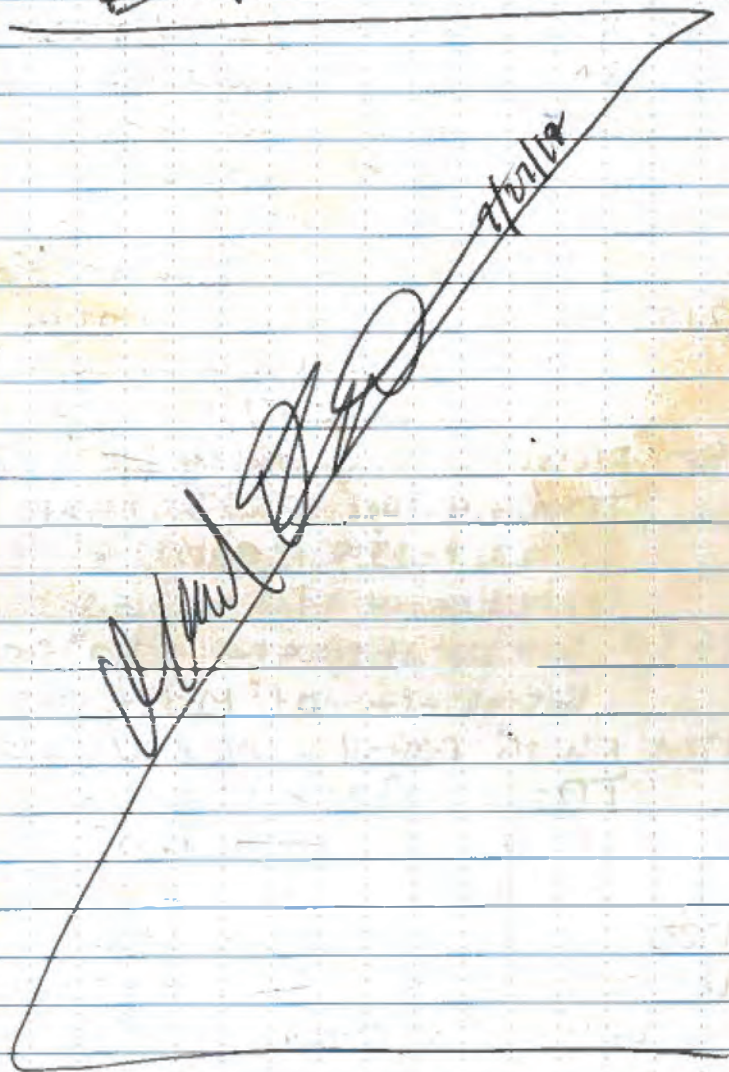
Return to Rain

22

M Ebert

Pt Morrow
7/27/14

raining

1930 Arrive Back at red Building
EOD

Scale: 1 square = _____

M Ebert

Pt Morrow
7/28/14cloudy
windy raining²³800 Arrive at Red Building Hold
Safety Meeting900 Arrive at M-UW-002. Attempt to
Extend Boring to 35 feet at
location 027.1100 Met refusal at 30 ft Bgs
at 027. Material is not
suitable for Macrocoring drilling.1120 Begin augering for well installation
attempt to auger past 30 ft
to a Max Depth of 35 ft.1645 Finished Installing M-MW-027
No water was present in
well upon installation
presumed Dry well. NO
Ground water present
at this location.TD = 34.0 DTW - N/A
SP = 33.5 - 23.5

Stick up height = 2.53

1650 Pooled M-MW-020. Well was
Dry even though there was
wet soil upon installation
will Re install tomorrow
to a deeper depth ~~to~~ ^{to} 35 ft.

Scale: 1 square = _____

Rite in the Rain

M Ebert

Pt Morrow
7/28/19cloudy
rainy
windy

To see if there is Deeper
Groundwater

1700 Began Augering for M-MW-
-UN-001

1920 Finish well M-MW-UN-001

TD - 27.0 ft Bgs DTW = Dry

SP - 26.5 - 16.5 ft Bgs

Stick up Height 1.72 ft Ags

Waste Samples Taken Today

ID

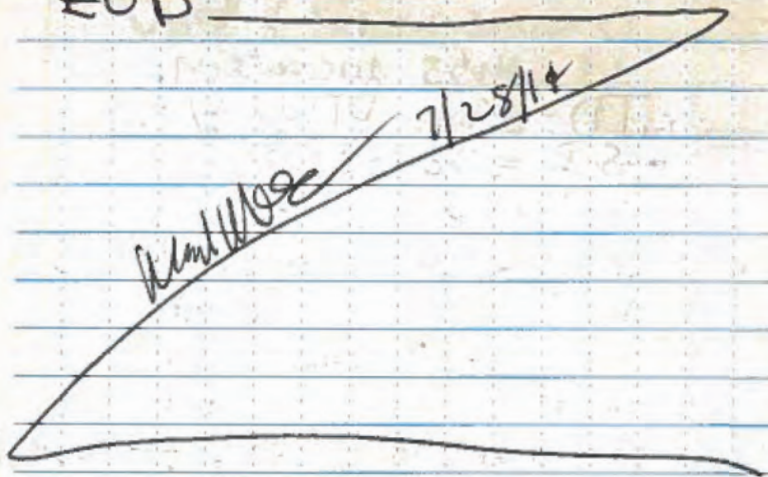
19-FM-Waste-DT-008 at

19-FM-Waste-DT-009 at

19-FM-Waste-DT-010 at

19-FM-Waste-DT-020 at

EOD



Scale: 1 square = _____

M Ebert

Pt Morrow
7/29/19

cloudy

800 Arrive at red Building and
Hold Safety meeting

930 Arrive at M-UN-002 To Begin
Augering for ~~first~~ well M-MW-020

1118 Hit refusal at around 27 ft Bgs
leave augers in the ground till well
supplies arrive in afternoon.

1130 Begin Boring at location 029.

1230 Inspection of Boring revealed
A very strong fuel odor from
10-32 ft Bgs. There was
perched groundwater from roughly
16-18 that had the strongest fuel
odor. There was a 2nd gw
interface from 22.5 to 32 ft.
Rig met refusal at 32 ft
cannot drill any deeper.

1320 Take sample 19-FM-M-UN-002-DT-029-16-17
at 1320 at 16-17 ft Bgs and Duplicates
19-FM-M-UN-002-DT-029-16-17 at 1320

Both sampled at the perched water

1332. Take sample ~~at~~ 19-FM-UN-002-DT-029
-22.5-23.5 at 1332 at 22.5-23.5
at the lower gw interface.

1340 Take sample 19-FM-M-UN-002-DT-029-31-32

Scale: 1 square = _____

Return to Room

M Ebert

Ft Morrow
7/29/19partly
cloudy

at 1340 at depth of rebar
for a vertical delineation
Sample.

1415 Begin to install well at location
020 well ~~at 020~~ ^{ME} ~~at 020~~ ^{ME}
M-MW-020.

1600 Finish installing M-MW-020
TD=25.95 ft Bgs DTW-Dry
SI=25.95-19.45 ft Bgs
Stick up height = 1.9 ft Bgs.

1610 Begin installing M-MW-029. This
well is a second source well
that we are installing at location
029. The well at 001 only
had roughly a foot of water
in it today. 029 will be
set deeper to try and find
more ground water. Ground
water was confirmed to ~~22 ft~~ ^{ME}
begin in boring at 029.

1850 Finished well M-MW-029
TD=32.33 ft Bgs DTW=WLM down
SI=31.83-21.83 ft Bgs
Stick up Height = 3.48 ft Bgs.

1933 Arrive at Background TOC

M Ebert

Ft Morrow
7/29/19

Sunny

And Physical parameters
location 014


2018 Take Sample 19-FM-2-Test-00-DT-214-
14-15 at 2018 for TOC
This soil is a light brown,
poorly graded, homogeneous, loose
saturated sandy gravel that
has been washed of fines.
This will be short hand for
short hand for this soil type
will be SG.

2057 Take Sample 19-FM-2-Test-00-DT-
215-12-5-13 at 2057 TOC SG

2059 Take Sample 19-FM-2-Test-00-DT-
215-13-15 at 2059 for Phys.
Parameters SG

2109 Take Sample 19-FM-2-Test-00-DT-
216-14-15 at 2109 for TOC &
SG.

430^{ME} 2130 arrive Back at Red Building
EOD

drawn by  7/29/19

M. Ebert Ft. Morrow sunny
7/30/14 HOT

- 800 Arrive at red Building Hold
Safety Meeting
- 930 Arrive at TOC, Phys. Parameters
Site Near M-PR-001
- 1007 Take Sample 19-FM-2-Test-00-DT-
217-14-15 at 1007 for TOC SG
- 1019 Take Sample 19-FM-2-Test-00-DT-218
-14-15 at 1019 for TOC SG
- 1025 Take Sample 19-FM-2-Test-00-DT
-219-14-15 at 1025 for TOC SG
- 1038 Take Sample 19-FM-2-Test-00-DT
-220-14-15 at 1038 for TOC SG
- 1050 Take Sample 19-FM-2-Test-00-DT
-221-14-15 at 1050 for TOC SG
- 1115 Install Monuments on M-PR-001
wells
- 1205 Arrive at M-UN-002 to install
Monuments and Tank M-MW-UN-
001 Due to a better source
well at location 029
- 1345 Arrive at ISM location 07
Begin Borings for ISM Sub-
surface sampling from 2-15
ft Bgs.
- 1600 After Discussion with LOKE

M. Ebert Ft. Morrow
P. Restrepo 7/30/14

- I was decided to combine the
TOC & Phys. Parameters sampling
with the ISM Borings soil
that will be sampled IS a
silty fine sand that is Brown
poorly graded/well sorted, homogeneous
soft and saturated. Short
hand for this soil will be
MS^{FE} FSM.
- 1629 Take Sample M¹⁹-FM-2-Test-00-
-DT-222-9-10 at 1629 for TOC FSM
- 1631 Take Sample 19-FM-2-Test-00-DT
-223-9-10 at 1631 for TOC FSM
- 1651 Take Sample 19-FM-2-Test-00-DT
-224-9-10 at 1651 for TOC FSM
- 1701 Take Sample 19-FM-2-Test-00-DT
-225-9-10 at 1701 for TOC FSM
- 1711 Take Sample 19-FM-2-Test-00-DT-
226-9-10 at 1711 for TOC FSM
- 1735 Take ISM subsurface sample
19-FM-ISM07-006-2-15 at 1735
- 1808 Take Sample 19-FM-2-Test-00-DT
-227-10-11 at 1808 for Physical
Parameters ISM
- 1810 Take Sample 19-FM-2-Test-00-

30 M Ebert
F Restrepo

Ft Morrow
7/30/14

Sunny

-DT-227-9-10 at 1810 for

TOC FSM

1816¹⁵ Take sample 19-FM-2-TEST

-00-DT-228-9-10 at 1814

for TOC FSM

1820 Take sample 19-FM-2-TEST-00

-DT-229-9-10 at 1820 for

TOC FSM

1900 Arrive at M-PR-005 to take

sample at location 038

1915 Take sample 19-FM-M-PR-005-DT-

038-14-15 at 1915 and ~~Duplicate~~

19-FM-M-PR-005-DT-938-14-15

at 1920.

2000 Arrive at ISMOS to do

sub surface ISM

2145 Take ISM sample 19-FM-ISMOS

-DT-006-2-15 at 2145.

2150 Arrive Back at red Building

EOD

done 7/30/14

M Ebert
F Restrepo

Ft Morrow
7/31/14

cloudy
rainy
windy

31

800 Arrive at red Building Hall

Safety meeting

900 Mob Rig from ISMOS to

ISM04.

945 Arrive at ISM04 Begin

Bores

1200 Take sample FM-^{ME} 19-FM-ISM04

DT-2-15 at 1200

1220 Arrive at K-LT-002 to

take 2 samples.

1240 Start Drilling ^{ME} at location 006

to take a sample at G-W Entrance

1250 Take sample 19-FM-C-LT-002-DT

-006-15-17 at 1250

1336 Take sample 19-FM-C-LT-002-DT

-004-15-16 at 1336 and

Duplicate 19-FM-C-LT-002-DT

-904-15-16 at 1340.

1440 Start Drilling Bores at

ISM01

1655 Take ISM sample 19-FM-ISM01-DT

-2-15.

1740 Arrive at ISM02.

1945 Take sample 19-FM-ISM02-006-2-15 at

1945.

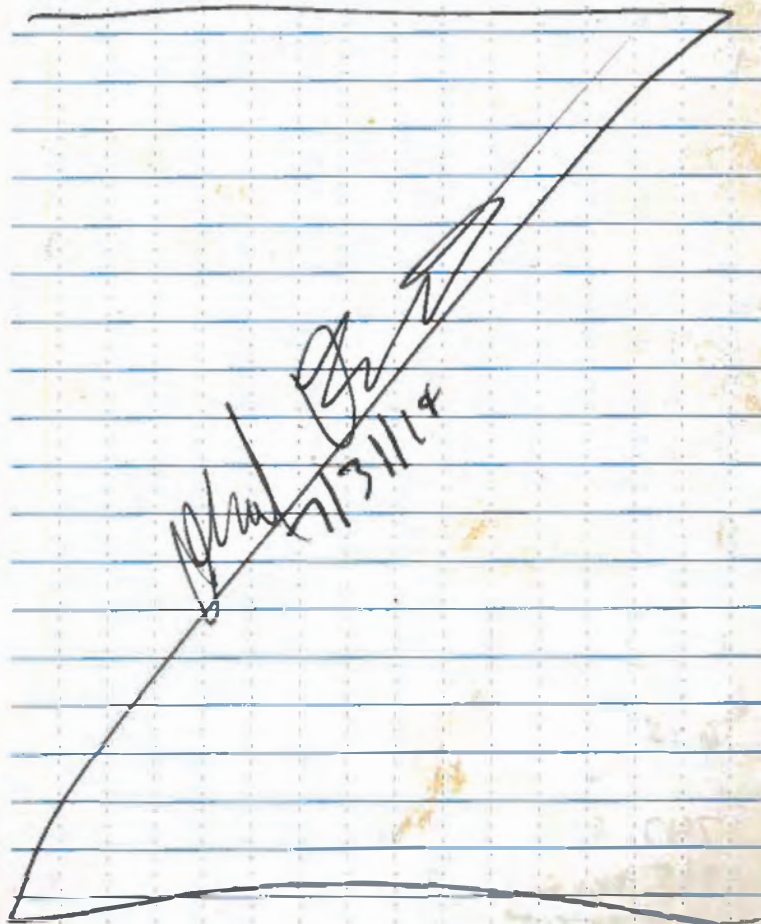
32 M Ebert
P Restrepo

Ft Morrow
7/31/18

Alowly
windy

2000 Move Rig TO Next Site
ISM 0

2030 Arrive Back at Red
Building.
ROD



Scale: 1 square = _____

M Ebert
P Restrepo

Ft Morrow
8/1/18

Partly
cloudy

33

800 Arrive at Red Building Hold
Safety Meeting

945 Arrive at ISM 03 start Drilling

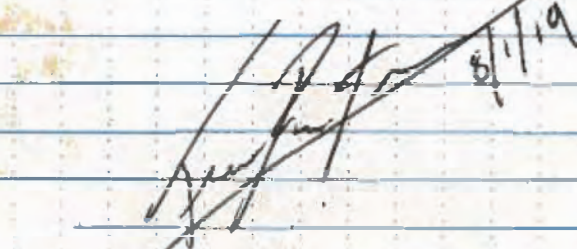
1137 take sample 19-EM-ISM03-DT-2-15
at 1137

1200 Arrive at ISM 06 and
start Drilling

1400 Take sample 19-EM-ISM06-DT-
#32-15 at 1400

1405 Sign over Log Book TO
Felipe Restrepo - Oliver
8/1/18

End of Drilling Day



Scale: 1 square = _____

Put in the Rain

M Ebert
34 B Lenhart

FMorrow
12/10/14

Sunny
40°

- 820 Arrive At Lake Clark
Bailey + Mike
- 1000 Board Plane for Port Heiden
- 1200 Arrive at Port Heiden
- 1220 Begun Pumping Dirty Drum
into 5 gal Buckets
- 1250 Finish Filling Buckets. 12
5 gallon Buckets were filled
with a total of 55 Gallons
- 1255 Dumped clean waste water to
ground
- FMPH - 27 - 10 gallons
- FMPH - 25 - 5 gallons
- FMPH - 26 - 50 gallons
- Dirty FMPH - 24 - 55 gallons
- 1330 Finish waste water Pumping
and cleaned up site
- 1400 start survey
- 1450 Meet plane and load all
12 Buckets on airplane
- N992AK Headed for Anchorage.
- 1500 plane takes off Field team
Resumes survey
- 1530 No Radio signal from Base
~~ME~~ Have to move Base station

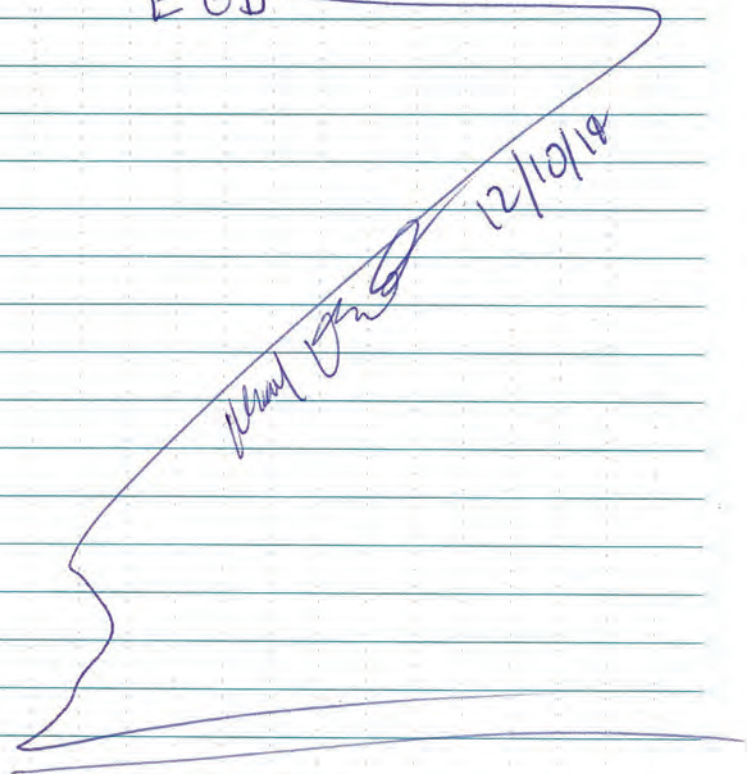
Scale: 1 square = _____

M Ebert
B Lenhart

FMorrow
12/10/14

Clear
32° 35

- 1630 Set up Base at FM-RI-LI
Survey
- 1645 Survey point N99R-001-007
Base station must run for
4 hours will ~~to~~^{ME} return
at 2030 to pick up
Base station
- 2030 Pick up Base station
EOD



Scale: 1 square = _____

Write in the Rain

N. Simmons
36 B. Lenhart

FT MORROW
6/23/21

52° Cloudy

0700 Arrive at Lake Clark Air
in Anchorage with Survey Equipment
and Sampling Gear.

0835 Receive word from Lake Clark
Air that weather has improved
and plane will be departing for
Port Heiden within next 5 minutes

1045 Arrive in Port Heiden. Truck
is not at air port. Contact
John Christensen of Aniakchak to
deliver truck to runway.

1130 Truck arrives at runway.
John acknowledges mix up and states
that person who rented Ahtna the
the truck is not in Port Heiden
and message was not passed on.

1145 Arrive @ Carol's Cabin with
gear. Bring bags inside to get
them out of rain.

1215 Depart Carol's Cabin with
survey equipment. Travel to
previously established survey
monument FM-RI-J1 to set
up base station.

1245 Travel to previously established

Scale: 1 square = _____

N. Simmons

FT MORROW

55° WINDY
RAINY 37

B. Lenhart

6/23/21

Survey monument FM-RI-B1 to
collect check shot. This location
is too far away from base station
and signal is not strong enough
to collect check shot.

1300 Begin troubleshoot survey
to locate closer established
location for check shot.

1600 Established check shot
at monitoring well M-MW-010.
measured location was within 0.15 feet
of location provided by 2019 Survey
Report provided by Mammoth Consulting.

1700 Traveled to sampling location
M-SH-001 to stake and
survey in sampling locations.

1800 Return to base station and
break down survey equipment
for the day

1830 Return to lodging and
unload survey and sampling
equipment for tomorrow's sampling.

1900 END OF DAY

Scale: 1 square = _____

Rate in the Rain

N. Simmons Ft Morrow 50°F
38 B. Lenhart 6/24/2021 WINDY

0700 Conduct Safety Tailgate meeting at lodging (Carol's cabin)
Discuss tripping hazards at field sampling location

0730 Place phone to Lake Clark Air to see if sampling team, gear, and samples can be picked up today instead of previously scheduled flight on 6/25/2021

0815 Receive confirmation from Lake Clark Air that a flight will be available for pick up today (6/24)

0830 Travel to sampling location M-SH-001

0855 Collect Sample 21-FM-M-SH-001-DT-001-0.5-1

0900 Sample (Dup) 21-FM-M-SH-001-DT-001-0.5-1

0915 Sample 21-FM-M-SH-002-DT-002-0-0.5

0930 Sample 21-FM-M-SH-001-DT-002-0.5-1

1000 Sample 21-FM-M-SH-001-DT-003-0-0.5

1015 Sample 21-FM-M-SH-001-DT-003-0.5-1

1045 Sample 21-FM-M-SH-001-DT-004-0-0.5

1100 Sample 21-FM-M-SH-001-DT-004-0.5-1

1115 Sample 21-FM-M-SH-001-DT-005-0-0.5

1130 Sample (M/S/MSD) 21-FM-M-SH-001-DT-005-0.5-1

Scale: 1 square = _____

N. Simmons Ft. Morrow 52°F
B. Lenhart 6/24/2021 WINDY 39

1150 Return to lodging to check in with Lake Clark Air Services on time frame for departing flight. No time given.

1155 Begin packaging and organizing field gear and samples.

1515 Lake Clark Air Services arrives in Port Heiden. Board flight with gear and samples.

1715 Arrive in Anchorage. Load equipment.

1800 End of Day

Scale: 1 square = _____

Rate in the Rain

EDW / Hansel



Summer
2019

Rite in the Rain

ALL-WEATHER

FIELD

No 353N

PH Fort Morrow

Phase III RI

Book 1 of 2



Name Kim Holmes

Address _____

Phone _____

Email _____

Projects Ahtha Environmental

Port Heiden

Fort Mowbray Phase III R1

Groundwater Sampling Task



RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE
------	-----------	------

Project Mgr - Ashley Olson

FTL - Luke Hoffmann

Project Personnel: (Ahtna)

Kim Holmes

Nick Simmons

Lexie Lucassen

Felipe Restrepo

Mike Ebert

Awiakchak:

Holly Matson - 907.837.4036

Emergency Contacts:

Kim Holmes GCI Phone - 907 764 9745

Luke Hoffmann GCI Phone - 907 764 9742

Ashley Olson - 907 302 7572

7/11/2019

Mon

USACE FIMO RIM
Kittlmes & N. Simmons

Sunny
w/light wind

- | | |
|------|--|
| 0700 | Check-in @ Lake Clark |
| 0800 | Departed Anchorage for Port Heiden |
| 1130 | Arrive in Port Heiden
Spend day organizing office, cleaning floors & shelves in Red Building, organizing connex & unpacking fish totes. |
| 1330 | Grant arrives & departs w/ FAA personnel who were staying @ Kris's lodging |
| 1530 | check into Kris's & unload gear. Start transporting to penshades |
| 1900 | Head to Kris's for the night
will tailgate @ red building @ 0800 tomorrow |

[Signature]

7/2/2019 USACE FOMO RI Ph. III Sunny w/ light wind
2 Tues K. Holmes & N. Simmons

0800 Tailgate onsite

Plan for today: Nick & I will go around to check conditions & identify pre-existing wells.

↑ stake out proposed wells
Hook up to printer & walk-through using iPads.

Load up gear including water meter, decon materials to obtain info.

↑ recalculate groundwater flow directions for QC

Also grab bolt cutters in case any locks don't work w/ key.

1230 Road to F-MW-001

impassable w/ trucks

Well identified ~6' east of main gravel road. Several other stick-ups present ranging in size, w/ F-MW-001 is

2" PVC w/ total depth of 20.85' & water level @ 12.5'

All stick-ups (3) in immediate vicinity are uncapped including F-MW-001. Other two are 4"

7/2/2019 USACE FOMO RI Ph. III Sunny w/ light wind
3 Tues. K. Holmes & N. Simmons

1940 Arrive back @ red bldg.

Wells visited today include:

Well	Water Level	Tot. Depth	Notes
E-MW-001	5.25'	9.65'	2" capped
C-MW-004	12.83'	20.45'	2" capped, top of casing held together w/ caulking
C-MW-001	17.25'	20.15'	2" capped, together w/ caulking
C-MW-002	18.13'	25.55'	2" capped
C-MW-003	16.3'	23.75'	2" capped
staked out C-MW-006, 007, 008, 009			
C-MW-005	14.66'	21.75'	2" capped

Headed to existing wells J-MW-002 & 003 but iPad/arrow battery low & GPS signal won't work for navigation. Seems to need at least 15% battery to work.

2035 Finish syncing iPads & cleaning up around office. Head to lodging.



7/31/2019 USACE FOMO RI Ph. III Sunny w/ light wind
Wed. K. Holmes & N. Simmons

0800 Tailgate onsite
Plan for today: Gndwtr team
will continue w/ well recon &
staking out proposed well
locations & then start w/ proposed
w/ost locations. Drill team
will continue w/ sites in M.

0830 Troubleshoot iPad / Arrow GPS
connection w/ Felipe.

Arrow seems to have trouble
connecting & doesn't track
movement very well. Can
reset EOS Tools Pro app.
Also needed to fix connection
cables which seemed to
have become loose & can
get dusty.

0930 Head to AOC J to continue
w/ well recon

Well	Waterlevel	Tot Depth	Notes
* J-MW-002	8.19'	15.75'	2" capped
J-MW-003	13.6'	24.1'	2" capped

* cut alders around J-MW-002
for access to site

Both wells located in sunken ground
scars

7/31/2019 USACE FOMO RI Ph. III Sunny w/
Wed. K. Holmes & N. Simmons light wind

1030 Head to AOC B
6 existing wells in this area
w/ a combination of slightly raised
steel monuments set in concrete w/
locks & flush-mount that
require a ratchet & socket.

1400 Return to Red Bldg after
finishing w/ AOC B wells

Existing wells visited include:

Well	Waterlevel	Tot Depth	Notes
B-MW-002	8.25'	14.05'	2" flush
B-MW-003	12.35'	14.7'	2" flushmount
B-MW-004	12.33'	19.46'	2" flushmount
B-MW-006	11.8'	13.95'	2" flush

B-MW-001 & B-MW-005
located w/ slightly raised steel
monuments w/ lock key won't
work (tried both) & can't cut
w/ bolt cutters. Will need to
return w/ better bolt cutters

All flushmount wells required
9/16" sockets.

Also staked out proposed wells
B-MW-007 thru B-MW-017

1430 Break for lunch

7/3/2019 USACE FOMO ^{Phil} sunny w/wind
6 Wed K. Holmes & N. Simmons

1530 Head to gas station

1540 Derek says new hours are
1600-1700 Head to Red

Bldg to update team

1600 Fill up truck w/ fuel

1615 Show Felipe & Mike where
gas station is.

1630 Head to AOC M

1840 Finish @ AOC M

M-MW-001 & M-MW-002

are both steel stickup monuments
w/locks & key doesn't work.

Bolt cutters also aren't
strong enough to cut lock.

Stake out proposed wells

@ M-GS-043, M-PR-001 & M-PR-005

One well doesn't seem to have
pre-identified ID or location point

talk w/ Felipe about troubleshooting
& let team know discrepancy.

Will put together list of
proposed WOST points to

stake out tomorrow &
updated files for 2019 GW contours
& flow direction to finalize proposed
well locations

7/4/2019 USACE FOMO ^{Phil} Fog & sunny w/light wind
Thurs K. Holmes & N. Simmons

0800 Tailgate onsite happy 4th!

Plan for today: Cut locks on 4 remaining
existing wells & then stake-out

WOST & Test Pit locations in

prep for Andy arrival tomorrow

Drill team finish sites independent
from WOST

1130 Finish w/remaining wells

Well	Waterlevel	Total Depth	Notes
B-MW-001	6.55'	15.1'	Cut lock, 2" PVC
B-MW-005	10.93'	14.55'	Cut lock, 2" PVC
M-MW-001	15.57'	25.19'	Cut lock, 2" PVC
M-MW-002	12.01'	21.61'	Cut lock, 2" PVC

Update well table & send to
office in hopes someone can
interpolate updated water contours
to fine-tune well placement
before wells start getting installed
(require WOST).

1430 Finish staking WOST proposed
locations & confirm w/Luke
all locations accounted for
besides locations that will be
determined based on soil analytical
results or step-outs.

Break for lunch

Rate in the Rain

7/14/2019 USACE FOMO RI Phill
8 Thurs. K. Holmes & N. Simmons

- 1700 Finish staking test pits
at M-6S-043 & M-PR-005
Slightly moved test pit
014 & 015 @ M-6S-043
to center of metallic
surface debris observed
onsite, including what
looked like two old
drums. The debris around
015 looked like a fox
den but it's there's metallic
debris in the holes also.
- 1730 Unload truck & charge
ipads - no data collected.
Head back to lodging to
check on groundwater
contour updates &
look up old well construction
logs in prep to water
sample tomorrow.



7/15/2019 USACE FOMO RI Phill Sunny w/light
9 Fri. K. Holmes & N. Simmons wind

- 0800 Tailgate onsite
Plan for today Sample existing
monitoring wells. Drill team
will finish any outstanding sites
& prep for Andy w/Dakota arriving
today.
- 0815 Realize that ipads &
computers are missing from
office & other misc. items
- 0930 Felipe setting up remaining
ipads (Big Poppa & Mugatu)
for field collection
start mobbing for groundwater
sampling. Will start w/
M-MW-001 & M-MW-002
since they have most water
volume & seem straight forward
- 1130 Head to house & make
sandwich to take to site
- 1215 Head to site to setup
will return for Big Poppa
when its finished syncing
- 1330 Pickup Big Poppa from Red Bldg
& confirm only using bladder pumps
(no ~~perist~~ pumps) & only 1 water level
meter - can't setup @ 2 sites @ ~~one~~ ~~site~~ ~~time~~

10 7/15/19
FRI

USACE FOMO Pt. III
K. Holmes & N. Simmons sunny w/light wind

1600 Water parameters stabilized
Collected Sample (Water) @ M-MW-001
for DRO/RRD, PAH, ↑ POL VOC/SIM
19S-FM-M-PR-001-M-MW-001-001

@ 1600 P
19S-FM-M-PR-001-M-MW-001-901

@ 1610 (duplicate)

1730 setup @ M-MW-002 P
start taking water quality
parameters

1750 19S-FM-M-PR-001-M-MW-002-001

Will override auto-populated
sample ID:

19S-FM-M-PR-001-M-MW-002-001

@ 1750 for DRO/RRD, PAH

↑ POL VOC/SIM

* Calibrated YSI ↑ turbidity
meter per the QAPP
before sampling wells

1900 Purge ↑ decon water
from M-MW-001 ↑ 002

Were transferred to
drum @ Red Bldg ↑ labelled

2000 Added EDB to M-MW-001 ↑ 002
sample sets. Will request lab

use jars that we have since it comes
from same method as 0200 ~~cells~~

K. Holmes
N. Simmons

USACE
FOMO Pt. III RI

7/16/2019
sunny w/light wind 11

0800 Tailgate onsite

Plan for today. Drill rig/WVOST
team will start in AOC C since
drill rig is already near there so
we'll start in AOC J to give them
space.

Calibrate instruments per QAPP,
Print labels for J-MW-002 ↑
J-MW-003 (will take dup @ MW-003
since it has larger water column)

Load up truck P pack up jars

Per switch from lab Test America

to SGS, moved all methanol

from sample area to avoid

confusion. New methanol from

SGS will be shipped out today.

Label all samples from yesterday

↑ reviewed forms w/Felipe

Will add water parameters from

yesterday to electronic forms

1000 Head to J-MW-002 ↑ J-MW-003

1210 started w/J-MW-002 @ J-WH-002

Total depth measured @ 15.75'

↑ water level @ 8.39'

2013 well construction log indicates
screen placed 8-13'

Rite in the Rain

12 K. Holmes
N. Simmons

USACE
FoMo Ph. # RT

7/6/19 Sat
sunny w/light wind

set pump @ 10.5' at first but
water level dropped below pump
after preliminary purging

Moved pump to 12.1' & decreased
pump rate from 350 mL/min to
150. Pause purging after 10 mins
of water parameter collection

to allow recharge. Restarted 15 mins

later & water level rose from
>12.1' to 11.7' purged water

for another 10 mins & water level
dropped back to below pump.

Water Pump rate isn't cycling

water through flow-thru cell
of YSI inbetween pauses of

purging. Will return to Red

Bldg to consult w/ FTH Hoffmann
regarding pauses during purging

or will switch to pump well dry.

& break for lunch

1330 Return to site J-MW-002

will try to surge well a few times

& continue w/ purging but if

recharge doesn't increase then

will pump well dry & allow to

recharge to 80% to sample

K. Holmes
N. Simmons

USACE
FoMo Ph. # RT

7/6/2019
sunny w/light wind¹³

1530 after surging, started
pumping @ rate of 150 mL/min
again but well pumped to below
12.1 before any water parameters
collected. Pumped dry & allowed
to recharge. ~~well~~ seemed to
recharge slower than before so
will ~~not~~ surge again to try &
clean out well.

1540 Surged well. Water level @ 9.4'
Start pump @ 150 mL/min

1544 Water level @ 10.45'

Pump set @ 11'

1545 Water level below pump.

Will drop pump, pump well
dry again & allow to recharge
to sample.

Head to J-MW-003 to

start purging well

1718 Start collecting water parameters
@ J-MW-003 @ site J-WH-003

total depth is 24.09' &

water level was 14.11' to begin

with. Screen is 13.35-23.35

according to well log. Pump set

@ 18'

rite in the rain

14 K. Holmes USACE 7/6/2019
N. Simmons FOMo Ph. III RI sunny w/light wind

1740 Collect sample

19S-FM-J-WH-003-M-MW-003-001

@ well J-MW-003 @ site J-WH-003

for DRO/RRO, VOC, EDB, PAH

1750 Collect duplicate sample

19S-FM-J-WH-003-M-MW-003-900th

1845 Arrive back @ J-WH-002

* We have two pumps so deconning between sites isn't required.

Left pump tubing in well @ J-WH-002 while letting it recharge

Water level back to 8.35'

set pump @ 12' & allowed pump to run for a few minutes

to evaluate recharge & quality

19:00 start collecting water quality parameters w/ rate set @

125 mL/min.

19:12 water parameters stabilize

19:20 Collect sample

19S-FM-J-WH-002-M-MW-002-001

@ well J-MW-002 @ site J-WH-002

2000 Finish packing up site & head back to red bldg.

Added purge water to drum from M & labelled

K. Holmes USACE 7/7/19
N. Simmons FOMo Ph. III RI sunny w/light wind¹⁵

0800 Tailgate onsite

Calibrate both YSI's & turbidity meter

Decom both bladder pumps

DHLL/UVIST team to finish in

AOC C

Groundwater team will start in

AOC B

1000 Setup @ B-MW-005 @

site B-DA-005

Well depth = 14.55' & water level

@ 11'. Well screened between

2.93 - 12.93'

Set pump @ 12.45'

1140 Collect sample:

~~19S-FM-J-WH-003~~

19S-FM-B-DA-005-B-MW-005-001

from well B-MW-005 @ site B-DA-005

for DRO/RRO, VOC, EDB & PAH

1150 Collect duplicate sample:

19S-FM-B-DA-005-B-MW-005-901

Although the water level was towards the bottom of the screen & there was a water column height of $\frac{1.12}{3.55}$ ft the well stayed pretty stable at 11.5'

1230 Setup @ B-MW-006 @ site

B-DA-005 well depth is 13.56' & water level @ 11.84' screen is 2.25 - 12.25'

16 K. Holmes USACE 7/7/19
N. Simmons FOMo Ph. III RT sunny w/light wind

- 1250 Pump rate set at 100 ml/min
collected one round of
water quality parameters
before well pumped dry
- 1330 FTL Hoffmann stopped by site
He left w/samples from
B-MW-005 & will print more forms
- 1400 Well recharged to 11.9'
reset pump to 12.5'
- 1412 Well pumped dry after 4
rounds of 3 min water quality
parameters but stabilization
not achieved
- 1530 Well recharged to 11.8'
set pump @ 12.3' & start
collecting water quality parameters
- 1546 Water quality parameters
stabilized. Water level
@ 12.05
- 1600 Collect sample
195-FM-B-DA-005-B-MW-006-001
@ Well B-MW-006 @ site B-DA-005
for DRG/RRO VOC/EDB, & PAH
Head back to red bldg
to decon pumps & collect
equipment blank

K. Holmes USACE 7/7/19
N. Simmons FOMo Ph. III RT sunny w/light wind 17

- 1745 Collect equipment
blank: EB-W-070719
from pump BP201
III # 144346
↑ triple T No:
Finish decon of pumps
Transfer purge & decon water
to drum of water waste &
label.
- 1845 Will pack up sample
coolers tonight for shipment
to SGS Anchorage tomorrow
- 2030 Head back to lodging
to continue inputting
data into iPad.

~~Set~~

18 K. Holmes
N. Simmons

USACE
FOMO Ph. III RI

7/8/2019
sunny w/light wind

0800 Tailgate onsite

Plan for today: Drill team will split up w/ Felipe going back to boring locations that were hand-augered for a change w/ VOC collection ↑ Mike will do the same w/ the drill rig for deeper locations
The Groundwater team will continue w/ wells in AOC B

Repack coolers w/ updated GC
They'll be shipped out on Lake Clark flight expected @ 10:30 w/ A. Olson

1000 setup @ B-MW-003

@ site B-DA-003
Total depth is 14.69' ↑
water level @ 12.45'
screen set 3.6-13.6'

1030 Pump set @ 13.4'
rate set @ 100 mL/min

1040 Well pumped dry
water was pretty clear
w/ a noticeable POC odor

1050 Well recharged to 13.1'
Will let fully recharge to hopefully have enough water for water to stabilize

K. Holmes
N. Simmons

USACE
FOMO Ph. III RI

7/8/2019
sunny w/light wind¹⁹

1115 Well recharged to 12.56'

1125 Stable water obtained

1145 Collect sample (*see Note on next page)
19S-FM-B-DA-003-B-MW-003-003

~~1210~~ Clean up @ well B-MW-003
@ site B-DA-003

for DRO/RRO, VOC/EDB, ↑ PAH
1210 Clean up @ site ↑
setup @ B-MW-004 @
B-DA-003

1235 Well B-MW-004 has
total depth of 19.45' ↑
water level @ 12.4 w/
screen from 8.2-18.2'
set pump @ 15.5

1315 Collect sample
19S-FM-B-DA-003-B-MW-004-004
@ well B-MW-004 @ site B-DA-003
for DRO/RRO, VOC/EDB ↑ PAH
Collected MS/MSD w/ primary

1415 Return to red bldg w/
samples ↑ break for lunch

1730 Finish inputting data into iPad,
decon pumps, dispose of
purge/decon water in drum (label
and label all samples *Rite in the Rain*)

K. Holmes USACE 7/18/2019
20 N. Simmons Fomo Ph. III RI sunny w/light wind

Setup @ well B-MW-002 @ site B-DA-003

Total depth of 14.05' w/
water level @ 8.35'

well screened 2.62 - 12.62'

set pump @ 10.4'

1845 Collect sample

19S-FM-B-DA-003-B-MW-002-002

@ well B-MW-002 @ site B-DA-003

for DRO/RRO, VOC/EDB,

P PAH

1855 Collect duplicate
sample

19S-FM-B-DA-003-B-MW-002-902

1900 Clean up site and return
to red bldg to decon p

label samples

2030 Collect sample

EB-W-070819

equipment blank collected
after deconning from wells

B-MW-002 w/pump 144346

2100 * Note from today: Will no longer
correct auto-populated sample IDs
from iPad. Updated ID approach
for samples collected today p
going forward. ~~back~~

K. Holmes USACE 7/19/19
N. Simmons Fomo Ph. III RI sunny w/light wind²¹

0800 Tailgate onsite

Plan for today: Drill team will

start w/wells in AOC B, Felipe
will re-hand auger shallow borings

w/SGS methanol, Gndwtr will
finish well in AOC B p start
in AOC C.

1000 Finish packing 2 coolers

(Haleakala p Mauna Kea)

for shipment to SGS on

Lake Clark flight expected
today w/LEXIE

Cut tube packages for wells
to minimize travel w/whole roll
p load truck

1115 Finish updating GW contour

p flow figure for AOC B

for well installation reference

Head to AOC C C-MW-003

1210 C-MW-003 @ C-LT-002 site

Old tubing found in well approx.
2' deep inside well.

Fish out old tubing p discard.

1245 Finish purging water p
water quality parameters stabilized

Return on the Rain

22 K. Holmes USAACE 7/9/19
N. Simmons FOMo Ph. III RI Sunny w/light wind

Well C-MW-003 @ site C-LT-002
Total depth is 23.72' & water
level @ 16.47'. Well screened
16.7-21.7. Pump set @ 18'

1300 Collect sample

19S-FM-C-LT-002-C-MW-003-003
for DRD/RRO, VOC/EDB & PAH

1340 Finish @ C-MW-003

Head to help Felipe hand-auger
last hole & give him a ride
to AOCB

1410 Setup @ well B-MW-001
@ site B-DA-004

Total depth is 15.15'
w/water level @ 6.7' &
screen from 5.6-15.6'
Set pump @ 9'

1415 Collect sample

19S-FM-B-DA-004-B-MW-001-001
for DRD/RRO, VOC/EDB, PAH

1425 Collect sample

19S-FM-B-DA-004-B-MW-001-901
for DRD/RRO, VOC/EDB, & PAH

1500 Cleanup site & head back
to red Bldg to decon pumps,
label sample jars, & finish inputting data

K. Holmes USAACE 7/9/19
N. Simmons FOMo Ph. III RI Sunny w/light wind 23

1600 Change plans: will take
ISM sample at M-SH-001
Decon ISM probe & prep
for sample collection

1730 Head to M-SH-001 for ISM
sample collection

Will stake out grid w/ iPad
QC grid area & collect
polygon sample corners
then collect 3 random
sample sets of 30

1930 M-SH-001 ISM (lead) sample
grid staked. GPS points
will be collected later due
to poor satellite coverage
Collect partial sample set
of with 10 of 30

Sample collection w/ hammer &
probe setup not working well.
Return to Red Bldg for
appropriate tools

2000 Head to landfill to discard
waste. Will finish lead ISM
sample tomorrow.


Return the Rain

24 K. Holmes USAACE
N. Simmons FoMo Ph. III RI Partial overcast 7/10/19

0800 Meet @ Red Bldg ↑
tailgate

Plan for today: Drill/WOST team
will continue @ AOC B to finish
installing wells & move to AOC J
for proposed WOST locations.
We will finish finish w/ lead ISM
sample @ site M-SH-001
↑ collect sample grid corner
GPS points.

1200 Finish collecting 3 sets of
30 aliquots for lead ISM
Sample @ M-SH-001 ↑
collect GPS corner points
south^{west} east corner - GPS pt 002
southeast " " 003
northeast " " 004
northwest " " 005

Added caption to feature
points 003-005 & need to
add to 002.

Staked points (corners) were
measured w/ 300' tape for
approx 104-106' per side

1215 Collect feature photos & walk
around site for surface lead survey.

K. Holmes USAACE
N. Simmons FoMo Ph. III RI Partial overcast 7/10/19 ²⁵
light wind

Along eastern grid boundary
few metal surface debris
↑ partially exposed 55-gal drum (1)
Bldg were observed

A bldg (assumed) footprint
observed w/in sample grid
w/ pieces of broken asphalt,
glass, & wood debris observed also

1230 Return to Red Bldg to
package lead ISM samples
for shipment on afternoon
flight

Samples @ site M-SH-001
for ISM lead include:

Primary: 19-FM-M-SH-001-DT-001-0-2
@ 10:00

Replicate: 19-FM-M-SH-001-DT-901-0-2

Replicate: 19-FM-M-SH-001-DT-601-0-2

@ 10:05 & 10:10 respectively
Samples were associated
w/ sample grid corner - northwest
survey feature 005
iPad assigned sample ID
was overridden w/ updated sample
ID recorded above.

26

K. Holmes USACE 7/10/19
N. Simmons FdMo Ph. III RI partial overcast

1330 Try to locate monument
UW143 in AOC F but
monument not located and GPS
point seems to be eroded
off beach cliff. Current
location indicates down on
the beach & cliff too
undercut to thoroughly
investigate. Assume location
has eroded away

1500 Plan for afternoon:
Sample at well F-MW-001.
Since well may be tidally influenced,
will plan to sample an hour
after low tide. Low tide
today indicated as 1600

1530 Collect monument checkpoint
in AOCC - FM-RI-C1

1700 Well F-MW-001 at site F-OT-001
Has total depth of 20.89'
Water level at 12.55' &
screen set 8.7-18.7'
Set pump @ 15' & pump
water at rate of 150 m³/min
Well has no well cap. There is
also a 4" PVC stickup approx. 50' east

K. Holmes USACE 7/10/19
N. Simmons FdMo Ph. III RI partial overcast ²⁷

1500 Collect sample:
19S-FM-F-OT-001-F-MW-001-001
at well F-MW-001 @ site F-OT-001
for DRO/RRO, VOC/EDB, PAH

1800 Collect duplicate sample
19S-FM-F-OT-001-F-MW-001-901
* Note - next time it'd be
easier to sample this well
w/a dolly to transport equipment
The road is impassible approx.
before the well due to
Coastal erosion.

2000 Return to Red Bldg
& unload equipment. Will
decon & collect equipment blank
tomorrow morning for shipment
tomorrow.

[Handwritten signature]

28 K. Holmes USACE 7/11/19
N. Simmons FOMo Ph. III RI Overcast

0800 Meet @ Red Bldg & tailgate

Plan for today: Decon pump
from yesterday & collect equipment
blank then continue w/ groundwater
sampling @ AOC-C

Drill/uVest team will continue to
delineate site also in AOC C due
to analytical results.

0930 Collect equipment blank

Sample: EB-W-071119

for DRO/RRO, VOC/EDB, PAH

1100 Setup @ C-MW-001 @ site
C-LT-002

Total depth 26.14' & water
level @ 17.41' w/ screen

set 12.8-17.8

Set pump @ 18' @ rate
of 100 mL/min but

well pumped dry before any
water parameters collected.

Dropped pump to 18.9' to
allow well to recharge

1150 Water parameters stabilized
but well pumped dry.

Will collect sample after
well recharges

K. Holmes USACE 7/11/19
N. Simmons FOMo Ph. III RI Overcast 29

1230 Collect sample:

195-FM-C-LT-002-C-MW-001-001

@ well C-MW-001 @ site C-LT-002
for DRO/RRO, VOC/EDB, P PAH

1240 Collect duplicate sample:

195-FM-C-LT-002-C-MW-001-901

Will setup @ well C-MW-005

@ site C-LT-002 while
continuing to collect sample
from C-MW-001

1320 Well C-MW-001 pumped
dry before ^{full} sample collected.

Will allow well to recharge
while starting to purge well
C-MW-005

1345 Water parameters stabilize
at well ~~18.9'~~ C-MW-005

1400 Collect sample

195-FM-C-LT-002-C-MW-005-005

@ well C-MW-005 @ site C-LT-002
for DRO/RRO, VOC/EDB, PAH

1400 & cont collecting sample
at well C-MW-001, well
recharged to 17.6' @ 1350

1500 Finish cleaning up @ both sites

& collect iPad pictures & data into the Rain

30

K. Holmes USACE 7/11/19
 N. Simmons FOMo Ph. III RI overcast

1530 New plan for tomorrow described
 @ Red Bldg. Will start
 fest pits @ M-GS-043p
 M-PR-005

Will decon pumps now
 & continue groundwater
 sampling in AOC C today
 Lexie & Luke can decon
 pumps tomorrow & collect
 equipment blank if it gets
 too late after the next
 wells today

1600 Fuel up white truck & add
 Derek's 4-wheeler fuel (approx. 3gal)
 & fill 3-gal into fuel tank

1645 Setup @ well C-MW-005^{EH} 2
 @ site C-LT-002

Total well depth is 25.51'
 & water level is 18.28'
 screen set 13.3-23.3'
 Set pump @ 20.5'

1730 Collect sample & MS/MSD
 195-FM-C-LT-002-C-MW-002-002
 @ well C-MW-002 @ site C-LT-002

K. Holmes USACE 7/11/19
 N. Simmons FOMo Ph. III RI Overcast w/light rain ³¹

1830 Finished cleaning up @
 C-MW-002 & setup @ C-MW-004

1840 Well C-MW-004 @ site C-LT-002
 has total depth of 20.45'
 w/water level @ 12.56' &
 screen set 13.96-18.96
 set pump @ 16.5

1900 Collect sample
 195-FM-C-LT-002-C-MW-004-004
 @ well C-MW-004 @ site C-LT-002
 for DRO/RRD, VOC/EDB, PAH
 well draw-down stabilized
 @ 13.1' but water remained
 cloudy (over range turbidity
 reading) throughout water
 quality parameter collection
 & sampling.

2030 Finish unpadding
 truck after cleaning
 up site @ C-MW-004.
 Head back to lodging

32 K. Holmes USACE 7/12
N. Simmons FoMo Ph.II RI overcast

~~See test pit
logbook
No groundwater
sampling today~~

See test pit logbook
for activities @ M-6S-043
from 0800 - 1800

1800 Decon both pumps
from groundwater sampling
@ C-MW-002 & C-MW-004

1900 Collect equipment blank
from ~~PUMP~~ @ well
Pump # 144346

Equipment blank:
EB-W-071219-004

2000 Return to logging to continue
inputting data into iPad

K. Holmes USACE 7/13/19
N. Simmons FoMo Ph.II RI overcast w/light rain ³³

0800 Meet @ Red Bldg &
tailgate onsite

Calibrate YSI &
prep gear for groundwater

Sample @ E-MW-001

Drill/West team will continue
@ AOC J / AOC M.

No well construction log
or other legacy data available
for E-MW-001. Previous reports
indicate wells were previously
installed prior to four pre-existing
wells prior to 2012 Ph.I field
work were located in AOC E
and the least damaged well was
selected for sampling and
assigned the number E-MW-001.

0945 set up @ well E-MW-001
@ site E-DS-001

Total well depth is 9.65'
w/ water @ 6.71'
& unknown screen depth

Pump set @ 2.3'

1045 collect sample

19S-FM-E-DS-001-E-MW-001-001

from well E-MW-001 @ site E-DS-001 *late in the rain*
for DRO/RRO, VOC & PAH

34

K. Holmes USACE 7/13/19
N. Simmons FoMo Ph. III RI Overcast w/ light rain

1050 Collected duplicate sample:

19S-FM-E-DS-001-E-MW-001-901

1140 Finish cleaning up site

P break for lunch

1240 Will continue w/ test pits
in afternoon. See Test Pit
logbook1415 Lexie decons pump
UNK2019 (as determined
for reference as no
ID on pump)

used @ well E-MW-001

Collects equipment blank

Sample: EB-W-071319-005

for DRO/RRD, VOC/EDB, PAH

1430 Plan to send out sample
coolers tomorrow. All
legacy wells sampled
P will return to test pits
tomorrow.K. Holmes USACE 7/22/19
L. Lucassen FoMo Ph. III RI Mostly clear w/ light wind³⁵

0800 Meet @ Red Bldg

P tailgate

Plan for today: N. Simmons P
A. Kirsch (Dakota) will leave on
Lake Clark flight to Anchorage.

Drill team will finish well M-PR-006

@ M-PR-001 P then move to
install wells @ B-DA-003/004/005

Development of wells installed

yesterday including M-MW-004,

M-MW-005, P M-MW-003

(in order of installation) can
begin @ 1300.

Decon Calibrate YSI, pack

sample jars P prep gear

in morning. Print forms, well

construction logs, P organizes
groundwater sampling
station.

1215 Break for lunch

1330 Setup @ M-MW-004

@ site M-PR-001

Well is 2" PVC w/ total depth = 18'

(below TOC) P water level @ 11.12'

screen set 6-16' lgs.

Rite in the Rain

36 K. Holmes USACE 7/22/19
L. Lucassen FOMO Ph. III RI Mostly clear

1400 Start purging well.
Water is very turbid but
seems to recharge quickly.

Surge blocker can't seem
to fit below ~13' bgs -
can feel surge blocker enter
water but can't get it
to sink to bottom of well.

Use Hurricane pump to lightly
surge well, per Project SOP.

1515 L. Lucassen returns
to Red Bldg to unload
4 5 gal buckets of water
pugged & check-in w/ ETL to Hoffman
Continue to surge screen
column & purge water -
Hurricane pump acting
irregular.

1545 L. Lucassen returns to
site. Pumped an additional
5-gal bucket (5 total) + 2 gal in
6th bucket.

Will switch pumps & start
collecting water parameters.
Water column seems to be clearing
up some although turbidity still

K. Holmes USACE 7/22/19
L. Lucassen FOMO Ph. III RI Mostly clear³⁷

Overhaul. Hurricane pump also
acting irregular - hard to set
pump to bring water up although
plenty of water when it will.

1600 F. Restrepo & Holly will
take Hurricane pump back
to Red Bldg & clean
& return.

1630 F. Restrepo & Holly return.
Lexie will go setup on
M-MW-005 to start well
development

1650 L. Hoffmann arrives onsite
He will groundwater sample
w/ me @ M-MW-004.

1715 Collect sample @ M-MW-004
195-FM-M-PR-001-M-MW-004-004
For DRO/RRO, PAH, P POL VOC/SIM
(EDB).

1725 Collect duplicate sample
@ M-MW-004

1750 Check-in w/ team @ M-MW-005
Apparently hurricane pump has
stopped working. Checked connections
& settings.

ETL Hoffmann & K. Holmes leave site
Full in the Rain

K. Holmes USACE 7/22/19
 L. Lucassen FOMO Ph. III RI Mostly clear

Will return w/ (new battery)

↳ Luke will check-in w/ (Mike)

1800 Return w/ battery

Continue to try & troubleshoot Pump.

F. Restrepo & Holly depart

Site to unload purge water (approx. 3 gal) from M-MW-055

1815 L. Lucassen departs from site to check-in w/ (Luke)

(in cell service out here)

Pump still running so continue to L. & adjust settings to pump water.

1840 L. Hoffmann returns to site. Pump will pump water

@ ~~ser~~ ground surface.

Checked to clear of any sediment plug. It seems to choke after a second of pumping.

L. Hoffmann will go look into alternative pump options.

1915 Clean up site & return to Red Bldg

2015 Head to lodging to finish data ~~work~~

K. Holmes USACE 7/23/19
 L. Lucassen FOMO Ph. III RI Clear w/ light wind

0800 Meet @ Red Bldg & tailgate

Plan for today: Replacement Monsoon pump (Mega Monsoon) was picked up from TTT this morning & made it on the Lake Clark flight expected mid-morning today. Will decon & collect equipment blanks this morning & continue well development w/ new pump when it arrives.

Drill team will continue installing wells in AOCB & Survey team (Felipe & Holly) will start RTK

Survey w/ OPUS solution received

last night. * Development pump

referenced yesterday as Hurricane Pump is actually Monsoon Pump (plastic) (Antna owned).

0930 Equipment blank EB-W-072319-0516

for DRO/RR0, PAH, POL VOC/EDB

collected from Monsoon Pump (Antna).

1030 Equipment blank EB-W-072319-007

for DRO/RR0, PAH, POL VOC/EDB

collected from bladder pump

UNK2019 - last used @ M-MW-004

1130 Pack up gear & pre-cut tubing

for M-MW-003 & M-MW-006 *fit in the rain.*

40

K. Holmes

USACE

7/23/19

A. Olson

FOMO Ph. III RI

Mostly clear w/ light wind

1130 A. Olson arrives on Lake Clark flight w/ new Monsoon pump & bailers for backup. Also brought foot pumps as backup. L. Lucassen will stay @ Red Bldg to decon pumps & label jars. P. A. Olson will join groundwater team!

1230 Return to M-PR-001 @ well M-MW-005. Started development @ this well yesterday before monsoon pump (ATTNA) stopped working. Pumped ~3 gal

1400 Finish surging & purging well w/ monsoon pump (~1.184)

Total depth is 18.03' from TOC w/ water level @ 11.38' TOC
20 gallons purged.

A. Olson runs monsoon pump back to Red Bldg for decon & unload water

1415 Set up bladder pump (UNK2019) & start water quality parameter stabilization. Water level meter stops working

K. Holmes

USACE

7/23/19

A. Olson

FOMO Ph. III RI

Mostly clear w/ light wind

1430 A. Olson returns & leaves again w/ water level meter to troubleshoot. Set pump @ 13' @ rate 200 mL/min. Screen set @ this well from 5.6-15.6'

1445 A. Olson returns w/ interface probe from Drill team. Water level hasn't dropped

1525 Collect water sample & MS/MSD from M-MW-005
195-FM-M-PR-005-M-MW-005-005 for DRO/RRO, PAH, POL VOC/EDB.

1545 A. Olson returns to Red Bldg for monsoon pump & start development @ M-MW-003.

1620 A. Olson sets up @ M-MW-003. K. Holmes returns to Red Bldg to check w/ drillers about cavity @ surface around M-MW-006 & drop off samples.

1700 Finish surging @ M-MW-003. Water cleared up after purging ~10 gal & 3 rounds of surging. This well is straighter than the last 2 & surge blocker fits to the bottom of this well.

42

K. Holmes USAACE
A. Olson FOMO Ph. III R1 Partial clear w/ light wind
7/23/19

- 1705 Holly joins groundwater team while Felipe switches to help drill team @ M-UN-002
- 1730 Setup bladder pump @ M-MW-003. Use bladder pump 144346. Total depth is 20.18' from TOC w/ water @ 15.39' after surge/purge. Screen set 7.5-17.5 (ft bgs) Pump set @ 16.5 from TOC w/rate set @ 300 mL/min
- 1745 Holly returns to Red Bldg to drop off monsoon pump for decon & returns w/ clean bladder pump (UNK2019)
- 1800 Finish water quality parameter collection @ M-MW-003 water level stayed steady @ 15.5' from TOC
- 1805 Collect sample from M-MW-003
195-FM-M-PR-001-M-MW-003-003 for DRO/RRO, PAH, PCB VOC/EDB
- 1815 Setup @ M-MW-006 for well development
* Lexie showed up @ 1800 w/ pump
→ to take Holly back to Red Bldg

K. Holmes
A. Olson

USAACE

FOMO Ph. III R1

7/23/19

Partially clear w/ light wind

- 1850 Finish cleaning up @ M-MW-003
- 1900 A. Olson surging/purging @ M-MW-006. Has to clean monsoon pump a couple of times Well is very turbid & slight PO₄ odor detected.
- 1915 Felipe arrives onsite. Will return to Red Bldg w/ pump 144346 from M-MW-003 for decon & equipment blank Will also drop off samples & bring back native soil from M-65-043 test pit stockpile for backfill @ M-MW-006
- 1950 Finish surge/purge @ M-MW-006. Approx. 20 gal purged & surged ~5 times. Felipe returns & backfills cavity to ground surface
- 2000 Setup bladder pump (UNK2019) @ M-MW-006. Total depth is 18.31' from TOC & water level is @ 12.6' from TOC. According to well log - Screen set 5.2-15.2' from bgs
Need to clarify w/ drill team if they can measure from TOC.

44 K. Holmes USAACE
A. Olson FOMo Ph. III RI 7/23/19
Partially clear w/ light rain

2000 (cont.) set pump @
13.5' from TOC ↑

Pump set @ rate 200 ml/min

2030 Collect sample @ M-MW-006
@ site M-PR-001

19S-FM-M-PR-001-M-MW-006-006
for DRO/RRO, PAH, POL VOC/EDB

2040 Collect duplicate.

The soil @ this site came back
w/ exceedances & slight odor
detected from water while sampling.

2110 Clean up site & head back
to Red Bldg.

* 2000 L. Luessen collected
equipment blank from
pump 144346-EB-W-072319-008
for DRO/RRO, PAH, POL VOC/EDB

2200 Finish unloading truck
& staging purge/decon water
in waste drums - all water
(purge & decon) from M-MW-006
poured into drum segregated &
labelled accordingly. Other purge
water & decon from M-PR-001
staged together.

K. Holmes USAACE
A. Olson FOMo Ph. III RI 7/23/19
Partially clear 45

2230 F. Restrepo collects
equipment blank from minicon
pump (1184)-EB-W-072319-009
for DRO/RRO, PAH, POL VOC/EDB

2300 Head to lodging to
finish data.

F. Restrepo & A. Olson
still @ Red Bldg for data
download & will decon
pump from M-MW-006 (UNK2019).

~~6/11/19~~

46 K. Holmes USACE 7/24/19
F Mo Ph. III RI mostly dr w/ light wind

0800 Meet @ Red Bldg & tailgate

Plan for today: A. Olson will go

w/ F. Restrepo in AM to survey

ISM grid locations & recon
subsurface ISM locations. Holly

& Luke will assist w/ groundwater

develop/sample - running decon trips

& sample waste between expected

flights w/ Lake Clark & drilling

supplies. Lexie will pack coolers

& Drill team continue @ M-UN-002

until sand arrives for wells.

0915 Finish packing gear &

Pre-cut tubing. YSI calibrated
per GAPP.

0945 Setup & start purging

@ ~~M~~ B-MW-015 @ B-DA-003

Total depth of well from TOC - 16.15'

Water level @ 11.89'

Screen set in well from 6.1 - 16.1' (TOC)

0955 Pump approx. 2.5 gal w/pump

(monsoon #1184) @ rate 9.11 V

1005 Finish 1st round of purge

Pumped approx. 4 gal & WL @ 14.6'

Well seems to recharge @

approx 0.1' per 20 sec

K. Holmes USACE 7/24/19
F Mo Ph. III RI mostly dr w/ light wind

1020 Finish surging WL @ 12.3

1105 Finish next round of surging

WL @ 12.2' pumped approx. 7.5 gal total

Start purging again

1140 Finish surging & purging

Purged 15 gal from well total

water level @ 12.1'

Setup bladder pump UNK 2019

1240 Start collecting water low quality

parameters @ B-MW-015

1300 Collect sample & ms/MSD @

B-MW-015 @ site B-DA-003

195-FM-B-DA-003-M-MW-015-015

1410 Clean up site & setup @

B-MW-008 @ site B-DA-003

Total depth of well - 16.82' (TOC)

w/ water level @ 13.79'

Screen set from 6.8 - 16.8' (TOC)

* clarification received regarding

calculating screen depth from

TOC from electronic well

construction logs. All depths

will be recorded from TOC unless

otherwise noted.

1545 Holly joins me @ site for assistance

Rite in the Rain

48 K. Holmes

USACE
FOMo Ph. III RI

7/24/19
Misty dr w/ light wind

1630 M. Ebert borrows ~~water~~ ^{KH} level interface probe
meter. Holly follows him so
she can bring back

L. Hoffmann will order a second
since current water level meter
not working

1800 L. Hoffmann arrives onsite
will take Holly back to Red Bldg
He also takes purge water

1900 Return to Red Bldg for additional
buckets

1930 Finish surging/purging @
B-MW-008. Well would purge
approx. 2.5 gal before needing
to recharge & take ~25 min to
recharge. Large sediment slug
@ bottom finally cleared up
Total depth is now 17' (TOC)
(~0.2' increase of depth)

Approx. 18 gal purged
Setup bladder pump (pump 144346)
Pump set @ 15' & WL @ 13.95'

1945 A. Olson & F. Restrepo return
from LSM recon. They will take
monsoon pump back for decon &
setup on B-MW-007

K. Holmes

USACE
FOMo Ph. III RI

7/24/19
Cloudy w/light wind 49

2005 Collect sample @ B-MW-008
19S-FM-B-DA-003-B-MW-008-008

2015 Collect duplicate sample
19S-FM-B-DA-003-B-MW-008-908
Both samples collected for
DRO/RO, PAH, POL VOC/EDB

2100 Clean-up site & join team
@ B-MW-007

L. Hoffmann & M. Ebert stop by
site to pickup purge water
& pump from B-MW-008 to decon

2200 Finish purging @ B-MW-007
L. Restrepo will return to office
to sync iPads from Drill team &
Matilda (we keep Merman to finish site)

20 gal purged
Total depth of well is 20.4'
(20.2' before development)
Water level @ 16.2' (15.86' before develop)
screen set 9.3-19.3' (TOC)
Pump set @ 17.5' & pump rate
@ 225

2230 Collect sample @ B-MW-007
19S-FM-B-DA-003-B-MW-007-007

2300 Finish cleaning up site & return
to Red Bldg

Rite in the Rain

50 K. Holmes

USACE
FOMO Ph. III RI

7/24/19

Equipment blanks collected during the day / after gear returned by support team @ the Red Bldg.

K. Holmes

USACE
FOMO Ph. III RI

7/25/19

Partially cloudy (windy)

0800 Meet @ Red Bldg → tailgate

Plan for today: continue groundwater sampling.

In AOC-B. Will start @ wells installed on 7/23 & plan to move to wells installed yesterday in the afternoon. Drill team will continue installing wells in AOC-B

& move to AOC-C if more sand shipments come in. Survey team (A. Olson & F. Restrepo in AM) will finish recon of ISM subsurface sample areas & then start RTK survey (A. Olson will switch to groundwater sample & Holly will join F. Restrepo).

0900 A. Olson will continue to calibrate YSI & bring out water quality instruments to site. Head to AOC-B to setup for well development

0915 Setup on well B-MW-013

@ site B-DA-003 (closest to B-DA-004 but associated w/ B-DA-003 for data mgmt purposes).

Total depth is 15.42' & water level @ 10.42' will purge

w/ monsoon pump 1184 & surge blocker.

1300 Finish purging @ well B-MW-013.

Purged 4th gal. Well recharged quickly but had alot of sediment to clear out.

K. Holmes USACE
FoMo Ph. III RI 7/25/19
Partially cloudy (w/ing)

1420 Setup bladder pump @ B-MW-013
(UNK2019)

Total depth after development - 15.5'

screen set 5.5 - 15.5'

WL @ 10.35' (all toe)

Pump set @ 11.5' & rate @ 200 ml/min

1430 A. Olson returns from
ISM sampling survey

& sets up for development

@ B-MW-012 (all AOCB

new wells associated w/
site B-DA-003 in iPad for
convenience.)

1445 Collect sample @ B-MW-013

19S-FM-B-DA-003-B-MW-013-013

1455 Collect duplicate sample

19S-FM-B-DA-003-B-MW-013-013

Both collected for DRO/RR0

PAH & Voc/EDB

1515 Finish cleaning up site

& setup @ B-MW-012¹²⁰ 017

for well development. A. Olson

will move there for development

next & P & Q will setup for sample

@ B-MW-012 when development

finished. Pump to Red Bldg for decon.

K. Holmes USACE
A. Olson FoMo Ph. III RI 7/25/19
overcast

1640 Setup bladder pump @ B-MW-012
Pump (144346) → 30 gal purged

TD - 14.92' & WL - 8.91'

Screen set 4.7 - 14.7'

*** Pump set @ 10.4' w/rate 225 ml/min

1750 Collect sample @ B-MW-012

19S-FM-B-DA-003-B-MW-012-012

for DRO/RR0, PAH & Voc/EDB

*1650 A. Olson sets up @

B-MW-017 for development

*1740 A. Olson finishes @

B-MW-017 & sets up @

B-MW-011

1850 Setup bladder pump @ B-MW-017

Pump (UNK2019) → 14 gals purged

Total depth - 14.85' & WL - 8.53'

Screen set 4.7 - 14.7'

Pump set @ 9.5' w/rate - 200 ml/min

1950 Collect sample @ B-MW-017

19S-FM-B-DA-003-B-MW-017-017

1930 A. Olson sets up @

B-MW-010. Well B-MW-011

pumped dry & is a slow

recharger. Will let recharge

& then purge again after

developing B-MW-010.

Rite in the Rain

K. Holmes USACE 7/25/19
A. Olson FOMO Ph. III RI Overcast w/rain

2315 Back @ Red Bldg
after site cleanup @
B-MW-010 & B-MW-011
B-MW-010 is developed
w/30 gal purged. B-MW-011
will recharge overnight
for development continuation.
Will update data &
leave pumps for decon

[Signature]

K. Holmes USACE 7/26/19
F. Restrepo FOMO Ph. III RI Overcast

0800 Meet @ Red Bldg & tailgate
Plan for today: F. Restrepo & A. Olson
(until her departure to ANC eta 1030)
will continue well development & I
will follow to sample.
Holly & Luke will support as
needed for equipment decon, etc.
They will track equipment blanks
in data tracking spreadsheets
& are not included here.
I will complete groundwater
development form & purge
form w/water quality parameters
for sampling when I setup
@ a well for iPad continuity
Will obtain notes from F. Restrepo
re: groundwater developments &
update form afterwards - AC
0945 Finish field prep - pre-cut
tubing & setup field coder
for both teams. Calibrate YSI
1010 Setup bladder pump @ B-MW-010
Pump (UNK2019) → 30 gal purged
yesterday by A. Olson
Total depth - 24.55' WL @ 19.9'
screen set 14.4 - 24.4'
Pump set @ 21" @ rate of 200 ml/min

56 K. Holmes USACE 7/26/19
F. Restrepo FOMO Ph. III R1 Overcast w/ light rain

1130 Collect sample @ B-MW-010

195-FM-B-DA-003-B-MW-010-010

1140 Collect duplicate

195-FM-B-DA-003-B-MW-010-910

Both collected for DRO/RR0, PAH, VOC/EDB

1255 F. Restrepo finishes @

B-MW-011 (9 additional gal
purged + 8 gal yesterday = 17 gal)

Sets up for development
@ B-MW-016

1320 Setup @ B-MW-011

Bladder pump 144346

TD - 18.6, WL - 14.01

Screen set 8.75 - 18.75

Pump set @ 15'

Rate determined as 100 mL/min

for sustainable water level

1435 Collect sample @ B-MW-011

195-FM-B-DA-003-B-MW-011-011

for DRO/RR0, PAH, VOC/EDB

1530 F. Restrepo finishes

@ B-MW-016 (9 gal purged)

sets up @ B-MW-014

~~1630~~ 1715 F. Restrepo finishes @

B-MW-014 sets up @

B-MW-009.

K. Holmes USACE 7/26/19
F. Restrepo FOMO Ph. III R1 Overcast w/ light rain 57

1820 Setup bladder pump @

B-MW-014 → 20 gals purged

TD - 19.55' & WL - 13.89

Screen set 10.4 - 20.4

Pump 144346 set @ 15'

Issues encountered to

purge water for water quality
parameter collection.

Troubleshoot compressor (pump).

End up trying new compressor
but the motor runs continuously.

Switch to pump UNK209

after decon - Problem fixed

seems to have been faulty

O-ring.

2030 Collect sample @ B-MW-014

195-FM-B-DA-003-B-MW-014-014

for DRO/RR0, PAH, VOC/EDB

2100 Return to Red Bldg

after site cleanup.

Leave equipment for decon

& will up finalize data

for day



58 K. Holmes USACE 7/27/19
F. Restrepo FOMO Ph. III R1 Overcast w/ rain

0800 Meet @ Red Bldg & tailgate
Plan for today: will continue
w/ F. Restrepo developing wells
& I will sample w/ Holly & Luke
as support for pump decon &
waste management.

Drill team is done @ AOC-C
0945 Finish gear prep.
Pre-cut tubing & calibrate YSI
1010 Setup @ B-MW-009 for
sampling & F. Restrepo sets
up @ ~~B-MW~~ C-MW-011
& will develop wells in AOC-C
today

B-MW-009 developed yesterday
by F. Restrepo. 40 gals purged
TD - 25.15' WL @ 15.61'
Screen set 15.6-25.6

Pump (#144346) set @ 16.5'
1110 Collect sample @ B-MW-009
195-FM-B-DA-003-B-MW-009-009

1120 Collect duplicate sample
195-FM-B-DA-003-B-MW-009-909

1200 Finish cleaning up site &
setup @ B-MW-016.

This well is a slow recharger
Purged 9 gal for development.

K. Holmes USACE 7/27/19
F. Restrepo FOMO Ph. III R1 Overcast w/ light rain

1315 Setup for water quality parameters
TD - 16.8' WL @ 12.95'
Screen set 6.6-16.6'
Pump (UNK2019) set @ 14'

1410 rate changed to 75
for sustainable drawdown rate
Tried calling L. Hoffmann to
confirm draw-down criteria
for project but service limited today

1430 Collect sample
195-FM-B-DA-003-B-MW-016-016
& for DRO/RR0, PAH & VOC/EDB

1600 Finish cleaning up
@ site & setup @
AOC-C well 011 (C-MW-011)

F. Restrepo has finished w/
development @ this well &
C-MW-009. He suggests I
clarify ID of C-MW-011 w/ L. Hoffmann
since he thought it was LOC00
L. Hoffmann said it is C-MW-011
F. Restrepo will continue to develop
C-MW-022 & then start C-MW-014
This will conclude development
of wells currently installed.

Rite in the Rain

60 K. Holmes USA CE 7/27/19
F. Restrepo FOMO Ph. III RI

1620 Start purging
@ C-MW-011 18.39'
TD is ~~26.35~~ ^{26.35} w/WL @ 15.61'
Screen set 16.3-26.3

Pump (144346) set @ 19.4'
1927 Collect sample @ C-MW-011

195-FM-C-LT-002-C-MW-011-011

All wells in AOC C associated

w/ C-LT-002 for convenience

Sample collected for DRO/RR0, PAH, ^{VOC} GDB

1800 Finish cleaning up @
site. Will return to Red
Bldg w/ waste water
& pumps to decon
& catch up w/ data

~~Handwritten signature~~

K. Holmes USA CE 7/28/19
FOMO Ph. III RI Onrcast 61

0800 Meet @ Red Bldg & Tailgate

Plan for today: Finish sampling
wells in AOC-C, Drill team

installed wells (C-MW-017 & M-MW-020)

@ M-UN-002 yesterday. Will hold
off development of those wells
until tomorrow to let drill team
finish. (maybe only 1 well - need to confirm)

0945 Finish gear prep

Pre-cut tubing & calibrate YSI

1000 Setup @ C-MW-009

Well depth doesn't match well

Construction log. Call FTL Hoffmann

to discuss discrepancy & confirm
wells ID are in order.

He will investigate discrepancy
& confirm to assume screen

is at bottom (10 ft) of well

so setup for sample accordingly
Well C-MW-009 @ site C-LT-002

TD - 25.35' w/WL @ 19.06'

Screen - 15-25'

Pump (UNK2019) set @ 20'

1220 Collect sample @ C-MW-009

1230 Collect duplicate sample

195-FM-C-LT-002-C-MW-009-009

195-FM-C-LT-002-C-MW-009-909 ^{both in the basin} respectively

1300 Finish cleaning up
 @ C-MW-009 & set up
 @ C-MW-014

C-MW-014 @ site C-LT-002
 TD - 24.7' w/wk @ 19.52'
 Screen set 17.4 - 24.4'

Pump (144346) set @ 20.5'

* I am creating well development &
 well sampling forms for sites
 developed by F. Restrepo. Will need
 to update forms w/his TD & wk
 before development & other notes

1405 Collect sample @ C-MW-014
 199-FM-C-LT-002-C-MW-014-014
 for DRO/RRO, PAH, VOC/EDB

1445 Finish cleaning up site
 & head back to Red Bldg
 will catch up w/data & then
 label/package samples for shipment
 to SGS tomorrow.

2330 Realize that sample collected
 @ C-MW-022 on 7/27 by
 F. Restrepo. & not originally included
 in that day summary only has
 preserved 250 ml jars (no unpreserved
 for PAH) - will recollect tomorrow morning.

GW/Hahsel
Summer
2019



Rite in the Rain.

ALL-WEATHER
JOURNAL

№ 393N

PH Fort Morrow
Phase III RI

Book 2 of 2



Name Kim Holmes

Address _____

Phone _____

Email _____

Projects Ahtna Environmental

Port Heiden

Fort Morrow Phase III RI

Groundwater Sampling task



RiteintheRain.com

K.Hdmes

USACE

7/29/19

FoMo Ph. III RI ~~cast~~ outcast ¹/₂ light rain

0700 Head to Red Bldg early
to collect C-MW-022 for inclusion
on sample shipment to SGS
today.

0800 Setup @ C-MW-022
TD-25.01' w/WL @ 18.3'
Screen set 15.2-25.2'
Pump (UNK2019) set @ 19.3'

0830 22 gal purged during development
~~took~~ Collect sample @ C-MW-022
Jars were pre-labelled last night
for efficiency & sample time
will be recorded as 1000 AM
Sample ID: 195-FM-C-LT-002-C-022-022^{MW-}
for DRO/RRO, PAH, VOC/EDB
Take ^{KH} Collect MS/MSD at this
site.

0915 Return to Red Bldg w/
Samples for shipment.

1020 Pack up gear & head to
M-UN-002 to check @ wells
installed by drill team (drill team
also working @ M-UN-002).

Some of the wells may not contain
water but M-MW-017 ready to develop.

Rite in the Rain

2 K. Holmes USACE 7/29/19
FoMo Ph. III RI clear w/light wind

Wells @ M-UN-002

Well 027 TD-36.55' WL-DRY

Well 001 (@loc 029) TD-28.85'

WL-27.28

* FTR Hoffmann arrived onsite & smells
POL on water level meter

Well 017 TD-25.45' WL-18.85'

Drill team finishing installing
well @ 020 but expect it
will also be dry. More
well material is coming this afternoon
so they will try to step out
slightly for a new well 029
(source well - marked ^{stake} 001 but
will be associated w/ 029 going
forward).

1100 Setup @ well M-MW-017

1215 Purged ~4 gal water - dry

1228 WL-23.85'

1237 WL-23.3'

1307 WL-22.36'

My truck is blocked in by
drill team vehicles - ride back to
Red Bldg w/L. Hoffmann to let well recharge.

K. Holmes USACE 7/29/19
FoMo Ph. III RI clear w/light wind

1400 Return to M-UN-002

1422 M-MW-017 WL-20.55

1506 WL-19.96

1548 WL-19.66

Will start developing again
@ 1555

* Bucket w/ 4 gals purged
earlier is only 1/2 full
Check w/ M. Ebert to confirm
nothing happened. Check
bucket - crack in bottom.

Mark bucket as cracked
& give to drill team for
soil. Transfer water
to new bucket & setup for
development. Will discuss
@ tailgate tomorrow.

Approx. 2 gals leaked next
to well.

1640 WL-19.16

Start purging water again.

1700 check WL - 23.1 → 23.0

in approx. 2 mins

1740 Purged dry.

1806 WL-23.68

1844 WL-22.66

4 K. Holmes USACE 7/29/19
FoMo Ph. III R1 Partial Overcast

1900 Pack up site & head back
to Red Bldg. Will
return @ 2100 to
develop again

2130 Talk w/ L. Hoffmann
won't develop well again
tonight as it may be
perched aquifer & concerned
may be draining it.
Site was left w/ everything
covered & nothing left that
needs to be changed.
End of day

~~6/1/19~~

K. Holmes USACE 7/30/19
FoMo Ph. III R1 Sunny w/ light wind

0800 Meet @ Red Bldg & tailgate

0900 Prep gear & head
to M-UN-002 for well
development @ M-MW-017
& M-MW-029 (new source
well installed yesterday.

Boring finished by 1300 &
all well materials in place &
finished by 1700. Will wait
until 1500 for development
per L. Hoffmann).

0915 check water level @
all existing wells:

MW 017 - WL 18.78'

MW 029 - under pressure

TD - 36.24 WL - 28.05

MW 020 - TD - 27.9' WL - 0 Dry

0935 Start (continue from yesterday)
development @ M-MW-017

1015 Purged approx. 4.5 gal - dry
Approx. 9 gal purged total including
yesterday

1025 WL - 24.45'

Return to Red Bldg while
well recharges

6 K. Holmes USACE 7/30/19
FoMo Ph. III RI Sunny w/light wind

1200 Return to M-UN-002

Drill team also here installing
well monuments

1215 M-MW-017 WL-21.12'

1245 WL-20.5'

1305 WL-20.15'

1340 WL-19.7'

1435 WL-19.3' Start well development
again

1510 Purged approx. 2 gal
WL-22.4 Resurge

1527 Purged approx. 4 gal (15 gal total)
WL-24.35 Will let recharge
& start development @ M-MW-029

1535 Setup for well development
@ M-MW-029
TD-36.24 before but
now TD-35.4

Drill team may have cut PVC
when installing monument as
it was pretty tall. Will
confirm later.

WL-25.09

1722 Purged approx. 3.5 gal

1750 Purged another 3.5 gal
for 7 gal. total.

K. Holmes USACE 7/30/19
FoMo Ph. III RI Sunny w/light wind

1755 WL 32.84 → 32.74

in approx. 2 min 20 sec

similar recharge rate as
M-MW-017

1804 Purged another 1 gal (8 total)
Well dry

1830 Re set-up @ M-MW-017

1907 WL-19.6'

1950* WL-19.3'

2050 Purged another 3 gal (11 total)

2140 21.9-WL

2145 surge & purge well again

2150 - Dry purged ~1 gal

* Went back & forth between
M-MW-017 & M-MW-029
for development of bottom
section of wells as recharging
times are grouped by well.

Re-purge @ M-MW-029

2010 WL-30.1

2055 WL-27.65

2170 Purge another 2 gal (10 Total)
WL-32.82

2155 start Purge
2205 Well dry - Purged ~2 gal (12 total)

8 K. Holmes USACE 7/30/19
FOMO Ph. III RI Partial Overcast

2245 Cleanup both sites

M-MW-017 is pretty well developed. The water clears up after initial sediment clears out after surging.

M-MW-029 is also looking like it will be good to sample after another round of development in the morning.

Head back to Red Bldg

~~Call~~

9 K. Holmes USACE 7/31/19
FOMO Ph. III RI Overcast

0800 Meet @ Red Bldg → tailgate

0930 Finish loading gear

Pre-cut tubing → calibrate YSI

1000 Setup @ M-MW-029

TD-35.4 WL-24.24

1040 WL-26.2

Purged 2 gal. Surge again

1101 WL-30.33

Purged 3 gal surge again

1121 Well dry → WL 34.1

purged 2 gal (7 today)

1135 WL-33.67

seems to recharge ~0.5' in 15 mins

1200 purged 1.5 gal (8.5 today)

1205 Setup @ M-MW-017

TD-25.4 WL-18.62

Screen set 14.9-24.9

Pump set @ 20' (UNK2019)

1245 surge water @ M-MW-029

Purge 1.5 gal (10 today)

WL - was 32.31 purge dry

Will let recharge → sample after sample collected @

M-MW-017

Rite in the Rain

10 K.Holmes USACE 7/31/19
FoMo Ph. III RI Overcast

1340 Rate established @
M-MW-017 @ 75 mL/min
for sustainable drawdown
Start collecting water
quality parameters

1400 Collect sample @ M-MW-017
19S-FM-M-UN-002-M-MW-017-017
for DRO/RO, PAH, VOC/EDB
↑ collect MS/MSD

1645 Finish collecting
sample & clean-up site.
Return to Red Bldg to drop
off pumps for decon &
will return to sample M-MW-029

1730 Return to M-UN-002
↑ setup on M-MW-029
to sample (source well)

TD-35.4 WL-26.0
Screen set 25.75-35.75
Purged 22 gals total
Pump (144346) set @ 27.5

1900 Collect sample @ M-MW-029
19S-FM-M-UN-002-M-MW-029-029
for DRO/RO, PAH, VOC/EDB

1910 Collect duplicate sample
19S-FM-M-UN-002-M-MW-029-929

K.Holmes USACE 7/31/19
FoMo Ph. III RI Overcast 11

1945 Finish collecting sample
& cleanup site.

Return to Red Bldg to
pad decon pump &
Collect equipment blank
Samples will be shipped
out tomorrow.

This concludes summer
groundwater sampling work.

~~K.Holmes~~

Test Pits / Hansel

2019



Rite in the Rain

ALL-WEATHER
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Nº 373N

PH Fort Morrow

Phase III RI

K. Holmes USACE T/12
N. Simmons FOMO Ph. IR RI Overcast w/ light rain

0800 meet @ Red Building & tailgate
Aniakchak crew also onsite including:
Celestee Renee - Excavator operator
Jeffrey Orloff - Assistant

Plan for today: Will start test pits
w/ Aniakchak crew - no groundwater
sampling today. Ashley Olson
will join test pit team until
departure to Anchorage in PM
Drill/WVOST team will continue
w/ WVOST @ AOC J & may move
to AOC M

Two test pit sites - both in AOC M
Samples: SGS is sending out more
methanol today. Have enough
for two test pits + duplicate
Test pits^(TP) can be developed
& left open for sampling but will
make sure to demarcate area
& limit duration of any open TP

Two test pit sites include:
M-GS-043 w/ 10 test pits
M-PR-005 w/ 4 test pits

0845 Finish loading truck &
mob to site w/ M-GS-043/PR-005

K. Holmes USACE 7/12/19
2 N. Simmons FOMO Ph. III RI Overcast w/ light rain

0900 Conduct site walk w/
A. Olson, FTL Hoffmann
Will start at proposed TP (TP)
Ø15 where portions of buried
debris noticeable from the surface
as well as other small cavities
where more debris is seemingly buried
deeper. Then will move to other
side of M-GS-043 site (south)
to get feel for the area.

The test pit locations do seem
generally set as planned -
in between Mess Hall (M-MH-002)
& M-GS-043 ground scars
Both set northeast of access
road & southwest from M-PR-005
But will continue to move test
pits & orient to delineate
area, ground-truth geophysical
survey performed in previous phases
that extends to about center of
Site area & southern portion
where no geophysical data
available.

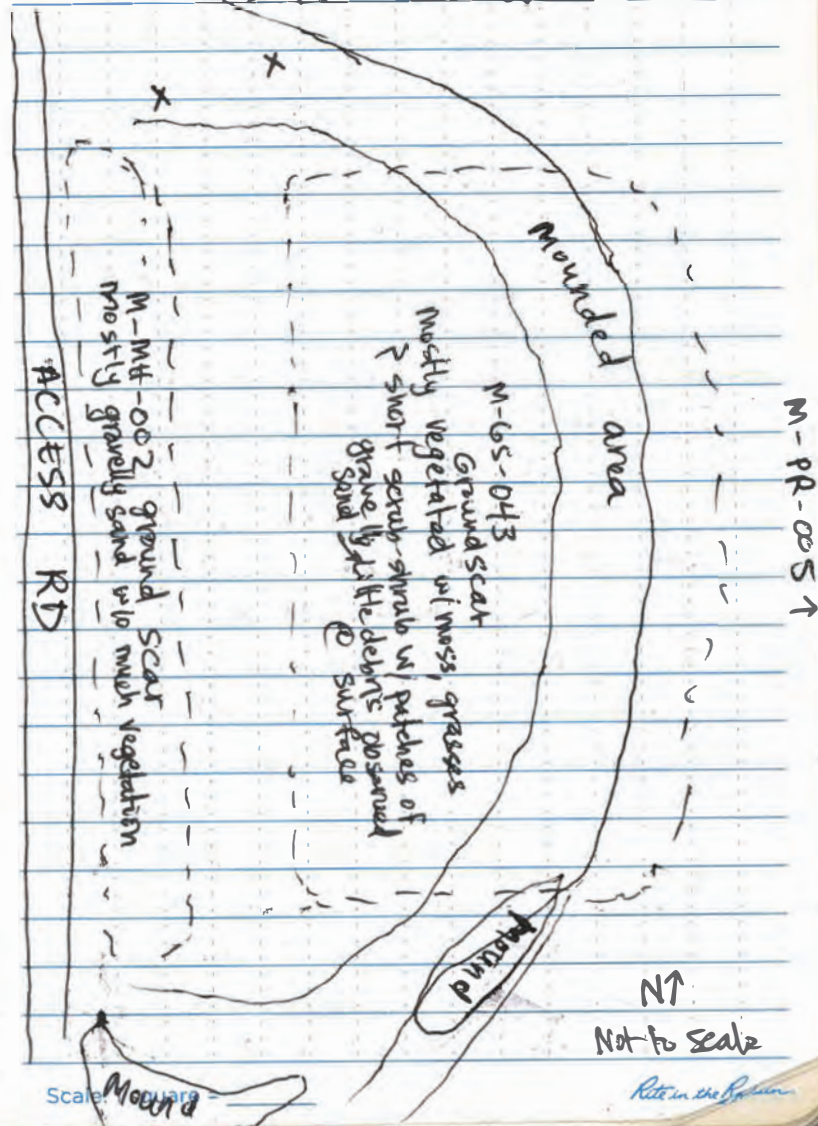
0915 Calibrate PID onsite

Scale: 1 square = _____

K. Holmes USACE 7/12/19
N. Simmons FOMO Ph. III RI 3

Conduct task specific safety mtg
w/ Aniakchak → cont. on next pg

SITE OVERVIEW



K. Holmes USACE 7/12/19
4 N. Simmons FoMo Ph. III RI Overcast w/ light rain

0915 Cont. TP site mtg. Will remove test pit soil in small lifts w/ excavator to be careful when encountering debris. Any intact or leaking drums will be left in TP. Debris & soil will be removed & placed on liner & then returned to test pit after samples collected and backfilled w/ pumice as needed so that debris is covered & no safety hazard @ surface.

0945 Start test pit @ gapp TP015
Test pit IDs will start @ $\phi 1$ & continue sequentially as they are completed.
E.g. This will be TP- $\phi 1$
& the next will be TP- $\phi 2$

1040 Finish TP- $\phi 1$. Test pit approx. 6' x 15' & 3' depth. Orientation is approx. NE x SW. Excavator bucket is 5.2' wide. Test pit debris including drum carcasses & metal fragments observed starting @ 0.5' & continued to 3' where test pit terminated.

sa 1 square = _____

K. Holmes USACE 7/12/19
N. Simmons FoMo Ph. III RI Overcast

Test pit terminated as drums & metal debris appear to continue in all four cardinal directions & vertically. No odor or PID readings observed. One drum lid had clear markings in yellow paint: [E-22] see test pit log & pictures for additional details
GASOLINE
AVIATION
MIL-G-5572-10
MONA-USA
1964-AF

1045 Collect samples from test pit sidewalls & floor. Sample summary will be included. Since new locations (GPS points) must be associated w/ a form but there is no test pit form will establish test pit corners through the XRF form. A. Olson leaves to confirm w/ Felipe Restrepo while samples collected. Drums located in all four sidewalls & floor but samples collected under drum location or where enough soil available for sample.

See next page \rightarrow

Scale: 1 square = _____

Return to the Sun

K. Holmes USACE 7/12/19
 6 N. Simmons Co. Mo Ph. III R1 Overcast

1115 A. Olson returns & confirms
 will collect locations under XRF
 form & associate samples w/a
 corner similar to ISM

1130 Change of plans: When all samples
 associated w/one point, samples IDs
 don't include a unique identifier.
 We will also collect centerpoint
 to associate each sample w/a
 unique point (test pit corner
 & centerpoint) & track which corner
 point associated w/which sidewall
 sample.

A. Olson & K. Holmes leave to
 continue troubleshooting iPad w/F. Reston
 while test pit is backfilled.

1240 Since test pit was mostly debris,
 not enough soil removed to completely
 cover piled debris or fill test pit.
 Stake off test pit boundary
 & demarcate area w/caution tape.
 Pictures collected during test pit
 development & corner points collected
 before sample collection.

Collect centerpoint & associate samples
 w/points & break for lunch

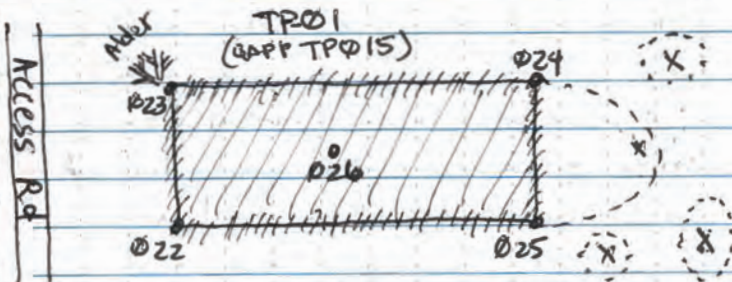
Scale: 1 square = _____

K. Holmes USACE 7/12/19
 N. Simmons Co. Mo Ph. III R1 Overcast 7

Sample Summary includes:

LocID	TP	Corner Pt	Sidewall Sample	Time/Depth
Ø22	TP-Ø1	SW	West	1045/2.5-3
Ø23		NW	North	1050/2-2.5
Ø24		NE	East	1055/1.5-2
Ø25	↓	SE	South	1100/2-2.5
Ø26	↓	Center	Floor	1105/3-3.5

X = Pockets & cavities observed
 on ground surface & pin flagged
 to avoid trip hazards
 Potentially represent additional
 debris



X = TP (Proposed TPØ14)
 = also placed in area
 where fragments of
 buried debris noticeable
 from surface intermixed
 w/small cavities

▨ = TP boundary w/drum
 cur casses & metal debris
 observed in sidewalls &
 floor of test pit

← 1 = 2' N↑

Scale: 1 square = _____

Rite in the Rain

8 K. Holmes USACE 7/12/19
N. Simmons FoMo Ph. III RI Overcast

1400 Meet @ Red Bldg & remob
to M-GS-043 to continue
test pits.

A. Olson will stay @ Red Bldg
for departure to Anchorage on
Lake Clark eta of 1430

1500 Setup & start TP-02
(proposed location TP020)

Actual Test Pit ID referenced in
iPad GPS locations & going forward
as e.g. 2019:TP-02 (gap: TP020).

TP-02 on opposite side of
M-GS-043 (south) from TP-01

No surface debris observed in
area & no indication of buried
debris. Test pit located in
area of small tussocks &
thicket of fireweed & mosses
between M-GS-043 & M-MH-002
ground scars.

1530 Finish test pit TP-02
TP-02 approx. 6' x 15' & 4.5' bgs
orientation approx. NE x SW

Test pit debris included drum
carcasses (4) & building materials
including milled lumber
& steel square nails

Scale: 1 square = _____

9 K. Holmes USACE 7/12/19
N. Simmons FoMo Ph. III RI Overcast

Test pit terminated w/ construction
debris continuing vertically & some
debris in sidewalls. See test pit
form & pictures for additional details.

1540 Collect samples from
test pit sidewalls & floor (TP-02)

Time	Sidewall	Depth	Notes
------	----------	-------	-------

1540	SW	3' (3-3.5)	
------	----	------------	--

1545	NW	3.3' (3-3.5')	
------	----	---------------	--

1550	NE	2.9' (2.5-3')	
------	----	---------------	--

1555	SE	1.8' (1.5-2')	
------	----	---------------	--

1600	Floor	4.5' (4-4.5')	collected under milled lumber w/noticeable oxidation coloration in soil
------	-------	---------------	---


1605	Floor (dup)		
------	-------------	--	--

1630 Finish backfilling test pit
& cleaning up site.

Placed debris back in test pit
first & fully covered w/native

Soil from test pit to surface level

1700 Finish collecting corner points
& centerpoint @ TP-02
Stake boundary of test pit
& demarcate

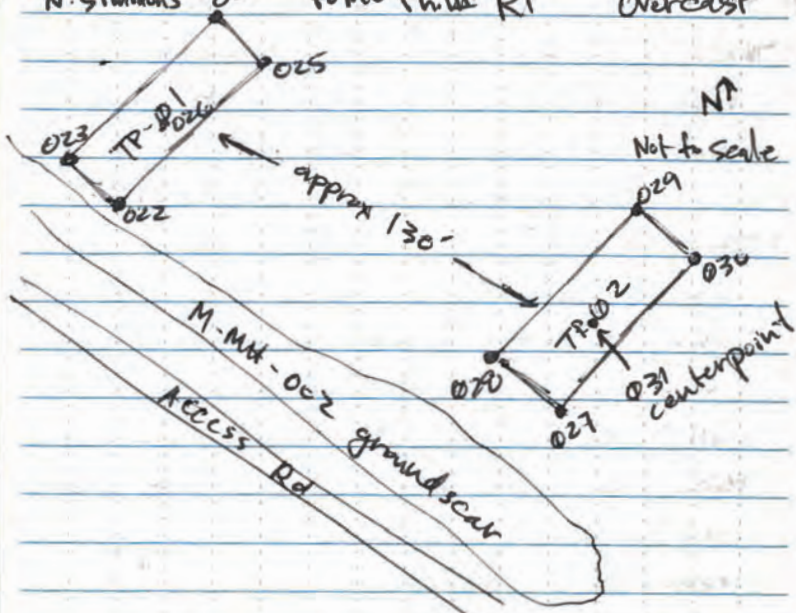
See next page for
location summary &
sketch 

Scale: 1 square = _____

10
K. Holmes
N. Simmons

USACE
FoMo Ph. III RI

7/12/19
Overcast



TP-02	Loc ID	f	Sample	Summary
Loc ID	TP	Corner Pt	Sidewall Sample	Time / Depth
027	SW		West	1540 / 3-3.5'
028	NW		North	1545 / 3-3.5'
029	NE		East	1550 / 2.5-3'
030	SE		South	1555 / 1.5-2'
031	center		Floor + Dip	1600 / 4-4.5'

1730 Head back to Red Bldg. Encountered metal wire while driving access Rd in AOC M towards airport rd. Wire twisted around wheel + axle & dragged ~25' before observed & stopped. Removed wire & will take to P&H landfill for disposal.

Scale: 1 square = _____

K. Holmes
N. Simmons

USACE
FoMo Ph. III RI

7/12/19
Overcast

11

1930 Discuss collecting sample locations along sidewalls in addition to corner points & editing auto iPad generated sample ID, as follows:
iPad sample ID created from associating sample w/ new location from XRF form:
19-FM-M-GS-043-DT-020-3-3.5
↑ Year ↑ Project ↑ AOC ↑ site ↑ Matrix ↑ LocID ↑ Depth Range

Discuss changing DT (since all samples soil) to test pit ID. Since characters limited to two values, could change as follows:
eg. T1 → test pit TP-01
T2 → test pit TP-02 etc
TX → test pit TP-10

Will confirm changes in AM. 2000 Head to logging to continue w/ data input & edits for consistency.

Scale: 1 square = _____

Rate in the Rain

12 K. Holmes USACE 7/13/19
N. Simmons F&M Ph. III RI Overcast w/light rain

0800 Meet @ Red Bldg & tailgate onsite

Plan for today: Aniakchak crew
will make a couple of runs
to quarry w/ dump truck
to stockpile pumice @ M-GS-043
to use as test pit backfill

We will finish summer groundwater
sampling of pre-existing wells in AM
& continue w/test pits afterwards.
Hopefully we will have new shipment
of methanol by then, to limit time
test pits need to be left open.

Update re: sample locations ↑

Sample IDs - will collect
sample sidewall locations in
addition to corner points ↑
will change sample IDs as
previously described.

0915 Collect check-in point
@ monument FM-RI-C1
to serve for points collected
yesterday. Will collect 2nd
in PM to serve for today.
→ See Groundwater logbook
for E-MW-001 sampling notes.

Scale: 1 square = _____

K. Holmes USACE 7/13/19
N. Simmons F&M Ph. III RI Overcast 13

1300 Back @ Red Bldg to mob for
test pits in PM w/Aniakchak crew
E Restrepo will join us to help
w/test pits while points
for sidewall samples & data
edits also captured. *

1400 Start @ TP-03 (gapp: TP02)

Moving north from south end of
M-GS-043 TP-02. No surface
debris or indication of buried
debris. Test pit located further
east from access road, in ground
scar from M-GS-043 & oriented
E/W & approx. 6' x 17' x 4' bgs

1430 No debris encountered in test pit
& No staining, or odors observed
& No PID screening readings
observed. See test pit log & pictures
* PID calibrated @ Red Bldg
before departure to site

1445 Collect samples from
test pit (TP-03) sidewalls
& floor

1505 collect GPS locations @ TP-01 &
TP-02 while TP-03 backfilled

Scale: 1 square = _____

Rite in the Rain

14 K. Holmes USACE 7/13/19
 N. Simmons F&Mo Ph. III R1 Overcast

Loc ID	Sample	Summary	for TP-01-03
Loc ID	TP	TP Point	Notes
032	01	W Sidewall	
033	01	N Sidewall	
034	01	E Sidewall	
035	01	S Sidewall	
026	01	Floor Sample	from 7/12 sufficient

036	02	W Sidewall	
037	02	N Sidewall	
038	02	E Sidewall	
039	02	S Sidewall	
031	02	Floor Sample	loc from 7/12 sufficient

040	03	SW corner	
041		NW corner	
042		NE corner	
043		SE corner	
044		N sidewall sample	
045		N " "	
046		E " "	
047		S " "	
048		Floor sample	

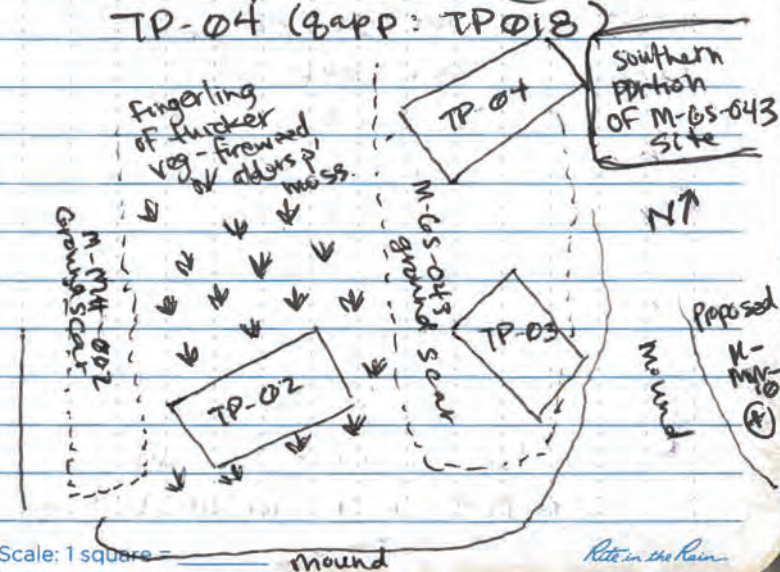
Note to change sample ID from
 DT → T# w/# = TP-# added to all
 Scale: 1 square = _____ Sample location Notes

K. Holmes USACE 7/13/19
 N. Simmons F&Mo Ph. III R1 Overcast 15

TP-03	Sample	Summary	Loc ID
Time	Sidewall	Depth	
1445	West	3-3.5	044
1450	North	2-2.5	045
1455	East	2.5-3	046
1500	South	1-1.5	047
1505	Floor	4-4.5	048

1545 Finish backfilling & cleaning
 up site. Stake corners &
 demarcate test pit boundary
 Native soil back-filled test pit to
 ground level.

1600 Setup & start @
 TP-04 (Bapp: TP018)



Retire in the Rain

16 K. Holmes USACE 7/13/19
N. Simmons FOMO Ph. III RI Overcast

1650 Terminate test pit @
4' bgs. No debris encountered
besides a few pieces of fur
paper at bottom of test pit
in southern most area.
Test pit is approx 6' x 17' x 4' bgs
& oriented NE x SW.

See test pit log & photos.

1705 Collect samples, including:

Time	Sample	Depth
1705	N sidewall	2-2.5'
1710	E	3-3.5'
1715	S	1-1.5'
1720	W	2.5-3'
1725	Floor sample	4-4.5'
1730	Floor (duplicate)	"

1750 Finish backfilling
test pit. Test pit backfilled
w/ native soil to ground
surface.

1835 Clean up site, stake
boundary & demarcate.
All stakes labelled w/ TP ID
Loc ID & stake name
(eg NW corner) for all test pits.

Scale: 1 square = _____

K. Holmes USACE 7/13/19
N. Simmons FOMO Ph. III RI Overcast 17

TP-04 Location ID Summary

Loc ID	TP Point
Ø49	SW corner
Ø50	NW "
Ø51	NE "
Ø52	SE "
Ø53	N sidewall sample
Ø54	E " "
Ø55	S " "
Ø56	W " "
Ø57	Floor + Dup

Since Loc ID included in sample
name, can't associate sample
w/ location or determine Sample
ID until point captured

Note added to change auto
iPad name as follows: (example)

19-PM-M-GS-Ø43-74-Ø53-2-2.5

All sample times, depth, Loc ID
& reference ID (e.g. North)

relayed to sample manager
for labelling & shipment.

1905 collect check-in survey point
& discard waste @ Landfill

Scale: 1 square = Return to red bldg to
finish enter data

K. Holmes USACE 7/14/19

18 N. Simmons FOMO Ph III RI Overcast & rain

0800 Meet @ Red Bldg & tailgate

Plan for today: Continue w/
test pits @ M-GS-043 all day

Drill team / UOST will continue

@ AOC J & move to M-PR-005
behind us, if they finish.

0845 mob to site. Task tailgate
onsite - things going well.

Will continue w/ good eye contact
between operator & crew &
going in shallow lifts.

Walk around site to tayout/adjust
test pit ^{locations} ~~sites~~ based on
results so far. Move planned

TP016 slightly east to delineate
mound on eastern side of

M-GS-043 ground scar. Move
planned TP019 slightly south
towards middle area between

TP-01 & TP-02, which are
both just east of M-MH-002
ground scar & were found to
contain debris.

0935 Start TP-05 (gapp: TP016)

No surface debris observed

Scale: 1 square = _____ Test pit will extend thru
past side mound

K. Holmes USACE 7/14/19

N. Simmons FOMO Ph III RI Overcast w/ light rain

1005 Terminate TP-05 @ 4' bgs

Test pit oriented N-S. E-W

& approx. 6' x 18' x 4' bgs

No debris or odors observed

See test pit log^{KH} & photos.

* PID calibrated @ Red Bldg
before we left to site.

1010 Collect samples from test pit
TP-05 sidewalls & floor

Time	TP Sidewall	sample	Depth	Range
1010	West		2.7	2.5-3
1015	North		3.4	3-3.5
1020	East		2.6	2.5-3
1025	South		3.8	3.5-4
1030	Floor		4	4-4.5

1110 Finish backfilling TP-05

test pit backfilled w/ native
soil to ground surface

Stake test pit boundary & demarcate

Clean up site

1150 Start TP-06 (gapp: TP019)

Test pit oriented E-W & N-S

between TP-01 & TP-02, somewhat

parallel to access road. No surface
debris observed *hits in the rain*

Scale: 1 square = _____

20. K. Holmes USACE 7/14/19
N. Simmons FOMo Phitt RI Overcast w/ rain

1205 Terminate TP-06 @ 4' bgs
Test pit approx. 6' x 15' x 4' bgs
Milled lumber encountered @
approx. 1.5' & corrugated metal
& wood debris @ 3'
See test pit log & photos

1215 Collect samples from test pit
TP-06 sidewalls & floor

Time	TP Sample	Depth	Range
1215	west sidewall	2'	2-2.5'
1220	north	1.5'	1.5-2'
1225	east	3'	3-3.5'
1230	south	2.5'	2.5-3'
1235	floor	4'	4-4.5'
1240	floor (dup)		

1315 Finish backfilling TP-06

All debris placed in test pit
first & covered w/native soil
Test pit backfilled to ground
surface w/native soil.

Test pit staked & demarcated
~~locations collected~~ → locations
site cleaned up. will be
Break for lunch collected
after lunch
(KH)

Scale: 1 square = _____

K. Holmes USACE 7/14/19
N. Simmons FOMo Phitt RI Overcast w/ light rain

TP-05 & TP-06 Location ID Summary

Test Pit	LocID	TP point
TP-05	058	SW Corner
	059	NW
	060	NE
	061	SE
	062	West sidewall sample
	063	North
	064	East
	065	South
	066	Floor

TP-06	067	SW Corner
	068	NW
	069	NE
	070	SE
	071	West sidewall sample
	072	North
	073	East
	074	South
	075	Floor

1430 Collect TP-05 & 06 locations
while excavator setting up
@ TP-07

Scale: 1 square = _____

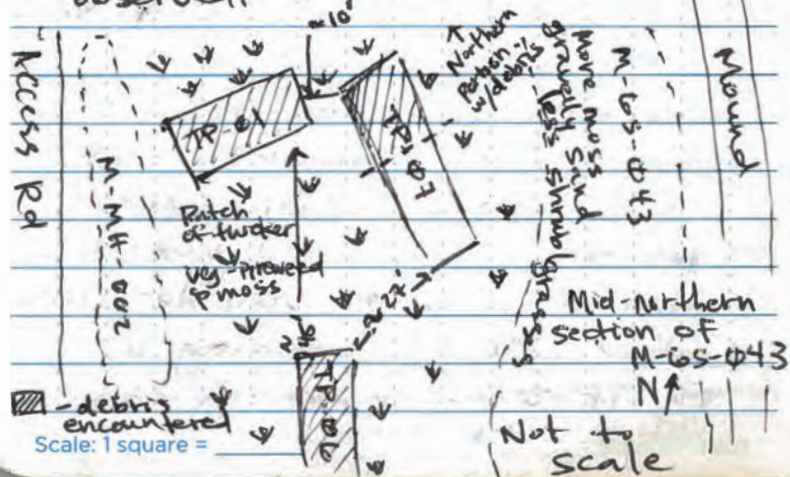
Rate in the Rain

K. Holmes USACE 7/14/19
22 N. Simmons FOMo Ph. III RI Overcast w/ light rain

1500 Start @ TP-07 (geop: TP017)

Test pit location slightly moved to encompass two locations that had been east of TP-01 to account for TP-05 which moved to characterize eastern mound feature.

Test pit is near the eastern base of TP-01 running perpendicular (N-S) & slightly angled towards eastern portion of M-65-043 to potentially capture eastern portion of buried debris area extending from TP-01 & west side of site in general. No surface debris observed.



K. Holmes USACE 7/14/19
N. Simmons FOMo Ph. III RI Overcast w/ light rain²³

1540 Finish developing TP-07

Drum carcasses & a 60-gal tank on a stand encountered

@ ~1' bgs in northern portion of test pit. Another drum carcass w/ what appeared to be rusty/discolored water

encountered @ 3' bgs. Water from drum was leaking out so left drum in test pit

& terminated northern section @ 3' bgs. Backed excavator

up to continue test pit to the south. No debris encountered on south side which extends beyond slightly mounded area

where debris has regularly been encountered. Debris appears to extend west, north,

& east from northern 1/2 of test pit w/ surface debris observed north, metal debris observed in east sidewall,

& TP-01 to the west

No PID screenings above 0.0 ppm encountered. See test pit

form & pictures

24 K. Holmes USACE 7/14/19
N. Simmons FOMO Ph. III RI Overcast w/ light rain

1545 Collect samples from
TP-07 sidewalls & floor

TIME	Sample	Depth	Notes
1545	West sidewall	1.5 (1.5-2)	In search of white drum not seen
1550	North "	0.8 (0.5-1)	Next to debris
1555	East "	1.4 (1-1.5)	Contributing N metal debris
1600	South "	2.8 (2.5-3)	clean wall
1605	Floor "	3" (2.5-3)	Under drain in N portion
1610	Floor (dup)		

Test pit is approx. E-W x N-S
6' x 28' x 3' bgs in north
4' bgs in south

* Drill team arrived in area
@ approx. 1445 Quick safety
mtg w/ them while setting up
@ site. They will start @ M-PR-045
to the east of M-GS-043

1700 Finish backfilling TP-07
All debris placed in bottom of
north portion & backfilled
w/ native soil. Test pit backfilled
to ground surface in most places
w/ minor gaps along edges. Will
top off w/ pumice backfill. Stake
boundary & demarcate. Clean up site.
Collect TP-07 locations

Scale: 1 square = _____

K. Holmes USACE 7/14/19
N. Simmons FOMO Ph. III RI Overcast w/ light rain 25

1720
1730 Setup @ TP-08

w/ sites having been adjusted
~~based on~~ don't know how helpful/
relevant proposed location IDs will be.
This test pit was placed @ northern
end of Phase II geophysical
anomaly signature. Signature
appeared to extend through
TP-01 & geophysical data stops
before TP-06. Test pit location
is generally set @ proposed location
on top of mound that extends
beyond M-MT-002 ground scar
& wraps around M-GS-043
site to the east. No sign
of surface debris.

1740 Test pit terminated at
4' bgs. Test pit oriented ~~N-S~~
NW-SE x approx. 6' (N-S) x 19' (E-W)

A few pieces of small building
materials (short piece of metal
& corroded canister) observed
in test pit @ ~1' bgs.

No other debris or odors observed
See test pit log & pictures.

Scale: 1 square = _____

Collect TP-07 locations
KH *fill in the rain*

26

K. Holmes USACE 7/14/19
N. Simmons FOMo Ph. III RI Overcast w/rain

1745 Collect sidewall samples
↑ floor sample @ TP-08

Time	Sample	Depth
1745	West sidewall	Depth 1.5-2'
1750	North "	1.5-2' 1-1.5'
1755	East "	2-2.5'
1800	South "	1.5-2'
1805	Floor "	4-4.5'

1830 Finish backfilling TP-08
w/native soil. Test pit
backfilled to ground surface
w/native soil.

Stake TP-08 boundary
↑ demarcate. Cleanup site
↑ collect TP-08 locations

1920 Collect GPS check-in
point (FM-RI-C1) ↑ dispose
of waste @ PH landfill
Return to Red Bldg to
cleanup truck, drop off
samples ↑ finalize data
for the day.

Scale: 1 square = _____

27

K. Holmes USACE 7/14/19
N. Simmons FOMo Ph. III RI Overcast

TP-07 ↑ TP-08 Loc ID Summary

Test Pit	Loc ID	TP Point
TP-07	076	NW corner
	077	NE corner
	078	SE corner
	079	SW corner
	080	West sidewall sample
	081	North " "
	082	East " "
	083	South " "
	084	Floor " "

TP-08	085	SW corner
	086	NW corner
	087	NE corner
	088	SE corner
	089 090 _{kt}	West sidewall sample
	090 091 _{kt}	North " "
	091 092 _{kt}	East " "
	092 093 _{kt}	South " "
	093	Floor " "

GPS check-in Point collected
under WOST Form for feature
FM-RI-C1

Scale: 1 square = _____

28 K. Holmes USACE 7/15/19 w/light
N. Simmons F&M Ph. III RI Overcast rain

0800 Meet @ Red Bldg & tailgate
Plan for today: Finish test pits
@ M-GS-043 & then switch
gears in PM. Another methanol
shipment expected tomorrow
morning but only enough for
2 test pits today & will
minimize time test pits left
open. Drill/UVOST team to
mob over to M-UN. Jeff will
transport drill rig w/loader
before we get started.

0910 Mob to M-GS-043 w/Celestee
while Jeff moving drill rig.
Emmett came by & oiled spots
of excavator. Celestee said
it has been acting kind of
off at times. She looks over
excavator & not sure if the right
places were oiled but wants
to try it.

0930 Jeff back onsite

1000 Setup @ TP-09 Test pit
adjusted slightly downhill since
TP-08 was clean (mostly) to see

Scale: 1 square = _____ if debris from TP-01
extends that far east.

K. Holmes USACE 7/15/19
N. Simmons F&M Ph. III RI Overcast 29

1030 Test pit terminated @ 4' bgs
Test pit oriented approx NE x SW
& is 6' (E-W) & 16' (N-S) x 4' bgs
No surface debris observed &
only debris observed in test pit
was one small piece of weathered
board about 2" thick approx. 2' bgs
See test pit form & pictures.

1040 Collect TP-09 sidewall
& floor samples

Time	Sample	Depth	Range
1040	West sidewall	2.7'	2.5-3'
1045	North "	1.7'	1.5-2'
1050	East "	3.8'	3.5-4'
1055	South "	2.4'	2-2.5'
1100	Floor "	4.2'	4-4.5'

1130 Finish backfilling test pit.

Test pit backfilled w/native soil
to ground surface.

Test pit boundary staked &
demarcated.

Test pit locations collected
while excavator sets up at
final test pit for M-GS-043

Scale: 1 square = _____

Rite in the Rain

30 K. Holmes USACE 7/15/19
N. Simmons FOMo Ph. III RI Overcast

1145 Reposition on TP-10

located @ far south end of
M-GS-043. Test pit moved here
to tentatively determine if
debris in south side mound or

if debris from TP-02 ends
@ base. Due to limited space
set test pit SW-NE so that
test pit spoils can be placed
on liner to south of excavation.

1215 Test pit terminated @ 4' bgs

Test pit approx. 6' (N-S) x 16' (E-W)
Drum carcasses (3) and a small
piece of corrugated metal observed
in test pit - all from north
sidewall only - apparently
the end extension of debris
encountered from TP-02

(located from approx. 15' northwest)

North wall is raised higher due
to being edge of mound/push pile

See test pit log & pictures.

1230 Collect TP-10 sidewall samples
& floor sample

see summary →

Scale: 1 square = _____

K. Holmes USACE 7/15/19
N. Simmons FOMo Ph. III RI Overcast 31

TP-10 Sample Summary:

Time	Sample	Depth	Range
1230	West Sidewall	3	2.5-3
1235	North	2.5	2.5-3
1240	East	3	3-3.5
1245	South	1.9	1.5-2
1250	Floor	4.1	4-4.5

1300 Start to backfill TP-10

but excavator losing power.
Celestee says she doesn't know

what's wrong. It seems to
be having a hard time to
raise arm. Call the Port
Heiden mechanic - Emmett

They will troubleshoot excavator
in PM. Also

Stake test pit boundary

& demarcate area.

Collect test pit locations see summary on next page →
& break for lunch.

1330 Collect GPS check-in point
FM-RI-C1 & dispose of
waste @ Ptt Landfill.

Will spend afternoon collecting

Background ISM samples

Scale: 1 square = _____

32 K. Holmes USACE 7/15/19
N. Simmons FoMo Ph. III RI Overcast

TP-09 & TP-10 Loc ID Summary

Test Pit	Loc ID	TP Point
TP-09	094	SW corner
	095	NW
	096	NE
	097	SE
	098	West sidewall sample
	099	north " "
	100	east " "
	101	south " "
	102	floor " "

TP-10	103	SW corner
	104	NW
	105	NE
	106	SE
	107	West sidewall sample
	108	north " "
	109	east " "
	110	south " "
	111	floor " "

TP-10 sample names changed to TX as described previously. No duplicate sample collected today -

Scale: 1 square = _____ Drill team will cover it. ~~bill~~

K. Holmes USACE 7/16/19
N. Simmons FoMo Ph. III RI Overcast w/ light rain³³

0800 Meet @ Red Bldg & tailgate.
Plan for today: Finish backfilling TP-10 @ M-GS-043 & decon. Then move to M-PH-005. Drill/WOST team will continue @ M-UN site.

Emmett indicated that diesel was missing from excavator last night - shouldn't have gone through so much over a couple of days. Added fuel & added locking fuel cap for security. Also changed filters since didn't know when they were changed last. He said he turned it on & seemed to be okay.

0845 Calibrate PID @ Red Bldg & load up to finish M-GS-043. More methanol should be on morning flight & available for samples in PM.

0900 Celestee looks over excavator. Said oil levels looking low & not all points look oiled. Call Emmett back to site for additional oil.

0915 Move excavator to level ground.

Scale: 1 square = _____

Return the Rain.

K. Holmes USACE 7/16/19
34 N. Simmons FOMo Ph. III RI Overcast

1015 Finished backfilling TP-10

Excavator seemed to work okay.

Test pit backfilled w/native soil
to ground surface

Excavator started to pick up
scoop of pumice to finish
backfilling sites as needed but
stopped working again.

Called Emmett & will request
to switch out to excavator
that Celestee prefers. & call ETL Hoffman

1130 New excavator onsite.

1200 Finish topping off TP-01 &
TP-07 w/pumice

Break for lunch

1315 Decon excavator bucket
from M-GS-043 & move
to M-PH-005

1340 Call ETL Hoffman to discuss
test pit strategy @ M-PH-005
Decide that area is small enough
& using wider bucket (~6' wide)
so may be sufficient to
place two test pits. Start TP-01
through center of small mound

Scale: 1 square = _____

feature @ site.

K. Holmes USACE 7/16/19
N. Simmons FOMo Ph. III RI Partial overcast 35
w/light wind

1400 Encounter 2" diameter steel
pipe stickup situated vertically

in test pit. No odor of PID

reading observed (0.0 ppm) @ approx 3' bgs

Excavator jogs out to the north
slightly to potentially expose
connected tank, etc.

1515 Finish developing TP-01

@ M-PH-005. Additional
steel pipe observed in
western portion of test

pit, including an approx
5' piece of steel pipe that
is loose, and a 10' piece
w/a threaded 90° elbow

that continues to extends
to the west.

Test pit is oriented ~NE-SW
≈ 6' (N-S) x 26' (E-W) x 3' bgs
in eastern portion & 4' bgs

in center portion w/a
9' jog to the north.

See test pit form &
pictures for additional
details

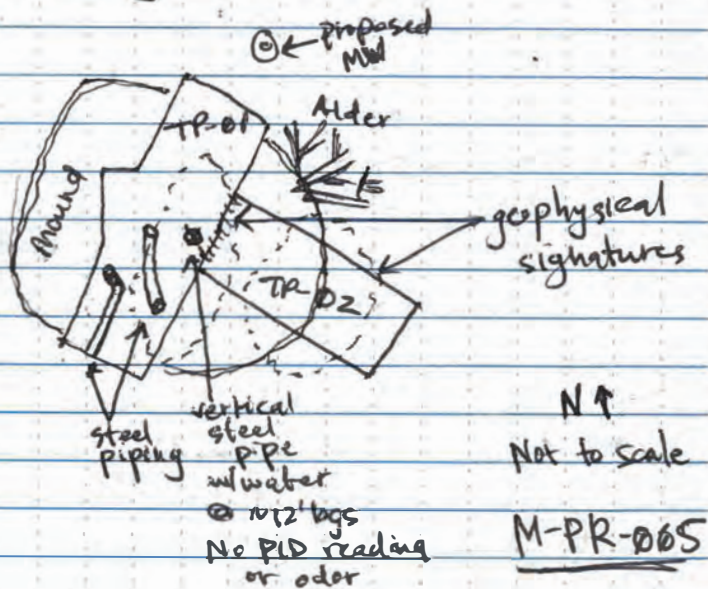
Scale: 1 square = _____

Rate in the Rain.

36

K. Holmes USACE 7/16/19
 N. Simmons FOMo Ph. III RI Partial overcast w/
 light wind

1520 Call FTL Hoffmann to
 discuss test pit results
 & second test pit placement
 First test pit seems to
 cut through one of the geophysical
 signatures. Will place second
 test pit perpendicular to
 TP-01 extending from vertical
 pipe to the south to intersect
 second geophysical signature
 & investigate near large alder
 @ edge of mound.



Scale: 1 square = _____

K. Holmes USACE 7/16/19
 N. Simmons FOMo Ph. III RI Partial overcast 37
 w/light wind

1545 Test pit terminated @ 4' bgs
 TP-02 oriented approx. NW-SE
 & 6' (E-W) x 16' (N-S) x 4' bgs
 One piece of metal debris
 (possible drum lid) observed @
 2-2.5' bgs Another piece of
 buried steel pipe observed
 @ TP-02 floor in NE corner
 near vertical stick-up.
 See test pit form & pictures

1555 Collect sidewall samples
 & floor samples from
 TP-01 & TP-02. No north
 sidewall of TP-02 present
 as it intersected w/ TP-01

TP	Time	Sample	Depth
TP-01	1555	West sidewall	1.5-2
	1600	North "	2.5-3
	1605	East "	1.5-2
	1610	South "	2.5-3
	1615	Floor	2-2.5
TP-02	1625	West sidewall	2.5-3
	1630	East "	1.5-2
	1635	South "	1.5-2
	1640	Floor	4-4.5
	1645	Floor (dup)	

under horizontal steel pipe

Next to vertical stick-up

Rate in the field

Scale: 1 square = _____

38 K. Holmes USACE 7/16/19
 N. Simmons FoMo Ph. III R1 Mostly clear w/ light wind

1700 Collected test pit boundary locations to confirm
 TP-01 & TP-02 cover the geophysical signatures - looks good based on iPad locations
 M-PR-005 TP-01 & TP-02 LocID Summary

Test Pit	LocID	TP Point
TP-01 ↓	014	SW corner
	015	NW "
	016	NE "
	017	SE "
TP-02 ↓	018	NE corner
	019	SE "
	020	SW "
	021	NW "
TP-01 ↓	022	West sidewall sample
	023	North " "
	024	East " "
	025	South " "
	026	Floor " "
TP-02 ↓	027	West sidewall sample
	028	East " "
	029	South " "
	030	Floor " "
TP-01	031	Jog along northern portion of sidewall

Scale: 1 square = _____

K. Holmes USACE 7/16/19
 N. Simmons FoMo Ph. III R1 Mostly clear w/ light wind

1810 Finish backfilling TP-01 & TP-02 @ M-PR-005. Both test pits backfilled to ground surface w/ native soil

1830 Finish backfilling test pits @ M-65-043 with pumice backfill as needed. Will leave pumice piled by access road in case any site settles & needs more backfill in next future.

1845 Finish collecting data & photos @ M-PR-005. Will come back tomorrow to replace sample location pin flags w/ stakes & sketching overview figures

1912 Collect GPS check-in point @ FM-RI-C1 & dispose of waste @ PHT landfill.

2030 Finish inputting site data in iPad & summarizing samples for QC during packaging.

* All test pit samples submitted for DRO/RRO (AK102/103), PAH (8290SM) & POL VOCs (8260)

Scale: 1 square = _____

[Signature]

40 K. Holmes USACE 7/21/19
N. Simmons FOMo Ph III RI Overcast w/ light rain

* Note regarding samples / loc IDs:
All directions (cardinal) associated
w/ samples collected were used
as a temporary field reference
& approximated. Referenced
directions were used until
location IDs were established
when the test pit was
backfilled. Location IDs
are to be used going forward.
Referenced directions may be
inaccurate in some locations
but were used for systematic
tracking & should be disregarded.

~~6/11~~



Rite in the Rain.
ALL-WEATHER
UNIVERSAL
№ 373N

Fort Morrow
Fall 2019
Phase III RI
Book 1 of



Name Ahtna Environmental Inc.

Address 110 W 38th Street
Anchorage AK 99503

Phone _____

Email _____

Projects Fort Mowrow Phase III RI
Fall 2019



RiteintheRain.com

CONTENTS

PAGE	REFERENCE	DATE
	Sample ID format:	
	19F-FM-J-WH-002-J-MW-	

m. Kottke
A. Gerlich F.Mo Ph III RI 50°F Rain
September 17, 2019

- 0720 Calibrate YSI 04 and TB02
- 0745 Pump 144466, IP 03 will be used
- 0808 Depart Red building after safety meeting
- 0814 Arrive at M-PR-001 to take water level measurements.
- 0839 Depart M-PR-001
- 0849 Arrive at M-UN-002 to take water level measurements.
- 0856 Depart M-UN-002
- 0916 Arrive at J-wH002 to take water level measurements.
- 0919 Depart J-wH-002
- 0930 Arrive at B-DA-003. will begin to take water level measurements on north end of feature.
- 0969 Depart site B-DA-003
- 1005 Arrive at Red building.
- 1020 Depart Red building.
- 1028 Arrive at J-WH-002 J-MW-002
- 1141 Sample ~~19F-FM-J-WH-002-J-MW-002~~ ~~19F-FM-J-WH-002-J-MW-002~~
- 1157 well went dry after VOAs
- 1200 Arrive at J-wH-003 J-MW-003
- 1240 Sample ~~19F-FM-J-WH-003-J-MW-003~~ ~~19F-FM-J-WH-003-J-MW-003~~
- 1245 and duplicate ~~19F-FM-J-WH-003-J-MW-003~~ ~~19F-FM-J-WH-003-J-MW-003~~
- 1249 well went dry after VOAs

Scale: 1 square = _____

Plot in the Rain

M Kottke
A Geulich

FOMO PH III RI

55°F Overcast
September 17, 2019

1250 Return to J-MW-002 to complete
Sample collection.

1257 Sample complete

1300 Return to J-NH-003 to complete
Samples

1330 Sample complete

1334 Depart feature T-WH-003

1340 Arrive at Red building.

1505 Depart Red building.

1514 Arrive at ~~M-PR-003~~ ^(MW) M-PR-001

~~M-MW-003~~ ^(MW) ~~M-MW-004~~ ^(MW)
1550 Sample ^(MW) ~~M-PR-001-004~~

1603 Move to M-MW-006
~~M-PR-001-M-MW-006-006~~

1630 Sample ^(MW) ~~M-PR-001-006~~

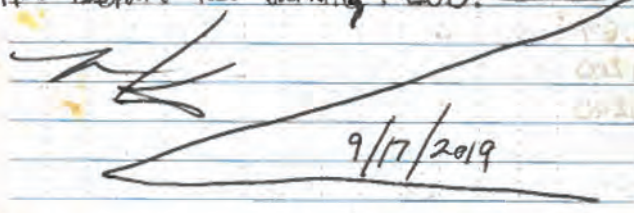
1645 move to M-MW-002
~~M-PR-001-M-MW-002-002~~

1736 Sample ^(MW) ~~M-PR-001-002~~

1740 Depart site.

1747 Arrive at Red Building. Decon.
equipment.

1900 Depart Red building. EOD.



Scale: 1 square = _____

M. Kottke
A. Geulich

FOMO PH III RI

50°F wind gusts
Overcast
September 18, 2019³

0703 Arrive at Red building. Calibrate VSI 04
T602, IPO2 and IPO3 will be used.

0917 Depart Red building after safety meeting

0822 Arrive at M-PR-01 M-MW-003

0837 Begin purge with pump #144463

0906 Sample from M-MW-003

0910 AG moves M-MW-001 (M-PR01) and begins to
purge with pump #144466

0930 Sample from M-MW-001

0936 ml moves to M-MW-005

0946 begins to purge with pump #144463

1006 Sample from M-MW-005

1020 Depart site M-PR-01

1038 Arrive at M-UN-002

1059 Begin to purge M-MW-029 with pump
#144466

1128 Sample at M-MW-029 and Duplicate

1133 AG moves to M-MW-017

1136 Begin purge with pump #144466

1150 Sample at M-MW-017

1207 Depart M-UN-002 for Red building

1215 Arrive at Red building for decon

1325 Depart Red building for B-DA-003

1335 Set up at B-MW-015

1400 Begin purging with pump #144466

Scale: 1 square = _____

Rite in the Rain

A Kettle
A Grillich FOMO PATTERN 50°F rain, wind gusts
September 19, 2019

- 1431 Sample from B-MW-015. Decoils
1440 AG moves to B-MW-008
1450 Begin purging with pump #12649
1520 Sample at B-MW-008. Decoils
1525 MK moves to B-MW-007
1559 Well name in IPED is A-MW-007
1608 begin purge with pump #12649
at B-MW-007
1636 sample at B-MW-007
1700 Depart site
1707 Return to Red building. Decoils
both pumps (#12649, 144466)
1816 Equipment blank with 144466
EB-W-091819-002
1907 Depart Red building EOD.

[Handwritten signature]

9/19/2019

Scale: 1 square =

M. Kottke
A. Grillich FOMO PATTERN 50°F Overcast
September 19, 2019

- 0703 Arrive at Red building. Safety meeting
Calibrate YSI 04. Using turbidity meter
201407081. IP 02 and IP 03 will
be used. Turbidity meter was calibrated
by TIT. Pump #12649 and 144466
will be used
0804. Depart Red building for B-DA-003
0809 Arrive at B-DA-003.
0810 Set up at B-MW-012. Using pump
#144466, IP 03, TB meter 201407081
0834 Begin Purge. AG begins to set up on
B-MW-12
0905 Sample at B-MW-013
0850 Begin Purge at B-MW-012
0925 Sample at B-MW-012
0930 MK moves to B-MW-001 at B-DA-004
0940 Begin Purge at B-MW-001
1028 Sample at B-MW-001 with pump 144466
1036 AG moves to B-MW-002
AG Begin to Purge with pump 12649
1053 Sample from B-MW-002
move to B-MW-017
01159 Sample from B-MW-017
1221 Depart site for Red building
1225 Arrive at Red building.

Scale: 1 square =

Return to Kettle

M. Kettle
A. Gillich FOMO PATH RE 52°F Overcast
September 19, 2019

- 1410 Depart Red building
- 1423 Arrived at end of road before AOC F
- 1445 Arrive at F-MW-001
- 1539 sample at F-MW-001 and duplicate
- 1552 Depart site F-OT-001
- 1609 Arrive at Truck. Depart for Red building. Hand off samples.
- 1643 Depart Red Building.
- 1653 MK is dropped at M-MW-001
- 1700 AG departs for J-WH-003
- 1707 Collect sample for Sil Gel (Clear up at J-MW-003, and duplicate)
Collect PATH sample at M-MW-005
- 1732 Depart for Red Building (MK + AG)
- 1737 Arrive at Red Building. Decon equipment. Hand off samples.
- 1803 Depart Red building for house.
EOD

Scale: 1 square =

M. Kettle
A. Gillich FOMO PATH RE 50°F Overcast
September 20, 2019

- 0746 Arrive at Red Building
- 0756 Equipment Blank EB-5
with pump #12649
- 0801 Equipment Blank EB-4
pump #144466
- 1006 AG and MK are expected to depart Fort Heiden today
- 1137 Depart Red Building
- 1145 Arrive at AOC F. Photo of 1 apt goldfish lake.
- 1200 Fuel up truck
- 1211 Depart for Red building
- 1216 Arrive at Red building
- 1217 Plane for passengers is here
MK, AG, MB departure
Plane Handling Log book over to N. Simmons

Scale: 1 square =

Return to Page

MK
9/19/2019

Book 2 of
PHASE III RI
014 FORT MORROW

Rite in the Rain.
ALL-WEATHER
UNIVERSAL
№373N



FALL 2019



Name _____

Address _____

Phone _____

Email _____

Projects _____



RiteintheRain.com

PORT HEIDEN, AK
2 FOMO PHASE III RI 9/17/19 CONT

MADE NOTE ON FIELD FORM
0910 MOVE TO AREA B TO CONTINUE
SYNOPTIC SURVEY

~0945 M KOTTKE & ~~5:12~~ A GELICH
ARRIVE AT AOI B, BEGIN
MEASURING AT OTHER END OF B
1010 RETURN TO RED BUILDING, TURN
IN H₂O LEVEL FORM, DISCUSS
ISSUE W/ WELL LABELING AT
AOI C W/ M SIMMONS
& L HOFFMANN. L HOFFMANN
CONFIRMS TO USE WELL IDS
FROM IPAD, NOT WELL IDS
WRITTEN ON WELL.

1005 MOVE TO AOI C TO BEGIN
SAMPLING. SET UP AT
C-MW-005. SEE PURGE/
SAMPLE LOG IN APP.

1105 APP MALFUNCTION - NO
FEATURES LISTED. CALL
L HOFFMANN - D PANKAJI
SAYS IPAD LIKELY DIDN'T
GET SYNCED. L LUCASSON
WILL BRING US NEW
IPAD TO USE.

Scale: 1 square =

-MB 9/17/19-

PORT HEIDEN AK
FOMO PHASE III RI 9/17/19 CONT.

L LUCASSON ARRIVES W/ NEW
IPAD (WHITE) - SWAP THEM OUT.
RESUME PURGING C-MW-005.
SEE FIELD FORM IN APP.

1145 COLLECT SAMPLE FOR PBO,
EDB, POL UOCS, PATHS.
1155 DECON PUMP

1200 RETURN TO RED BLDG.
PICKS UP ADDITIONAL SAMPLING
SUPPLIES

1310 MOVE BACK TO AOI C, SET UP
AT C-MW-001 TD = 20.7 FT PORE
SEE PURGE FORM IN APP.

1330 WELL C-MW-001 PURGED
DRY. WILL LET RECHARGE &
THEN COLLECT SAMPLE.

1350 C-MW-001 HAS NOT
RECHARGED AT ALL YET.
DECON PUMP, MOVE
TO C-MW-002. SEE
PURGE/SAMPLE FORMS IN
APP.

1450 COLLECT SAMPLE FROM
C-MW-002

1500 DECON PUMP, MOVE & SET

Scale: 1 square =

-MB 9/17-

Return to Rain

~~MP~~ ~~EMB 917~~

UP AT C-MW-Φ3. SEE PURGE/
SAMPLE FORM IN APP.

1540 IPAD BATTERY DIES. RECHARGE
IPAD, RECORD PARAMETERS
MANUALLY FOR LATER TRANSFER
INTO IPAD

1600 COLLECT PRIMARY + MS/MSD
SAMPLE FROM C-MW-Φ3.

1605 L LUCASON STOPS BY
TO DROP OFF ADDITIONAL
BOTTLES, TAKES SAMPLES
FROM C-MW-Φ2 & C-MW-Φ3

~ 1620 L LUCASON DEPARTS

1630 DECON PUMP, MOVE TO
SET UP @ C-MW-Φ4.
SEE PURGE/SAMPLE
FORM IN APP.

1645 RETURN TO RED BLDG,
DECON EQUIPMENT

1830 C CHRISTENSEN DEPARTS
FOR DAY. WORKING W/
D PANKANI TO FIX IPAD
ISSUE @ C-MW-Φ3

1930 DEPART SITE FOR DAY
- M 9/17/19 -

Scale: 1 square =

PORT HEIDEN, AK
FOMO PHASE III RI

9/18/19

PERSONNEL: MORGAN BRUNO/SAMPLER
CELESTEE CHRISTENSEN/HEAVY

OBJECTIVE: CONTINUE GW SAMPLING
AT AOI C + AOI B.

CONDITIONS: ~ 50°F, LIGHT RAIN, WINDY
0705 ARRIVE ON-SITE - H4S TAILGATE
WILDLIFE, DRIVING SAFETY.

0710 DISCUSS PLAN FOR DAY -
WE WILL START AT AOI B
WHILE WAITING FOR FURTHER
DIRECTION ON WELL WANGS
FOR NEW WELLS @ AOI C.

0715 CALIBRATE EQUIPMENT

YSI = YSI-Φ5

TURBIDIMETER = T303

PUMP = 1264.9

INTERFACE PROG = IP01

SEE CALIBRATION FORMS

0730 LOAD TRUCK, DISCUSS
PARAMETER ORDER W/
IPAD W/ D PANKANI.

0814 MOVE TO AOI B TO BEGIN
SAMPLING

0815 SET UP A B-MW-Φ5.
ONLY 1.5 FT OF H₂O IN

Scale: 1 square =

- M3 9/18 -

Return to Rain

6 PORT HEIDEN, AK
FOMO PHASE II RE

9/18/19 cont

WELL

0835 BEGIN PURGING B-MW-005
WELL PURGES BELOW
PUMP INTAKE PRIOR TO
ANY H₂O DISCHARGING
THROUGH FLOW CELL - WASTE
TO SAMPLE.

0900 PULL PUMP & DECON.
MOVE TO B-MW-016, MEASURE
H₂O LEVEL. LESS THAN
1 FT H₂O IN WELL -
CANNOT SAMPLE W/
BLADDER PUMP.

0915 MOVE TO SET UP @
B-MW-014

0930 BEGIN PURGING B-MW-014

0940 H₂O NOT PUMPING, PULL
PUMP TO TROUBLESHOOT -
AIR LINE CAME OFF
PUMP. REPLACE &
RESUME PUMPING

1010 COLLECT SAMPLE @ B-MW-014

1020 DECON PUMP MOVE
B-MW-016 & SET UP.

~~0940~~

~~WELL PURGES BELOW~~

Scale: 1 square = _____ - mg 9/18 -

PORT HEIDEN AK
FOMO PHASE III RE

9/18/19 cont

1030 FITTING ON FLOW THROUGH
CELL SNAPS OFF. MOVE
TO RED BLDG. TO GET
REPLACEMENT.

1100 RETURN TO B-MW-016

1110 BEGIN PURGING B-MW-016
SEE PURGE / SAMPLE FORM

1140 COLLECT SAMPLE AT B-MW-016

1210 IPAD DING - PACK UP
TRUCK & RETURN TO RED
BLDG. WILL DECON PUMP
& COLLECT EB WHILE
IPAD CHARGES

1330 COLLECT EB-W-01819-001
W/ PUMP 12649. PUMP
HAVING ISSUES W/ AIR
LEAKING.

1400 A GELICH TAKES PUMP
12649 TO TROUBLESHOOT.

1405 N SIMMONS RELAYS
MESSAGE FROM A
JOHN THAT WELLS W/
TOO LITTLE H₂O TO PURGE
SHOULD NOT BE SAMPLED.

1415 MOVE TO MOI B, PICK UP

Scale: 1 square = _____ - mg 9/18/19 - *Ritter in the Rain*

PORT HEIDEN AK
FOMO PHASE III RI

9/18/19 cont.

DECONNGED PUMP #
FROM A CELLICH.

1425 ROBE TO AOI C, SET UP
@ WELL MARKED C-MW-Φ09

1440 - LATE ENTRY - N SIMMONS
RELAYS THAT NEW WELLS
@ AOI C SHOULD BE
SAMPLED UNDER WHATEVER
WELL ID IS WRITTEN ON
MONUMENT.

1450 BEGIN PURGING C-MW-Φ09
COLLECT SAMPLE @
C-MW-Φ09

1535 DECON PUMP

1540 ~~1540~~ ~~MB918~~ MOVE TO
C-MW-Φ06. SEE PURGE
SAMPLE FORM. IPAD
SAYS THERE IS NO
WELL @ C-MW-Φ06;
RECORDED ON IPAD
PURGE FORM FOR
C-MW-Φ11

1620 COLLECT SAMPLE @
C-MW-Φ06.

1635 DECON PUMP

Scale: 1 square =

- MB 9/18/19 -

PORT HEIDEN AK
FOMO PHASE III RI

9/18/19 cont.

1640 SET UP @ ~~MB918~~ C-MW-Φ02
SEE PURGE/SAMPLE FORM

1655 BEGIN PURGING C-MW-Φ02

1720 COLLECT SAMPLE FROM
C-MW-Φ02

1740 RETURN TO RED BLNG TO
ALLOW TIME TO DO EB
ON PUMP BP201

1800 DECON PUMP SB201

1835 COLLECT [EB-W-Φ101A-Φ03]
FROM PUMP BP201

1900 FINISHED FOR DAY, DEPART

MB
9/18/19

Scale: 1 square =

Ritter

10 PORT HEIDEN AK
FOMO PHASE III RI 9/19/19

PERSONNEL: MORGAN BRUNO/SAMPLER

CELESTEE CHRISTENSEN/HELPER

CONDITIONS: ~48 °F, OVERCAST

OBJECTIVE: CONTINUE GW SAMPLING

Φ7Φ ARRIVE @ RED BLDG, BEGIN

CALIBRATION. SEE CAL FORMS.

Φ715 TAILGATE SAFETY MTG -

HYDRATION, WEATHER,

STAYING WARM & DRY.

REFUELING TRUCKS -

16ΦΦ TO 17ΦΦ. POSSIBLY

USING SOMEONE w/ ATV

TO DROP OFF SUPPLIES AT

AOI E WELL TO AVOID

ERGONOMIC ISSUES w/ CARRYING

BATTERY TO WELL. N SIMMONS

IS LOCKING INTO THIS &

WILL GET BACK TO W.

Φ805 MOBE TO AOI C TO SET

UP AT C-MW-Φ14. SEE

PURGE/SAMPLE FORM.

Φ905 COLLECT SAMPLE + MS/MSD

FROM C-MW-Φ14

Φ910 N SIMMONS ARRIVES AT

AOI C TO LOOK AT

Scale: 1 square =

-MB 9/19-

PORT HEIDEN, AK
FOMO PHASE III RI 9/19/19 CONT

WELL NAMING ISSUE.

Φ925 N SIMMONS DIRECTS

THAT WELL PREVIOUSLY

LABELLED AS C-MW-Φ14

WILL BE CHANGED TO

C-MW-Φ07 + PREVIOUSLY

LABELLED C-MW-Φ22

WILL BE CHANGED TO

C-MW-Φ08.

Φ930 DECON PUMP BRΦ1

Φ930 - LATE ENTRY - EQUIP

TODAY: YSI = YSI-Φ5

TURBIDIMETER = TBΦ3

INTERFACE PROBE = IPΦ1

PUMP = BRΦ1

Φ935 RETURN TO RED BLDG

DROP OFF C-MW-Φ14

SAMPLES, PICK UP NEW

SAMPLE KITS. DROP OFF

PURGE H₂O.

1020 MOBE TO AOI E, SET

UP @ E-MW-Φ01, SEE

PURGE/SAMPLE FORM

1035 COLLECT SAMPLE FROM

E-MW-Φ01

Scale: 1 square =

-MB 9/19 - *Rite in the Rain*

PORT HEIDEN, AK
FOMO PHASE III RT 9/19/19 CONT

- 1055 DECON PUMP
1100 MOVE TO AOE B. CHECK
IN W/ A GEILICH/M KOTKE
ABOUT WHICH ~~MOBES~~ WELLS
THEY HAVE COMPLETED.
1110 SET UP @ B-MW-011. SEE
PURGE/SAMPLE FORM.
1145 COLLECT SAMPLE FROM
B-MW-011.
1205 DECON PUMP. MOVE EQUIP.
TO B-MW-010.
1215 DRIVE C. CHRISTENSEN
BACK TO RED BLDG.
DROP OFF SAMPLES.
1225 MOVE ~~TO~~ M BRUNO
MOBES BACK TO AOE B.
RESUME SETUP @ B-MW-010
1315 COLLECT SAMPLE AT
B-MW-010.
1405 DECON PUMP
1415 MOVE TO B-MW-009.
SEE PURGE/SAMPLE FORM.
1505 COLLECT SAMPLE @
B-MW-009
1510 C CHRISTENSEN ARRIVES

Scale: 1 square = _____ - MB 9/19/19 -

PORT HEIDEN, AK
FOMO PHASE III RT 9/19/19 CONT 13

- ~~NO 1110~~ BACK ON SITE @ B-MW-009
~~1520~~ 1525 MEASURE DTW @
B-MW-003. ONLY $\phi.7$
FT H₂O IN WELL. ~~INSUFFICIENT~~
INSUFFICIENT H₂O TO PURGE
(H₂O BELOW PUMP INTAKE).
1530 DECON PUMP
1535 SET UP @ B-MW-004.
SEE PURGE/SAMPLE FORM.
1605 C CHRISTENSEN MOBES
TO RED BLDG TO GET
MORE VIALS, M BRUNO
CONTINUES PURGING WELL
1615 C CHRISTENSEN BACK
ON SITE W/ ADDITIONAL
VIALS
1620 COLLECT PARENT SAMPLE
FROM B-MW-004
1625 COLLECT FD FROM B-MW-004
1635 RETURN TO RED BLDG.
DROP OFF SAMPLES,
CONFER W/ N SIMMONS
ON PLAN FOR 4 LAST
DRYISH WELLS
1715 MOVE TO AOE C TO

Scale: 1 square = _____ - MB 9/19/19 - *Rain in the Rain.*

14 PORT HEIDEN, AK
FORM PHASE III RI

9/19/19 CONT.

CHECK H₂O LEVEL @

C-MW-ΦΦ1

1730 DTW = 19.86 FT BTUC
TD = 20.12 FT BTUC
H₂O COLUMN = 0.26 FT
INSUFFICIENT H₂O TO SAMPLE

1735 MOVE TO AOI B TO
CHECK WATER LEVELS

@ B-MW-ΦΦ5 &

B-MW-ΦΦ6

1745 B-MW-ΦΦ5:
DTW = 12.55 FT BTUC
TD = 14.27 FT BTUC
WATER COLUMN = 1.82 FT

1750 B-MW-ΦΦ6:
DTW = 13.38 FT BTUC
TD = 13.96 FT BTUC
H₂O COLUMN = 0.58 FT
INSUFFICIENT H₂O TO SAMPLE

1752 DECON PUMP

1805 B-MW-ΦΦ5 78↓90
RECHARGED, BEGIN
PURGING/COLLECT SAMPLE

1830 RETURN TO RED BLIX,
DECON PUMP, UNLOAD
-MNY 9/19-

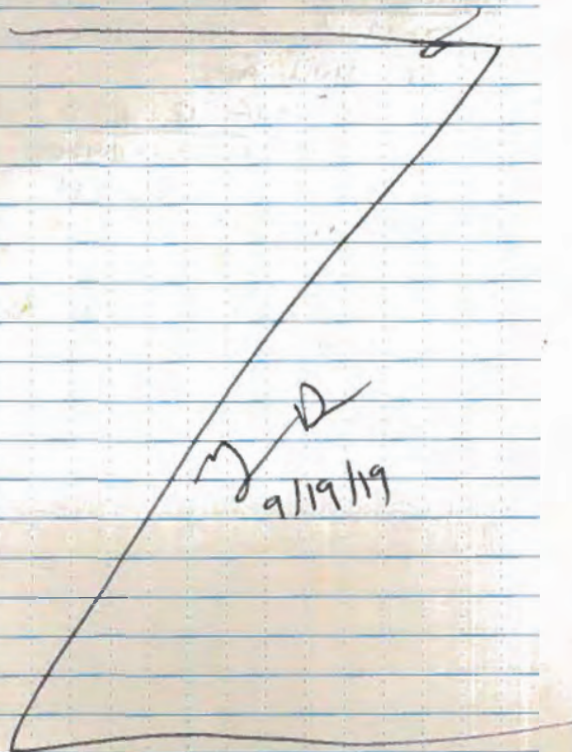
Scale: 1 square = _____

PORT HEIDEN, AK
FORM PHASE III RI

9/19/19 CONT 15

TRUCK,

1915 FINISHED FOR DAY,
DEPART



Scale: 1 square = _____

Return to the Pen

16 PORT HEIDEN, AK
FOMO PHASE III RI 9/20/19

PERSONNEL: MORGAN BRUNO

CONDITIONS: ~

PE: MODIFIED D

OBJECTIVE: PACK UP EQUIPMENT,

DUMP RUN, RELABEL WELLS

@ MNU AOT

0730 ARRIVE @ RED BLDG

0750 COLLECT [E6-W-092019-006]
FROM PUMP BR201.

0800 H+S TAILGATE - PROPER
LIFTING TECHNIQUE

* NOTE: PUMP BR201 AKA
S/N 144463

Scale: 1 square = _____

PORT HEIDEN, AK
FOMO PHASE III RI

17

Scale: 1 square = _____

Return the Pain.

GW Survey / Harsel
COMMUNITY WELLS
2019



Rite in the Rain.

ALL-WEATHER
UNIVERSAL

Nº 373N

PH Fort Morrow
Phase III R1

K. Holmes USACE 7/17/19
N. Simmons FOMO Ph. III RI Overcast w/ light wind

0800 Meet @ Red Bldg & tailgate onsite
Plan for today: Start community well
inventory & survey. Aniakchak
crew consists of Holly Matson
She will help w/providing background
information & community familiarity.
Drill/WOST team to continue
@ M-UN in AOC M & potentially
move on to M-GS-043.

0830 Return to M-GS-043
to work w/Emmett for finalization
of innovator demob from test sites.

1000 Review legacy information
& resources w/FTL Hoffmann
to provide Holly better background
of task & objectives. Also
review electronic data collection
methods & resources available
on iPad

11260 Break for lunch

1315 Head to AOC F to
recon Old Meshik for wells
& collect GPS locations for
two previously identified wells

1345 Scout around south end of

K. Holmes USACE 7/17/19
N. Simmons FOMO Ph. III RI Overcast w/ light wind

Old Meshok. Holly pointed out where the school used to be a various houses.

No signs of unidentified wells. She said she remembers wells were in the basements & may have been covered up. Also remembers brown boxes around wells in general.

Scout around for pre-existing location 103 but no well observed.

Took photo of area where GPS location shows well. Holly said it would be an unusual location for a well. Originally it would have been Nick Christensen's house.

The groundscar is visible to the south closer to Goldfish Lake. McCarlo Christensen lived on the other side of the access road towards the beach, until he moved around 2007. He should be had a well but no well visible.

Two 4" PVC stickups observed that appear to be part of sewer system (overview photo capture).

Scale: 1 square =

K. Holmes USACE 7/17/19
N. Simmons FOMO Ph. III RI Overcast w/ light wind

1400 Scout out for well 104, supposed to be right along Goldfish Lake shoreline. GPS point seems to

line up w/ a 2" black PVC extending horizontally towards lake.

There is also a well point stickup (used for marking wells) floating in the lake. Holly mentioned lake shoreline also eroding. Not sure where original well location is. Took photos of the area.

1430. Continue to survey wells located along road heading north from Goldfish Lake. Map IDs for wells in iPad no longer available, making it hard to find the right form/location to edit.

First well (Map ID 109) was Holly's old house (well). Well near city landing area. Well 110 edited incorrectly. Update to associate attributes w/ well 111 - in front of vacant house also near city landing area.

1500 Holly points out house across street that has well but not previously included

Scale: 1 square =

in dataset → *Rite in the Rain*

K. Holmes USACE 7/17/19
N. Simmons FoMo Ph. III RI Overcast w/ light wind

House (w/multiple buildings on lot)
owned by Dan Montgomery. They live
in Palmer but run hunting lodge from
property. They have running water.
Scout around for well but not
identified. Holly calls her husband
for more details.

Continue working North & visit
all wells identified in AOC & also
capture coordinates for well that
was hand-installed @ City Shop
in last couple of years.

1600 Stop by Ray's Place to
discuss well survey w/Larissa
& Gerta in hopes they will
pass message along to other
people in town (apparently many
people out of town presently)
Larissa indicates that Ray's Place
has 2 wells but only 1 in database.
Map ID of wells to associate well
w/form still not loading.

Return to Red Bldg to troubleshoot
1645 Drinking water wells Map ID
loading correctly on Felipe's iPad.

Scale: 1 square = _____ Switch out & continue survey

K. Holmes USACE 7/17/19
N. Simmons FoMo Ph. III RI Overcast w/ light wind

1700 Start @ east end of Hospital Rd
- new HUD area at intersection
to Port Heiden landfill.

First house is Holly's & next
two on north side of road are
her husband's brothers (both currently
vacant). Map IDs of wells stopped
displaying immediately after editing
the first associated form for
Holly's house. Continue to capture
updated coordinates, photos &
form details by finding forms
associated w/ Holly's family names.

1745 Identify well map ID for
JEFF's house & capture data
for his house while he's available

1800 Return to Montgomery house
near Goldfish Lake after
Holly obtains update re: well location.
However, have wrong iPad now
so can't edit. Will return tomorrow
after sync.

1815 Collect GPS check-in point
@ FM-RT-C1 & drop off Holly.

1840 Return to Red Bldg to troubleshoot
Scale: 1 square = _____ Map ID & process. *Rise in air rain*

K. Holmes USACE 7/17/19
N. Simmons F.O.M. Ph. III RI Overcast w/ light wind

1900 Luke will look into updating a tabular spreadsheet w/ existing well details & Map ID & create paper form that we can use to speed up field collection processing time - iPad starts loading very slow after a couple of hours of data collection & loses battery fast.

He will also continue to work w/ Geosyntec to troubleshoot well Map ID loading issue.

* Other notes from Holly:

Wells installed in New HUD were part of the HUD program & all installed in 1989.

Wells shown on the Civil Cabin (Kris's house) were installed as part of program in 1983.

1915 Head to M-GS-043 to continue to stake out sample locations w/ Loc ID for RTK Survey

2015 Head back to lodging for data input

K. Holmes USACE 7/18/19
N. Simmons F.O.M. Ph. III RI Overcast w/ light wind?

0800 Meet @ Red Bldg & tailgate

Plan for today: Continue Community Drinking well survey w/ Holly.

Drill/UVOST team working in AOC M

Will return to sites in AOC F to acquire updated coordinates first.

0915 Acquired updated coordinates for #1 well (Map ID-109 & 111) Realize

that Dan Montgomery's house is listed as Jack Wellbourne (well #10, Map ID #110). Had created new location

yesterday since well doesn't display on app as no coordinates provided.

Call FITL Hoffmann to troubleshoot how to handle list of wells into locations to assure not

creating a new location where the dataset already includes a pre-assigned number.

Plan to reference MWWT figures & will visit all houses w/ a number & name (this comes from the 1-foot)

Will also visit any location where Holly has info about well but not included in dataset (eg MWWT building polygons w/o a #)

8 K. Holmes USACE 7/18/19
N. Simmons FOMo Ph. III R1 Overcast w/light wind

Will reference spreadsheet to determine
Map ID to reference dataset
location, update coordinates.
↑ acquire photos (referencing
Map ID for all photo references).
1030 Finish collecting updated
coordinates for wells visited
yesterday & additional wells
that were included in the database
but missing locations from
AOC F

1045 Head to Ray's Place to
check in w/Gerta

1130 Finish @ Ray's Place. Gerta
& Larissa indicate there's two
wells associated w/Ray's Place.
Find second well - well cap on
fg ground & they think its
decommissioned but don't have
specifics on the well. Gerta
also gives us location info &
access to her rental in New Hud
(where Tonya stays), her current
home - used to be her grandmother's
but it was moved to new location
Scale: 1 square = _____ ↑ her mom's house (Annie)

K. Holmes USACE 7/18/19
N. Simmons FOMo Ph. III R1 overcast w/light wind

Also interview other residents
working @ Ray's Place including
Charlie, Billy, & Tisha. Noone has
paperwork or specifics on well
depths but access to GPS &
photo well is granted & relay
details they remember about history
of well & water quality.
Tonya finds Well Installation Bid
documents that we can take
to copy.

1200 Stop back by Ray's & return
Well Installation Bid report to
Tonya after providing to
FTL Hoffmann for review.

1215 Continue conducting well surveys
in New Hud where we left
off yesterday.

1300 Almost finished New Hud.
Arrow GPS stopped working
@ Delores's house - last house
in main section. Will switch out
card & break for lunch.

1445 Finish collecting outlying wells past
new HUD (out by Lind Hill). Call Delores to
let her know her rental cabin's
window was broken →

Scale: 1 square = _____

10 K. Holmes USAACE 7/18/19
N. Simmons Fomo Ph. III RI Onrcast w/light w/d in

Holly observed broken window
& we waited for Delores in case
she needed help covering it up.
Holly said there has been alot of
vandalism recently & w/Delores's
husband out of town she's been
vandalized a few times.

1600 Finish conducting well surveys
@ Billy's house & a couple of
houses that are managed by
Kris - one of those houses also
had vandalism so Holly lets Kris's
sister (Kristen) know.

Head to fuel up truck & refuel
gas can for WOST team.

1630 Return to intersection between
Rd to airport & to New HUD
& scout around three houses
that seem to be connected to
wells outside of related to Kristen.

Holly says she remembers them
having wells. She talks to one
home-owner via phone (John) &
he confirms they tried to put in a
well but it wasn't successful (GPS
Point collected)

Scale: 1 square = _____

K. Holmes USAACE 7/18/19
N. Simmons Fomo Ph. III RI Onrcast w/light w/d in

1715 Collect GPS & photos
for wells near Kristen's house

Holly remembers now these
wells were set over here due
to land ownership restrictions.
The Matson brothers built up houses
there but it was State/military
land so they couldn't install wells -
set them back by Kristen's instead.

1845 Finish conducting well surveys
for today. Finished day

collecting wells by quarry -
Jimmy, Gerta & Annie's houses.

Annie supposedly has two
wells near each other,
set in thick grove of alders.

Only one identified & dogs
were acting aggressive so
abandoned further investigation.

* Also collected GPS check-in point
by landfill in afternoon when
out by Delores's rental.

1910 Head out to finish staking
test pit sample locations @

M-65-043

2015 head back to lodging to continue w/ data

K. Holmes USACE 7/18/19
 12 N. Simmons FOMo Ph. III RI Overcast
 7/17 Drinking Water Well Survey Summary*

Loc ID	Well ID	Area	Notes
103	3	Old Meshik	Not Found Took photo
104	4	Old Meshik	Not Found/Took photo
N/A	1-8	Old Meshik	Not Found
109	9	Meshik School	Took photo / Form started
111	11	Area	Took photo / Form started
113	13		"
114	14		"
141	43	New HUD	updated GPS/Photo
142	44		
143	45		
144	46		
136	38		

7/18 Drinking Water Well Survey Summary*

Loc ID	Well ID	Area	Notes
109	9	Meshik	updated GPS
110	10	School	
111	11	Area	
112	12		
113	13		
161	65		
114	14		
133	35	Ray's Place	Updated GPS/photo
201	N/A	2nd well @ Ray's Place	possibly decommissioned

Scale: 1 square

K. Holmes USACE 7/18/19
 N. Simmons FOMo Ph. III RI overcast w/light rain¹³
 7/18 Drinking Water Well Summary (cont.)

Loc ID	Well ID	Area	Notes
137	39	NEW HUD	Updated GPS/Photo
138	40		Interviewed resident as possible for all wells on 7/18
139	41		
140	42		
144	46	KH	collected 7/17
145	47		
146	48		
147	49		
163	67		
148	50	Scattered Sites	These properties managed by Kris
149	51		
150	52		
151	53		These 3 nested close together due to land access issues
152	54		
153	55		
154	56		Well attempted but never worked.
202	N/A	Ray's Place	New location for Gerda's new house
134	36	Place	Annie (Gerda's mom) has 2 wells but only 1 located
135	37	Area	Jimmy - also serves Celestee & Maxine

* See Drinking Water well survey spreadsheet for all locations. Hard copy notes captured as well as updated GPS point & photos.

Scale: 1 square

14 K. Holmes USACE 7/19/19
N. Simmons FoMo Ph. III RI Overcast w/light rain

0800 Meet @ Red Bldg & tailgate
Plan for today: Continue Community
Drinking Water Well Survey
w/Holly. WOST/Drill team
will continue in AOC M.

0830 Scout around Airport Area
(Near Red Bldg) for wells related
to the Old Reeves terminal/warehouse
& Barney Wise. Holly indicates
the Reeves went bankrupt in early
2000s. Barney Wise then had a
trailer in the area & ran
man-camp like facilities for military
working in area. Legacy information
indicates the well was still present
after the trailer was gone but
could not locate a well. Searched
from airport fence line through
old groundscar where Reeves terminal/
trailers had been. Captured photo
of general area.

Also could not find drinking
water well associated w/old
Reeves warehouse - Holly said this
is where they had all their tanks
for monitoring well

Scale: 1 square =

K. Holmes USACE 7/19/19
N. Simmons FoMo Ph. III RI Overcast w/light rain¹⁵

System observed but no drinking
water well. Captured photo of
general area.

0900 Collected GPS/photos for
State DOT building well.

1030 Finish collecting GPS &
photos for wells in Little HUD
(new cul-de-sac across from Ray's)

Tisha lives in first house
to north side of Cul-de-sac.
talked w/her yesterday @ Ray's
She said that an underground spring
runs through the area &
sometimes floods the sewer.
Her next door neighbor John has
the deepest well & the rest are
generally in the 40-60' bgs range.
The water is generally tinted
slightly orange/pink but tastes good.
John & the rest of the homeowners
are out of town.

Assign Tisha's house Map ID #165
and continue in sequence around the
cul-de-sac w/pre-defined but
unidentified database records.

Scale: 1 square =

Rate in the Rain

16 K. Holmes USACE 7/19/19
N. Simmons FOMo Ph. III RI Overcast w/light rain

1130 Moved to work way through
Old HUD area, starting on eastern
side @ Gerda's old house
(House moved to current location
but old shop still onsite &
used as Rental (Bathroom Cabin))
Holly calls Carla & Archie & conducts
phone interview instead of knocking
on door. (Well 132). Speak w/
Holly's mum @ well 126 (well
goes dry after load of laundry.
It seems to be only one in area
that goes dry - Also speak w/
Marilyn Fortune (well 130). She
generally thinks well on other side
of street is a little more tinted
All other neighbors are out of
town. Collect GPS & photos
of wells through Kip's house
working west (well 124).

1200 Break for lunch

1530 Finish well survey for
locations in Old HUD
(including Meshik Mall). Spoke w/
Charlie who lives at residence

Scale: 1 square = _____

K. Holmes USACE 7/19/19
N. Simmons FOMo Ph. III RI Overcast w/light rain

associated w/ well 118 & the
Toni in relation to Meshik Mall
but neither had details regarding
well depth, screen, or installation
Captured GPS & photos for all
wells listed. Also scouted around
the Christian & orthodox
churches but no wells observed.
Holly doesn't remember them
ever having wells.

1400 Collect GPS & photos
for well @ Fish House -
constructed around 2013,
Holly said they had intended
to develop their fish processing
capabilities w/a program through
Japan but it hasn't worked out
as planned. Building not currently
in use.

Only outlying pre-established location
is well 173 - Rental Bunkhouse.

This may be associated w/
bunkhouse / 2nd well @ Rays.

Will discuss w/ Larissa.

Also recollect GPS for well @ Gerda's
new house to associate

Scale: 1 square = _____

18 K Holmes USACE 7/19/19
N. Simmons F&M Ph III RI Crest w/ light rain

w/ location 170. New location
202 can be deleted.

1630 QC iPad well inventory
locations to check they
have updated coordinates as
possible. One location - John Matson
collected on 7/17 (Holly's next door
neighbor) doesn't seem to have
saved. Return to well ↑ recollect.
Also collect GPS check-in
point @ FM-RI-C1

1700 Return to Old Meshik to
recon wells again. Holly
has some photos from old Meshik
to use as reference.

1830 Finish recon of Old Meshik.
No additional wells observed.
Tack GPS point @ intersection
where old Meshik road used to
run. There may still be some
wells that haven't eroded but
tall/thick vegetation prevents much
exploration east of Old Town Well.

Observed old well pump by Macarls
Christenson but no sign of well location.

Scale: 1 square = Also observed well head in
Goldfish Lake but no well.

K Holmes USACE 7/19/19
N. Simmons

19

1900 Return to Red Bldg to
check-in ↑ process data.
See well survey summary on
next page →

Scale: 1 square =

Rate in the Rain

20 K Holmes USACE 7/19/19
N. Simmons FOMO Ph. III RI Overcast w/light rain

7/19 Drinking Water Well Survey Summary*

Loc ID	Well ID	Area	Notes
	N/A	Airport Area	Scanned by old Reeve's terminal & old warehouse but no wells found
156	58		
155	57	↓	GPS updated / Photo
165	69	Little HUD	Assigned to first house on northeast side of R
166	70	(cut-de-sac)	Cut-de-sac (Tishu)
167	71		continued consecutively to south
168	72		
169	73		
170	74		
128	30	Old HUD	
132	34		
131	33		
127	29		
126	28		
130	32		
129	31		
125	27		
124	26		
123	25		
122	24		
121	23		
120	22		
119	21		
N/A	20		No well observed

N/A scale: 1 square =

K Holmes USACE 7/19/19
N. Simmons FOMO Ph. III RI Overcast w/light rain 21

7/19 Drinking Water Well Survey Summary (cont.)

Loc ID	Well ID	Area	Notes
160	64	Old HUD	Old Firehall
N/A	63		only 1 well associated w/ old Firehall & City Bldg
N/A	19		No well observed
118	18		
117	17		
116	16		
164	68		
159	62	(see below)	
115	15		
157	59		No well observed for separate garage area (1st house)
158	60/61		Current Meshik Mall store
159	62		Old Meshik Mall location
172	72 76	New Fish house (Northeast from Meshik Mall)	person but no additional wells found
	1-8	Old Meshik	
171	71 75		Had created new location (2021) well back & updated pre-existing location. 202 can be deleted.
142	42 44		Recaptured GPS coordinate since doesn't seem to be in iPod

Scale: 1 square =

* see drinking water well spreadsheet for all locations. Hand copy notes captured as well as updated GPS locations & photos for all sites visited.



Soil Boring Log

Boring Number: B-DA-003-007

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9484273/-158.62668082

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 84.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/10/2019

Drilling Company Discovery

Top of Casing Elevation 87.32 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-007
 WELL ID: B-MW-007
 Water Level BTOC: 15.8 feet
 Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	50/60				SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.		0		
	5								
	46/60						0		
	10						0		
19-FM-B-DA-003-DT-007-11-12							0		
	46/60						1.8 /	0.75	
	15			▽					
	60/60				GRAVELLY SAND (SW); brownish tan; well graded; homogenous; stiff; saturated; no odor; no staining.		0		
	20								
End of Boring: 20 feet bgs.									



Soil Boring Log

Boring Number: B-DA-003-008

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94909956/-158.62704726

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 82.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/10/2019

Drilling Company Discovery

Top of Casing Elevation 85.39 Feet

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-008
WELL ID: B-MW-008
Water Level BTOC: 14.45 feet
Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	5	48/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist to saturated; no odor; no staining; sand coarsens at depth..		0		
19-FM-B-DA-003-DT-008-7.5-8.5		48/60					0	0.4	
	10								
	15	48/60					0		
	20	60/60			GRAVELLY SAND (SW); brownish tan; well graded; homogenous; medium stiff; saturated; no odor; no staining.		0		

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-009

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94657649/-158.62482379

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 83.8 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/9/2019

Drilling Company Discovery

Top of Casing Elevation 86.13 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-009
WELL ID: B-MW-009
Water Level BTOC: 15.51 feet
Water level at time of installation

Total Depth 23 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	50/60				SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to wet; no odor; no staining; coarsens near bottom.		0		
	5								
	56/60						0		
	10								
	42/60			▽			0		
	15							0.4	
19-FM-B-DA-03-DT-009-16.5-17.5	60/60				GRAVELLY SAND (SW); brownish tan; well graded; homogenous; hard; saturated; no odor; no staining.		0		
	20				(NO CORE); No core past 20 ft bgs. Well was installed deeper than original boring..				

End of Boring: 23 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94706475/-158.62653646

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 88.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/9/2019

Drilling Company Discovery

Top of Casing Elevation 90.55 Feet

Weather sunny 65

Rig Type Hand Tools

Notes: UVOST ID: 19-FM-B-DA-003-UV-010
WELL ID: B-MW-010
Water Level BTOC: 19.9 feet
Water level at time of installation

Total Depth 21.86 feet bgs

Boring Size 2.5 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	50/60				SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to hard; moist; no odor; no staining.				
	5								
	36/60								
	10								
	48/60								
	15								
19-FM-B-DA-003-DT-010-16-17	48/60			▽	GRAVELLY SAND (SW); brownish tan; well graded; homogenous; medium stiff; saturated; no odor; no staining.			1.2	
	20				(NO CORE); No core past 20 ft bgs. Well was installed deeper than original boring..				

End of Boring: 21.86 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94771241/-158.62535904

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 83.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/9/2019

Drilling Company Discovery

Top of Casing Elevation 85.51 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-011
 WELL ID: B-MW-011
 Water Level BTOC: 13.96 feet
 Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	36/60				SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to hard; moist; no odor; no staining; sand coarsens near bottom of unit.		0		
	5								
	60/60						0		
	10								
19-FM-B-DA-003-DT-011-11-12				▽				0.9	
	50/60						0		
	15				SAND (SW); brownish tan; well graded; homogenous; medium stiff; saturated; no odor; no staining.				
	60/60							0	
	20								

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94939478/-158.62520104

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 79.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/10/2019

Drilling Company Discovery

Top of Casing Elevation 82.10 Feet


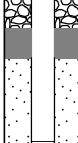
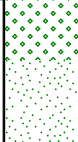

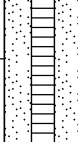
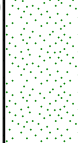
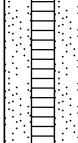
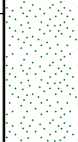
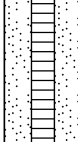
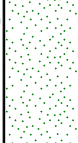

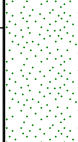

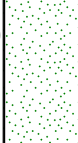

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-012
WELL ID: B-MW-012
Water Level BTOC: 8.68 feet
Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	45/60				SAND (SW); dark brown; well graded; homogenous; very loose; dry; no odor; no staining.		0		
19-FM-B-DA-003-DT-012-5.5-6.5	5				SAND (SP); brown; poorly graded; homogenous; medium dense; saturated; no odor; no staining.		0	1.7	
	56/60						0		
	10						0		
	60/60						0		
	15						0		
	60/60						0		
	20								

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94993184/-158.62579798

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.3 Feet

Field Scientist/Engineer ME

of Samples 1 + Duplicate

Elevation Datum NAVD88

Date 7/10/2019

Drilling Company Discovery

Top of Casing Elevation 83.54 Feet

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-013
 WELL ID: B-MW-013
 Water Level BTOC: 10.35 feet
 Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	5	46/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose to medium stiff; moist to saturated; no odor; no staining; increase in gravel at depth.		0		
19-FM-B-DA-003-DT-013-6-7 19-FM-B-DA-003-DT-913-6-7								0.9	
	10	48/60					0		
	15	60/60					0		
	20	60/60					0		

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9467381/-158.62391396

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/9/2019

Drilling Company Discovery

Top of Casing Elevation 84.90 Feet

Weather sunny 65

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-014
 WELL ID: B-MW-014
 Water Level BTOC: 13.85 feet
 Water level at time of installation
 NR = Not Recorded

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	46/60				SILTY SAND (SM); brown; homogenous; loose to hard; moist; no odor; no staining.		0		
	5								
	50/60						0		
	10								
19-FM-B-DA-003-DT-014-12-13	56/60			▽			NR	1.1	
	15				GRAVELLY SAND WITH SILT (SW-SM); brownish tan; well graded; homogenous; hard; saturated; no odor; no staining.				
	60/60						NR		
	20								

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94963199/-158.6271357

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/10/2019

Drilling Company Discovery

Top of Casing Elevation 84.24 Feet

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-015
 WELL ID: B-MW-015
 Water Level BTOC: 12.09 feet
 Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	5	48/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.		0		
19-FM-B-DA-003-DT-015-7-8		48/60					0	0.5	
	10								
	15	54/60			GRAVELLY SAND (SW); brownish tan; well graded; homogenous; stiff; saturated; no odor; no staining.		0		
	20	60/60					0		

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94719617/-158.62412313

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/9/2019

Drilling Company Discovery

Top of Casing Elevation 84.54 Feet

Weather breeze and sun

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-016
 WELL ID: B-MW-016
 Water Level BTOC: 13.73 feet
 Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	50/60				SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; damp; no odor; no staining.		0		
	5								
19-FM-B-DA-003-DT-016-7-8	50/60						0	0.9	
	10			▽					
	54/60						0		
	15				GRAVELLY SAND (SW); tan with brown; well graded; homogenous; stiff; saturated; no odor; no staining.				
	60/60						0		
	20								

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: B-DA-003-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94869833/-158.62426338

Site B-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 79.0 Feet

Field Scientist/Engineer ME

of Samples 1 + Duplicate

Elevation Datum NAVD88

Date 7/9/2019

Drilling Company Discovery

Top of Casing Elevation 81.43 Feet

Weather sunny and breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-B-DA-003-UV-017
 WELL ID: B-MW-017
 Water Level BTOC: 11.11 feet
 NR = Not Recorded

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	45/60				SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose; damp; no odor; no staining.				
	5								
19-FM-B-DA-003-DT-017-5.5-6.5 19-FM-B-DA-003-DT-917-5.5-6.5				▽	GRAVELLY SAND (SW); dark brown; well graded; homogenous; stiff; saturated; no odor; no staining.			0.8	
	56/60								
	10						0		
	60/60								
	15								
	NR/60								
	20								

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94233608/-158.57087804

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 173.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/2/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

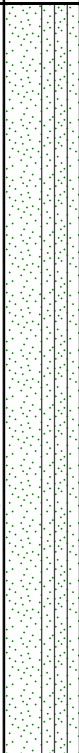
Weather sunny

Rig Type Hand Auger

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 4 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0				
	1				
	2	48/48			SILTY SAND WITH FINE TO COARSE GRAVEL (SP-SM); brown; poorly graded; homogenous; loose; dry; no odor; no staining.
	3				
19-FM-C-DB-001-DT-001-3-4 19-FM-C-DB-001-DT-001-3-4_R	4				

End of Boring: 4 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-006

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94235835/-158.57109806

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 128.8 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny


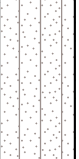
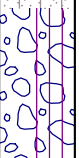
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	54/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; medium dense; damp; no odor; no staining.
	5.0				
	7.5	54/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0			▽	
	12.5	54/60			SANDY GRAVEL WITH SILT (GW-GM); dark gray; well graded; homogenous; medium dense; wet; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-007

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94228111/-158.57114633

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 128.2 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

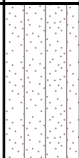

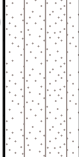
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	54/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	54/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0			▽	
	12.5	54/60			SANDY GRAVEL WITH SILT (GW-GM); dark gray; well graded; homogenous; medium dense; saturated; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-008

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94229465/-158.57091895

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 129.3 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny


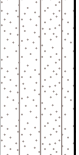
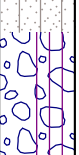

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	54/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	54/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0				
	12.5	54/60			SANDY GRAVEL WITH SILT (GW-GM); dark gray; well graded; homogenous; medium dense; wet; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-009

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94234445/-158.57096916

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 128.9 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny


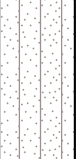
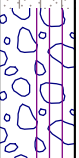
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	54/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	54/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0			▽	
	12.5	54/60			SANDY GRAVEL WITH SILT (GP-GM); dark gray; poorly graded; homogenous; medium dense; wet; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94228827/-158.5707498

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 129.0 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

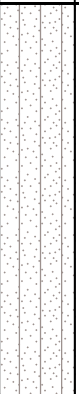
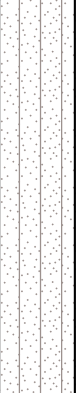
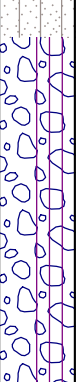
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	54/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0			▽	
	12.5	54/60			SILTY GRAVEL (GW-GM); gray; well graded; homogenous; medium dense; wet; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94238514/-158.57074678

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 129.3 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610





Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	54/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	52/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0				
	12.5	NR/60			SANDY GRAVEL WITH SILT (GW-GM); gray; well graded; homogenous; medium dense; wet; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94238726/-158.57093333

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 127.9 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny



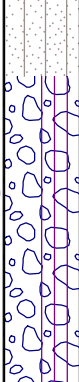

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	36/60			SILTY SAND WITH GRAVEL (SM); gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	36/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0				
	12.5	56/60			SANDY GRAVEL WITH SILT (GW-GM); gray; well graded; homogenous; medium dense; saturated; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94246759/-158.57077869

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 131.6 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
					SILTY SAND WITH ORGANICS (SM); light brown; homogenous; soft; moist; no odor; no staining.
	2.5	54/60			
					SILTY SAND WITH GRAVEL (SM); gray; homogenous; medium dense; moist; no odor; no staining.
	5.0				
	7.5	60/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0				
	12.5	60/60			
	15.0				SANDY GRAVEL WITH SILT (GW-GM); gray; well graded; homogenous; medium dense; wet; no odor; no staining.

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94250784/-158.57092673

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 130.7 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny



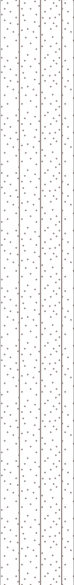

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
					SILTY SAND WITH ORGANICS (SM); light brown to dark brown; homogenous; loose; damp; no odor; no staining.
	2.5	54/60			
	5.0				
	7.5	50/60			
	10.0				
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	12.5	52/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-DB-001-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9425212/-158.57110469

Site C-DB-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 129.6 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicate and Replicates

Elevation Datum NAVD88

Date 7/4/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
					SILTY SAND WITH ORGANICS (SM); light brown; homogenous; soft; moist; no odor; no staining.
					SILTY SAND WITH GRAVEL (SM); gray; homogenous; medium dense; moist; no odor; no staining.
	2.5	48/60			
	5.0				
	7.5	54/60			
19-FM-C-DB-001-DT-002-2-15 19-FM-C-DB-001-DT-R02-2-15 19-FM-C-DB-001-DT-902-2-15 19-FM-C-DB-001-DT-602-2-15	10.0				
	12.5	56/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: C-GS-001-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94581301/-158.57121802

Site C-GS-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 127.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/2/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 3 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0				
					GRAVELLY SAND (SW); gray with dark brown; well graded; homogenous; loose; dry; no odor; no staining.
	1				
19-FM-C-GS-001-DT-001-0.5-3 19-FM-C-GS-001-DT-001-0.5-3_R		36/36			
	2				
	3				

End of Boring: 3 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-006

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94457382/-158.57364928

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 132.8 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/6/2019

Drilling Company Discovery

Top of Casing Elevation 135.35 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-006
 WELL ID: C-MW-006
 Water Level BTOC: 18.39 feet
 Water level at time of installation

Total Depth 23.3 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	5	54/60			SILTY SAND (SM); brown; homogenous; loose; dry; no odor; no staining.				
	10	48/60			SILTY GRAVEL WITH SILT (GW-GM); brown; well graded; homogenous; loose; damp; no odor; no staining.		0		
	15	36/60		18.39					
19-FM-C-LT-002-DT-006-16-17								0.6	
	20	54/60							
					(NO CORE); No core past 20 ft bgs. Well had to be installed deeper than original boring..				

End of Boring: 23.3 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-008

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94470625/-158.57432348

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 131.9 Feet

Field Scientist/Engineer FR

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/7/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-008
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	48/60				SILTY SAND WITH GRAVEL (SM); tan; homogenous; medium stiff; moist; hydrocarbon odor; no staining.	0			
	5						41.6		
	54/60				▽		67.2		
19-FM-C-LT-002-DT-008-6-7.5 19-FM-C-LT-002-DT-908-6-7.5							105.2	2.7	Fuel
	10					SILTY SAND (SM); brown; stratified; soft; moist to wet; organic odor; no staining; varies from coarse and fine srtratifications.	13		
19-FM-C-LT-002-DT-008-10-12							0	1.0	
	15						0		
	60/60						0		
	20						0		

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-009

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94425163/-158.57364376

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 134.0 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicates

Elevation Datum NAVD88

Date 7/25/2019

Drilling Company Discovery

Top of Casing Elevation 136.91 Feet

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-009
 WELL ID: C-MW-009
 Water Level BTOC: 18.37 feet
 Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	42/60				SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; dry; no odor; no staining.				
	5				SAND WITH SILT (SW); brownish tan; well graded; homogenous; loose; moist; no odor; no staining.		0		
	46/60				SILTY SAND (SM); tan; homogenous; stiff; wet to saturated; no odor; no staining.		0		
19-FM-C-LT-002-DT009-10.5-11.5 19-FM-C-LT-002-DT909-10.5-11.5	10							0.8	anomalous signature due to rocks
	36/60						0		
19-FM-C-LT-002-DT-009-15-16 19-FM-C-LT-002-DT-909-15-16	15				SILTY SAND (SM); dark brown; stratified; stiff; wet to saturated; no odor; no staining; fine and coarse stratifications..			0.5	
	42/60						0		
	20								

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94476892/-158.57439494

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 133.6 Feet

Field Scientist/Engineer ME

of Samples 1 + 1 Duplicate

Elevation Datum NAVD88

Date 7/6/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny, slight breeze, 60 degrees

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-010
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	45/60				SILTY SAND (SM); brown; homogenous; loose; damp; no odor; no staining.	0		
	5				SILTY SAND WITH GRAVEL (SM); tan; homogenous; loose; dry; no odor; no staining.	1.8		
	10				SILTY SAND (SM); brown; homogenous; loose; moist to saturated; no odor; no staining; saturated at 16.3.	NR		
	15							
19-FM-C-LT-002-DT-010-16-17 19-FM-C-LT-002-DT-910-16-17							0.5	
	20					NR		

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94458953/-158.57352226

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 132.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/6/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-011
WELL ID: No Associated Well

Total Depth 23.3 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	54/60			SILTY SAND (SM); brown; homogenous; loose; dry; no odor; no staining.			
	10	48/60			SANDY GRAVEL WITH SILT (GW-GM); brown; well graded; homogenous; loose; damp; no odor; iron oxide staining.	0		
19-FM-C-LT-002-DT-011-17-18	15	36/60						
	20	54/60					0.4	
	23.3				(NO CORE); No core past 20 ft bgs. Well was installed deeper than the original boring..			

End of Boring: 23.3 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94416657/-158.57347448

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 132.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/6/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny 70

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-013

WELL ID: No Associated Well

NR = Not Recorded

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	44/60				SILTY SAND (SM); brown; homogenous; loose; dry; no odor; no staining.	NR		
	5			SILTY GRAVEL WITH SILT (GW-GM); tan; well graded; homogenous; loose; moist; no odor; no staining.				
	50/60							
	10			SILTY SAND (SM); brown with dark tan; homogenous; hard; wet; no odor; no staining.				
19-FM-C-LT-002-DT-013-12-13					SILTY SAND (SM); dark brown; homogenous; soft; saturated; no odor; no staining.		0.8	
	15							
	20							

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94446057/-158.57467167

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 134.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/6/2019

Drilling Company Discovery

Top of Casing Elevation 136.82 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-014
 WELL ID: C-MW-007
 Water Level BTOC: 19.52 feet
 Water level at time of installation
 NR = Not Recorded

Total Depth 22.2 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
		48/60			SILTY SAND (SM); dark brown to brown; homogenous; soft; moist; no odor; no staining; .4 ft lenses of coarse sand at bottom of unit.				
	5				SILTY SAND (SM); brown; stratified; soft to dense; wet to saturated; no odor; no staining; sand varies between fine and coarse stratifications..				
		56/60							
	10						NR		
19-FM-C-LT-02-DT-014-11.5-12.5		60/60						0.5	
	15								
		60/60							
	20				(NO CORE); No core past 20 ft bgs. Well was installed deeper than original boring..				

End of Boring: 22.2 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.944652/-158.57423201

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 132.3 Feet

Field Scientist/Engineer FR

of Samples 1

Elevation Datum NAVD88

Date 7/7/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-015
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
	2.5	52/60			SILTY SAND WITH GRAVEL (SW-SM); tan; well graded; homogenous; medium stiff; moist; hydrocarbon odor; no staining; very slight hydrocarbon odor.	0		
19-FM-C-LT-002-DT-015-5-7	5.0						1.9	
	7.5	48/60				1.6		
	10.0				SILTY SAND (SM); brown; laminated; dense; moist; no odor; no staining; Only core to 10ft..	0		

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-021

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94460032/-158.57432431

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 133.1 Feet

Field Scientist/Engineer AS

of Samples 1

Elevation Datum NAVD88

Date 7/7/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-LT-002-UV-021
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
	2.5	54/60			GRAVELLY SAND (SP); grayish white and light brown; poorly graded; homogenous; medium dense; dry; no odor; no staining; No sign of any contamination as questioned by the UVOST signature at 4.23 fbs..	0		
19-FM-C-LT-002-DT-021-4-4.5	5.0				(NO CORE); No core past 5 ft bgs. only needed core to 5 ft to investigate questionable UVOST signature at 4.23 ft bgs..		3.3	possible fuel contamination; very slight only one data point
	7.5							
	10.0							

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: C-LT-002-022

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94464003/-158.57417891

Site C-LT-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 132.8 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/8/2019

Drilling Company Discovery

Top of Casing Elevation 135.48 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: C-MW-008
Water Level BTOC: 18.3 feet
Water level at time of installation

Total Depth 22.1 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	48/60				GRAVELLY SAND (SW); tan; well graded; homogenous; medium stiff; moist; no odor; no staining; unit fines near bottom.				
	5								
	46/60								
	10				SILTY SAND (SM); brown; stratified; soft; moist to saturated; no odor; no staining; stratifications vary between fine and coarse sand.		0		No UVOST conducted at this location.
	48/60								
	15			▽					
19-FM-C-LT-002-DT-022-16-17	60/60								
	20				(NO CORE); No core past 20 ft bgs. Well was installed deeper thank original boring..				

End of Boring: 22.1 feet bgs.



Soil Boring Log

Boring Number: C-ST-001-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94650121/-158.57493653

Site C-ST-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 130.9 Feet

Field Scientist/Engineer ME

of Samples 4

Elevation Datum NAVD88

Date 7/11/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-ST-001-UV-001
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0								
					SILTY SAND (SP-SM); dark brown; poorly graded; homogenous; loose; dry; hydrocarbon odor; hydrocarbon staining.	0			
19-FM-C-ST-001-DT-001-2-4 19-FM-C-ST-001-DT-001-2-4_R 19-FM-C-ST-001-DT-001-3-4	2.5	48/60						11.8	Fuel Signature
					SAND (SP); dark brown; poorly graded; homogenous; loose; dry; hydrocarbon odor; no staining.				
	5.0								
					SILTY SAND (SP-SM); brownish orange with light tan; poorly graded; stratified; dense; saturated; no odor; iron oxide staining.			0.8	
19-FM-C-ST-001-DT-001-7-8	7.5	60/60				0			
	10.0								

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: C-ST-001-002

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9464927/-158.57503725

Site C-ST-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 129.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/11/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather drizzling, windy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-C-ST-001-UV-002
WELL ID: No Associated Well

Total Depth 13.5 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
	2.5	48/60			GRAVELLY SAND (SP); brown; poorly graded; homogenous; loose; dry; no odor; no staining.			
	5.0							
19-FM-C-ST-001-DT-002-6-7	7.5	42/42				SILTY SAND (SP); tan; poorly graded; homogenous; dense; saturated; no odor; iron oxide staining; increase in fines between 9-10.	0	0.7
	10.0							
	12.5	60/60						

End of Boring: 13.5 feet bgs.



Soil Boring Log

Boring Number: C-ST-001-005

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94642262/-158.57493629

Site C-ST-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 137.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/25/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy

Rig Type Geoprobe 6610

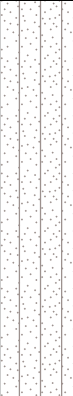

Notes: UVOST ID: 19-FM-C-ST-001-UV-005

WELL ID: No Associated Well

NR = Not Recorded

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
	2.5	36/60			SILTY SAND (SM); brown; stratified; soft; moist; no odor; no staining.	NR		
	5.0				SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist to damp; no odor; no staining.			
19-FM-C-ST-001-DT-005-7-8	7.5	NR/60				NR	0.4	
	10.0							

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: ISM01-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94048383/-158.58273209

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 99.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy


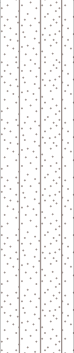

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60		▽	SILTY SAND (SM); dark brown with light brown; laminated; soft; wet to saturated; no odor; no staining; varying shades of brown in laminations..
19-FM-ISM01-DT-006-2-15	10.0				SILTY SAND WITH GRAVEL (SM); tan; homogenous; dense; saturated; no odor; no staining.
	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94054156/-158.58276665

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 99.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	36/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			SILTY SAND (SM); pale brown to brown; stratified; very soft; saturated; no odor; no staining.
	10.0				
	12.5	40/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; soft to dense; saturated; no odor; no staining.
	15.0				

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94051637/-158.5829116

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 98.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy



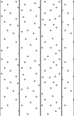
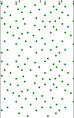

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0			▽	SILTY SAND (SM); reddish brown with light brown; stratified; soft; moist to saturated; no odor; no staining; varying shades of brown in stratifications .
	7.5	58/60			SILTY SAND (SM); tan; homogenous; dense; saturated; no odor; iron oxide staining.
	10.0				SAND (SP); dark gray; poorly graded; homogenous; loose; wet; organic odor; no staining.
	12.5	60/60			SILTY SAND WITH GRAVEL (SM); tan; homogenous; dense; wet; no odor; iron oxide staining.
	15.0				

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94043139/-158.5825162

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 99.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); brown with reddish brown; mottled; soft; wet; no odor; no staining; varying shades of brown .
	7.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
19-FM-ISM01-DT-006-2-15	10.0				
	12.5	52/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94048603/-158.58250601

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 100.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

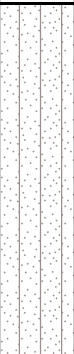

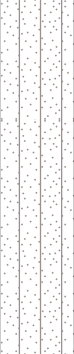
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); brown reddish brown; mottled; soft; moist to saturated; no odor; iron oxide staining; varying shades of brown .
	7.5	57/60		▽	SILTY SAND (SM); grayish brown; stratified; stiff; wet; no odor; no staining.
	10.0				SILTY SAND WITH GRAVEL (SM); tan; homogenous; dense; wet to saturated; no odor; iron oxide staining.
	12.5	60/60			
	15.0				

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94051814/-158.58260501

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 100.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	50/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0			▽	SILTY SAND (SM); brown with reddish brown; mottled; soft; moist to saturated; no odor; iron oxide staining; varying shades of brown .
	7.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown with grayish brown; mottled; dense; saturated; no odor; iron oxide staining; varying shades of brown .
	10.0				
	12.5	60/60			
	15.0				

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94057006/-158.58250689

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 100.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; saturated; no odor; no staining.
	5.0				
	7.5	60/60		▽	SILTY SAND (SM); brown with reddish brown; mottled; soft; moist to saturated; no odor; no staining; varying shades of brown .
	10.0				
	12.5	60/60			SILTY SAND (SM); brownish gray; poorly graded; homogenous; hard; wet; no odor; no staining.
	15.0				SAND (SP); black; poorly graded; stratified; loose; wet; no odor; no staining.

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94061948/-158.58241292

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 100.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

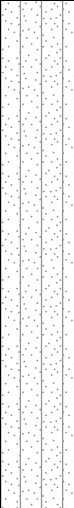
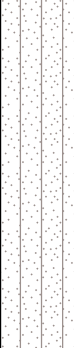
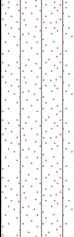
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60		▽	SILTY SAND (SM); grayish brown reddish brown; mottled; soft; moist; no odor; iron oxide staining; varying shades of brown .
	10.0				
	12.5	60/60			SILTY SAND (SM); brownish gray; poorly graded; homogenous; hard; wet; no odor; iron oxide staining.
	15.0				

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94062922/-158.58265728

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 99.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	46/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); brown with reddish brown; mottled; soft; moist; no odor; no staining; varying shades of brown .
	7.5	60/60			SILTY SAND (SM); brownish gray; poorly graded; homogenous; dense; wet; no odor; no staining.
	10.0				SAND (SP); very dark gray to reddish brown; poorly graded; stratified; loose; wet; no odor; no staining.
	12.5	60/60			SANDY SILT (SM); tan; homogenous; soft; saturated; no odor; no staining.
	15.0			▽	

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM01-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94067548/-158.58275958

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 99.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	40/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); brownish gray to reddish brown; mottled; soft; moist to wet; no odor; no staining.
	7.5	60/60			
	10.0				
	12.5	60/60		▽	SAND (SP); very dark gray to reddish brown; poorly graded; stratified; loose; wet; no odor; no staining.
	15.0				SILTY SAND (SM); gray; homogenous; hard; wet; no odor; no staining.

19-FM-ISM01-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91039537/-158.61235415

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; firm; moist; no odor; no staining.
	5.0				
	7.5	56/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); brown to very dark brown; stratified; firm; damp; no odor; no staining; varying shades of brown in stratifications .
	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91038189/-158.6122659

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

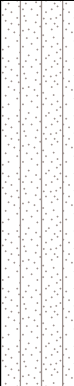
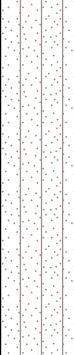
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; firm; moist; no odor; no staining.
	5.0				
	7.5	42/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); dark brown and brown; stratified; firm; moist; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown in the stratifications..
	12.5	NR/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91037614/-158.61214789

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	46/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; firm; moist; no odor; no staining.
	5.0				
	7.5	52/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); dark gray and brown; stratified; loose; moist; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown with gray in the stratifications..
	12.5	42/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91031573/-158.61200024

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather windy cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark gray brown; laminated; loose; moist; no odor; no staining; sparse fine grained laminations..
	5.0				
	7.5	50/60			GRAVELLY SAND WITH SILT (SW); dark gray; well graded; homogenous; loose; moist; no odor; no staining.
	10.0				SILTY SAND (SM); brown to light brown; laminated; soft; damp; no odor; no staining.
	12.5	NR/60			SAND (SP); dark gray; poorly graded; homogenous; loose; damp; no odor; no staining.
	15.0				

19-FM-ISM02-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91038786/-158.61201302

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather windy cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH FINE GRAVEL (SM); dark gray to brown; laminated; firm; moist; no odor; no staining; sparse fine grained laminations .
	5.0				SILTY SAND WITH FINE GRAVEL (SM); dark gray; homogenous; loose; moist; no odor; no staining.
	7.5	52/60			SILTY SAND (SM); gray and brown; poorly graded; stratified; firm to soft; damp; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of browns and greys in the stratifications.
	10.0				
	12.5	50/60			
	15.0				

19-FM-ISM02-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9104345/-158.61209007

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
					SILTY SAND WITH FINE GRAVEL (SM); brown to dark gray; laminated; firm; moist; no odor; no staining; sparse fine grained laminations .
	2.5	42/60			SILTY SAND WITH FINE GRAVEL (SM); dark gray; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	56/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); brown to dark gray; stratified; firm to soft; moist to wet; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown and grey in the stratifications..
	12.5	52/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91047139/-158.61186032

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather windy cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH FINE GRAVEL (SM); brown to dark gray; laminated; firm; moist; no odor; no staining.
	5.0				SILTY SAND WITH FINE GRAVEL (SM); dark gray; homogenous; firm; moist; no odor; no staining.
	7.5	60/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); brown and dark gray; stratified; firm; moist; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown and grey in the stratifications..
	12.5	48/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91053286/-158.61202543

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 73.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather windy cloudy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); brown to gray; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	56/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); gray and brown; stratified; firm; damp to wet; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown and grey in the stratifications. wet at bottom..
	12.5	48/60			
	15.0			▽	

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91056276/-158.61221561

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather windy cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	46/60			SILTY SAND (SM); brown to dark gray; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	50/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); dark brown and light brown; laminated; firm; damp; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown in the laminations ..
	12.5	36/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM02-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.91049335/-158.61227445

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	50/60			SILTY SAND (SM); brown to gray; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	46/60			
19-FM-ISM02-DT-006-2-15	10.0				SILTY SAND (SM); brown and gray; stratified; firm; moist; no odor; no staining; grain size varies between fine and coarse stratifications. varying shades of brown and grey in the stratifications..
	12.5	56/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94046171/-158.65761346

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 36.8 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable


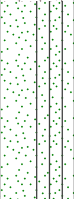
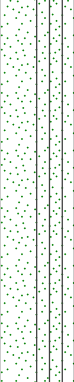
Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	56/60			SILTY SAND (SP-SM); tan with brown; poorly graded; homogenous; loose; moist; no odor; no staining; pumice gravel.
	10.0				
	12.5	48/60			
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94055157/-158.65767091

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 39.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

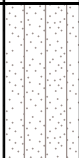

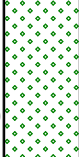
Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	44/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; dry; no odor; no staining.
	5.0				
	7.5	60/60			
	10.0				
	12.5	50/60			GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining.
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94046202/-158.65748804

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 37.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

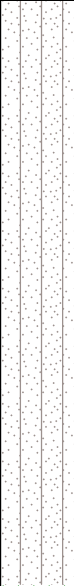


Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	50/60			SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining.
	10.0				
	12.5	46/60			
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94040175/-158.65737299

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 36.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	46/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	52/60			GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining; pumice gravel .
	10.0				
	12.5	42/60			
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94053304/-158.65715105

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 39.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable



Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well
NR = Not Recorded

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; wet; no odor; no staining.
	5.0				
	7.5	NR/60			
	10.0				
19-FM-ISM03-DT-006-2-15	12.5	58/60			GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining; pumice gravel .
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94048053/-158.657179

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 38.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	56/60			
	10.0				
	12.5	56/60			GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining.
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94049515/-158.6573057

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 38.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable


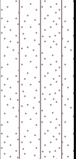
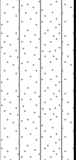
Weather partly cloudy.

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	52/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			
	10.0				GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining; pumice gravel .
	12.5	48/60			
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94053561/-158.65738327

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 38.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

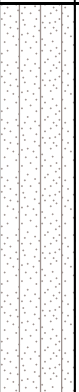
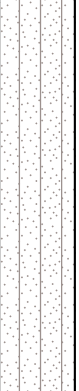

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			
	10.0				
	12.5	54/60			GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; moist; no odor; no staining.
	15.0				

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94065636/-158.65737804

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 38.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable


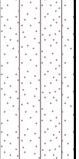

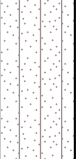
Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	44/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			
	10.0				
	12.5	46/60			
	15.0				GRAVELLY SAND (SW); tan with brown; well graded; homogenous; loose; damp; no odor; no staining; pumice gravel..

19-FM-ISM03-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM03-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94063466/-158.65724007

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 39.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy.

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			
	10.0				
	12.5	60/60			
19-FM-ISM03-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94601869/-158.62148711

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist to saturated; no odor; no staining; pumice gravel.
	5.0				
	7.5	46/60			
	10.0				
	12.5	56/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9459029/-158.62149549

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy rainy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	54/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	36/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94592232/-158.62138558

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining; washed of some fines in groundwater.
	5.0				
	7.5	48/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94596129/-158.62130326

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	46/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; hard to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	42/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94591837/-158.62119837

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	60/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94595098/-158.62111232

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	40/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94603381/-158.62114553

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather cloudy rainy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	54/60			
	10.0				
	12.5	60/60			
	15.0				

19-FM-ISM04-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94611571/-158.62117335

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	56/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94610509/-158.62134612

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy windy





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	48/60			
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM04-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94605091/-158.62135831

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/31/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy, rainy and windy




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	50/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose to stiff; moist to saturated; no odor; no staining.
	5.0				
	7.5	52/60		▽	
	10.0				
	12.5	60/60			
19-FM-ISM04-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97187733/-158.63745509

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 93.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny


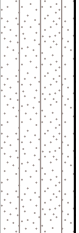
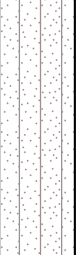

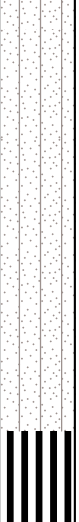
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); dark brown; homogenous; soft; moist; no odor; no staining.
	5.0				
	7.5	46/60			SILTY SAND (SM); pale brown dark brown; laminated; medium dense; damp; no odor; no staining; varying shades of brown in laminations..
	10.0				
	12.5	58/60			SILTY SAND (SM); black with tan; stratified; medium dense to soft; wet to saturated; no odor; iron oxide staining; iron staining throughout unit. giving parts a reddish color.
	15.0				SILT WITH FINE SAND (MH); tan; -1; homogenous; very soft; saturated; no odor; no staining.

19-FM-ISM05-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97198567/-158.63743248

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 92.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	54/60			SILTY SAND (SM); red brown; laminated; dense; moist; no odor; iron oxide staining; laminations vary between brown; tan; and red.
	10.0				
	12.5	60/60			SILTY SAND (SM); very light brown; homogenous; very soft; saturated; no odor; no staining.
	15.0				GRAVELLY SAND WITH SILT (SW); brown; well graded; homogenous; hard; wet; no odor; no staining.

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9719593/-158.63760166

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 94.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

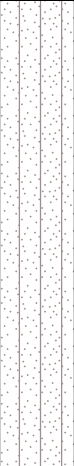


Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	40/60			SILTY SAND (SM); dark brown with brown; laminated; soft; moist; no odor; no staining.
	10.0			▽	SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	12.5	60/60			SILTY SAND WITH GRAVEL (SM); light brown; homogenous; medium dense; saturated to wet; no odor; no staining.
	15.0				

19-FM-ISM05-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97193614/-158.63771569

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 94.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

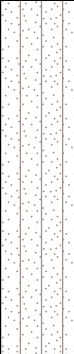
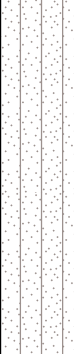

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); brown to dark brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); reddish brown to brown; stratified; loose to soft; moist; no odor; no staining.
	7.5	56/60			SILTY SAND (SM); very dark brown; homogenous; dense; wet to saturated; no odor; no staining.
19-FM-ISM05-DT-006-2-15	10.0				
	12.5	NR/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

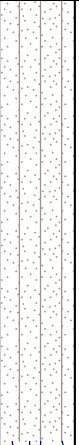

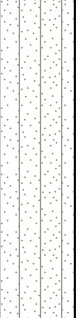
Boring Number: ISM05-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI
Site Background ISM
Client USACE
Field Scientist/Engineer ME
Date 7/30/2019
Weather sunny
Total Depth 11 feet bgs

Recovery Device Macro Core
Device Diameter 2 -inch
Sample Method Macro Core
of Samples 1
Drilling Company Discovery
Rig Type Geoprobe 6610
Boring Size 2 -inch

X/Y Coordinates 56.97186948/-158.63800715
X/Y Datum WGS84
Ground Elevation 94.5 Feet
Elevation Datum NAVD88
Top of Casing Elevation Not Applicable
Notes: UVOST ID: No Associated UVOST
 WELL ID: No Associated Well

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				SANDY GRAVEL (GW); very light tan; well graded; homogenous; hard; moist; no odor; no staining; pumice gravel.
	7.5	54/60			SILTY SAND (SM); brown; laminated; soft; damp; no odor; no staining.
19-FM-ISM05-DT-006-2-15	10.0				SILTY SAND WITH GRAVEL (SM); tan; homogenous; dense; wet; no odor; no staining; Refusal at 11 ft bgs.
		12/12			

End of Boring: 11 feet bgs.



Soil Boring Log

Boring Number: ISM05-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97184719/-158.63793541

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 94.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny



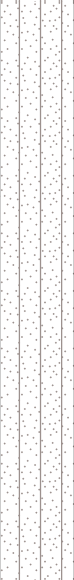
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	56/60			SILTY SAND (SM); very dark brown and very light brown; laminated; soft; wet; no odor; no staining; varying shades of brown in laminations..
	10.0				
	12.5	60/60			SILTY SAND (SM); tan; homogenous; dense; saturated; no odor; no staining.
19-FM-ISM05-DT-006-2-15	15.0			▽	

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97187405/-158.63779887

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 94.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			SILTY SAND (SM); very dark brown and light brown; homogenous; soft; moist; no odor; no staining.
	10.0				
	12.5	60/60			SILTY SAND WITH FINE GRAVEL (SM); tan; homogenous; dense; saturated to wet; no odor; no staining.
	15.0				

19-FM-ISM05-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97183438/-158.63774161

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 94.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

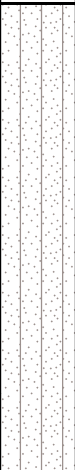
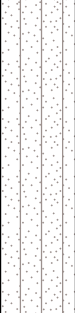
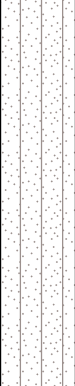
Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	40/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	54/60			SILTY SAND WITH GRAVEL (SM); pale brown to brown; homogenous; soft; moist to saturated; no odor; no staining; gravel is sparse and appears around 11 ft..
	10.0				
	12.5	48/60			
	15.0				

19-FM-ISM05-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97186756/-158.63760478

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 93.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	48/60			SILTY SAND (SM); dark brown and light brown; laminated; soft; moist; no odor; no staining; varying shades of brown in laminations .
	10.0				
	12.5	60/60			SILTY SAND (SM); tan; homogenous; dense; saturated to wet; no odor; no staining.
	15.0				

19-FM-ISM05-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM05-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97190186/-158.63760209

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 94.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny





Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	42/60			SILTY SAND (SM); dark brown to light brown; laminated; soft; moist; no odor; no staining; varying shades of brown in laminations .
19-FM-ISM05-DT-006-2-15	10.0				
	12.5	42/60			SILTY SAND (SM); pale brown; homogenous; dense; wet; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94137006/-158.63943355

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 60.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable


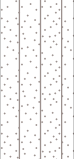

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			SILT (ML); tan; homogenous; dense; wet; no odor; no staining.
19-FM-ISM06-DT-006-2-15	10.0				SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94131042/-158.63940879

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 61.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

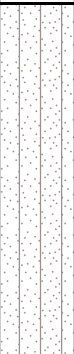


Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	36/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining; gravel near bottom of unit .
	5.0				SILTY SAND (SM); reddish brown; stratified; soft; saturated; no odor; iron oxide staining; stratifications vary between fine and coarse grained.
	7.5	60/60			
	10.0				
	12.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; iron oxide staining.
	15.0				

19-FM-ISM06-DT-006-2-15



End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94133017/-158.63949869

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 60.3 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy


Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60		▽	SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); reddish brown; stratified; soft; saturated; no odor; iron oxide staining; stratifications vary between fine and coarse..
	7.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	12.5	60/60			
19-FM-ISM06-DT-006-2-15	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94131328/-158.63929018

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 61.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partlycloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				SILTY SAND (SM); reddish brown; stratified; very soft; saturated; no odor; iron oxide staining.
	7.5	48/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	10.0				
19-FM-ISM06-DT-006-2-15	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94136722/-158.63927141

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 61.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

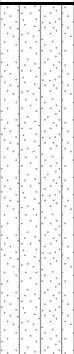




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	50/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0			▽	SILTY SAND (SM); reddish brown; stratified; loose; saturated; no odor; no staining. (NO CORE); Sand liquified in core rod and ran out when rods were being pulled up.
	7.5	0/60			
	10.0				
	12.5	40/60			SILTY SAND (SM); reddish brown; homogenous; very soft; saturated; no odor; no staining; liquified sand.
	15.0				SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.

19-FM-ISM06-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94145866/-158.63929553

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 60.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	44/60			SILTY SAND WITH FINE GRAVEL (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0			▽	SILTY SAND (SM); reddish brown; stratified; very soft; saturated; no odor; no staining; some parts completely liquified..
	7.5	24/60			SILTY GRAVEL WITH SAND (GM); pale brown; homogenous; loose; saturated; no odor; no staining.
	10.0				SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; medium dense; saturated; no odor; no staining.
	12.5	60/60			
	15.0				

19-FM-ISM06-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94147983/-158.63937737

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 59.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	24/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; hydrocarbon staining.
	5.0			▽	
	7.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	10.0				
	12.5	60/60			
	15.0				

19-FM-ISM06-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94153584/-158.63924219

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 59.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

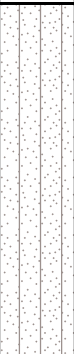

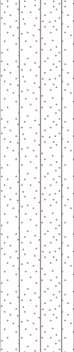
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	40/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0			▽	SILTY SAND (SM); reddish brown; homogenous; very soft; saturated; no odor; no staining.
	7.5	24/60			
19-FM-ISM06-DT-006-2-15	10.0				SILTY SAND (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94153375/-158.63911688

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 61.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable




Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	44/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	60/60			SILTY SAND (SM); reddish brown; stratified; very soft; saturated; no odor; no staining.
	10.0				
	12.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	15.0				

19-FM-ISM06-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM06-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94148376/-158.6391714

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 60.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 8/1/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny




Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	44/60			SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.
	5.0			▽	
	7.5	60/60			SILTY SAND (SM); reddish brown; stratified; very soft; saturated; no odor; no staining.
	10.0				
	12.5	60/60			SILTY SAND WITH GRAVEL (SM); pale brown; homogenous; dense; saturated; no odor; no staining.
	15.0				

19-FM-ISM06-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96500537/-158.67195976

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	42/60			SILTY SAND WITH GRAVEL (SP-SM); brown; poorly graded; homogenous; loose; dry to wet; no odor; no staining.
	5.0				
	7.5	48/60			
19-FM-ISM07-DT-006-2-15	10.0			▽	SILTY SAND (SM); brown; homogenous; soft; saturated; no odor; no staining.
	12.5	NR/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96494622/-158.67187413

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SP-SM); grayish brown; poorly graded; homogenous; loose; dry to wet; no odor; no staining.
	5.0				
	7.5	48/60			SILTY SAND (SM); brown; poorly graded; homogenous; soft; saturated; no odor; no staining.
19-FM-ISM07-DT-006-2-15	10.0			▽	
	12.5	60/60			GRAVELLY SAND (SW); gray; well graded; homogenous; loose; saturated; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96485537/-158.67181606

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; dry to saturated; no odor; no staining.
	5.0				
	7.5	36/60			
19-FM-ISM07-DT-006-2-15	10.0			▽	SILTY SAND (SM); brown; homogenous; soft; saturated; no odor; no staining.
	12.5	60/60			
	15.0				SILTY SAND (SP-SM); black; poorly graded; laminated; firm; saturated; no odor; no staining.

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96490552/-158.67177017

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 42.0 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; dry to saturated; no odor; no staining.
	5.0				
	7.5	36/60			SILTY SAND (SM); brown; homogenous; soft; saturated; no odor; no staining.
19-FM-ISM07-DT-006-2-15	10.0			▽	
	12.5	60/60			SAND (SP); black; poorly graded; laminated; firm; saturated; no odor; no staining.
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96489408/-158.67163364

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; moist to saturated; no odor; no staining.
	5.0				
	7.5	50/60			
	10.0				
	12.5	60/60			
	15.0				

19-FM-ISM07-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9650037/-158.67164489

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

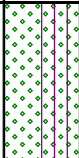
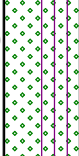
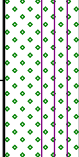
Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; moist to saturated; no odor; no staining.
	5.0				
	7.5	40/60			
19-FM-ISM07-DT-006-2-15	10.0			▽	SILTY SAND (SM); brown; poorly graded; homogenous; soft; saturated; no odor; no staining.
	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-016

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96499973/-158.67156716

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

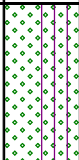
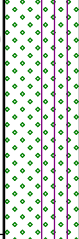
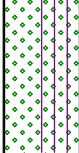




Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well Water

Total Depth 15 feet bgs

Boring Size 2 -inch

level at time of installation

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; moist to saturated; no odor; no staining.
	5.0				
	7.5	56/60			SILTY SAND (SM); brown; poorly graded; homogenous; soft; saturated; no odor; no staining.
19-FM-ISM07-DT-006-2-15					
19-FM-Z-TEST-00-DT-222-9-10 19-FM-Z-TEST-00-DT-223-9-10 19-FM-Z-TEST-00-DT-224-9-10 19-FM-Z-TEST-00-DT-225-9-10 19-FM-Z-TEST-00-DT-226-9-10 19-FM-Z-TEST-00-DT-227-9-10 19-FM-Z-TEST-00-DT-228-9-10 19-FM-Z-TEST-00-DT-229-9-10	10.0				
19-FM-Z-TEST-00-DT-227-10-12	12.5	NR/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96508994/-158.67158968

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.4 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

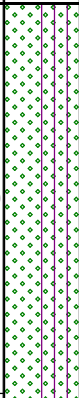
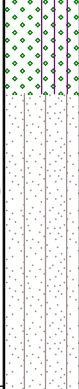

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; moist to saturated; no odor; no staining.
	5.0				
	7.5	48/60		▽	SILTY SAND (SM); dark brown with very light brown; poorly graded; laminated; soft; saturated; no odor; no staining; dark brown laminations in top 6 inches.
19-FM-ISM07-DT-006-2-15	10.0				
	12.5	60/60			
	15.0				SAND (SP); brown; poorly graded; stratified; loose; saturated; no odor; no staining; begins as very coarse sand with gravel and grades down to fine sand at 15 ft.

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-018

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96509688/-158.67168172

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	46/60			SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; moist; no odor; no staining.
	5.0				
	7.5	42/60		▽	SILTY SAND (SM); dark brown and brown; poorly graded; stratified; soft; wet to saturated; no odor; no staining; dark brown stratifications in top foot of peat.
	10.0				
	12.5	42/60			SAND WITH GRAVEL (SP); dark brown; poorly graded; stratified; soft; saturated; no odor; no staining; finer and coarser stratifications.
	15.0				SILTY SAND (SM); light brown; poorly graded; homogenous; soft; saturated; no odor; no staining.

19-FM-ISM07-DT-006-2-15

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: ISM07-019

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96504161/-158.67186166

Site Background ISM

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 41.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/30/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	48/60			SILTY SAND WITH ORGANICS (SM); light brown to dark brown; homogenous; very soft; moist; no odor; no staining.
	5.0				SILTY SAND WITH GRAVEL (SW-SM); grayish brown; well graded; homogenous; loose; moist; no odor; no staining.
	7.5	57/60			
19-FM-ISM07-DT-006-2-15	10.0			▽	SILTY SAND (SM); light brown and dark brown; stratified; soft; saturated; no odor; no staining.
	12.5	60/60			
	15.0				

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: J-SP-002-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96815436/-158.65780805

Site J-SP-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 66.6 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/14/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-SP-002-UV-001
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
19-FM-J-SP-002-DT-001-0.5-1.5					SILTY SAND WITH GRAVEL (SW-SM); dark brown; well graded; homogenous; very loose; moist; no odor; no staining.	0 5.2	0.4	
	2.5	48/60				0		
	5.0							
	7.5	48/60				0		
	10.0							
19-FM-J-SP-002-DT-001-11-12					SILTY SAND (SM); brown; poorly graded; homogenous; very soft; moist; no odor; no staining.		1.2	
	12.5	48/60		▽	SILTY SAND (SM); brown with light brown; laminated; loose; moist; no odor; no staining.	0		
	15.0							

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: J-SP-002-004

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9681202/-158.65778811

Site J-SP-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 65.9 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/14/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-SP-002-UV-004
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0								
19-FM-J-SP-002-DT-004-0.5-1.5 19-FM-J-SP-002-DT-904-0.5-1.5					SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.			1.6	possible fuel.
	2.5	46/60				0			
	5.0								
	7.5	48/60				0			
19-FM-J-SP-002-DT-004-8-9								1	
	10.0				SILTY SAND (SM); dark brown; homogenous; medium dense; moist; no odor; no staining.				

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: J-WH-002-004

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96700323/-158.66857156

Site J-WH-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 54.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/13/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy, rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-WH-002-UV-004
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
	2.5	26/60			SILTY SAND (SM); brown; homogenous; very loose; moist; no odor; no staining.	0		
	5.0							
	7.5	50/60				0		
	10.0							
19-FM-J-WH-002-DT-004-11-12	12.5	48/60			SILTY SAND (SM); light brown and brown; laminated; soft; wet; no odor; iron oxide staining.	0	0.3	
	15.0							

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: J-WH-002-007

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96692265/-158.66854551

Site J-WH-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 51.1 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/13/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-WH-002-UV-007
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0								
19-FM-J-WH-002-DT-007-1.5-2.5 19-FM-J-WH-002-DT-907-1.5-2.5	2.5	40/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; soft; moist; no odor; no staining.			0.1	
	5.0							9.3	Most of the contamination is between 1.4-2.5 ft bgs but there appears to be some minor downward leeching to roughly 5 ft bgs.
	7.5	44/60			SILTY SAND (SM); dark brown brown; laminated; medium dense; wet; no odor; iron oxide staining.			0	
19-FM-J-WH-002-DT-007-8-9								0.4	
	10.0								

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: J-WH-002-010

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96681701/-158.66856156

Site J-WH-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 54.6 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/13/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-WH-002-UV-010
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	42/60				SILTY SAND (SM); brown; homogenous; soft; moist; no odor; no staining.	0		
	5				SILTY SAND WITH ORGANICS (SM); dark brown brown; laminated; dense; moist; no odor; no staining.			
	48/60				SILTY SAND (SM); brown; homogenous; very loose; moist; no odor; no staining.	0		
19-FM-J-WH-02-DT-010-11.5-12.5	60/60				SILTY SAND (SM); brown; laminated; dense; damp; no odor; iron oxide staining.	0	1.1	
	15				SILTY SAND WITH GRAVEL (SM); brownish tan; homogenous; dense; wet to saturated; no odor; no staining.			
	60/60					0		
	20							

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: J-WH-003-004

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96729323/-158.66755401

Site J-WH-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 56.1 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/2/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0.0				
	2.5	50/60			SILTY SAND (SM); brown; homogenous; medium dense; damp; no odor; no staining.
	5.0				SILTY SAND WITH SILT (SW-SM); grayish brown; well graded; homogenous; loose; damp; no odor; no staining.
	7.5	54/60			
	10.0				SILTY SAND (SM); brown grayish brown; homogenous; loose; damp; no odor; no staining.
19-FM-J-WH-003-DT-004-12-13 19-FM-J-WH-003-DT-004-12-13 R	12.5	56/60			SILTY SAND WITH GRAVEL (SM); light brown; stratified; dense; wet; no odor; iron oxide staining.
	15.0				SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; wet; no odor; no staining.

End of Boring: 15 feet bgs.



Soil Boring Log

Boring Number: J-WH-003-007

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96715753/-158.66758652

Site J-WH-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 49.6 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/12/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-WH-003-UV-007
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	48/60			SILTY SAND WITH GRAVEL (SM); brown; homogenous; firm; moist to saturated; no odor; no staining.	0		
	10	60/60		SILTY SAND (SM); gray and brown; laminated; soft; wet; no odor; no staining; brown; grey; and tan laminations. A layer of wood was found at 10-11 ft bgs..	0			
19-FM-J-WH-003-DT-07-10.5-12.5 19-FM-J-WH-03-DT-907-10.5-12.5		60/60			9.8			
	15			SILTY SAND WITH GRAVEL (SM); gray; homogenous; soft; saturated; no odor; no staining.	0			
19-FM-J-WH-003-DT-007-15-16							0.5	
	20	60/60				0		

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: J-WH-003-011

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96713818/-158.66745681

Site J-WH-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 49.9 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/12/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather windy, overcast, 55 degrees

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-WH-003-UV-011
WELL ID: No Associated Well

Total Depth 15 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0.0							
	2.5	48/60			SAND (SW); brown; well graded; homogenous; loose; dry; no odor; no staining.			
	5.0							
	7.5	60/60						
19-FM-J-WH-003-DT-011-8-9					SILTY SAND (SP-SM); grayish tan to light brown; poorly graded; homogenous; soft; saturated; no odor; iron oxide staining; A 4-in section of wood was found at 10 ft..	0		
	10.0						9.3	Possible weathered fuel.
19-FM-J-WH-003-DT-011-10-11								
	12.5	60/60						
	15.0							
End of Boring: 15 feet bgs.								



Soil Boring Log

Boring Number: J-WH-003-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96706016/-158.66765563

Site J-WH-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 60.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/12/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-J-WH-003-UV-013
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	30/60			SILTY SAND (SM); dark brown; homogenous; loose; moist; no odor; no staining.	0		
	10	46/60					0	
	15	48/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; hard; moist; no odor; no staining.		0	
					SILTY SAND (SM); dark brown; homogenous; loose; moist; no odor; no staining.			
19-FM-J-WH-03-DT-013-16.5-17.5		48/60				0	2.3	possibly weathered fuel and wood
	20				SILTY SAND (SM); gray and brown; homogenous; soft; wet; no odor; no staining.			

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-DA-003-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97414225/-158.65637483

Site M-DA-003

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 97.1 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

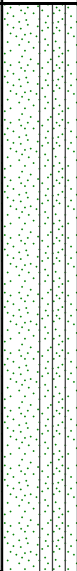

Weather sunny, windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0.0					
	2.5	39/60			SILTY SAND WITH FINE GRAVEL (SP-SM); dark brown; poorly graded; homogenous; loose; dry; no odor; no staining.	0
19-FM-M-DA-003-DT-001-5.5-6.5 19-FM-M-DA-003-DT-001-5.5-6.5R	5.0					
	7.5	30/60			SILTY SAND (SM); black with reddish brown; laminated; very dense; damp; no odor; iron oxide staining.	0
	10.0					

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: M-DA-006-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97286914/-158.6570039

Site M-DA-006

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 86.0 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny, windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 5 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0					
	1				SILTY SAND WITH ORGANICS (SP-SM); brown; poorly graded; homogenous; firm; dry; no odor; no staining.	
	2					
	3	50/60			SAND (SW); brown; well graded; homogenous; loose; dry; no odor; no staining.	0
	4					
19-FM-M-DA-006-DT-001-4.5-5 19-FM-M-DA-006-DT-001-4.5-5_R	5					

End of Boring: 5 feet bgs.



Soil Boring Log

Boring Number: M-DA-006-002

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97279479/-158.65720282

Site M-DA-006

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 77.9 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable



Weather sunny, windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0.0					
	2.5	36/60			GRAVELLY SAND (SW); light brown; well graded; homogenous; loose; dry; no odor; iron oxide staining.	
	5.0				SAND (SW); brown; well graded; homogenous; hard; dry; no odor; no staining.	
	7.5	60/60			GRAVELLY SAND (SW); gray and light brown; well graded; homogenous; medium dense; dry; no odor; iron oxide staining.	0
19-FM-M-DA-006-DT-002-9-10 19-FM-M-DA-006-DT-002-9-10_R	10.0					

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: M-DA-006-003

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97272352/-158.65727167

Site M-DA-006

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 72.9 Feet

Field Scientist/Engineer ME

of Samples 2 + 2 Duplicates

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny, windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 5 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0					
	1					
	2					
	3	35/60				
19-FM-M-DA-006-DT-003-2-4 19-FM-M-DA-006-DT-903-2-4 19-FM-M-DA-006-DT-003-2-4_R 19-FM-M-DA-006-DT-903-2-4_R	4					
	5					

End of Boring: 5 feet bgs.



Soil Boring Log

Boring Number: M-DA-006-004

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97271234/-158.65746342

Site M-DA-006

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 74.6 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny, windy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 5 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0					
	1					
	2					
19-FM-M-DA-006-DT-004-2-3 19-FM-M-DA-006-DT-004-2-3_R	3	41/60				0
	4			▽		
	5					

End of Boring: 5 feet bgs.



Soil Boring Log

Boring Number: M-PH-001-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.96471095/-158.63504886

Site M-PH-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 87.1 Feet

Field Scientist/Engineer FR

of Samples 1

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

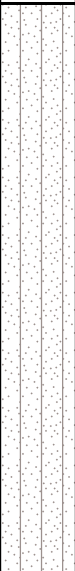
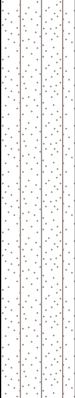
Weather sunny, windy, 60 degrees

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0.0					
	2.5	36/60			SILTY SAND (SM); dark brown to light brown; homogenous; medium dense; damp; no odor; no staining.	0
	5.0					
	7.5	44/60				0
19-FM-M-PH-001-DT-001-8.5-9.5 19-FM-M-PH-001-DT-001-8.5-9.5R	10.0					

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: M-PR-001-003

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97898473/-158.64908678

Site M-PR-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 49.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/19/2019

Drilling Company Discovery

Top of Casing Elevation 52.67 Feet

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-001-UV-003
WELL ID: M-MW-003
Water Level BTOC: 15.26 feet
Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	48/60				SILTY SAND (SM); dark brown and light brown; laminated; soft; moist; no odor; no staining.		0		
	5								
	50/60						0		
	10								
	42/60			▽	GRAVELLY SAND (SW); dark brown; well graded; homogenous; loose; wet; no odor; iron oxide staining.		0		
19-FM-M-PR-01-DT-003-12.5-13.5								0.4	
	15								
	50/60				SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; saturated; no odor; no staining.		0		
	20								
End of Boring: 20 feet bgs.									



Soil Boring Log

Boring Number: M-PR-001-004

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97899466/-158.64865147

Site M-PR-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 46.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/19/2019

Drilling Company Discovery

Top of Casing Elevation 48.63 Feet

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-001-UV-004
WELL ID: M-MW-004
Water Level BTOC: 11.44 feet
Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	42/60				SILTY SAND WITH GRAVEL (SM); brown; stratified; loose; moist; no odor; no staining; last six inches of unit corsen significantly with coarse sand and gravel..		0		
	5				SILTY SAND (SM); brown; laminated; loose; moist; no odor; no staining; fine and coarse sand laminations..		0		
	48/60						0		
19-FM-M-PR-001-DT-004-9.5-10.5	10			▽	SAND (SW); dark brown; well graded; homogenous; loose; wet to saturated; no odor; iron oxide staining.			0.3	
	56/60						0		
	15								
	36/60						0		
	20				GRAVEL (GP); gray; poorly graded; homogenous; loose; saturated; no odor; no staining; well washed gravel..				

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-PR-001-005

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97930345/-158.64874639

Site M-PR-001

Device Diameter 2-inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 45.7 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/19/2019

Drilling Company Discovery

Top of Casing Elevation 48.76 Feet

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-001-UV-005
WELL ID: M-MW-005
Water Level BTOC: 11.09 feet
Water level at time of installation

Total Depth 20 feet bgs

Boring Size 2-inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	48/60				SILTY SAND (SM); dark brown; laminated; soft; moist; no odor; iron oxide staining.		0		
	5								
	48/60						0		
19-FM-M-PR-001-DT-005-9-10	10			▽	SAND WITH SILT (SW); light brown; well graded; stratified; loose; saturated; no odor; iron oxide staining; some stratifications have been washed of fines..			1.3	
	54/60						0		
	15				GRAVEL (GW); gray; well graded; homogenous; loose; saturated; no odor; no staining.				
	60/60				SILTY SAND (SM); light brown; homogenous; dense; saturated; no odor; no staining.		0		
	20				GRAVELLY SAND (SW); gray; well graded; homogenous; loose; saturated; no odor; no staining; well washed of fines.				
End of Boring: 20 feet bgs.									



Soil Boring Log

Boring Number: M-PR-001-006*

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97901403/-158.64894436

Site M-PR-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 47.0 Feet

Field Scientist/Engineer ME

of Samples 4

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation 49.43 Feet

Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-001-UV-006
 WELL ID: M-MW-006
 Water Level BTOC: 11.85 feet
 Water level at time of installation
 NR = Not Recorded

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0									
	45/60				SILTY SAND (SM); brown; homogenous; soft; moist; no odor; no staining.		0 0.8 14			
	5									
	54/60						19.1 50.2 83.1 110.7			
19-FM-M-PR-001-DT-006-8-9 19-FM-M-PR-001-DT-006-8-9_R				▽	SAND WITH SILT (SW); brown; well graded; stratified; loose; saturated; hydrocarbon odor; hydrocarbon staining; iron staining. fine and coarse stratifications.		87.3		3.5	Max RE at 7.42 ft bgs.
19-FM-M-PR-001-DT-006-9-10 19-FM-M-PR-001-DT-006-9-10_R	10						6			
	15									*Borings M-PR-001-006 and M-PR-001-007 are in the same location and share the same lithology. M-PR-001-006 was conducted as part of the data gap investigation and was only drilled to a depth of 10 ft bgs. It was decided there would be a well at this location and M-PR-001-007 was conducted at a greater depth for installation of the monitoring well. All information at both borings should be treated as at the same location.
	20				SANDY GRAVEL (GW); gray; well graded; homogenous; loose; saturated; hydrocarbon odor; no staining; well washed of fines.					

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-PR-001-007*

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.979017/-158.648924

Site M-PR-001

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 47.7 Feet

Field Scientist/Engineer ME

of Samples 1 + Duplicate

Elevation Datum NAVD88

Date 7/19/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	42/60				SILTY SAND (SM); brown; homogenous; soft; moist; no odor; no staining.	0			*Borings M-PR-001-006 and M-PR-001-007 are in the same location and share the same lithology. M-PR-001-006 was conducted as part of the data gap investigation and was only drilled to a depth of 10 ft bgs. It was decided there would be a well at this location and M-PR-001-007 was conducted at a greater depth for installation of the monitoring well. All information at both borings should be treated as at the same location.
	5					4.7			
	56/60				SAND WITH SILT (SW); brown; well graded; stratified; loose; saturated; hydrocarbon odor; hydrocarbon staining; iron staining. fine and coarse stratifications.	350			
19-FM-M-PR-001-DT-007-9.5-10.5	10			▽		350			
19-FM-M-PR-001-DT-907-9.5-10.5	60/60					400			
	15					81			
	36/60					42			
	20				SANDY GRAVEL (GW); gray; well graded; homogenous; loose; saturated; hydrocarbon odor; no staining; well washed of fines.	23			
						16			
						4.7			

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-006

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97355929/-158.65401948

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 83.1 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/14/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather rain

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-006
WELL ID: No Associated Well

Total Depth 27 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	52/60			SILTY SAND WITH ORGANICS (SM); brown; homogenous; soft; moist; organic odor; no staining.			
	10	48/60			SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; loose; moist; no odor; no staining.	0		
	15	48/60			SILTY SAND (SM); gray to dark brown; homogenous; very loose; saturated; no odor; no staining.	0		
19-FM-M-PR-05-DT-006-13.5-14.5	15							
	20	60/60			SANDY PEAT WITH SILT (PT); brown; -1; laminated; hard; moist; organic odor; no staining.	0	3.8	Most likely not fuel. Probable high organic soil. Waveforms do not quite match any fuel signature that UVOST contractor has seen.
19-FM-M-PR-005-DT-006-18-19	20				SILTY SAND WITH PEAT (SM); dark gray; homogenous; loose; saturated; no odor; no staining; spots of peat near top of unit. .	0		
	25	60/60						
					(NO CORE); UVOST was advanced to a depth of 27ft bgs..			

End of Boring: 27 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-007

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97344836/-158.65384697

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.2 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/14/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather rain

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-007
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES	
	0								
	42/60				SILTY SAND WITH ORGANICS (SM); brown; homogenous; soft; moist; organic odor; no staining.				
	5				SILTY SAND WITH GRAVEL (SM); gray; homogenous; loose; moist; no odor; no staining.	0			
	48/60						0		
19-FM-M-PR-05-DT-007-10.5-11.5	10						1.3	0.4	
	60/60			▽		0			
	15					0			
	60/60					0			
19-FM-M-PR-005-DT-007-19-20	20				SILTY SAND WITH PEAT (SM); gray and brown; stratified; hard to soft; moist; organic odor; no staining; layers of peat and sand alternate. sand has organic material in it..		4.4	Peat layer	



Soil Boring Log

Boring Number: M-PR-005-013

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.973321/-158.653335

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.2 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/14/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather rain

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-013
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	45/60				SILTY SAND WITH ORGANICS (SM); light brown; homogenous; soft; moist; organic odor; no staining.			
	5				SILTY SAND WITH GRAVEL (SM); dark gray; homogenous; loose; moist; no odor; no staining.	0		
	44/60						0	
19-FM-M-PR-05-DT-013-10.5-11.5	10							0.4
	60/60						0	
19-FM-M-PR-005-DT-013-14-15 19-FM-M-PR-005-DT-913-14-15	15					SILTY SAND WITH ORGANICS (SM); brown; laminated; soft; moist; organic odor; no staining; has strong decaying organic odor.	5.2 0	1.7
	60/60				SILTY SAND (SM); brown; laminated; medium dense; saturated; organic odor; no staining.			
	20				SILTY SAND (SM); tan; homogenous; medium dense; saturated; no odor; no staining; high silt content. .	NR		
End of Boring: 20 feet bgs.								



Soil Boring Log

Boring Number: M-PR-005-032

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9728357/-158.65401389

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 84.7 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-032
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES	
	0								
					SILTY SAND WITH ORGANICS (SM); dark brown; homogenous; loose; moist; no odor; no staining.	0			
	5				SILTY SAND (SM); light brown dark brown; laminated; dense; moist; no odor; no staining.				
					SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; moist; no odor; iron oxide staining.	0			
19-FM-M-PR-005-DT-032-8.5-10.5	10							0.3	
	15						0		
	20						0		
19-FM-M-PR-005-DT-032-21-22							0.3		
	25					0			

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-033

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97305691/-158.65371445

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.3 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-033
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	56/60			SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.	0		
	10	44/60		▽	GRAVELLY SAND WITH SILT (SW); very dark brown; well graded; homogenous; loose; saturated; no odor; no staining.	0	0.25	
19-FM-M-PR-005-DT-033-10-11	15	56/60			SILTY SAND (SM); very dark brown; homogenous; loose; saturated; organic odor; no staining.	0		
	20	60/60			PEAT WITH SILT (PT); very dark gray and light brown; stratified; very dense; wet; organic odor; no staining; sand mixed in with peat in areas of the unit..	0	3.2	Peat layer
19-FM-M-PR-005-DT-033-19-20 19-FM-M-PR-005-DT-933-19-20	25	60/60			SILTY SAND WITH GRAVEL (SM); very light brown; homogenous; very dense; wet; no odor; no staining.	0		

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-034

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97315855/-158.65414914

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.8 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather windy and cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-034
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	48/60				SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; loose; damp; no odor; no staining.	0		
	5							
	56/60					0		
	10							
	42/60			▽	GRAVELLY SAND (SW); dark gray; well graded; stratified; hard; saturated; no odor; iron oxide staining.	0		
19-FM-M-PR-005-DT-034-15-16	15				SAND (SP); black; poorly graded; homogenous; loose; saturated; no odor; no staining.		0.7	
	42/60				SANDY PEAT WITH SILT (PT); light brown; stratified; hard; wet; organic odor; no staining.	0		
19-FM-M-PR-005-DT-034-19-20	20						4.6	Peat Layer
	36/60					0		
	25				SILTY SAND WITH GRAVEL (SM); grayish olive; homogenous; dense; wet; no odor; no staining; cobbles are also prevalent ..			



Soil Boring Log

Boring Number: M-PR-005-035

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97317271/-158.65453898

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 86.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-035
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES	
	0								
		44/60			SILTY SAND (SM); dark brown with dark brown; laminated; loose to dense; moist; no odor; no staining.	0			
	5				SILTY SAND WITH FINE GRAVEL (SM); very dark brown; homogenous; loose; moist; no odor; no staining; sand coarsens at last 6 inches of unit..				
19-FM-M-PR-005-DT-035-7.5-8.5		48/60					0	1.0	Anomalous data point. No fuel found.
	10					SILTY SAND (SM); dark brown with light brown; laminated; medium dense to soft; moist; no odor; no staining.			
		36/60					0		
	15				SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; wet; no odor; no staining.				
		24/60				0			
	20				SILTY SAND WITH GRAVEL (SM); brown; laminated; hard; wet; no odor; no staining; fine ac coarse laminations..				
		42/60				0			
	25								

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-036

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97336747/-158.65405483

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.4 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-036
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	48/60			SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose to stiff; moist to wet; no odor; no staining; sand and gravel coarsen below groundwater interface..	0		
	10	56/60				0		
19-FM-M-PR-005-DT-036-11-12				▽			0.3	
	15	56/60			SILTY SAND WITH ORGANICS (SM); black dark brown; homogenous; soft; saturated; organic odor; no staining.	0		
	19-FM-M-PR-005-DT-36-17.5-18.5	48/60			PEAT WITH SILT (PT); light brown; laminated; hard; wet; organic odor; no staining.	0	6.4	Peat Layer
19-FM-M-PR-05-DT-936-17.5-18.5								
	20				SILTY SAND WITH GRAVEL (SM); tan; laminated; medium dense; wet; no odor; no staining.	0		
	25	36/60				0		

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-037

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97324746/-158.65356169

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 80.9 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-037
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES	
	0								
	46/60				SILTY SAND WITH GRAVEL (SM); grayish brown dark brown; homogenous; loose; moist; no odor; no staining.	0			
	5								
	48/60					GRAVELLY SAND WITH SILT (SW-SM); brown very dark brown; well graded; homogenous; stiff; wet; no odor; no staining.	0		
19-FM-M-PR-005-DT-037-11-12	10				▽			0.3	
	48/60					SILTY SAND (SP-SM); dark brown; poorly graded; homogenous; medium dense; saturated; no odor; no staining.	0		
	15								
19-FM-M-PR-005-DT-037-17-18	42/60				PEAT WITH SILT (PT); light brown; laminated; very dense; wet; organic odor; no staining.	0	3.3	Peat layer	
	20				SILTY SAND WITH GRAVEL (SM); dark tan; homogenous; dense; wet; no odor; no staining.				
	42/60					0			
	25								

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-PR-005-038

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97312154/-158.65345523

Site M-PR-005

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 80.9 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/20/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy/rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-PR-005-UV-038
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	48/60			SILTY SAND WITH FINE GRAVEL (SM); very dark brown; homogenous; loose to medium stiff; moist; no odor; no staining.	0		
	10	42/60			GRAVELLY SAND (SW); gray; well graded; homogenous; loose; saturated; no odor; no staining.	0		
19-FM-M-PR-005-DT-038-12-13	15	43/60		▽	PEAT (PT); light brown; homogenous; very dense; wet; organic odor; no staining.	0	0.4	Peat layer
19-FM-M-PR-005-DT-038-14-15 19-FM-M-PR-005-DT-038-14-15_2 19-FM-M-PR-005-DT-938-14-15	20	24/60			SILTY SAND (SP-SM); very dark gray; poorly graded; homogenous; very loose; saturated; no odor; no staining.	0		
	25	60/60			GRAVELLY SAND WITH SILT (SW); light brown; well graded; homogenous; loose; saturated; no odor; no staining.	0		



Soil Boring Log

Boring Number: M-UN-002-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97570358/-158.64091645

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.7 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/15/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-001
WELL ID: No Associated Well

Total Depth 30 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	5	48/60			SILTY SAND WITH GRAVEL (SM); dark brown with brown; stratified; soft to firm; moist; no odor; no staining; fine and coarse stratifications..	0			
	10	60/60		SILTY SAND WITH GRAVEL (SM); tan and brown; stratified; medium dense; moist; hydrocarbon odor; hydrocarbon staining; layers of fine an coarse. fuel concentrated in coarse stratifications. fuel sheen in groundwater. .	0				
	15	48/60			5.1 0	41.9			
	19FM-M-UN-002-DT-001-15.5-16.5				298				
	19FM-M-UN-002-DT-901-15.5-16.5				32				
	20	60/60			18	264		Max RE at 14.68.	
	25	60/60			546				
	30	60/60			350				
					56				
					30				
				130					
				116	no UVOST screening data at this sample depth.				
				12.1					
				6.4					
				6.6					
				1.3					
				0					

End of Boring: 30 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-003

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97573803/-158.64094108

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 79.1 Feet

Field Scientist/Engineer ME

of Samples 2 + 1 Duplicate

Elevation Datum NAVD88

Date 7/23/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-003
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES		
	0										
	50/60				SILTY SAND (SM); dark brown to brown; laminated; loose; moist to wet; no odor; no staining.	0					
	5										
	60/60							0			
	10										
	60/60							3.2			
19-FM-M-UN-2-DT-003-13.5-14.5	15					SILTY SAND (SM); light brown very dark brown; homogenous; dense; saturated; hydrocarbon odor; hydrocarbon staining.		5.6		2.7	Fuel Signature
	15							15000			
	60/60							388			
	20							211			
	60/60							46			
	20					18					
	60/60					31					
	25					6.2					
19-FM-M-UN-002-DT-003-24-25	25					10.4		0.5			
19-FM-M-UN-002-DT-903-24-25	25										

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-004

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97577997/-158.64095333

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 81.0 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/23/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-004
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	36/60				SILTY SAND (SM); brown; homogenous; soft; moist; no odor; no staining.	0			
	5								
	40/60				GRAVELLY SAND (SW); gray; well graded; homogenous; loose; dry; no odor; no staining.	0			
	10				SILTY SAND (SM); dark brown light brown; laminated; dense; moist; no odor; no staining.				
19-FM-M-UN-002-DT-004-12-13	48/60					0			
	15				SILTY SAND WITH GRAVEL (SM); very light brown; homogenous; dense; wet; no odor; no staining.			1.7	fuel signature was not consistent throughout this depth range. fuel signatures appeared as spikes that were 1-2 Data points. it s possible that contamination is following sandy laminations through the unit.
	48/60					0			
	20								
19-FM-M-UN-002-DT-004-22-24	60/60					0		0.8	
	25								

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-005

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97581736/-158.64096042

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 82.7 Feet

Field Scientist/Engineer ME

of Samples 1 + Duplicate

Elevation Datum NAVD88

Date 7/16/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-005
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	42/60				SILTY SAND (SP-SM); brown; poorly graded; homogenous; soft; moist; no odor; no staining.	0		
	5							
	48/60					SILTY SAND (SM); light brown; homogenous; dense; damp; no odor; no staining.	0	
	10							
	60/60					SILTY SAND WITH GRAVEL (SM); brown; homogenous; dense; damp to saturated; no odor; no staining.	1.5	
	15							
	60/60					1.2		
	20							
19-FM-M-UN-002-DT-005-22-23 19-FM-M-UN-002-DT-905-22-23	60/60					0	0.8	
	25							

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-007

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97567979/-158.64083366

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 75.7 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/24/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-007
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
19-FM-M-UN-002-DT-007-1.5-3	48/60				SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; moist to wet; no odor; no staining.	0		2.42	Possible Fuel
	5								
	42/60					0			
19-FM-M-UN-002-DT-007-9-10	10				(NO CORE); no core from 10-25 due to core sleeve becoming stuck in core barrel for depths 10-15 and 15-20 giving no recovery. Drilling conditions were not favorable..				
	15								
	20								
	25								

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-008

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97572157/-158.64065698

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 79.0 Feet

Field Scientist/Engineer ME

of Samples _____

Elevation Datum NAVD88

Date 7/23/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-008
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	42/60				SILTY SAND WITH GRAVEL (SM); light brown; homogenous; medium dense; damp; no odor; no staining.	0			
	5				(NO CORE); Rock was lodged in core barrel and sleeve was not able to be extracted from core barrel..				
	0/60								
	10								
	15							0.7	
	20							0.6	
	25								

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-009

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97575108/-158.64052401

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 77.5 Feet

Field Scientist/Engineer ME

of Samples 1 + Duplicate

Elevation Datum NAVD88

Date 7/17/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-009
WELL ID: No Associated Well

Total Depth 30 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES				
	0											
	5	48/60			SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; moist to damp; no odor; no staining; gravel increasing in size and frequency at depth.	0	2.7	there are 2 sections that are anomalous but are not likely fuel				
	10	46/60		0								
	15	36/60		0								
	20	48/60		0								
	25	60/60		0								
	30	60/60		0								
19FM-M-UN-002-DT-009-22.5-23.5												
19FM-M-UN-002-DT-909-22.5-23.5												
											2.5 0.7	anomalous signature

End of Boring: 30 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-012

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97574715/-158.64081881

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 79.9 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/16/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-012
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	40/60				SILTY SAND WITH GRAVEL (SM); brown; homogenous; soft; moist to saturated; no odor; no staining.	0		
	5					0		
	54/60					0	0.5	
	10					0		
	15					0		
	48/60							
	15							
	58/60							
	20							
	0/60				(NO CORE); No core past 20 ft bgs. The core sleeve crumpled in the drill rod and was not able to be removed.			
	25							

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-014

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97565648/-158.6406822

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 79.2 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/17/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-014
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	42/60			SILTY SAND WITH COARSE GRAVEL (SM); brown; homogenous; hard; moist; no odor; no staining; gravel increases in size and frequency with depth..	0		
	10	42/60				0		
	15	36/60				0		
		60/60			GRAVELLY SAND WITH SILT (SW); light brown; well graded; homogenous; very hard; dry; no odor; no staining; coarse gravel and pebbles/cobbles..	0		
19-FM-M-UN-002-DT-014-19-20	20						0.3	
End of Boring: 20 feet bgs.								

Rocky soil prevented further drilling. High %RE sections turned out to be rocks that were being broken through. Refusal was met at 19.5 ft bgs.



Soil Boring Log

Boring Number: M-UN-002-015

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9756771/-158.64059565

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.8 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/17/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-015
WELL ID: No Associated Well

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	43/60			SILTY SAND WITH GRAVEL (SM); light brown; homogenous; hard; moist; no odor; no staining; increase in size and frequency of gravel at depth .	0		
	10	30/60		0				
	15	56/60		0				
19-FM-M-UN-002-DT-015-14-15	15			1.2		High RE due to rocks being crushed by the UVOST probe.		
	20	60/60		0				
	25	36/60	0					

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-017

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97572739/-158.64109549

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 77.8 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/17/2019

Drilling Company Discovery

Top of Casing Elevation 78.64 Feet

Weather sunny

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-017
WELL ID: M-MW-008
Water Level BTOC: 18.4 feet
Water level at time of installation

Total Depth 25 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	44/60				SILTY SAND (SM); light brown; stratified; very soft; moist to wet; no odor; no staining; fine and coarse stratifications..		0		
	5								
	46/60						0		
	10								
	24/60				SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; wet to saturated; no odor; no staining.		0		
	15								
19-FM-M-UN-002-DT-017-17-18	60/60						0		
	20								
	60/60						0	0.2	
	25								

End of Boring: 25 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-020

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97576688/-158.64073947

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 80.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/18/2019

Drilling Company Discovery

Top of Casing Elevation 82.08 Feet

Weather cloudy windy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-020
WELL ID: M-MW-009
Water Level BTOC: Dry feet
Water level at time of installation

Total Depth 26 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	30/60				SILTY SAND (SM); brown; homogenous; loose; moist; no odor; no staining.		0		
	5								
	24/60				SILTY SAND (SM); dark brown; laminated; soft; damp; no odor; no staining.		0		
	10								
	54/60				SILTY SAND WITH GRAVEL (SM); brown; homogenous; medium dense; saturated to wet; no odor; no staining.		0		
	15								
	56/60						0		
	20								
19-FM-M-UN-002-DT-020-20-21								0.2	
	42/60						0		
	25								
					(NO CORE); No core past 25 ft bgs. Well was installed deeper than original boring..				



Soil Boring Log

Boring Number: M-UN-002-022

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97564452/-158.64085462

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 77.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/24/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-022
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	5	48/60			SILTY SAND (SM); brown; homogenous; loose to firm; moist; no odor; no staining.	0		
19-FM-M-UN-002-DT-022-6-8		40/60			SILTY SAND WITH GRAVEL (SM); light brown; homogenous; dense; damp to wet; no odor; no staining; starts getting wettish at 6-7. never gets saturated..	0	0.4	
	10	42/60						
	15	60/60						
	20							

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-024

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.9757189/-158.64100165

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.0 Feet

Field Scientist/Engineer ME

of Samples 1 + Duplicate

Elevation Datum NAVD88

Date 7/24/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-024
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	40/60				SILTY SAND (SM); dark brown with light brown; stratified; loose to hard; moist to wet; no odor; no staining; fine and coarse stratifications..	0			
	5			0					
	60/60			0					
	10			0					
	40/60			0					
19-FM-M-UN-002-DT-024-13.5-15 19-FM-M-UN-002-DT-924-13.5-15	15			▽	SILTY SAND (SM); brown; homogenous; loose; saturated; hydrocarbon odor; hydrocarbon staining; entire 15-20 ft core was liquified. only got recovery because a rock had lodged itself in the cutting shoe right at 20 ft. whole core smells like fuel..	11.7		213	
				356					
				349					
				78					
	60/60								
	20					24			

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-027

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97561186/-158.64088081

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 77.5 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/28/2019

Drilling Company Discovery

Top of Casing Elevation 79.71 Feet

Weather rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-027
WELL ID: M-MW-010
Water Level BTOC: Dry feet
Water level at time of installation

Total Depth 33.5 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0								
	48/60				SILTY SAND (SM); dark brown and brown; stratified; loose; moist; no odor; no staining.		0		
	5								
	34/60				SILTY SAND WITH GRAVEL WITH ROCK FRAGMENTS (SM); light brown; homogenous; dense; moist to damp; no odor; iron oxide staining.		0		
	10								
	60/60						0		No UVOST screening at depth of sample.
	15								
	60/60						0		
	20								
	60/60						0		
	25								
19-FM-M-UN-002-DT-027-27-28	60/60						0		
	30				(NO CORE); No core past 30 ft bgs. Met refusal at 30 ft bgs. Soil is very rocky and not suitable for drilling..				

End of Boring: 33.5 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-028

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97570298/-158.64054233

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 77.1 Feet

Field Scientist/Engineer ME

of Samples 1

Elevation Datum NAVD88

Date 7/19/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather cloudy rainy

Rig Type Geoprobe 6610

Notes: UVOST ID: 19-FM-M-UN-002-UV-028

Total Depth 20 feet bgs

Boring Size 2 -inch

WELL ID: No Associated Well
NR = Not Recorded

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0							
	40/60				SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; hard; moist; no odor; no staining.	0		
	5							
	46/60					0		
	10				(NO CORE); No core recovered due to large rock jamming core sleeve in drill rod.	NR		
	15							
19-FM-M-UN-002-DT-028-17-18	60/60				SILTY SAND WITH GRAVEL (SM); dark brown; homogenous; hard; moist; no odor; no staining.	0	1.4	most likely rocks giving anomalous UVOST signatures.
	20							

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: M-UN-002-029

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97571507/-158.64097289

Site M-UN-002

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 78.8 Feet

Field Scientist/Engineer ME

of Samples 3 + 1 Duplicate

Elevation Datum NAVD88

Date 7/29/2019

Drilling Company Discovery

Top of Casing Elevation 81.86 Feet

Weather cloudy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: M-MW-007
Water Level BTOC: 26 feet
Water level at time of installation

Total Depth 35 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	WELL GRAPHIC	PID SCREENING	UVOST SIGNATURE	MAX %RE AT SAMPLE DEPTH	UVOST NOTES
	0									
	48/60				SILTY SAND (SM); light brown; stratified; soft; moist; no odor; no staining.		0			
	5									
	60/60						0			
	10									
	42/60				SILTY SAND (SM); grayish brown; stratified; soft to dense; wet; hydrocarbon odor; hydrocarbon staining; fuel in coarse stratifications. same unit as above just with fuel odor and staining..		172			
	15						24			
							32			
							190			
							380			
							370			
19-FM-M-UN-002-DT-029-16-17					SILTY SAND WITH GRAVEL (SM); grayish brown; homogenous; soft to dense; saturated to wet; hydrocarbon odor; hydrocarbon staining.					
19-FM-M-UN-002-DT-929-16-17							999			No UVOST conducted at this location.
	20									
							180			
19-FM-M-UN-02-DT-029-22.5-23.5							44			
	25									
							15.2			
							37			
							42			
	30									
							18			
19-FM-M-UN-002-DT-029-31-32							190			
							47			
	35									

End of Boring: 35 feet bgs.



Soil Boring Log

Boring Number: M-WH-004-001

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97499334/-158.64669662

Site M-WH-004

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 73.6 Feet

Field Scientist/Engineer ME

of Samples 2

Elevation Datum NAVD88

Date 7/3/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

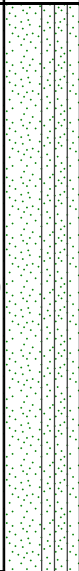

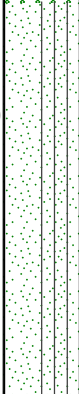
Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 10 feet bgs

Boring Size 2 -inch

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES	PID SCREENING
	0.0					
	2.5	46/60			SILTY SAND (SP-SM); brown and dark gray; poorly graded; homogenous; hard; damp; no odor; no staining.	0
19-FM-M-WH-004-DT-001-5.5-6.5 19-FM-M-WH-004-DT-001-5.5-6.5R	5.0				SAND (SW); light brown; well graded; homogenous; very loose; dry to moist; no odor; no staining.	
	7.5	46/60			SILTY SAND (SP-SM); dark brown; poorly graded; homogenous; dense; damp; no odor; no staining.	0
	10.0					

End of Boring: 10 feet bgs.



Soil Boring Log

Boring Number: Z-TEST-00-206

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.94346787/-158.57148214

Site Background TOC/Physical Parameters

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 130.5 Feet

Field Scientist/Engineer ME

of Samples 16

Elevation Datum NAVD88

Date 7/26/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather partly cloudy.

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0				
	48/60				SILTY SAND WITH GRAVEL (SM); very dark brown; homogenous; loose; moist; no odor; no staining.
	5				
19-FM-Z-TEST-00-DT-206-7-8 19-FM-Z-TEST-00-DT-207-7-8 19-FM-Z-TEST-00-DT-208-7-8 19-FM-Z-TEST-00-DT-209-7-8 19-FM-Z-TEST-00-DT-210-7-8 19-FM-Z-TEST-00-DT-211-7-8 19-FM-Z-TEST-00-DT-212-7-8 19-FM-Z-TEST-00-DT-213-7-8	10	54/60		▽	
19-FM-Z-TEST-00-DT-208-12.5-13		54/60			SILTY SAND WITH GRAVEL (SW-SM); tan and brown; well graded; homogenous; stiff; saturated; no odor; no staining; pumice gravel.
19-FM-Z-TEST-00-DT-207-13-15 19-FM-Z-TEST-00-DT-206-14-15 19-FM-Z-TEST-00-DT-209-14-15 19-FM-Z-TEST-00-DT-210-14-15 19-FM-Z-TEST-00-DT-211-14-15 19-FM-Z-TEST-00-DT-212-14-15 19-FM-Z-TEST-00-DT-213-14-15	15				
	60/60				
	20				

End of Boring: 20 feet bgs.



Soil Boring Log

Boring Number: Z-TEST-00-214

Project Number: 05172.001

Project Name Fort Morrow Phase III RI

Recovery Device Macro Core

X/Y Coordinates 56.97903755/-158.64707178

Site Background TOC/Physical Parameters

Device Diameter 2 -inch

X/Y Datum WGS84

Client USACE

Sample Method Macro Core

Ground Elevation 46.7 Feet

Field Scientist/Engineer ME

of Samples 9

Elevation Datum NAVD88

Date 7/29/2019

Drilling Company Discovery

Top of Casing Elevation Not Applicable

Weather sunny breezy

Rig Type Geoprobe 6610

Notes: UVOST ID: No Associated UVOST
WELL ID: No Associated Well

Total Depth 20 feet bgs

Boring Size 2 -inch

Water level at time of installation

ANALYTICAL SAMPLES	DEPTH (ft)	SOIL RECOVERY IN RECEIVED/IN DRIVEN	SOIL GRAPHIC	WATER LEVEL	SOIL DESCRIPTION AND NOTES
	0				
	48/60				SILTY SAND WITH FINE GRAVEL (SM); dark brown; homogenous; loose; moist; no odor; no staining.
	5				
	60/60			▽	SILTY SAND WITH GRAVEL (SM); very light brown; stratified; loose; saturated; no odor; no staining.
	10				
	60/60				SAND WITH SILT (SW); very light brown; well graded; homogenous; loose; saturated; no odor; no staining.
19-FM-Z-TEST-00-DT-215-12.5-13					SANDY GRAVEL (GP); light brown; poorly graded; homogenous; loose; saturated; no odor; no staining; washed of fines.
19-FM-Z-TEST-00-DT-215-13-15					
19-FM-Z-TEST-00-DT-214-14-15					
19-FM-Z-TEST-00-DT-216-14-15	15				
19-FM-Z-TEST-00-DT-217-14-15					
19-FM-Z-TEST-00-DT-218-14-15					
19-FM-Z-TEST-00-DT-219-14-15					
19-FM-Z-TEST-00-DT-220-14-15					
19-FM-Z-TEST-00-DT-221-14-15					
	20				
End of Boring: 20 feet bgs.					

MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: B-MW-001

Project Name Fort Morrow Phase III RI **Site** B-DA-004

Monument Type Flushmout

Client USACE **Field Scientist/Engineer** Not Recorded

Surface Seal Concrete

Date 7/30/2014 **Weather** Not Recorded

Screened Interval 5.6 - 15.75 feet

Drilling Company Not specified **Rig Type** Not specified

Screen Slot Size 0.01"

Boring Size 3.5" **Drilling Method** Not Specified

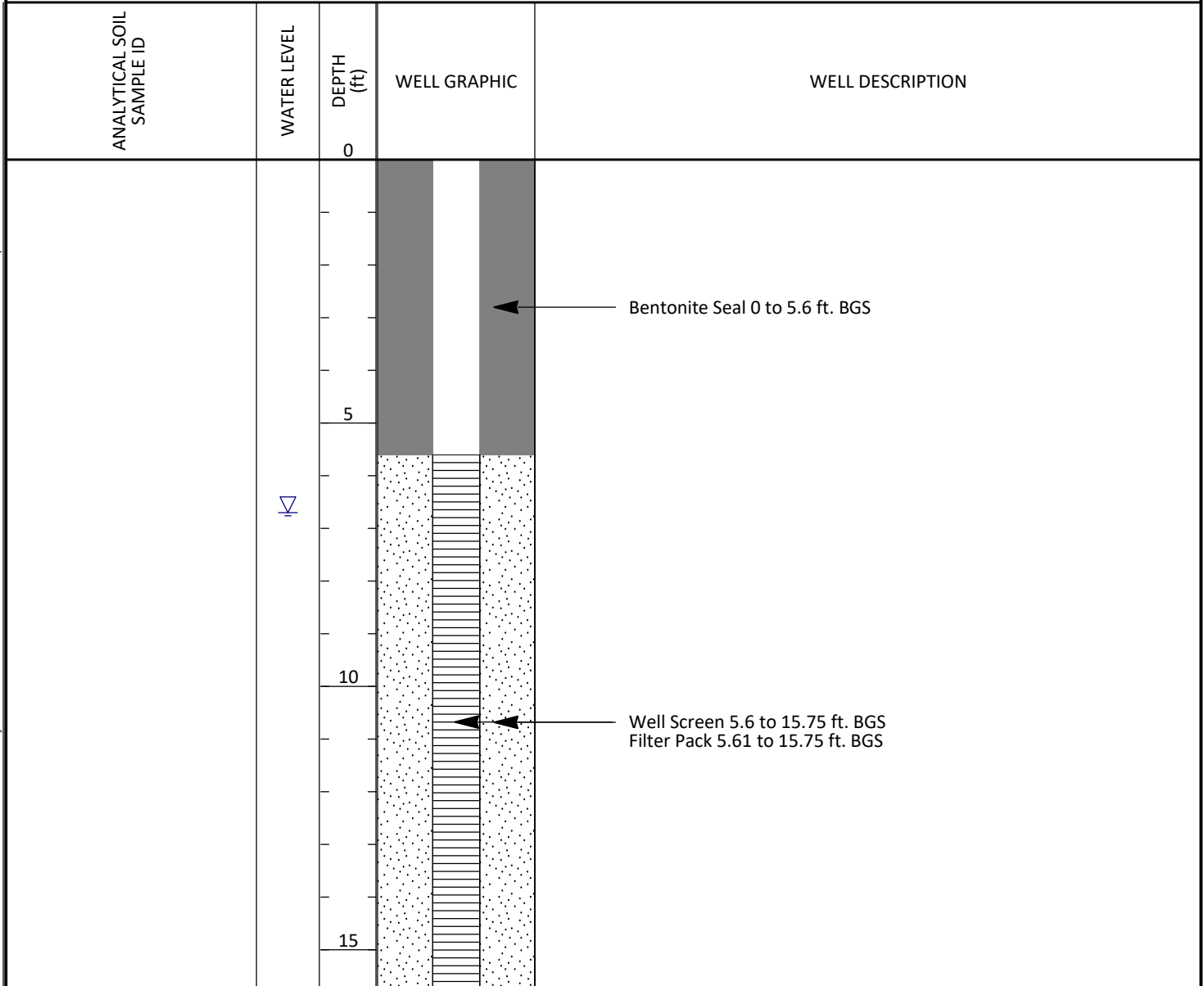
Extra Field Notes:
Stick up height: -0.1 feet bgs.
Location ID: B-DA-004-001
Historical Well 2014, Data compiled from Phase I and II Reports

Well Diameter 2" **# of Samples** Not Recorded

Total Depth 15.75 feet bgs **Depth to GW** 6.7 feet bgs/6.1 feet BTOC

X/Y Coordinates 56.94926066/-158.62588197 **Top of Casing Elevation** 79.80 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

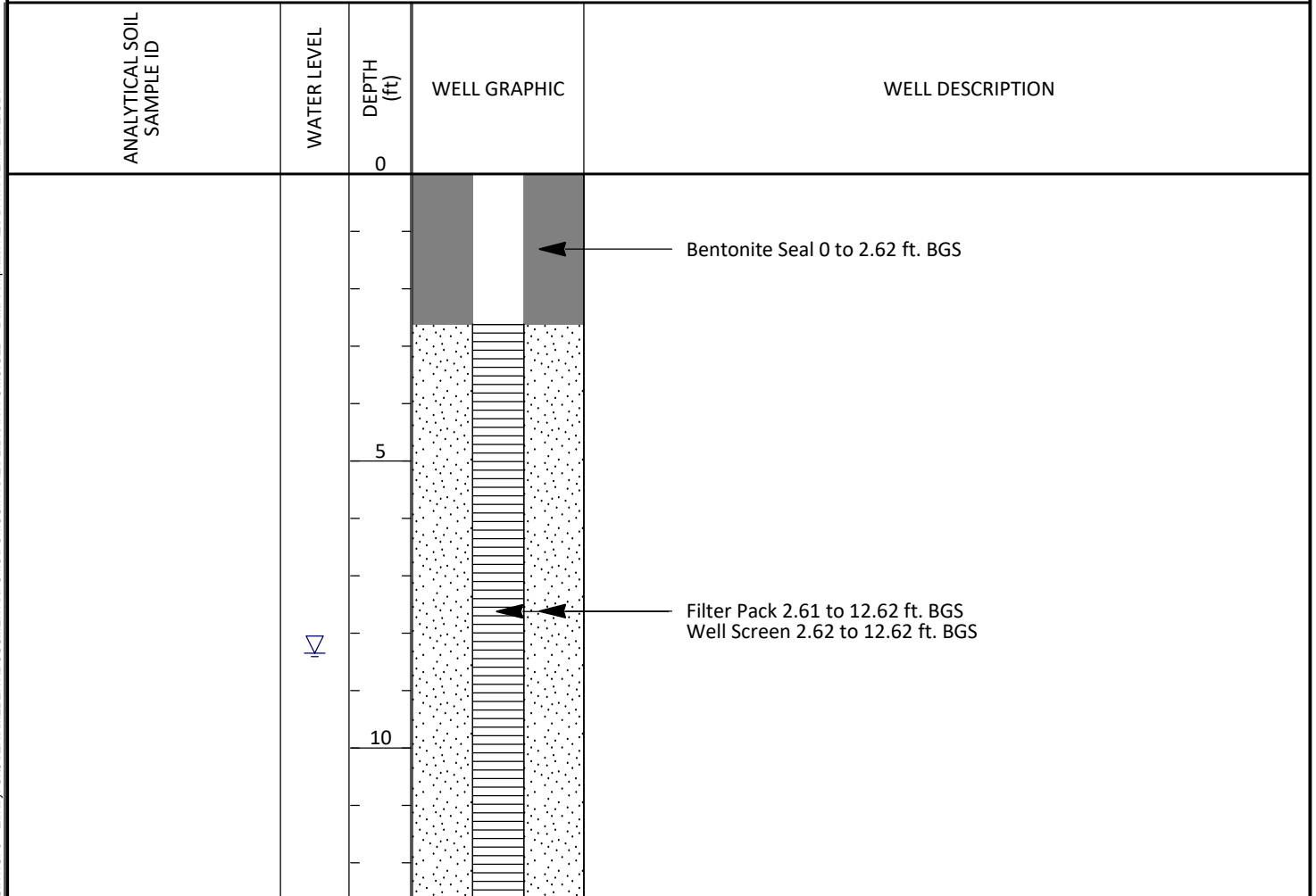
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Well Number: B-MW-002

Project Name Fort Morrow Phase III RI Site B-DA-003
 Client USACE Field Scientist/Engineer Not Recorded
 Date 9/24/2014 Weather Not Recorded
 Drilling Company Not specified Rig Type Not specified
 Boring Size 3.5" Drilling Method Not Specified
 Well Diameter 2" # of Samples Not Recorded
 Total Depth 12.62 feet bgs Depth to GW 8.35 feet bgs/8.11 feet BTOC
 X/Y Coordinates 56.9490407/-158.62618257 Top of Casing Elevation 80.86 Feet

Monument Type Flushmout
 Surface Seal Concrete
 Screened Interval 2.62 - 12.62 feet
 Screen Slot Size 0.01"

Extra Field Notes:
 Stick up height: 0.34 feet bgs.
 Location ID: B-DA-003-002
 Historical Well 2014, Data compiled
 from Phase I and II Reports



MONITORING WELL CONSTRUCTION LOG

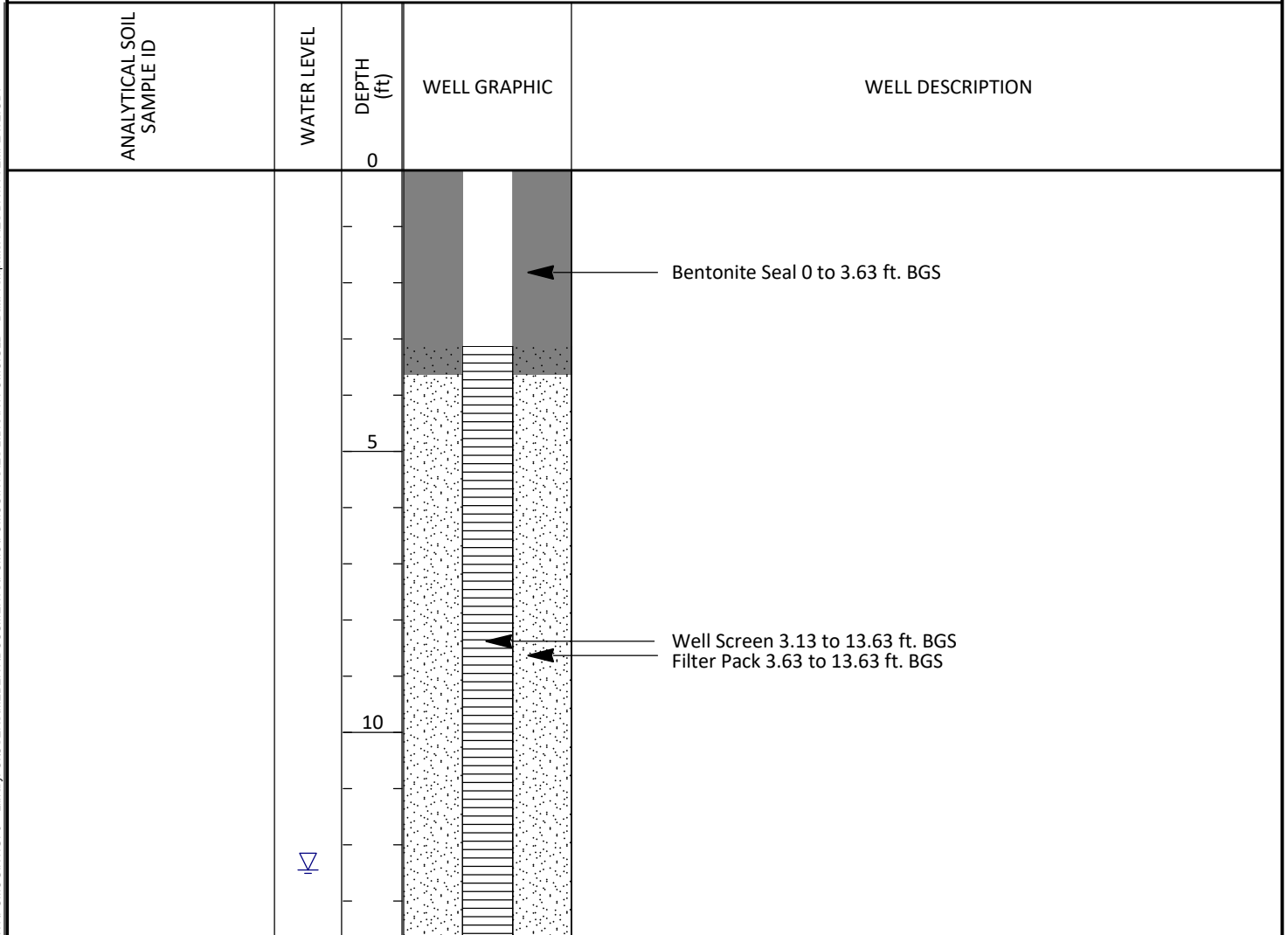
Project Number: 05172.001

Well Number: B-MW-003

Project Name Fort Morrow Phase III RI Site B-DA-003
 Client USACE Field Scientist/Engineer Not Recorded
 Date 9/24/2014 Weather Not Recorded
 Drilling Company Not specified Rig Type Not specified
 Boring Size 3.5" Drilling Method Not Specified
 Well Diameter 2" # of Samples Not Recorded
 Total Depth 13.63 feet bgs Depth to GW 12.45 feet bgs/12.51 feet BTOC
 X/Y Coordinates 56.94699967/-158.62477164 Top of Casing Elevation 83.70 Feet

Monument Type Flushmout
 Surface Seal Concrete
 Screened Interval 3.13 - 13.63 feet
 Screen Slot Size 0.01"

Extra Field Notes:
 Stick up height: 0.3 feet bgs.
 Location ID: B-DA-003-003
 Historical Well 2014, Data compiled
 from Phase I and II Reports



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

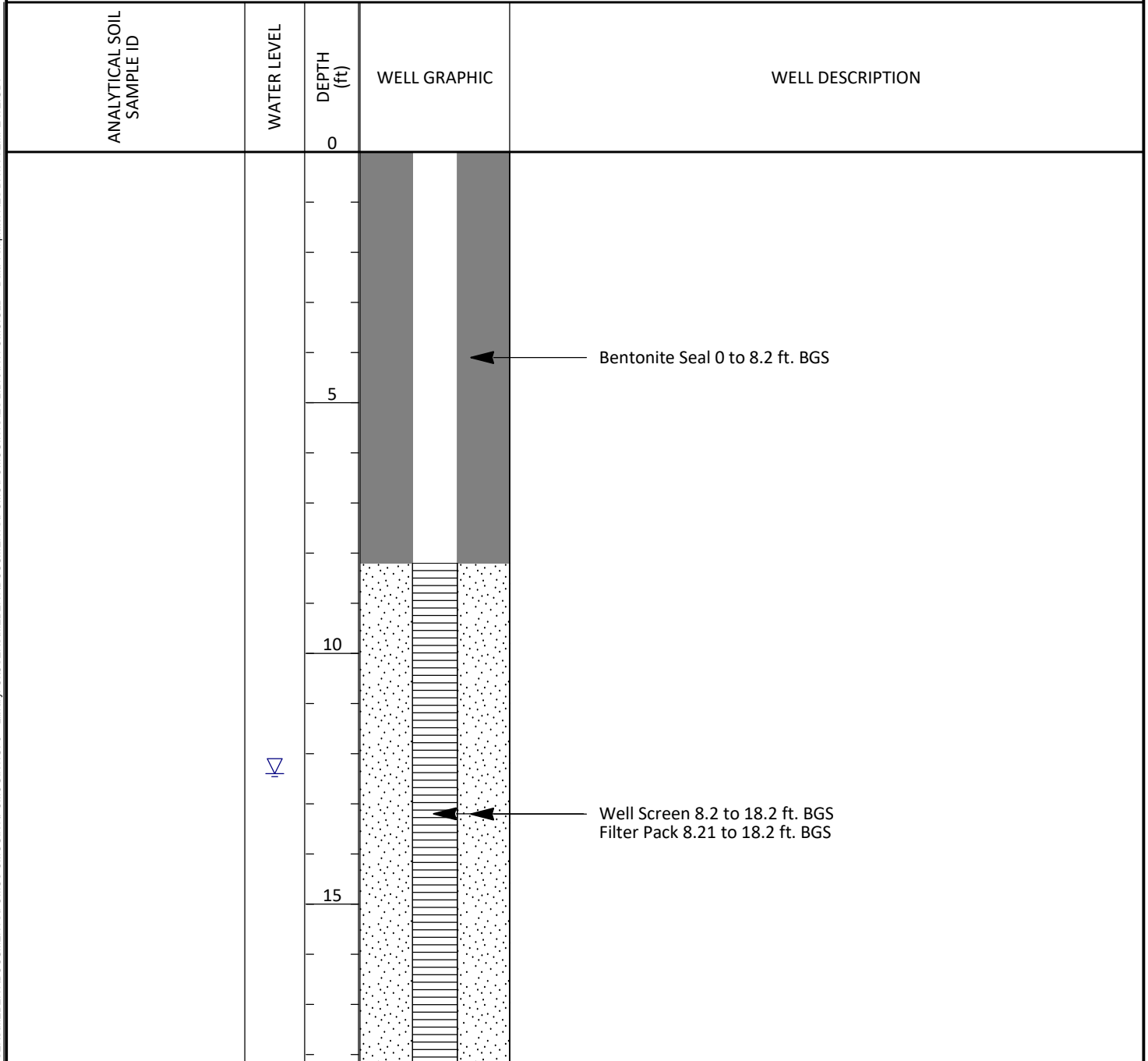
Well Number: B-MW-004

Project Name Fort Morrow Phase III RI Site B-DA-003
 Client USACE Field Scientist/Engineer Not Recorded
 Date 9/24/2014 Weather Not Recorded
 Drilling Company Not specified Rig Type Not specified
 Boring Size 3.5" Drilling Method Not Specified
 Well Diameter 2" # of Samples Not Recorded
 Total Depth 18.2 feet bgs Depth to GW 12.4 feet bgs/12.6 feet BTOC
 X/Y Coordinates 56.94691133/-158.62498313 Top of Casing Elevation 83.61 Feet

Monument Type Flushmout
 Surface Seal Concrete
 Screened Interval 8.2 - 18.2 feet
 Screen Slot Size 0.01"

Extra Field Notes:
 Stick up height: 0.19 feet bgs.
 Location ID: B-DA-003-004
 Historical Well 2014, Data compiled
 from Phase I and II Reports

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MONITORING WELL CONSTRUCTION LOG

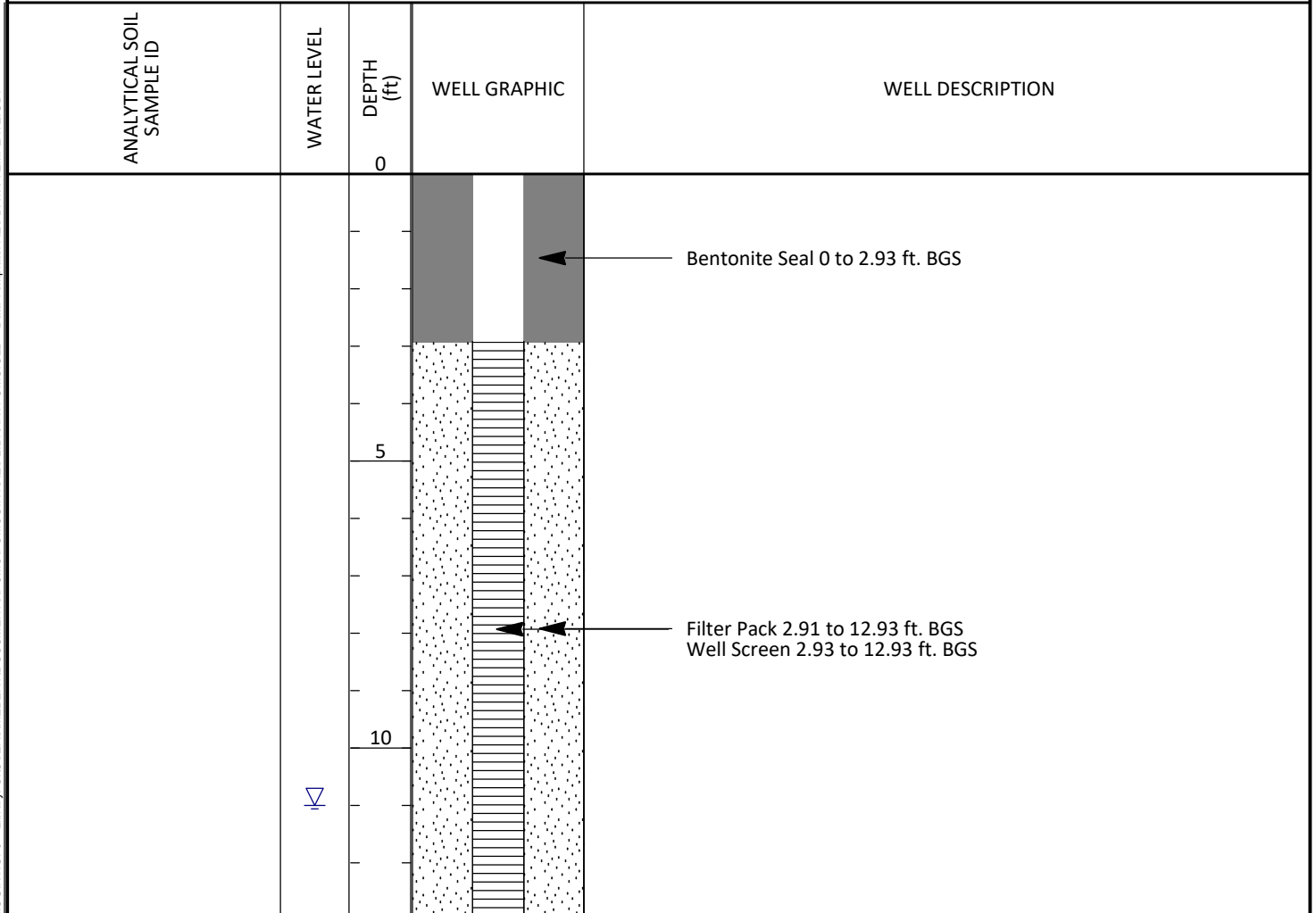
Project Number: 05172.001

Well Number: B-MW-005

Project Name Fort Morrow Phase III RI **Site** B-DA-005
Client USACE **Field Scientist/Engineer** Not Recorded
Date 9/24/2014 **Weather** Not Recorded
Drilling Company Not specified **Rig Type** Not specified
Boring Size 3.5" **Drilling Method** Not Specified
Well Diameter 2" **# of Samples** Not Recorded
Total Depth 12.93 feet bgs **Depth to GW** 11 feet bgs/11.2 feet BTOC
X/Y Coordinates 56.94513653/-158.62335939 **Top of Casing Elevation** 81.10 Feet

Monument Type Flushmout
Surface Seal Concrete
Screened Interval 2.93 - 12.93 feet
Screen Slot Size 0.01"

Extra Field Notes:
 Stick up height: 0.1 feet bgs.
 Location ID: B-DA-005-005
 Historical Well 2014, Data compiled from Phase I and II Reports



MONITORING WELL CONSTRUCTION LOG

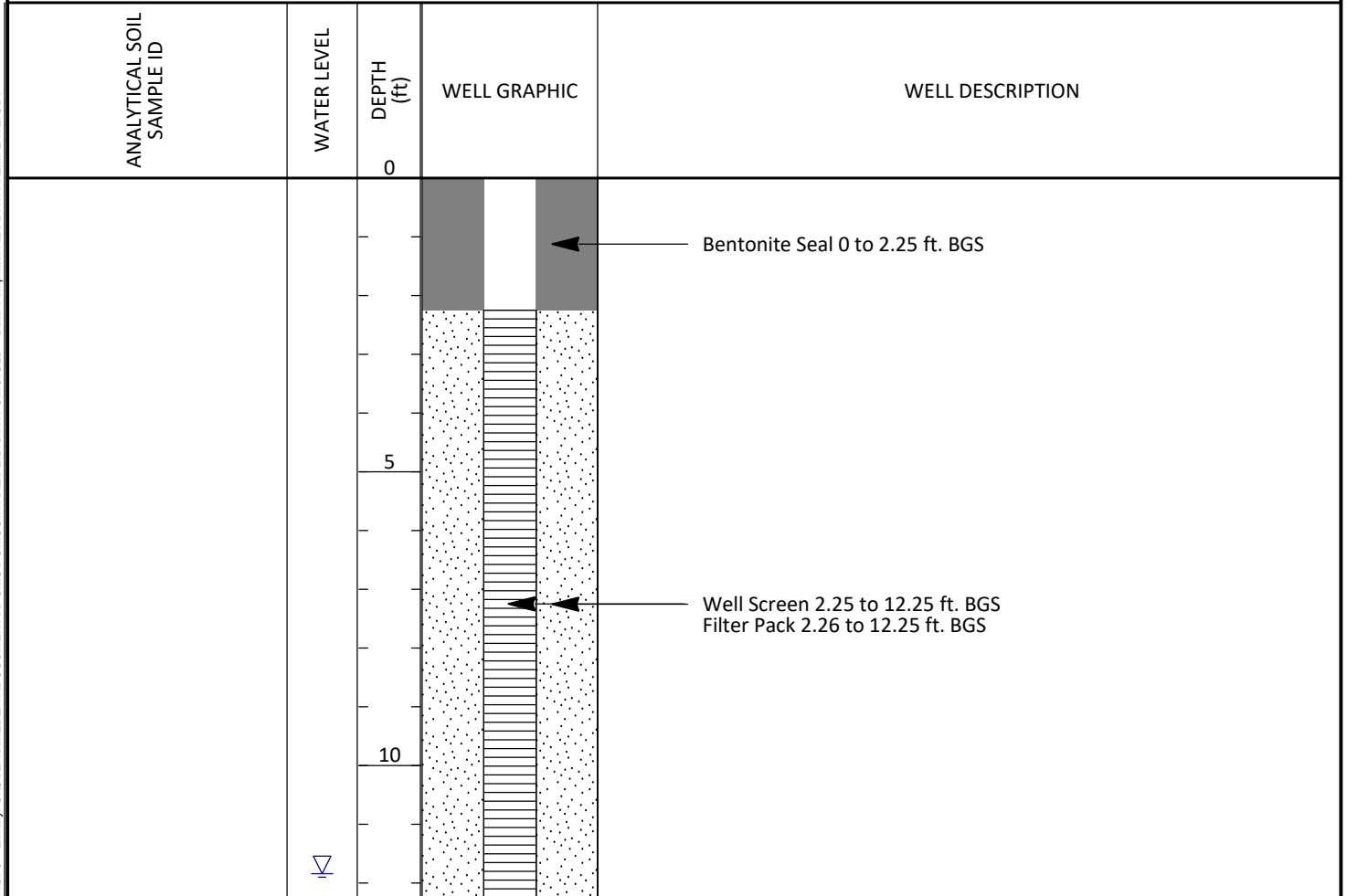
Project Number: 05172.001

Well Number: B-MW-006

Project Name Fort Morrow Phase III RI **Site** B-DA-005
Client USACE **Field Scientist/Engineer** Not Recorded
Date 9/24/2014 **Weather** Not Recorded
Drilling Company Not specified **Rig Type** Not specified
Boring Size 3.5" **Drilling Method** Not Specified
Well Diameter 2" **# of Samples** Not Recorded
Total Depth 12.25 feet bgs **Depth to GW** 11.84 feet bgs/12.01 feet BTOC
X/Y Coordinates 56.94504042/-158.62353351 **Top of Casing Elevation** 81.67 Feet

Monument Type Flushmout
Surface Seal Concrete
Screened Interval 2.25 - 12.25 feet
Screen Slot Size 0.01"

Extra Field Notes:
Stick up height: 0.23 feet bgs.
Location ID: B-DA-005-006
Historical Well 2014, Data compiled from Phase I and II Reports



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: B-MW-007

Project Name Fort Morrow Phase III RI Site B-DA-003

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/22/2019 Weather sunny

Screened Interval 7.65 - 17.65 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

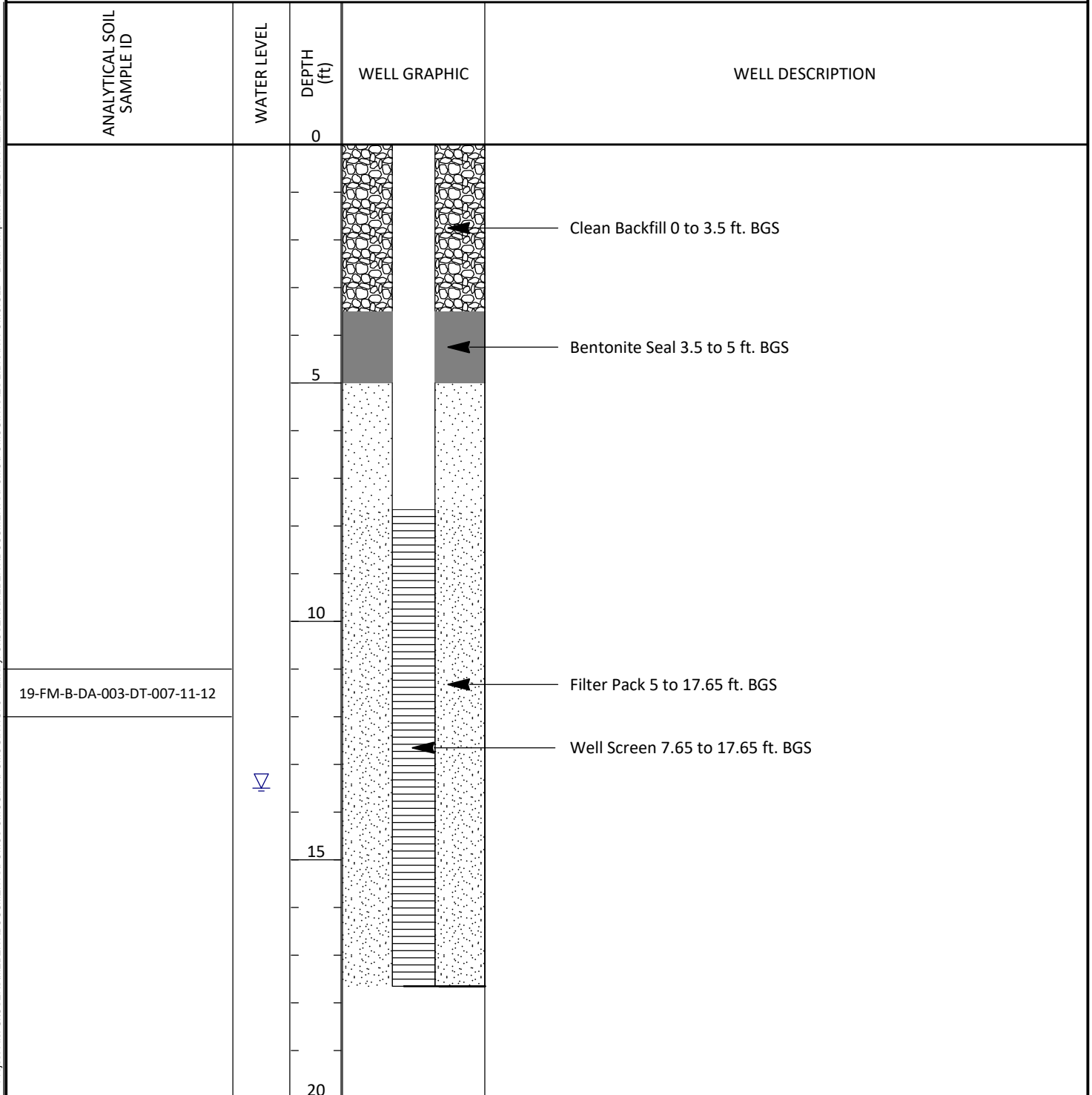
Extra Field Notes:
Stick up height: -2.72 feet bgs.
Location ID: B-DA-003-007
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 17.65 feet bgs Depth to GW 13.5 feet bgs/15.8 feet BTOC

X/Y Coordinates 56.9484273/-158.62668082 Top of Casing Elevation 87.32 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

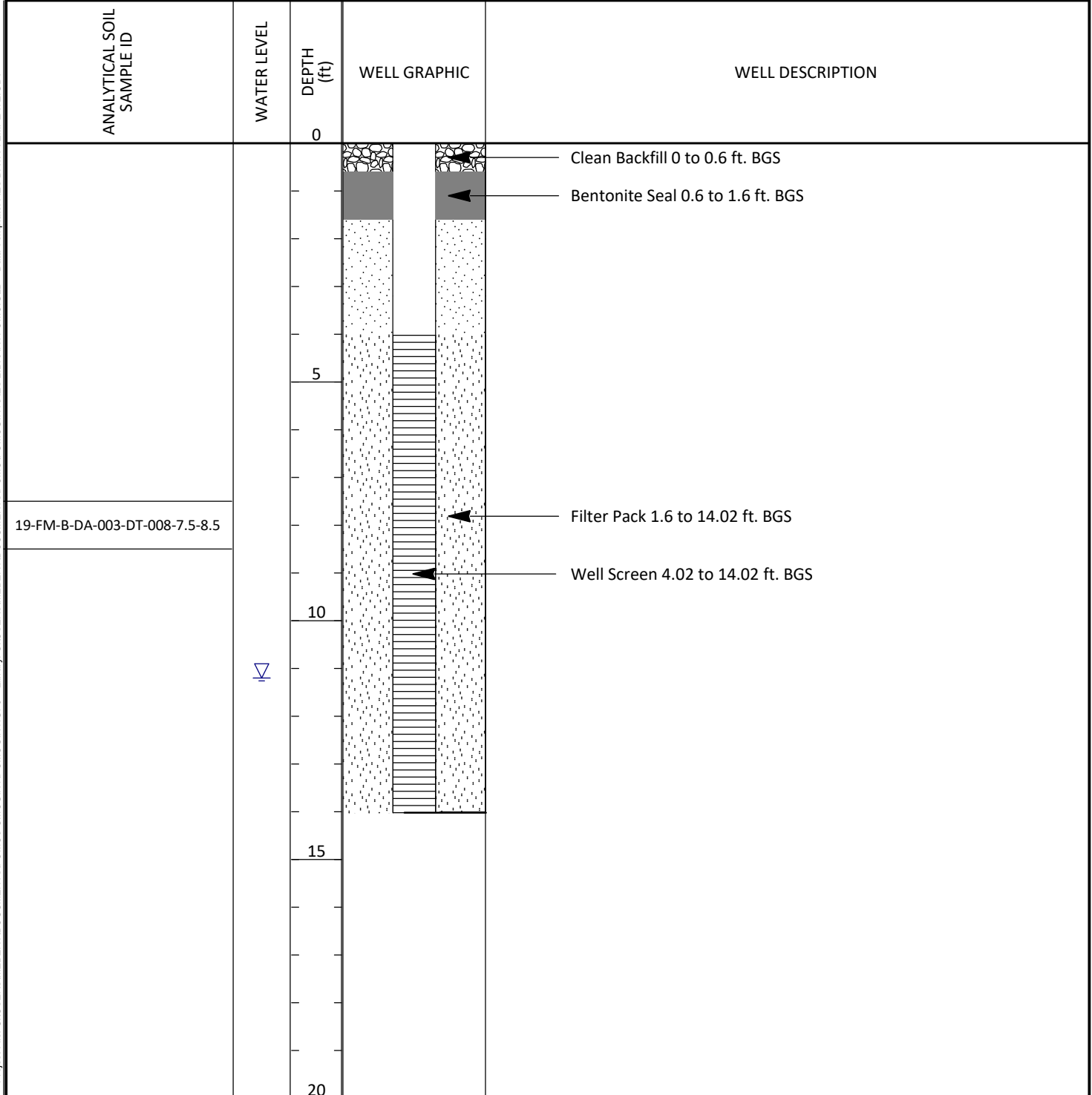
Project Number: 05172.001

Well Number: B-MW-008

Project Name Fort Morrow Phase III RI Site B-DA-003
 Client USACE Field Scientist/Engineer ME
 Date 7/22/2019 Weather partly cloudy
 Drilling Company Discovery Rig Type Geoprobe 6610
 Boring Size 11" Drilling Method Hollow Stem Auger
 Well Diameter 2" # of Samples 1
 Total Depth 14.02 feet bgs Depth to GW 11.2 feet bgs/14.45 feet BTOC
 X/Y Coordinates 56.94909956/-158.62704726 Top of Casing Elevation 85.39 Feet

Monument Type Above Ground
 Surface Seal None
 Screened Interval 4.02 - 14.02 feet
 Screen Slot Size 0.01"
 Extra Field Notes:
 Stick up height: -2.69 feet bgs.
 Location ID: B-DA-003-008
 2019 Well

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINTAES.LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **B-MW-010**

Project Name Fort Morrow Phase III RI Site B-DA-003

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/24/2019 Weather sunny 65

Screened Interval 11.86 - 21.86 feet

Drilling Company Discovery Rig Type Hand Tools

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

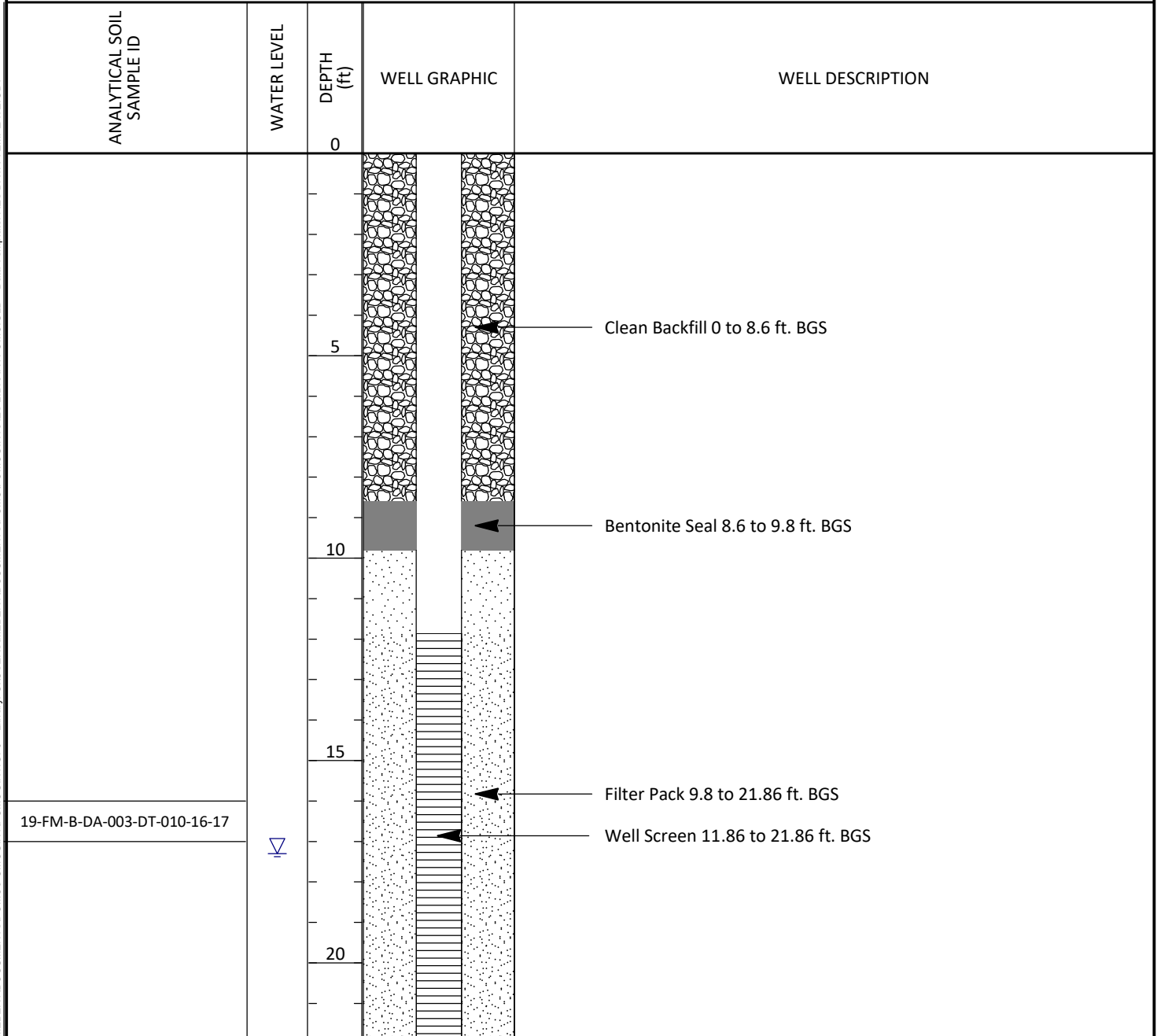
Extra Field Notes:
Stick up height: -2.45 feet bgs.
Location ID: B-DA-003-010
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 21.86 feet bgs Depth to GW 17.3 feet bgs/19.9 feet BTOC

X/Y Coordinates 56.94706475/-158.62653646 Top of Casing Elevation 90.55 Feet

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MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: B-MW-012

Project Name Fort Morrow Phase III RI Site B-DA-003

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/23/2019 Weather cloudy

Screened Interval 2.4 - 12.4 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

Extra Field Notes:
Stick up height: -2.4 feet bgs.
Location ID: B-DA-003-012
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 12.4 feet bgs Depth to GW 6.59 feet bgs/8.68 feet BTOC

X/Y Coordinates 56.94939478/-158.62520104 Top of Casing Elevation 82.10 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT

ANALYTICAL SOIL SAMPLE ID	WATER LEVEL	DEPTH (ft)	WELL GRAPHIC	WELL DESCRIPTION
		0		<p>Clean Backfill 0 to 0.5 ft. BGS</p> <p>Bentonite Seal 0.5 to 1 ft. BGS</p>
19-FM-B-DA-003-DT-012-5.5-6.5		5		<p>Filter Pack 1 to 12.4 ft. BGS</p> <p>Well Screen 2.4 to 12.4 ft. BGS</p>
		10		
		15		
		20		

MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: B-MW-013

Project Name Fort Morrow Phase III RI Site B-DA-003

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/23/2019 Weather cloudy

Screened Interval 3 - 13 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

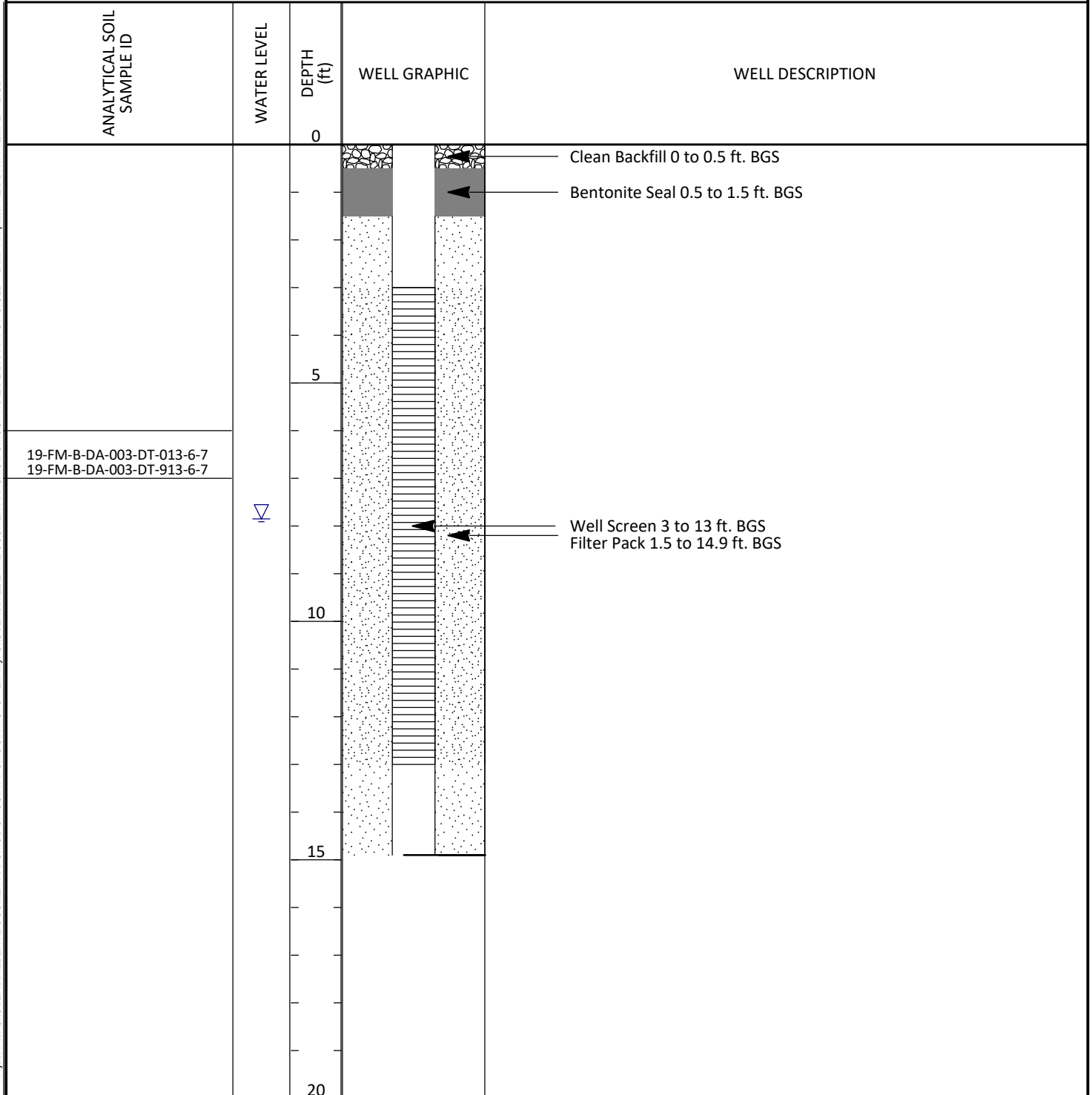
Extra Field Notes:
Stick up height: -2.24 feet bgs.
Location ID: B-DA-003-013
2019 Well

Well Diameter 11" # of Samples 1 + Duplicate

Total Depth 14.9 feet bgs Depth to GW 7.85 feet bgs/10.35 feet BTOC

X/Y Coordinates 56.94993184/-158.62579798 Top of Casing Elevation 83.54 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

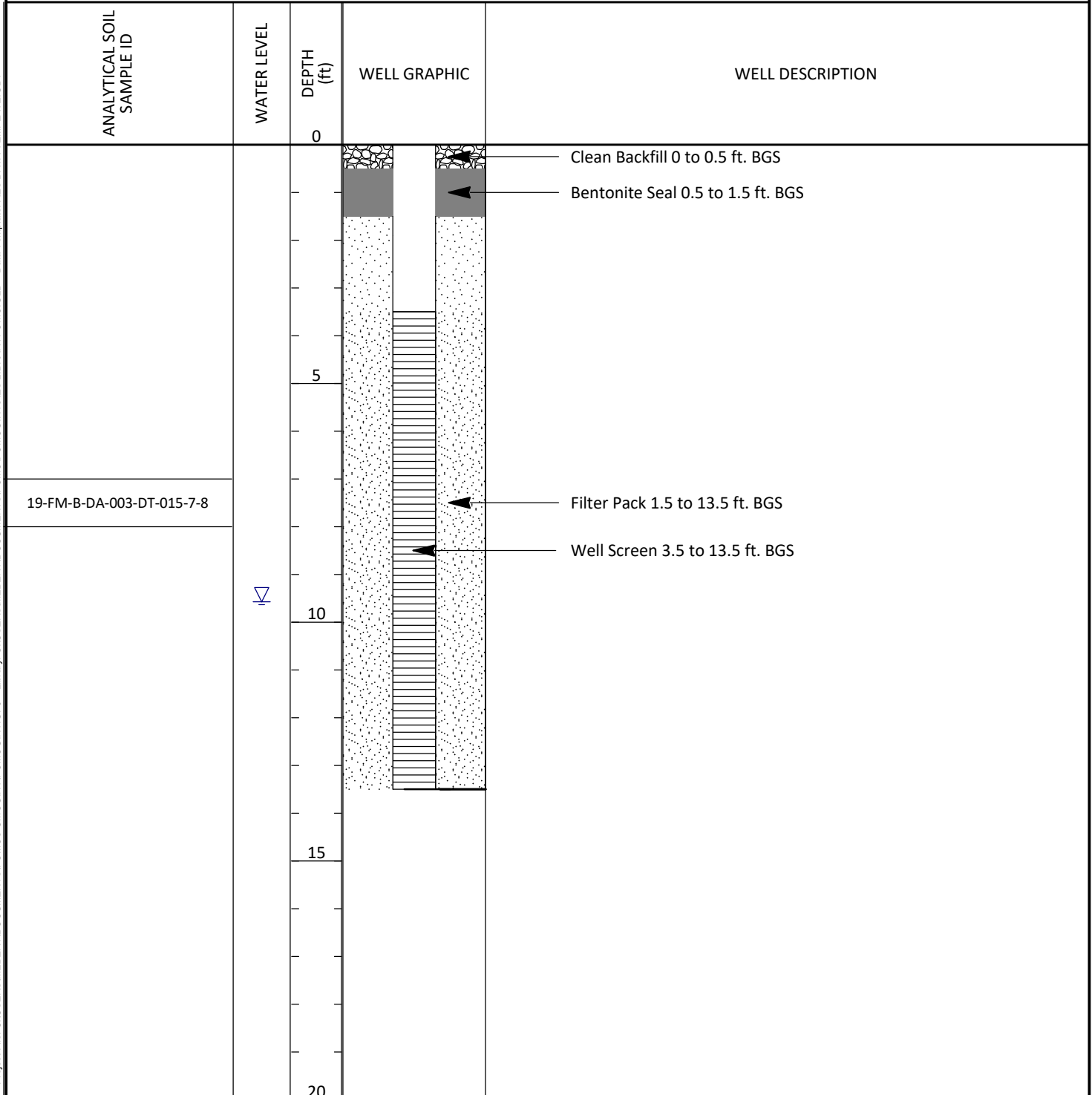
Project Number: 05172.001

Well Number: B-MW-015

Project Name Fort Morrow Phase III RI Site B-DA-003
 Client USACE Field Scientist/Engineer ME
 Date 7/22/2019 Weather partly cloudy
 Drilling Company Discovery Rig Type Geoprobe 6610
 Boring Size 11" Drilling Method Hollow Stem Auger
 Well Diameter 2" # of Samples 1
 Total Depth 13.5 feet bgs Depth to GW 9.57 feet bgs/12.09 feet BTOC
 X/Y Coordinates 56.94963199/-158.6271357 Top of Casing Elevation 84.24 Feet

Monument Type Above Ground
 Surface Seal None
 Screened Interval 3.5 - 13.5 feet
 Screen Slot Size 0.01"
 Extra Field Notes:
 Stick up height: -2.64 feet bgs.
 Location ID: B-DA-003-015
 2019 Well

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

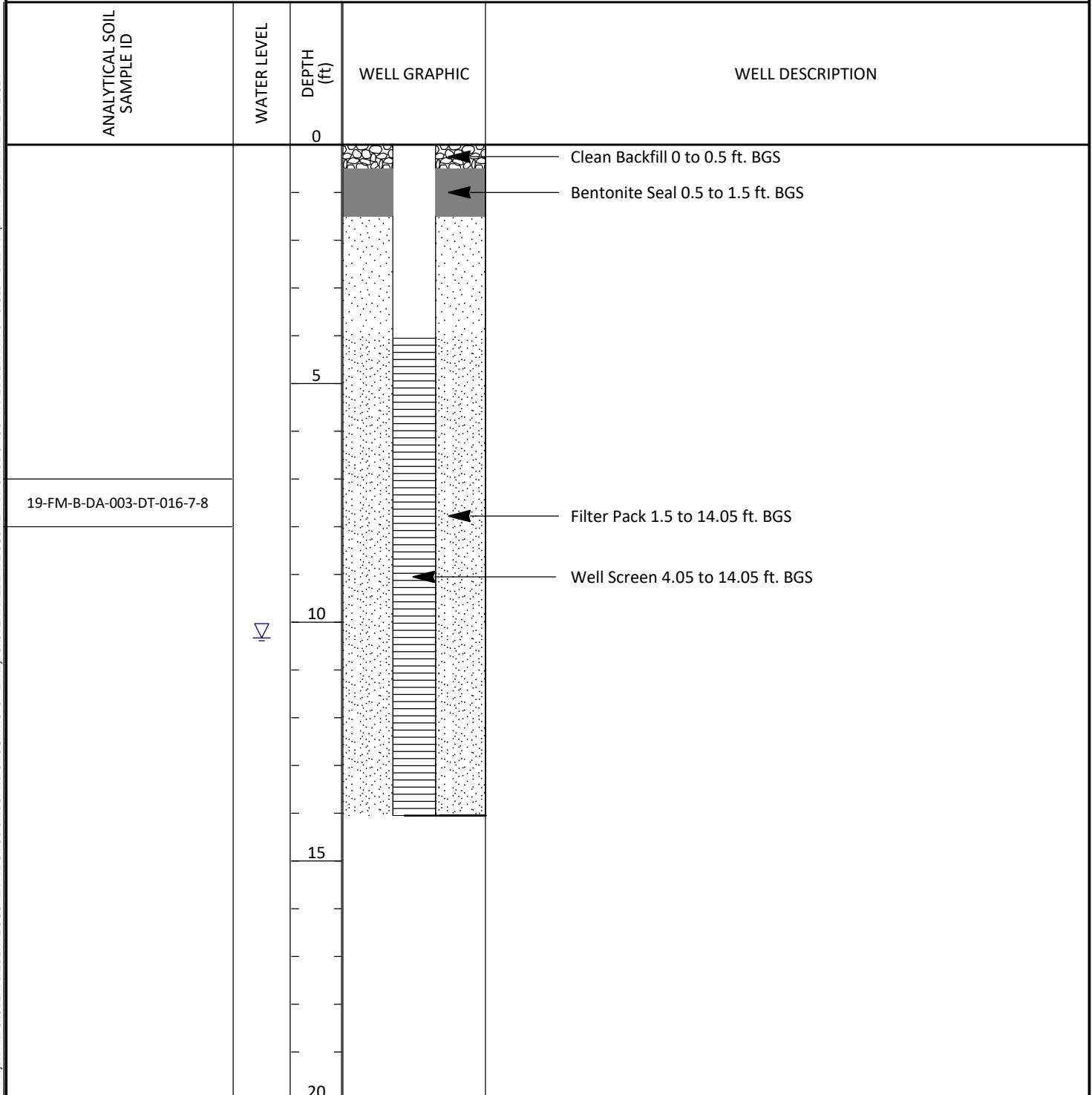
Project Number: 05172.001

Well Number: B-MW-016

Project Name Fort Morrow Phase III RI Site B-DA-003
 Client USACE Field Scientist/Engineer ME
 Date 7/25/2019 Weather breeze and sun
 Drilling Company Discovery Rig Type Geoprobe 6610
 Boring Size 11" Drilling Method Hollow Stem Auger
 Well Diameter 2" # of Samples 1
 Total Depth 14.05 feet bgs Depth to GW 10.33 feet bgs/13.73 feet BTOC
 X/Y Coordinates 56.94719617/-158.62412313 Top of Casing Elevation 84.54 Feet

Monument Type Above Ground
 Surface Seal None
 Screened Interval 4.05 - 14.05 feet
 Screen Slot Size 0.01"
 Extra Field Notes:
 Stick up height: -2.64 feet bgs.
 Location ID: B-DA-003-016
 2019 Well

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: C-MW-001

Project Name Fort Morrow Phase III RI **Site** C-LT-002

Monument Type Above Ground

Client USACE **Field Scientist/Engineer** Not Recorded

Surface Seal Not Specified

Date 2012 **Weather** Not Recorded

Screened Interval 12.8 - 17.8 feet

Drilling Company Not specified **Rig Type** Not specified

Screen Slot Size 0.01"

Boring Size 3.5" **Drilling Method** Not Specified

Extra Field Notes:
Stick up height: -2.34 feet bgs.

Well Diameter 2" **# of Samples** Not Recorded

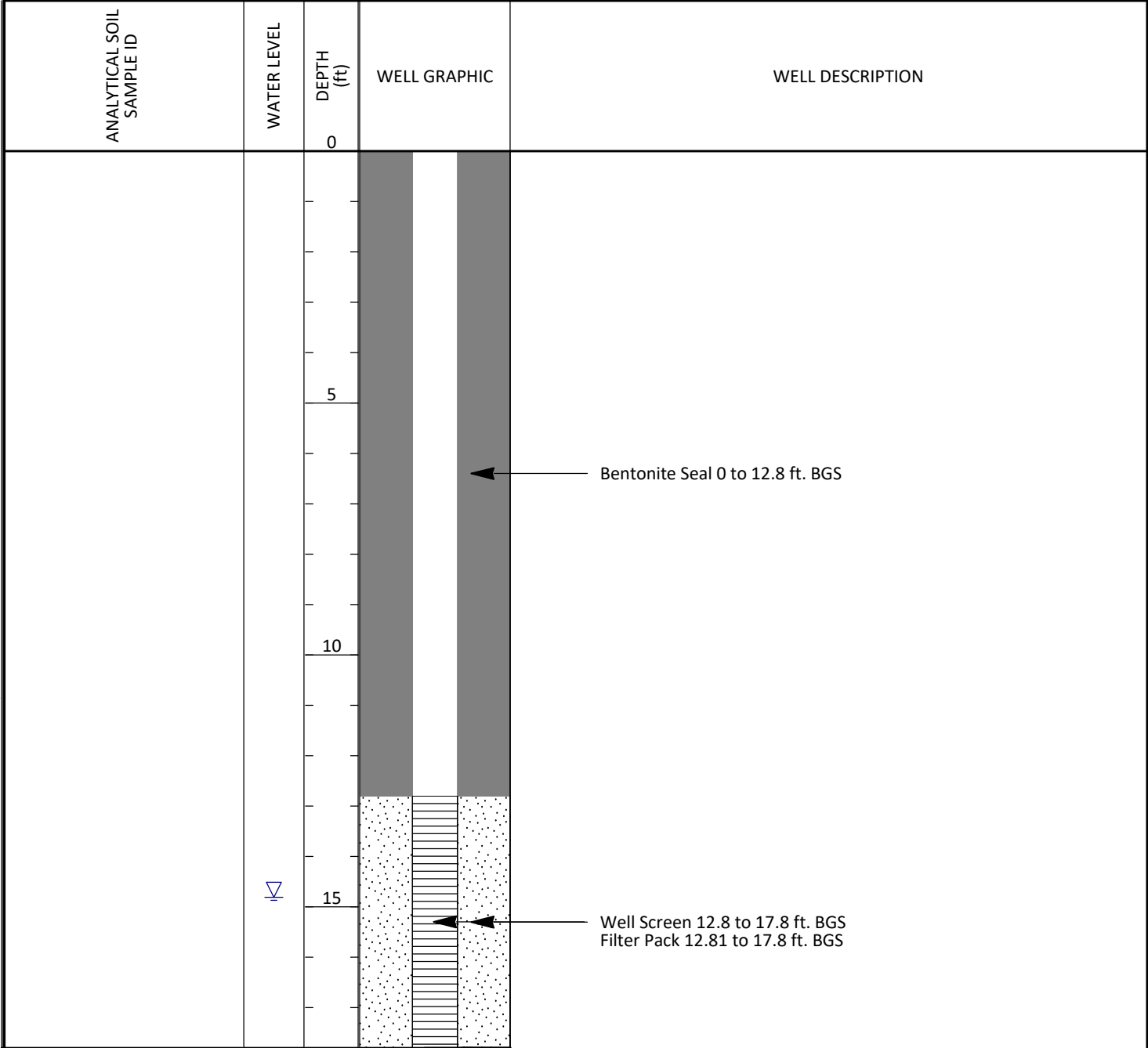
Location ID: C-LT-002-001

Total Depth 17.8 feet bgs **Depth to GW** 14.81 feet bgs/17.28 feet BTOC

Historical Well 2012, Data compiled from Phase I and II Reports

X/Y Coordinates 56.94451168/-158.57399106 **Top of Casing Elevation** 135.54 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

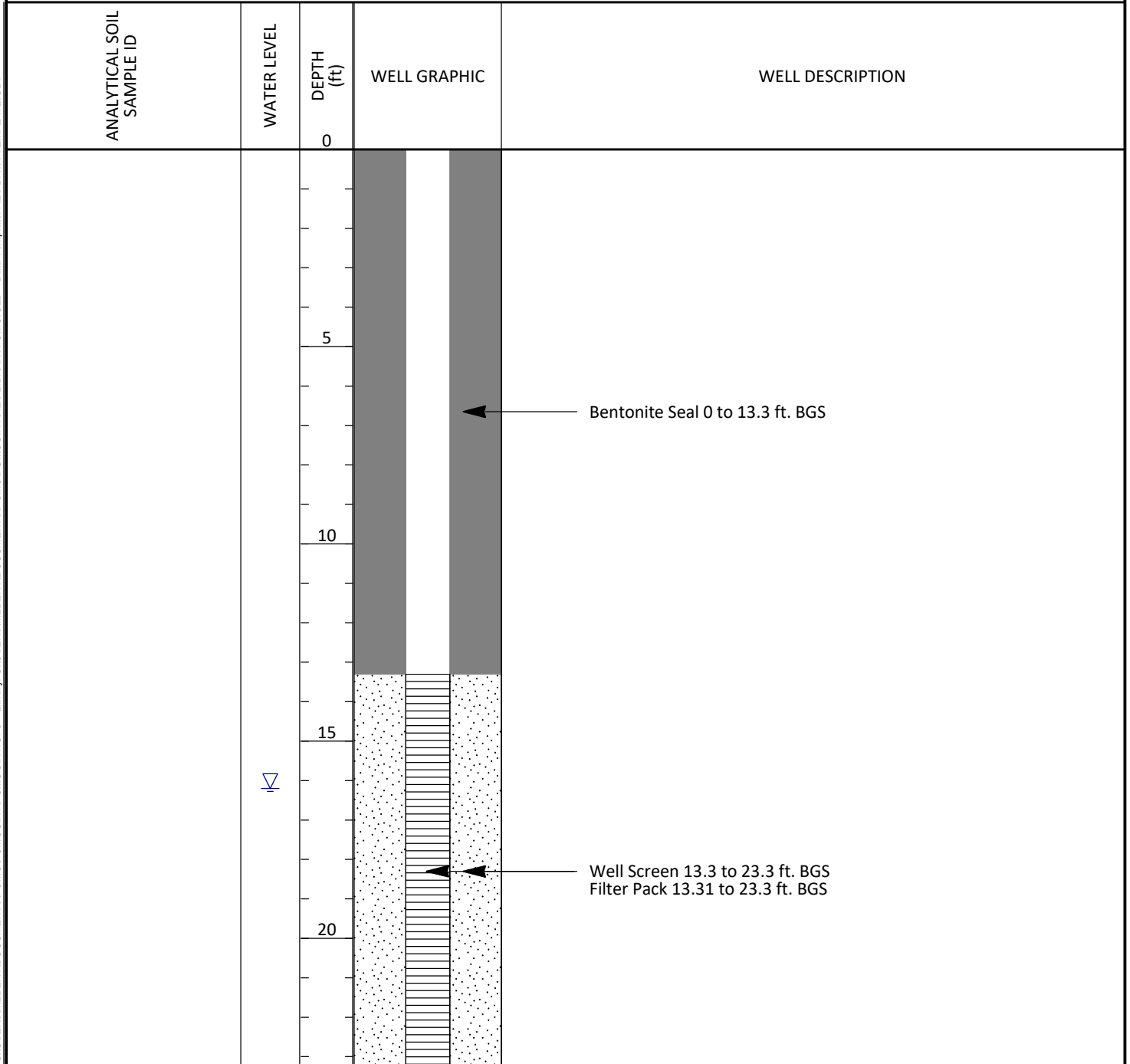
Project Number: 05172.001

Well Number: C-MW-002

Project Name Fort Morrow Phase III RI Site C-LT-002
 Client USACE Field Scientist/Engineer Not Recorded
 Date 2012 Weather Not Recorded
 Drilling Company Not specified Rig Type Not specified
 Boring Size 3.5" Drilling Method Not Specified
 Well Diameter 2" # of Samples Not Recorded
 Total Depth 23.3 feet bgs Depth to GW 16.2 feet bgs/17.78 feet BTOC
 X/Y Coordinates 56.94427626/-158.57441573 Top of Casing Elevation 136.20 Feet

Monument Type Above Ground
 Surface Seal Not Specified
 Screened Interval 13.3 - 23.3 feet
 Screen Slot Size 0.01"

Extra Field Notes:
 Stick up height: -1.9 feet bgs.
 Location ID: C-LT-002-002
 Historical Well 2012, Data compiled
 from Phase I and II Reports



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: C-MW-003

Project Name Fort Morrow Phase III RI **Site** C-LT-002

Monument Type Above Ground

Client USACE **Field Scientist/Engineer** Not Recorded

Surface Seal Not Specified

Date 2012 **Weather** Not Recorded

Screened Interval 16.7 - 21.7 feet

Drilling Company Not specified **Rig Type** Not specified

Screen Slot Size 0.01"

Boring Size 3.5" **Drilling Method** Not Specified

Extra Field Notes:
Stick up height: -2.22 feet bgs.

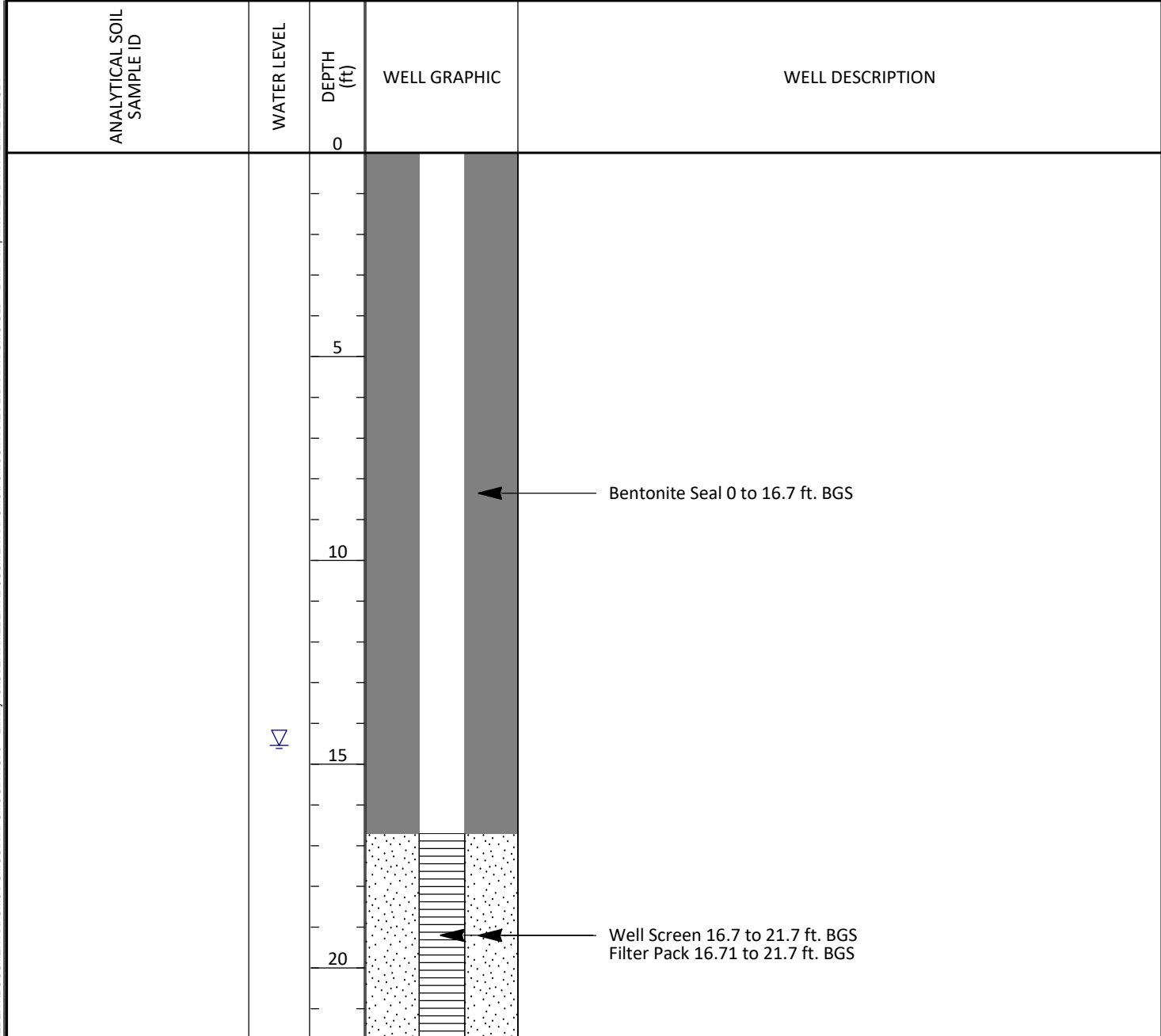
Well Diameter 2" **# of Samples** Not Recorded

Location ID: C-LT-002-003

Total Depth 21.7 feet bgs **Depth to GW** 14.54 feet bgs/16.2 feet BTOC

Historical Well 2012, Data compiled from Phase I and II Reports

X/Y Coordinates 56.9447212/-158.57497267 **Top of Casing Elevation** 134.02 Feet



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **C-MW-004**

Project Name Fort Morrow Phase III RI Site C-LT-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer Not Recorded

Surface Seal Not Specified

Date 2012 Weather Not Recorded

Screened Interval 23.77 - 28.77 feet

Drilling Company Not specified Rig Type Not specified

Screen Slot Size 0.01"

Boring Size 3.5" Drilling Method Not Specified

Extra Field Notes:
Stick up height: -1.9 feet bgs.

Well Diameter 2" # of Samples Not Recorded

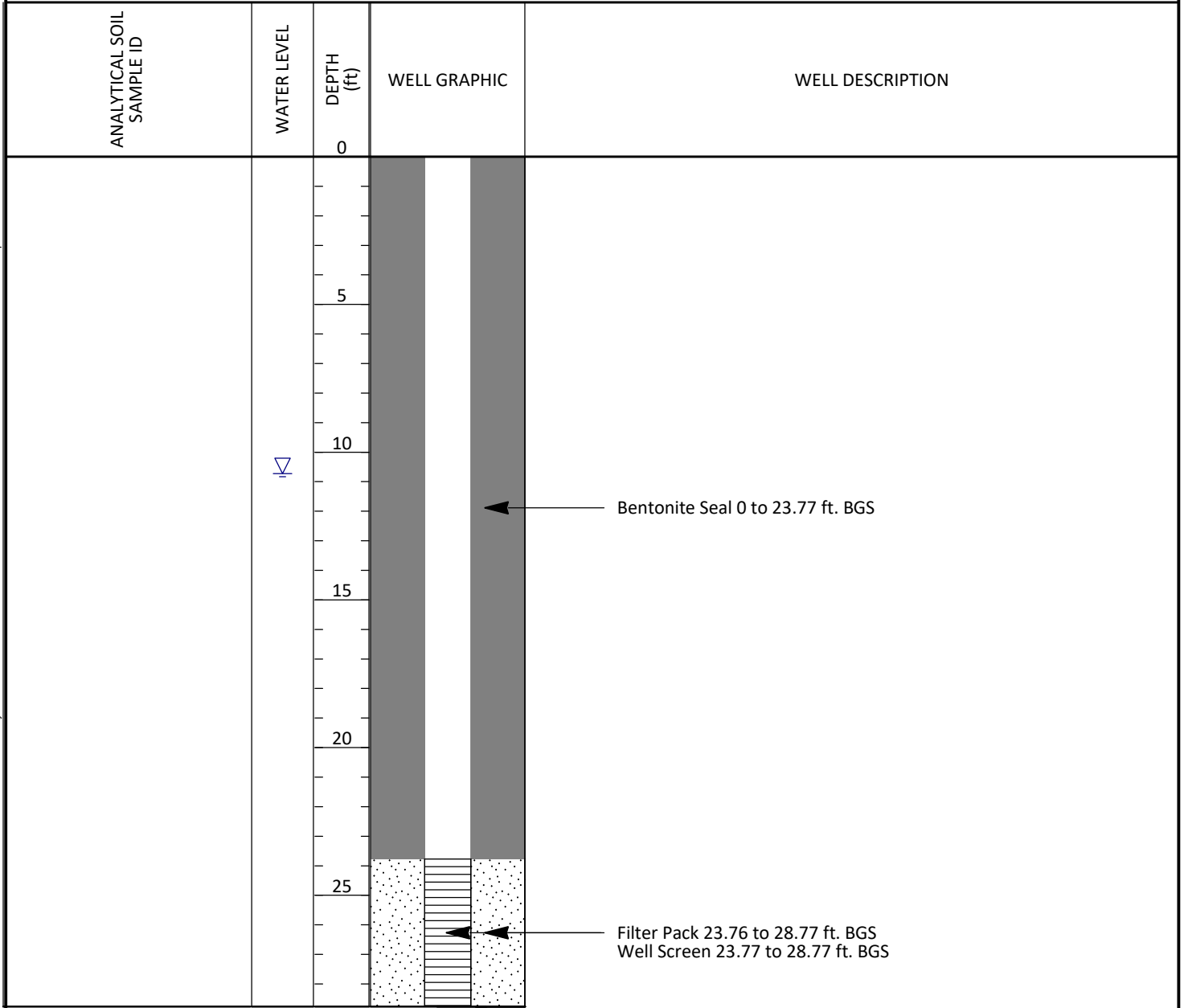
Location ID: C-LT-002-004

Total Depth 28.77 feet bgs Depth to GW 10.73 feet bgs/25.7 feet BTOC

Historical Well 2012, Data compiled
from Phase I and II Reports

X/Y Coordinates 56.94510241/-158.57587073 Top of Casing Elevation 129.00 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: C-MW-005

Project Name Fort Morrow Phase III RI Site C-LT-002

Monument Type Flushmout

Client USACE Field Scientist/Engineer Not Recorded

Surface Seal Concrete

Date 9/23/2014 Weather Not Recorded

Screened Interval 10.33 - 20.33 feet

Drilling Company Not specified Rig Type Not specified

Screen Slot Size 0.01"

Boring Size 3.5" Drilling Method Not Specified

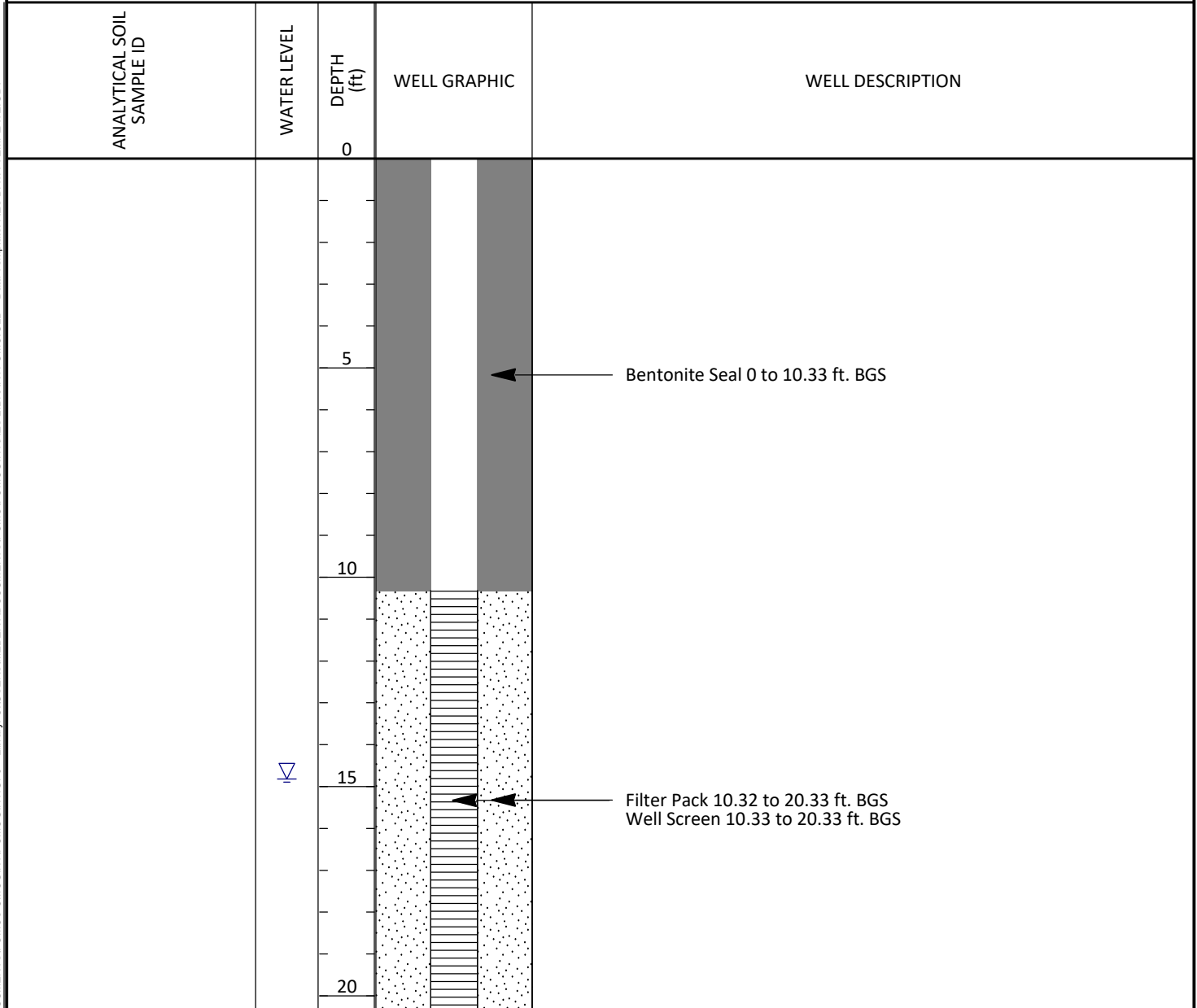
Extra Field Notes:
Stick up height: -2.43 feet bgs.
Location ID: C-LT-002-005
Historical Well 2014, Data compiled
from Phase I and II Reports

Well Diameter 2" # of Samples Not Recorded

Total Depth 20.33 feet bgs Depth to GW 14.82 feet bgs/15.45 feet BTOC

X/Y Coordinates 56.94462848/-158.57322486 Top of Casing Elevation 133.63 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMOG.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: C-MW-007

Project Name Fort Morrow Phase III RI Site C-LT-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/26/2019 Weather sunny

Screened Interval 11.7 - 21.7 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

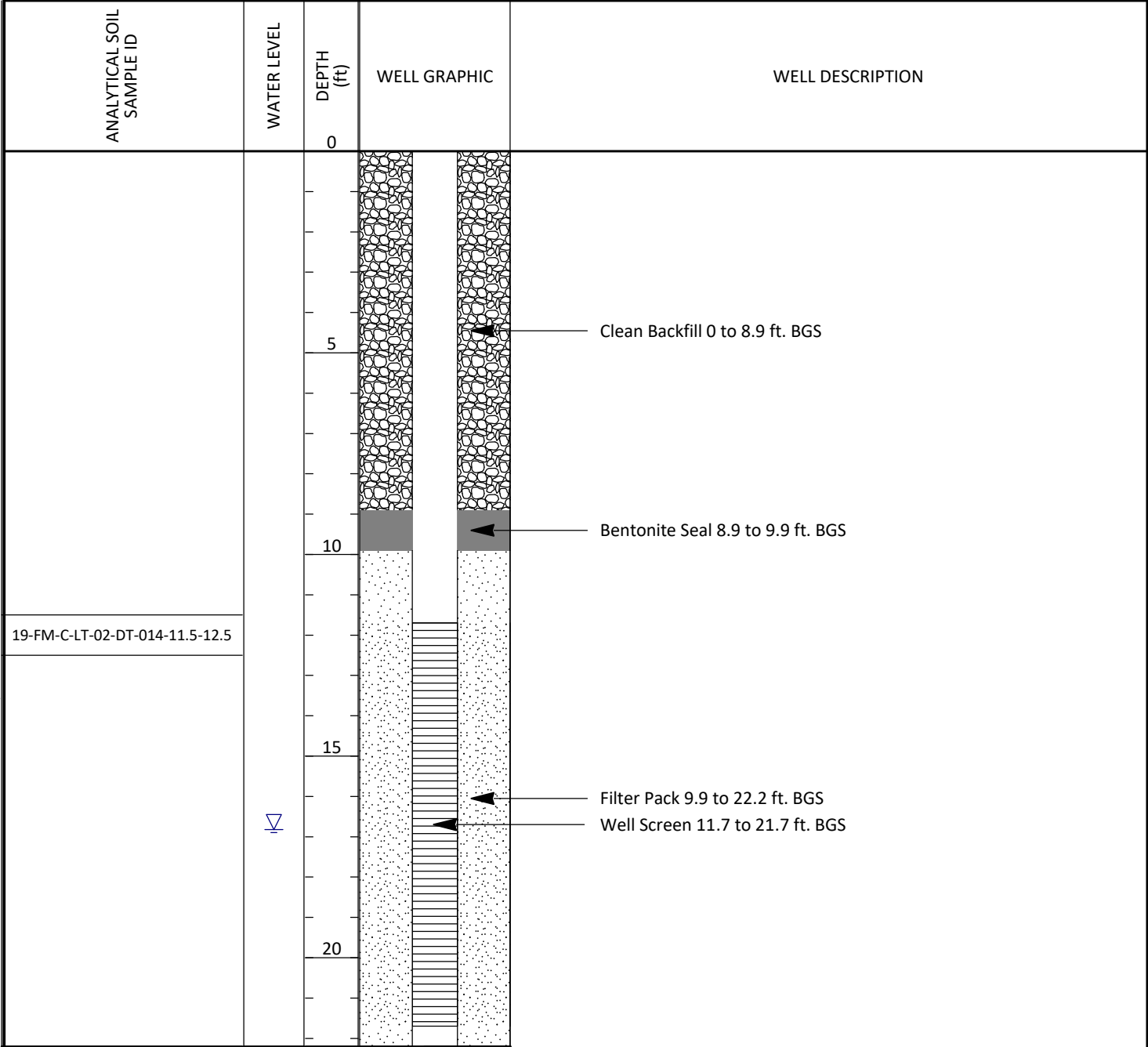
Extra Field Notes:
Stick up height: -2.82 feet bgs.
Location ID: C-LT-002-014
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 22.2 feet bgs Depth to GW 16.82 feet bgs/19.52 feet BTOC

X/Y Coordinates 56.94446057/-158.57467167 Top of Casing Elevation 136.82 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **C-MW-009**

Project Name Fort Morrow Phase III RI Site C-LT-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/26/2019 Weather cloudy

Screened Interval 7.7 - 17.7 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

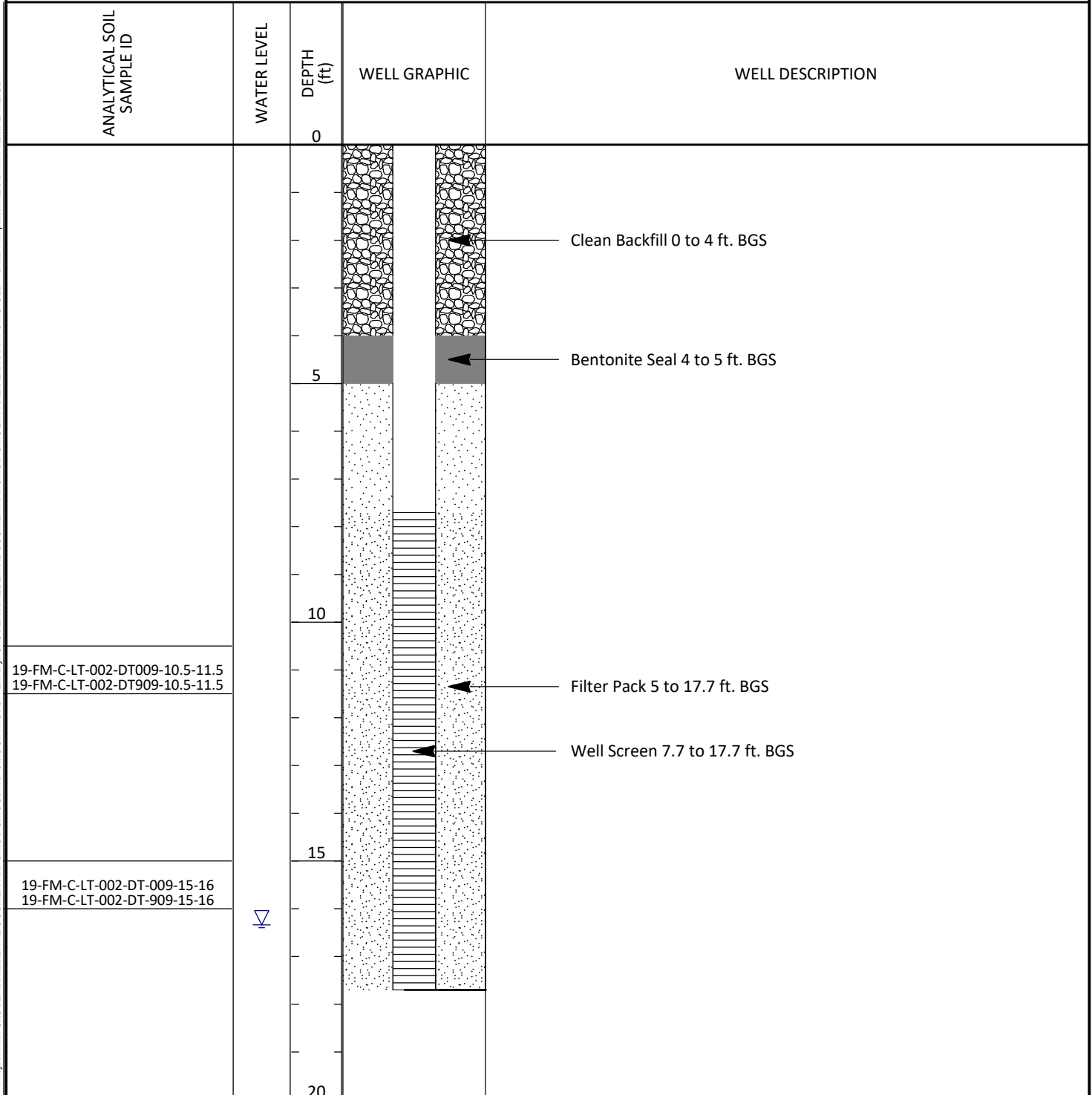
Extra Field Notes:
Stick up height: -2.91 feet bgs.
Location ID: C-LT-002-009
2019 Well

Well Diameter 2" # of Samples 2 + 2 Duplicates

Total Depth 17.7 feet bgs Depth to GW 16.34 feet bgs/18.37 feet BTOC

X/Y Coordinates 56.94425163/-158.57364376 Top of Casing Elevation 136.91 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: F-MW-001

Project Name Fort Morrow Phase III RI Site F-OT-001

Monument Type Above Ground

Client USACE Field Scientist/Engineer Not Recorded

Surface Seal Not Specified

Date 2012 Weather Not Recorded

Screened Interval 8.68 - 18.68 feet

Drilling Company Not specified Rig Type Not specified

Screen Slot Size 0.01"

Boring Size 3.5" Drilling Method Not Specified

Extra Field Notes:
Stick up height: -1.71 feet bgs.

Well Diameter 2" # of Samples Not Recorded

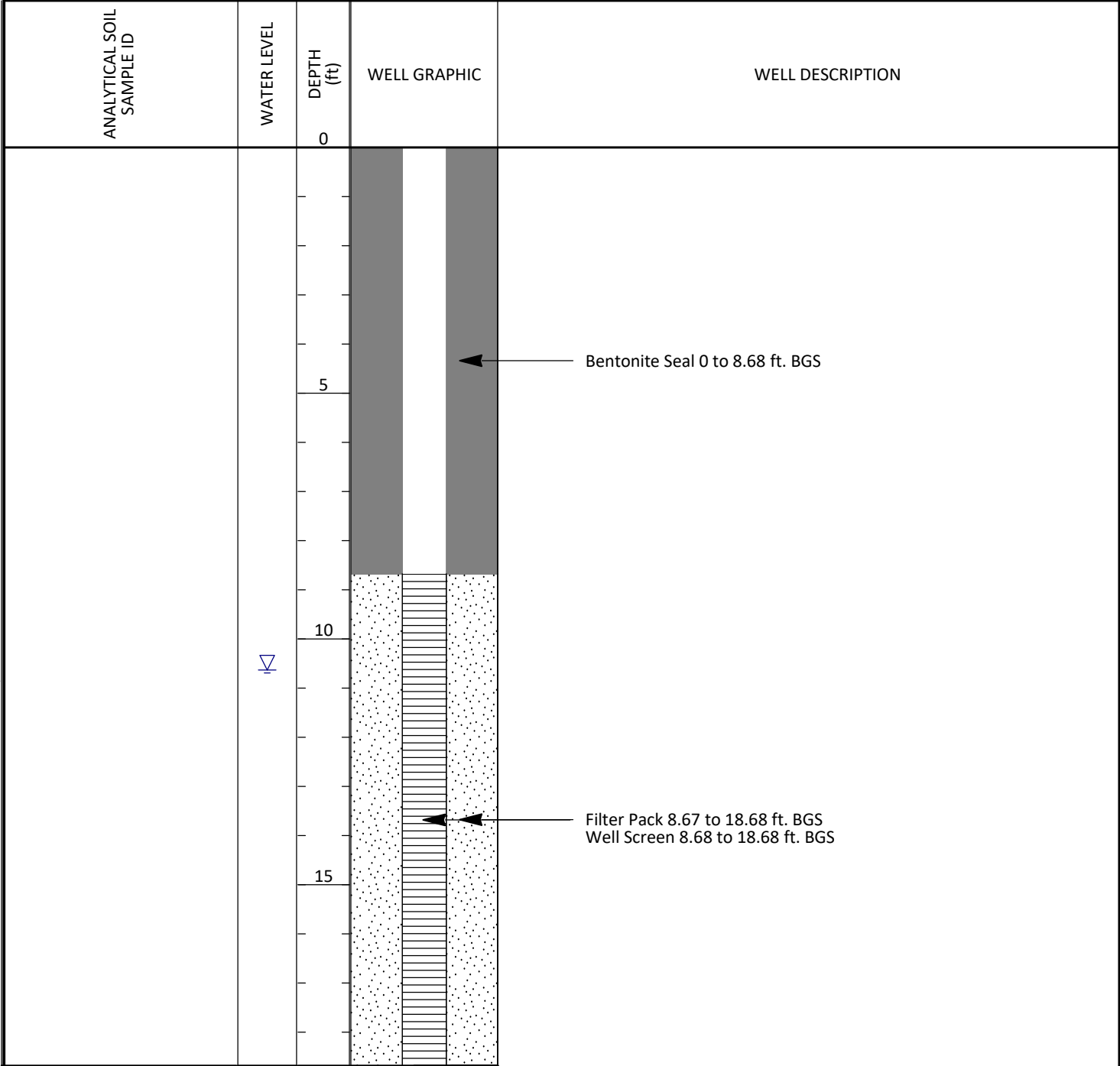
Location ID: F-OT-001-001

Total Depth 18.68 feet bgs Depth to GW 10.63 feet bgs/10.2 feet BTOC

Historical Well 2012, Data compiled
from Phase I and II Reports

X/Y Coordinates 56.9096500667/-158.684010647 Top of Casing Elevation 23.81 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

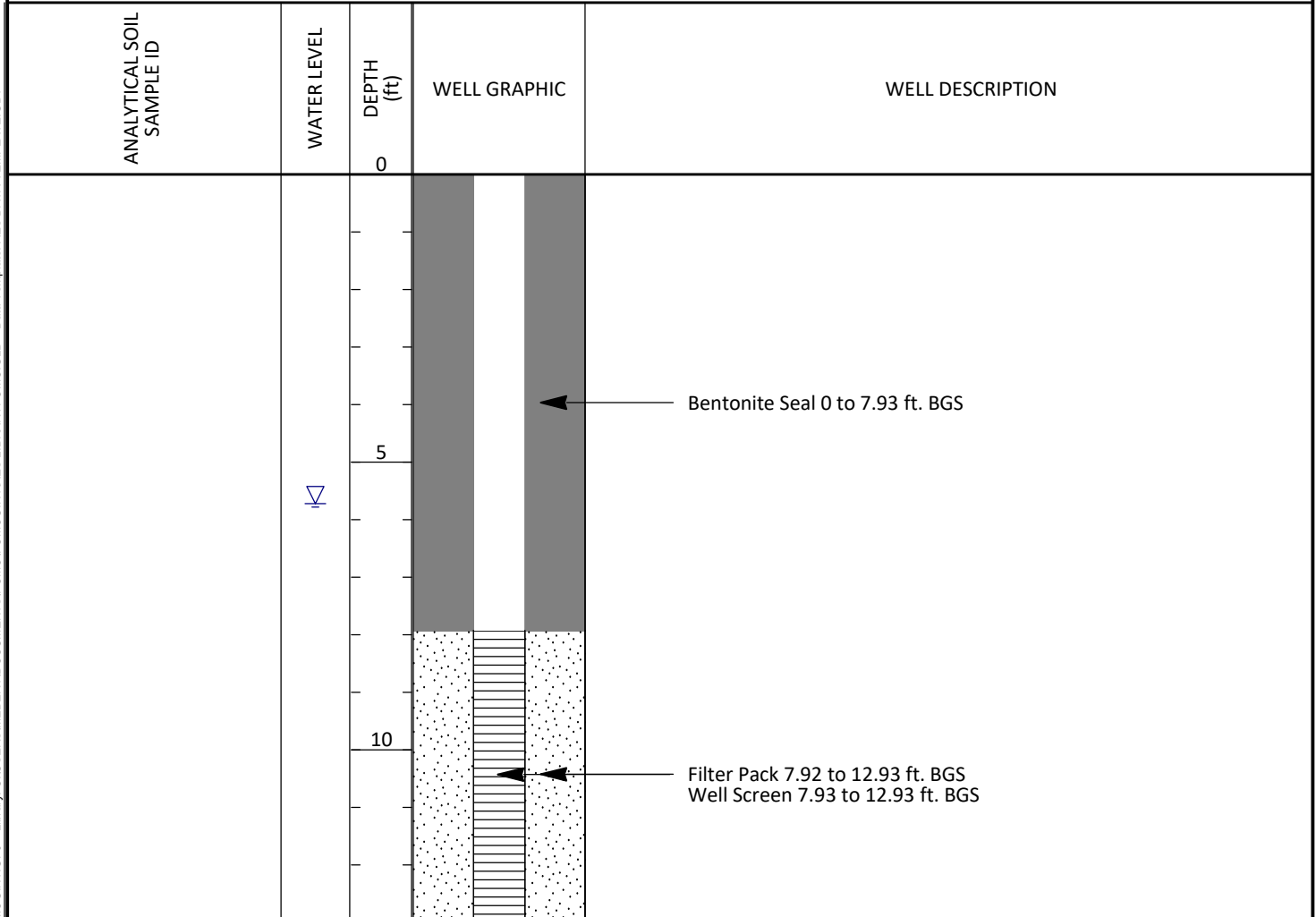
Project Number: 05172.001

Well Number: J-MW-002

Project Name Fort Morrow Phase III RI **Site** J-WH-002
Client USACE **Field Scientist/Engineer** Not Recorded
Date 2012 **Weather** Not Recorded
Drilling Company Not specified **Rig Type** Not specified
Boring Size 3.5" **Drilling Method** Not Specified
Well Diameter 2" **# of Samples** Not Recorded
Total Depth 12.93 feet bgs **Depth to GW** 5.72 feet bgs/6.72 feet BTOC
X/Y Coordinates 56.96693819/-158.66880804 **Top of Casing Elevation** 46.38 Feet

Monument Type Above Ground
Surface Seal Not Specified
Screened Interval 7.93 - 12.93 feet
Screen Slot Size 0.01"

Extra Field Notes:
Stick up height: -3.08 feet bgs.
Location ID: J-WH-002-002
Historical Well 2012, Data compiled from Phase I and II Reports



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: J-MW-003

Project Name Fort Morrow Phase III RI **Site** J-WH-003

Monument Type Above Ground

Client USACE **Field Scientist/Engineer** Not Recorded

Surface Seal Not Specified

Date 2012 **Weather** Not Recorded

Screened Interval 13.35 - 23.35 feet

Drilling Company Not specified **Rig Type** Not specified

Screen Slot Size 0.01"

Boring Size 3.5" **Drilling Method** Not Specified

Extra Field Notes:
Stick up height: -2.09 feet bgs.

Well Diameter 2" **# of Samples** Not Recorded

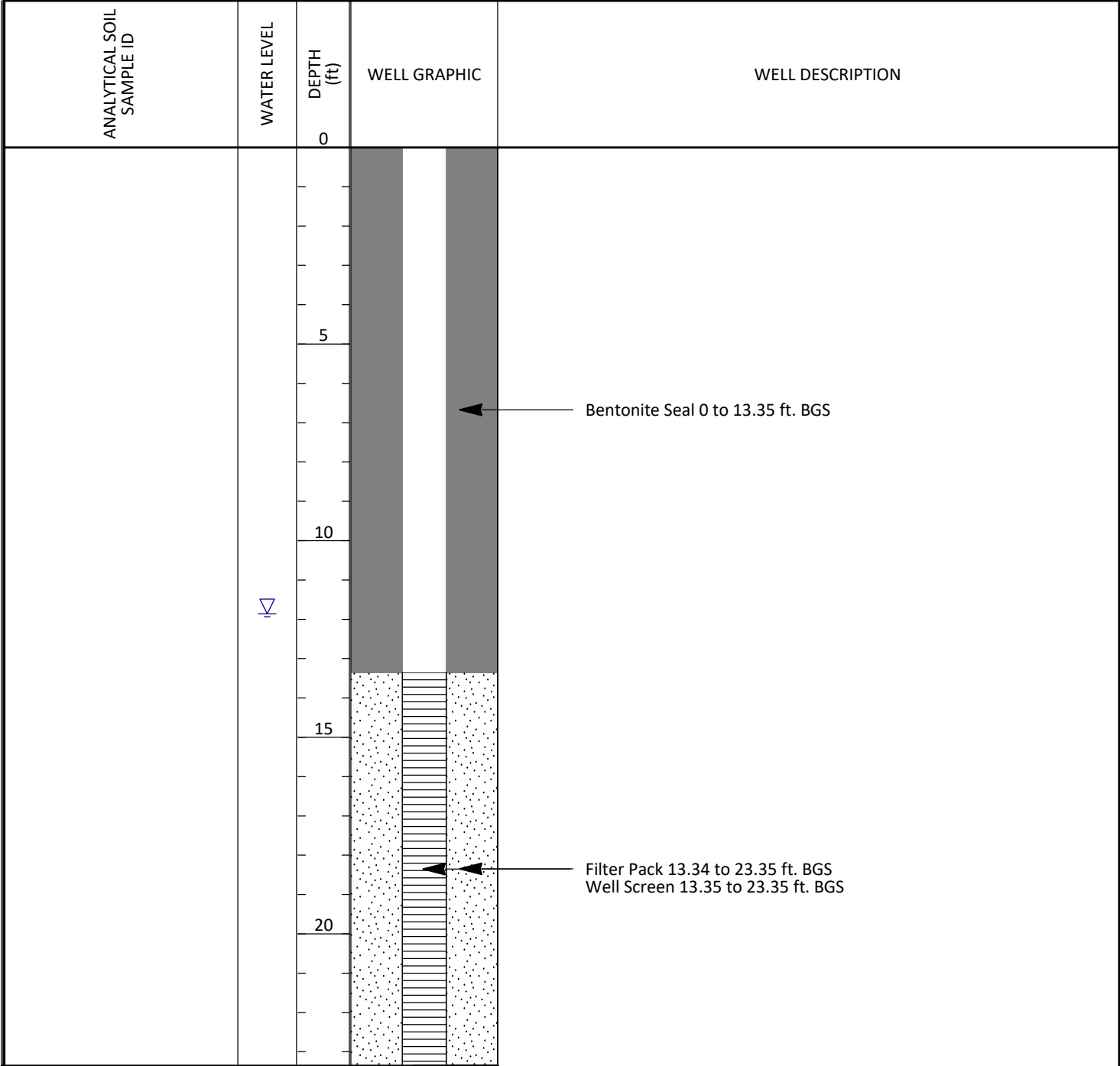
Location ID: J-WH-003-003

Total Depth 23.35 feet bgs **Depth to GW** 11.86 feet bgs/14.04 feet BTOC

Historical Well 2012, Data compiled from Phase I and II Reports

X/Y Coordinates 56.96716873/-158.66762754 **Top of Casing Elevation** 52.49 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: M-MW-001

Project Name Fort Morrow Phase III RI Site M-TF-001

Monument Type Above Ground

Client USACE Field Scientist/Engineer Not Recorded

Surface Seal Not Specified

Date 9/25/2015 Weather Not Recorded

Screened Interval 12 - 22 feet

Drilling Company Not specified Rig Type Not specified

Screen Slot Size 0.01"

Boring Size 3.5" Drilling Method Not Specified

Extra Field Notes:
Stick up height: -3.79 feet bgs.

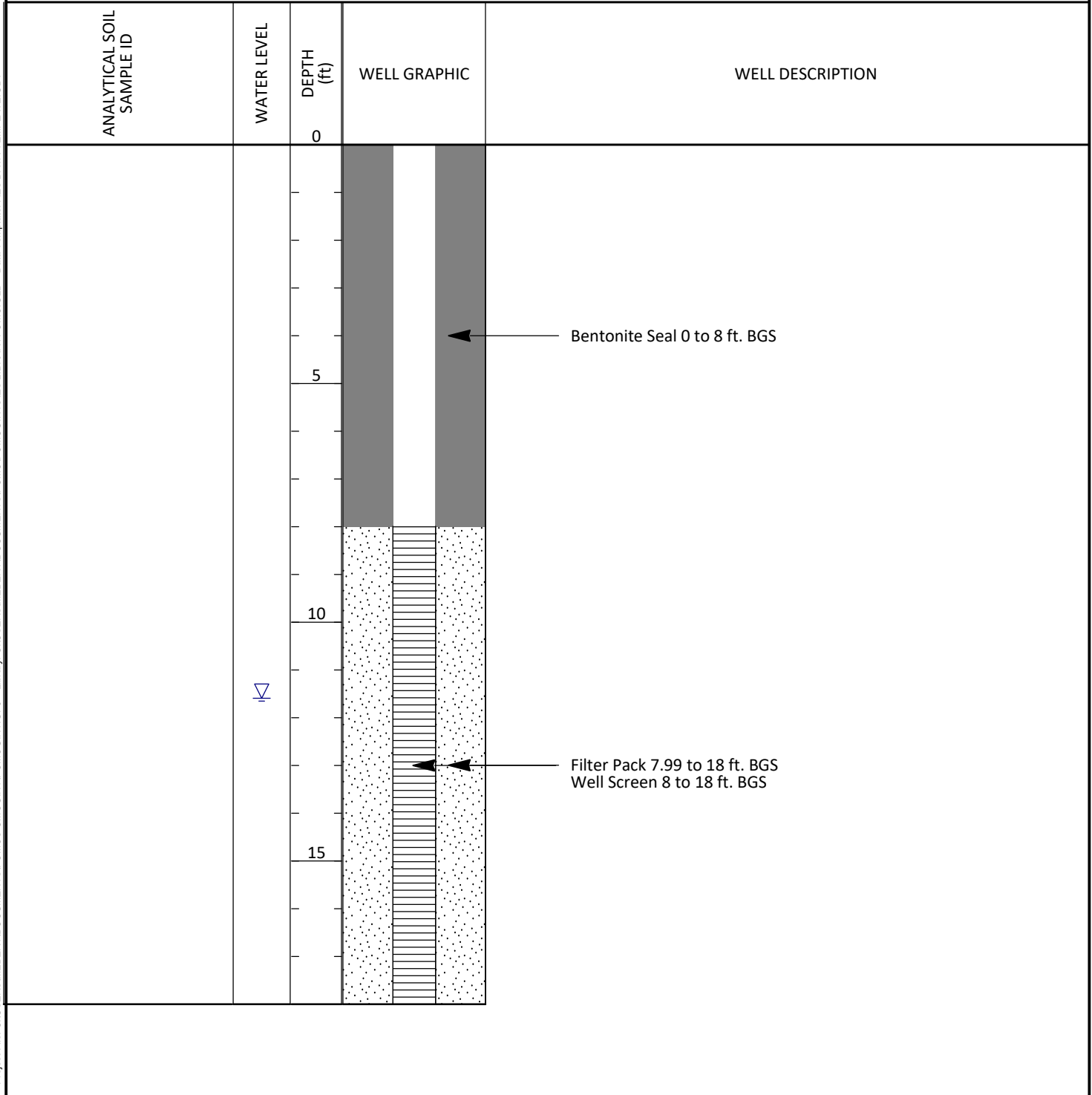
Well Diameter 2" # of Samples Not Recorded

Location ID: M-TF-001-001
Historical Well 2015, Data compiled
from Phase I and II Reports

Total Depth 22 feet bgs Depth to GW 11.59 feet bgs/12.5 feet BTOC

X/Y Coordinates 56.97909712/-158.64937833 Top of Casing Elevation 53.09 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: M-MW-002

Project Name Fort Morrow Phase III RI Site M-QT-055

Monument Type Above Ground

Client USACE Field Scientist/Engineer Not Recorded

Surface Seal Not Specified

Date 9/25/2015 Weather Not Recorded

Screened Interval 8 - 18 feet

Drilling Company Not specified Rig Type Not specified

Screen Slot Size 0.01"

Boring Size 3.5" Drilling Method Not Specified

Extra Field Notes:
Stick up height: -3.85 feet bgs.

Well Diameter 2" # of Samples Not Recorded

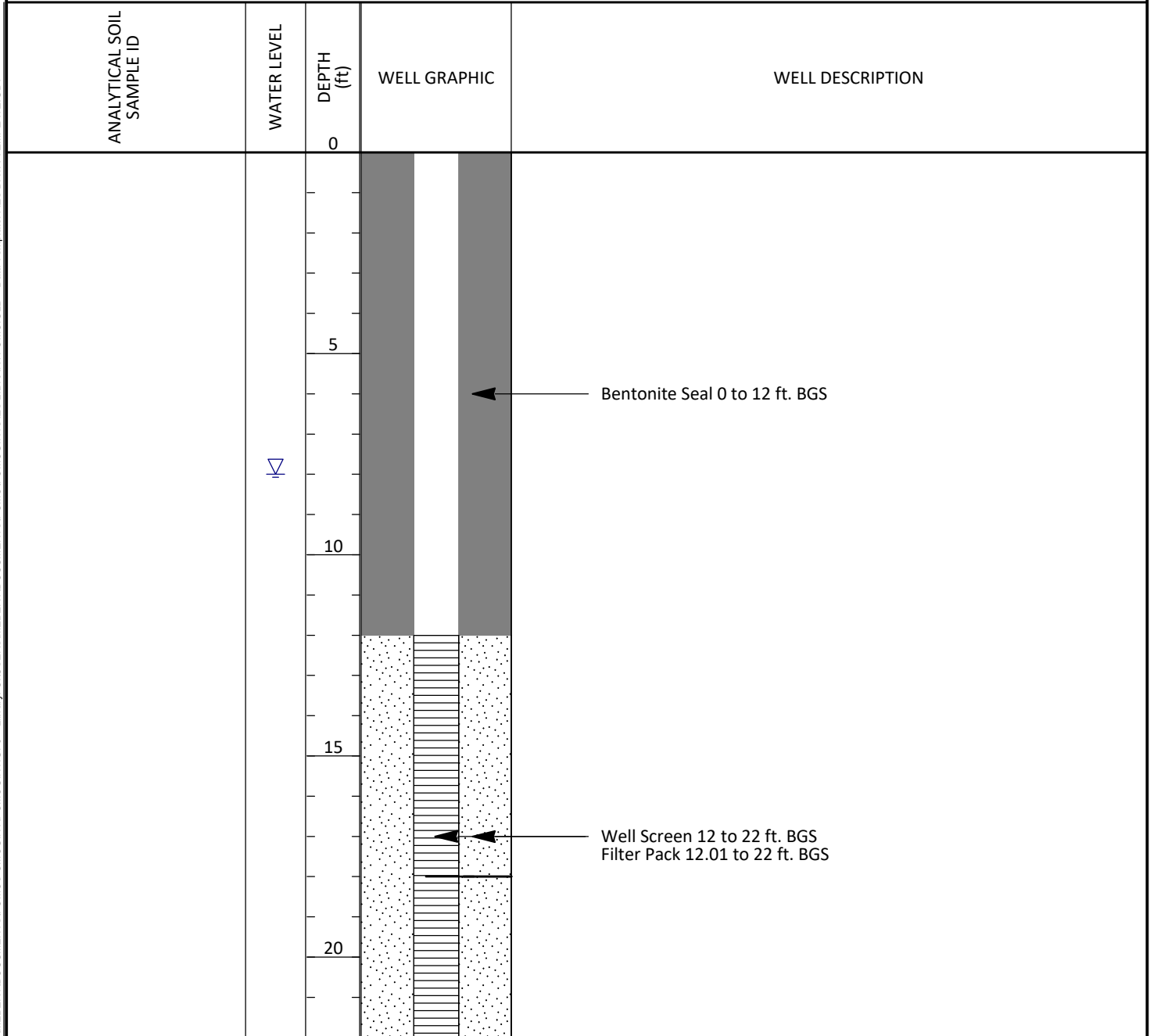
Location ID: M-QT-055-002

Total Depth 18 feet bgs Depth to GW 8 feet bgs/16 feet BTOC

Historical Well 2015, Data compiled
from Phase I and II Reports

X/Y Coordinates 56.97853619/-158.64830131 Top of Casing Elevation 50.15 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: M-MW-003

Project Name Fort Morrow Phase III RI Site M-PR-001

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/21/2019 Weather cloudy windy

Screened Interval 7.46 - 17.46 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

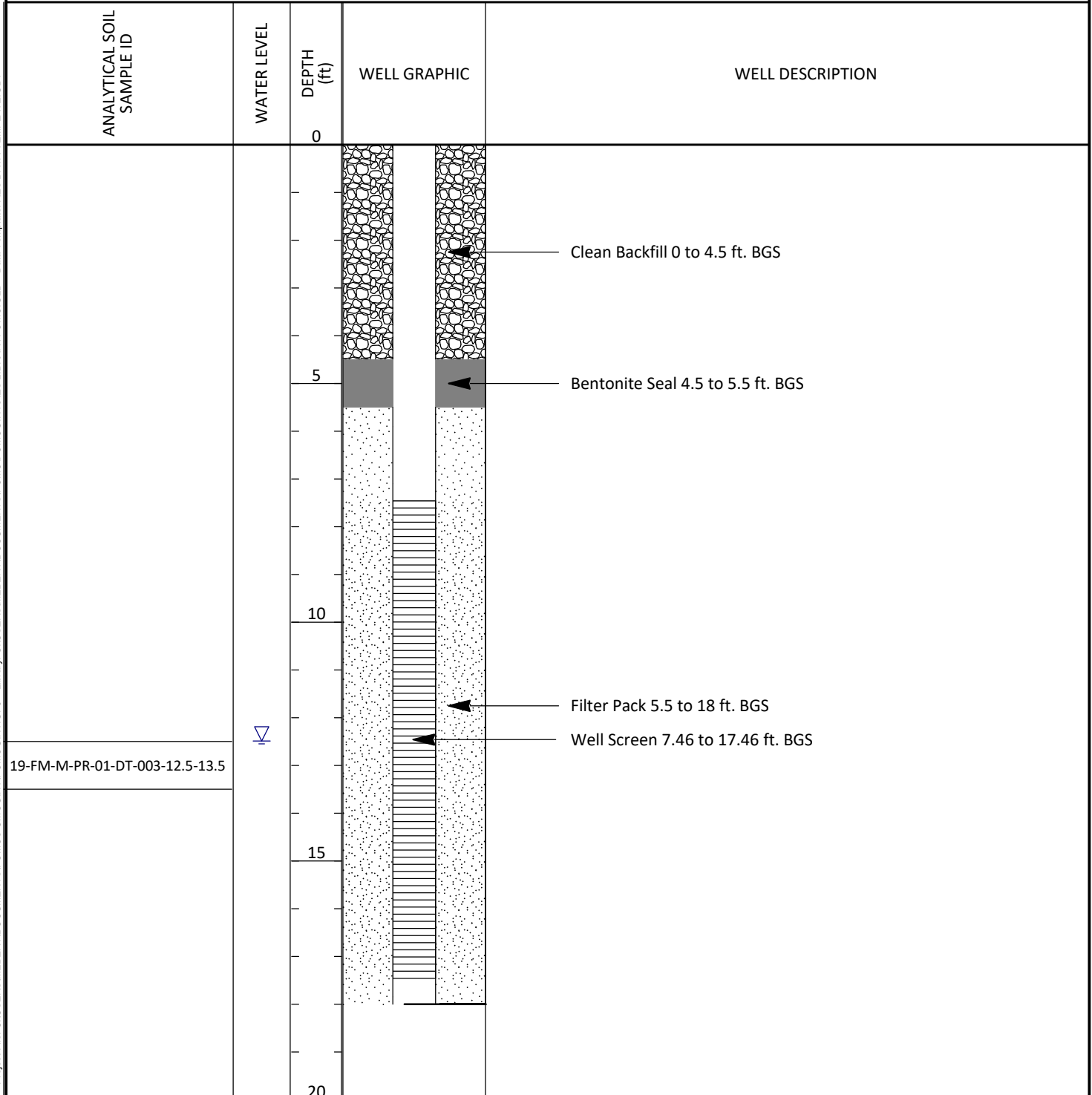
Extra Field Notes:
Stick up height: -2.77 feet bgs.
Location ID: M-PR-001-003
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 18 feet bgs Depth to GW 12.49 feet bgs/15.26 feet BTOC

X/Y Coordinates 56.97898473/-158.64908678 Top of Casing Elevation 52.67 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: M-MW-004

Project Name Fort Morrow Phase III RI Site M-PR-001

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/21/2019 Weather cloudy rainy

Screened Interval 6 - 16 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

Extra Field Notes:
Stick up height: -1.93 feet bgs.
Location ID: M-PR-001-004
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 16.5 feet bgs Depth to GW 8.92 feet bgs/11.44 feet BTOC

X/Y Coordinates 56.97899466/-158.64865147 Top of Casing Elevation 48.63 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT

ANALYTICAL SOIL SAMPLE ID	WATER LEVEL	DEPTH (ft)	WELL GRAPHIC	WELL DESCRIPTION
	▽	0		Clean Backfill 0 to 3 ft. BGS
19-FM-M-PR-001-DT-004-9.5-10.5		5		Bentonite Seal 3 to 4 ft. BGS
		10		Filter Pack 4 to 16.5 ft. BGS Well Screen 6 to 16 ft. BGS
		15		
		20		

MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: M-MW-005

Project Name Fort Morrow Phase III RI Site M-PR-001

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/21/2019 Weather cloudy windy

Screened Interval 5.58 - 15.58 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

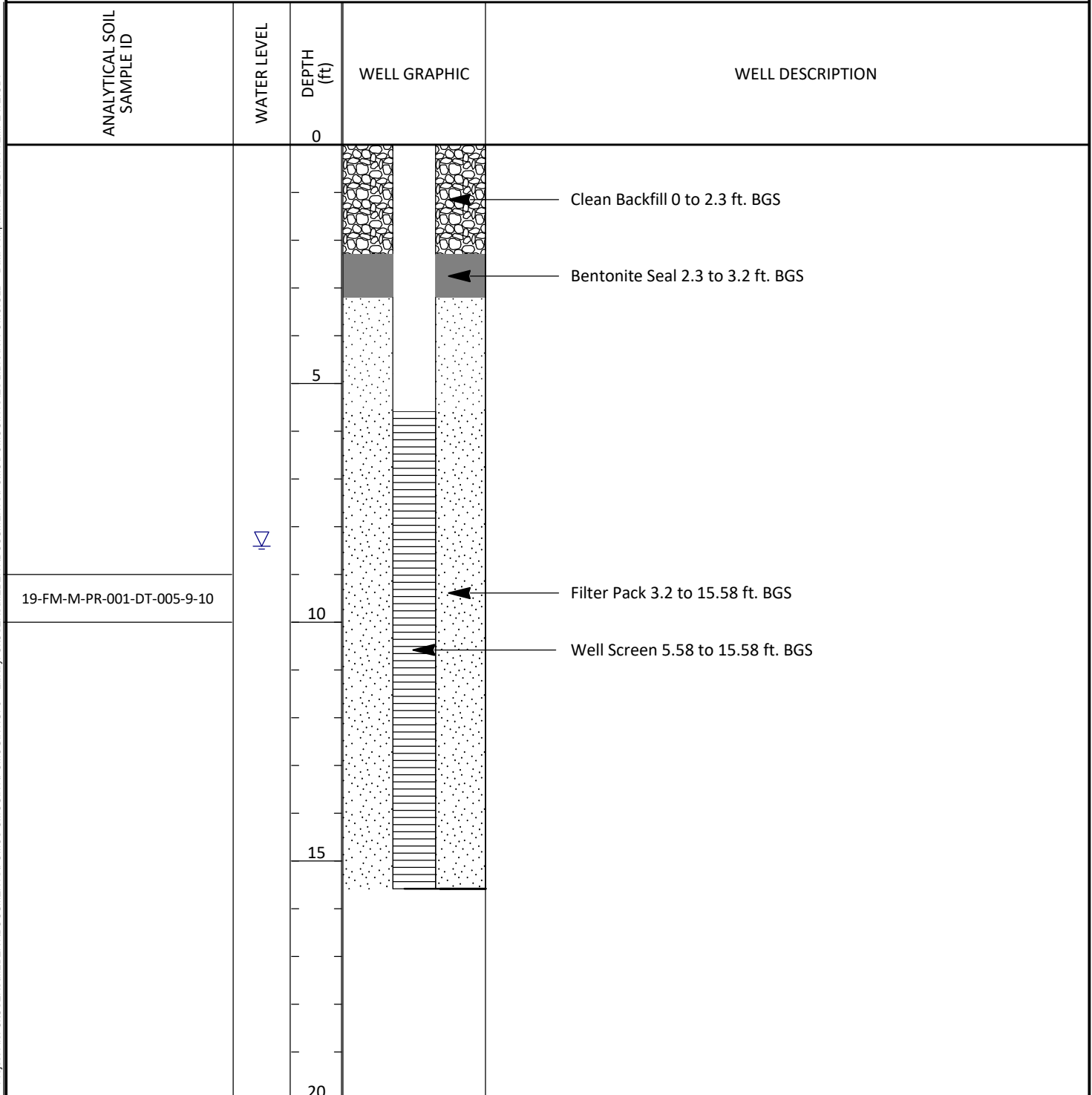
Extra Field Notes:
Stick up height: -3.06 feet bgs.
Location ID: M-PR-001-005
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 15.58 feet bgs Depth to GW 8.41 feet bgs/11.09 feet BTOC

X/Y Coordinates 56.97930345/-158.64874639 Top of Casing Elevation 48.76 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT





MONITORING WELL CONSTRUCTION LOG

Project Number: 05172.001

Well Number: M-MW-006

Project Name Fort Morrow Phase III RI Site M-PR-001

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/22/2019 Weather sunny breezy

Screened Interval 5.23 - 15.23 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

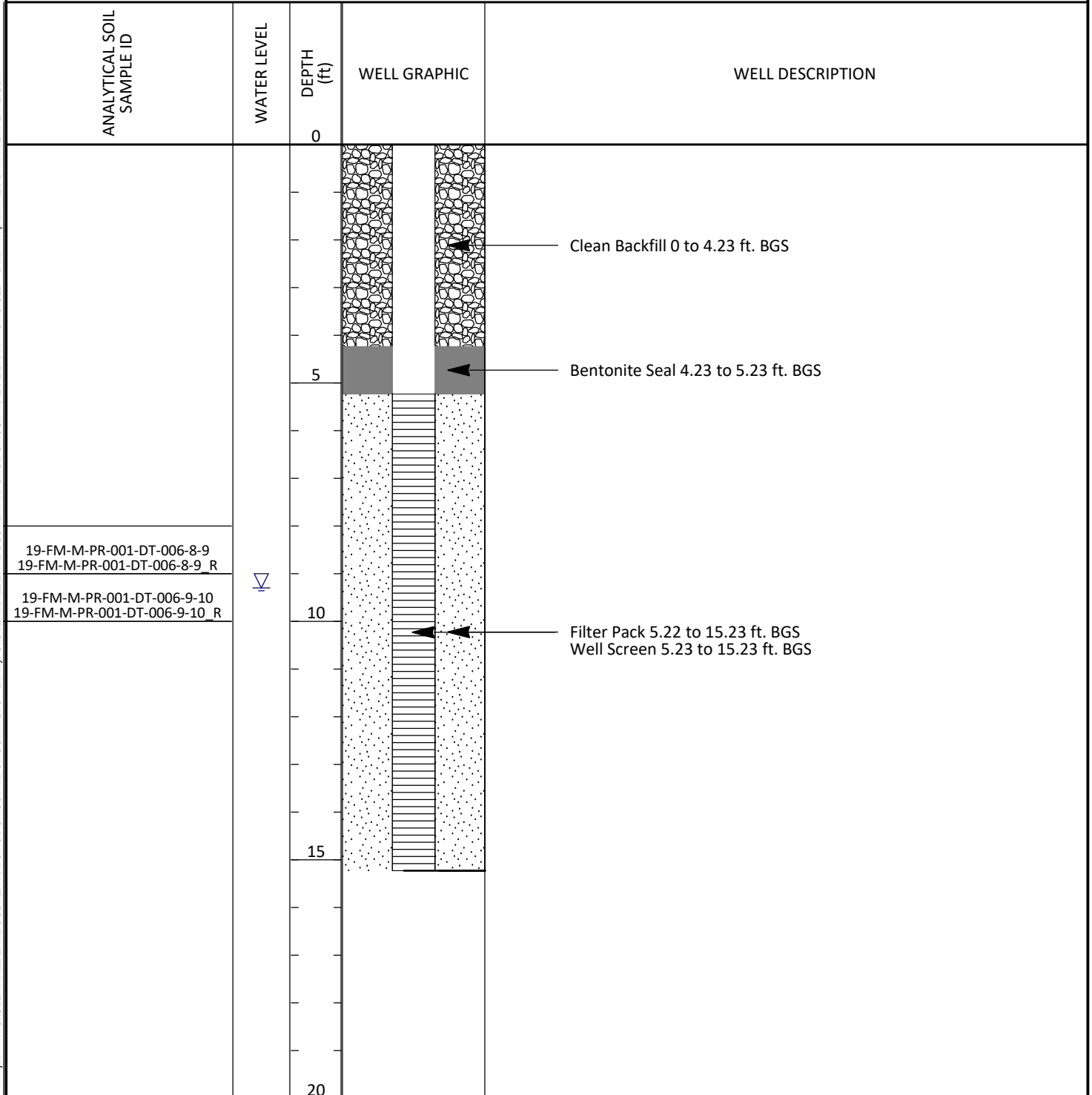
Extra Field Notes:
Stick up height: -2.43 feet bgs.
Location ID: M-PR-001-006*
2019 Well

Well Diameter 2" # of Samples 4

Total Depth 15.23 feet bgs Depth to GW 9.3 feet bgs/11.85 feet BTOC

X/Y Coordinates 56.97901403/-158.64894436 Top of Casing Elevation 49.43 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINTAES.LIBRARY\FOMOG.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **M-MW-007**

Project Name Fort Morrow Phase III RI Site M-UN-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/29/2019 Weather cloudy

Screened Interval 21.83 - 31.83 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

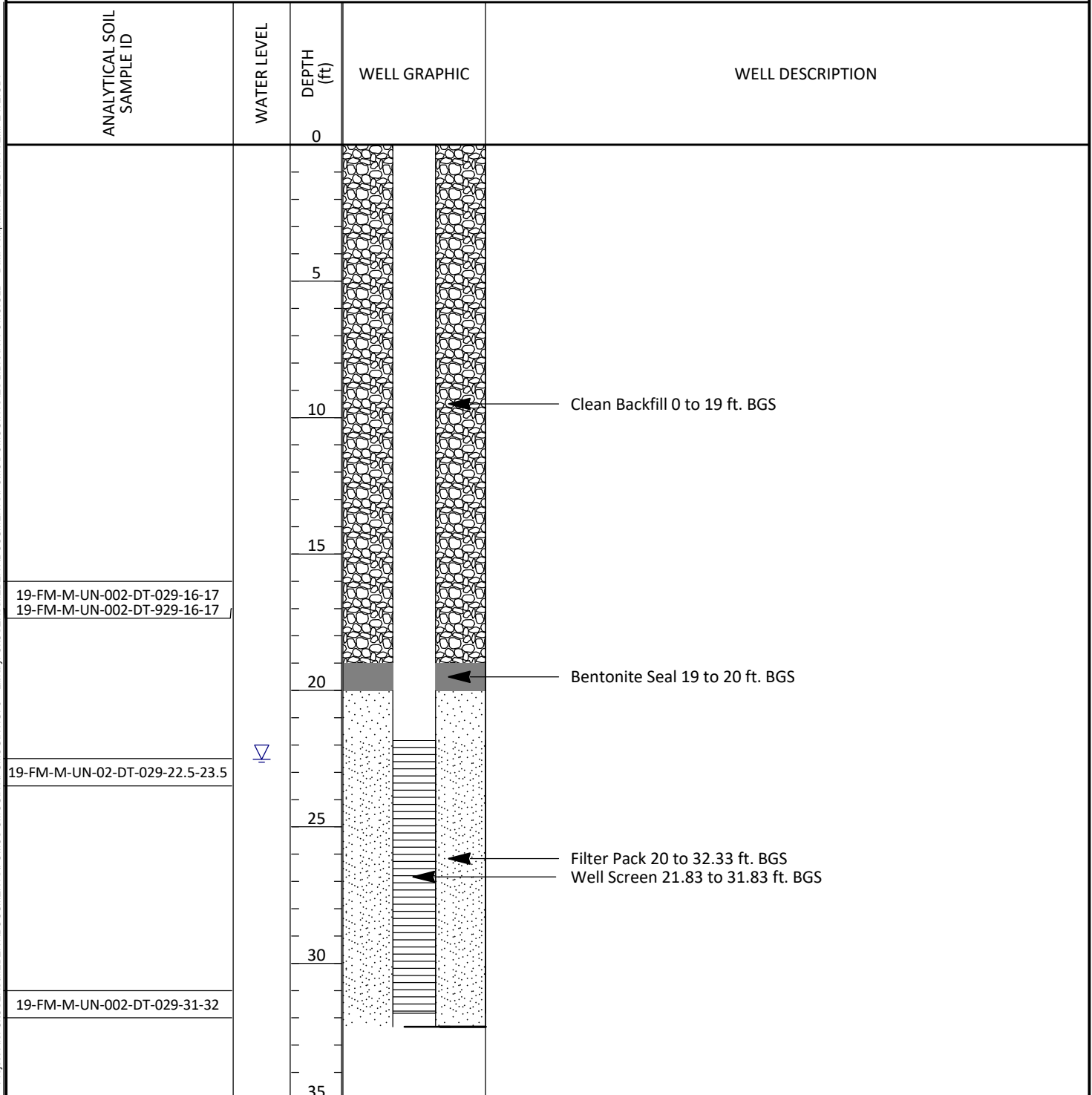
Extra Field Notes:
Stick up height: -3.06 feet bgs.
Location ID: M-UN-002-029
2019 Well

Well Diameter 2" # of Samples 3 + 1 Duplicate

Total Depth 32.33 feet bgs Depth to GW 22.52 feet bgs/26 feet BTOC

X/Y Coordinates 56.97571507/-158.64097289 Top of Casing Elevation 81.86 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMOG.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **M-MW-008**

Project Name Fort Morrow Phase III RI Site M-UN-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/27/2019 Weather sunny

Screened Interval 13.9 - 23.9 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

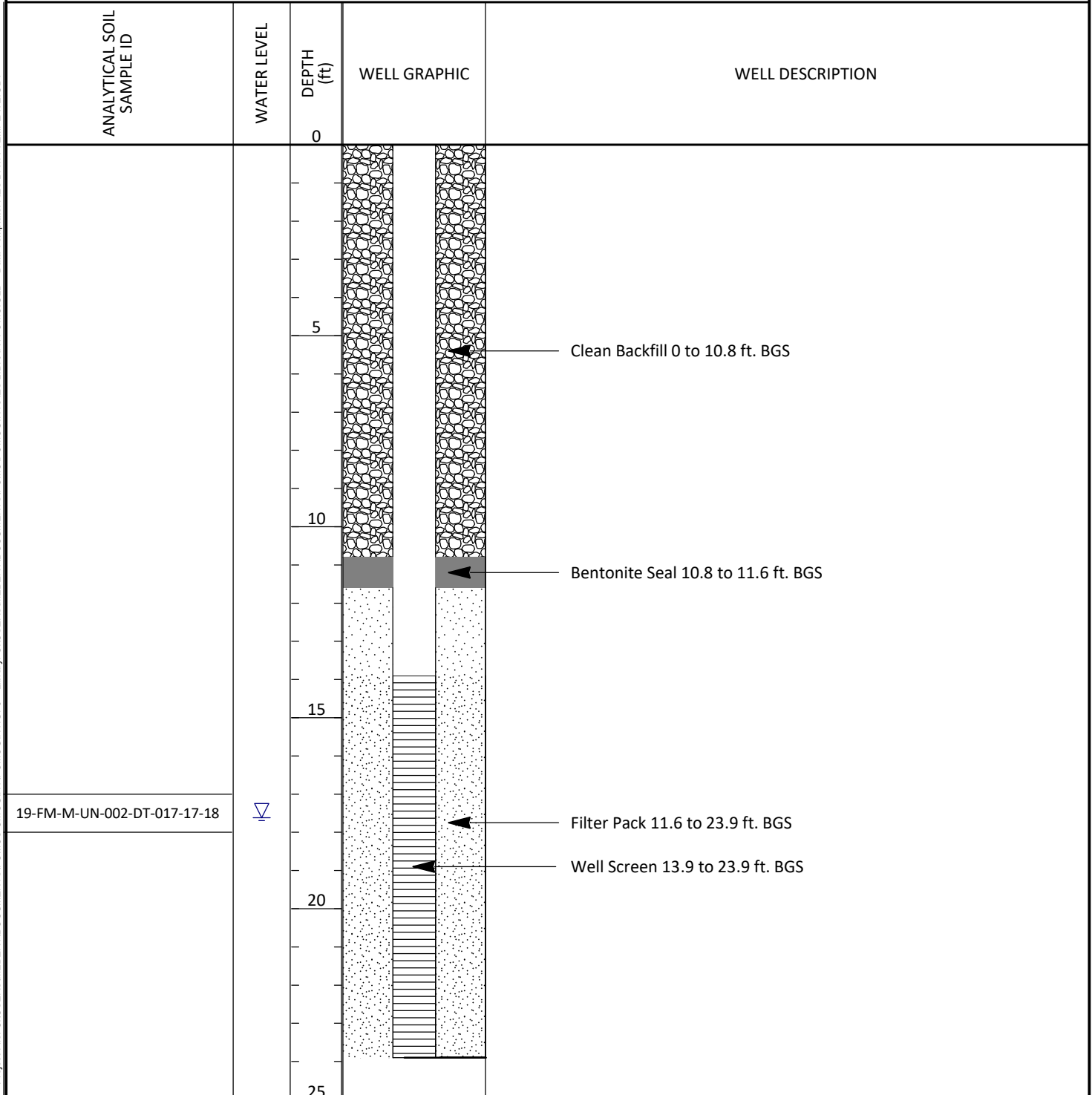
Extra Field Notes:
Stick up height: -0.84 feet bgs.
Location ID: M-UN-002-017
2019 Well

Well Diameter 2" # of Samples 1

Total Depth 23.9 feet bgs Depth to GW 17.62 feet bgs/18.4 feet BTOC

X/Y Coordinates 56.97572739/-158.64109549 Top of Casing Elevation 78.64 Feet

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **M-MW-009**

Project Name Fort Morrow Phase III RI Site M-UN-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/29/2019 Weather cloudy windy

Screened Interval 15.45 - 25.45 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

Extra Field Notes:
Stick up height: -1.98 feet bgs.

Well Diameter 2" # of Samples 1

Location ID: M-UN-002-020

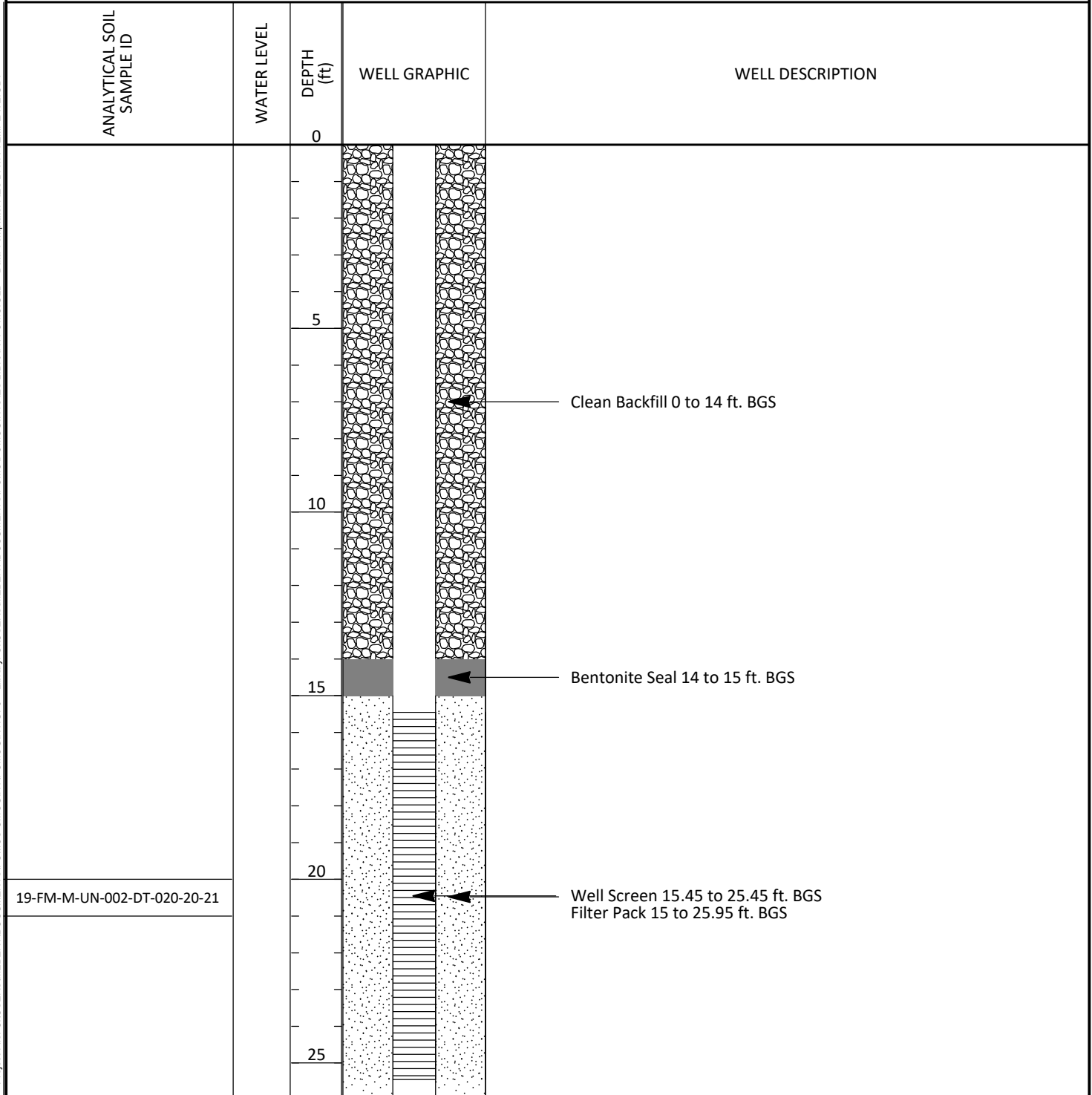
Total Depth 25.95 feet bgs Depth to GW dry feet bgs/Dry feet BTOC

2019 Well

X/Y Coordinates 56.97576688/-158.64073947 Top of Casing Elevation 82.08 Feet

Well was completed as a dry well

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



MONITORING WELL CONSTRUCTION LOG

Project Number: **05172.001**

Well Number: **M-MW-010**

Project Name Fort Morrow Phase III RI Site M-UN-002

Monument Type Above Ground

Client USACE Field Scientist/Engineer ME

Surface Seal None

Date 7/28/2019 Weather rainy

Screened Interval 24 - 33.5 feet

Drilling Company Discovery Rig Type Geoprobe 6610

Screen Slot Size 0.01"

Boring Size 11" Drilling Method Hollow Stem Auger

Extra Field Notes:

Well Diameter 2" # of Samples 1

Stick up height: -2.61 feet bgs.

Total Depth 33.5 feet bgs Depth to GW dry feet bgs/Dry feet BTOC

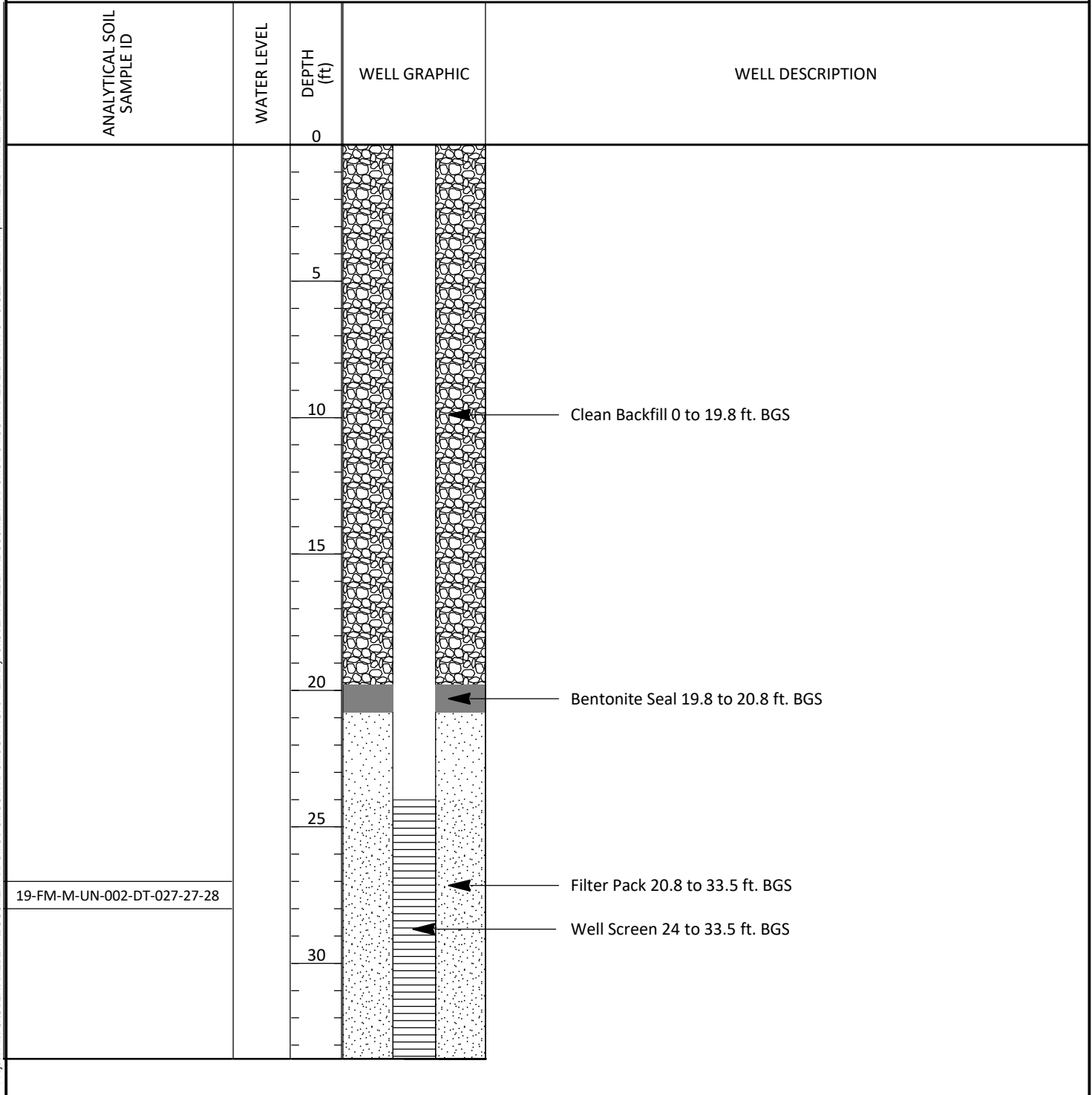
Location ID: M-UN-002-027

X/Y Coordinates 56.97561186/-158.64088081 Top of Casing Elevation 79.71 Feet

2019 Well

Well was completed as a dry well

Project File: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\FOMOGINT.GPJ Library: C:\USERS\MEBERT\DOCUMENTS\FOMOGINT\AES LIBRARY\FOMO.GLB Data Template: AES DATA TEMPLATE.GDT



Groundwater Purging and Sampling Log

Well ID:	B-MW-001	Client:	USACE-Alaska District
Sampling Event:	Summer	Date:	7/9/2019
Project Name:	RI Phase III, Port Heiden / Fort Morrow	Latitude (Decimal Degrees):	56.94926066
Project Number:	05172.001	Longitude (Decimal Degrees):	-158.62588197
TOC Elevation (ft NAVD88):	79.80	Ground Elevation (NAVD88-GEOID12B):	79.70
Depth to Water (ft BTOC):	6.70	Sampler:	KH
Total Well Depth (ft BTOC):	16.15	Water Quality Meter 1:	YSI ProPlus
Screen Interval (ft BGS):	5.6 - 15.75	Water Quality Meter 2:	Hach 2100Q
Screen Interval (ft BTOC):	5.7 - 15.85	Casing Volume (gallons):	0.028
Well Diameter (inch):	2	3 Casing Volumes (gallons):	0.084
Casing Material:	Schedule 40 PVC	Purging Method:	Low-Flow
Screen Material:	0.01-inch Geoprobe Pre-Pack	Purging Equipment:	Bladder Pump
		Pump Placement (ft BTOC):	9

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:00	7.0	0.171	1.63	5.51	111.2	15.6	200	0.5	clear, very slight POL odor
14:03	7.1	0.173	1.31	5.57	111.8	15.6	200	0.66	clear, very slight POL odor
14:07	6.8	0.172	1.10	5.61	111.4	13.1	200	0.87	clear, very slight POL odor
14:10	6.8	0.170	0.98	5.64	111.0	15.8	200	1.03	clear, very slight POL odor

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-004-B-MW-001-001	7/9/19 14:15	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-004-B-MW-001-901	7/9/19 14:25	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-001 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94926066
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62588197
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 79.70

TOC Elevation (ft NAVD88): 79.80 **Sampler:** MK
Depth to Water (ft BTOC): 8.19 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 16.11 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 5.6 - 15.75 **Casing Volume (gallons):** 0.023
Screen Interval (ft BTOC): 5.7 - 15.85 **3 Casing Volumes (gallons):** 0.069
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 12

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
9:55	6.9	0.212	6.12	6.82	98.7	49.4	300	0.1	
10:00	6.7	0.212	3.91	6.91	91.1	44.4	300	0.25	
10:05	6.5	0.202	2.48	7.01	84.1	31.0	300	0.5	
10:10	6.3	0.202	1.92	7.08	79.6	24.9	300	0.75	
10:15	6.2	0.201	1.51	7.25	74.2	21.1	300	1	
10:20	6.2	0.200	1.40	7.17	72.5	20.1	300	1.25	
10:25	6.2	0.200	1.33	7.21	69.4	16.9	300	1.25	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-004-B-MW-001-001	9/19/19 10:28	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID:	B-MW-002	Client:	USACE-Alaska District
Sampling Event:	Summer	Date:	7/8/2019
Project Name:	RI Phase III, Port Heiden / Fort Morrow	Latitude (Decimal Degrees):	56.9490407
Project Number:	05172.001	Longitude (Decimal Degrees):	-158.62618257
TOC Elevation (ft NAVD88):	80.86	Sampler:	KH
Depth to Water (ft BTOC):	8.35	Water Quality Meter 1:	YSI ProPlus
Total Well Depth (ft BTOC):	14.05	Water Quality Meter 2:	Hach 2100Q
Screen Interval (ft BGS):	2.62 - 12.62	Casing Volume (gallons):	0.017
Screen Interval (ft BTOC):	2.28 - 12.28	3 Casing Volumes (gallons):	0.051
Well Diameter (inch):	2	Purging Method:	Low-Flow
Casing Material:	Schedule 40 PVC	Purging Equipment:	Bladder Pump
Screen Material:	0.01-inch Geoprobe Pre-Pack	Pump Placement (ft BTOC):	10.4

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
18:25	9.1	0.115	17.40	6.08	101.6	68.7	200	0.2	cloudy grey, odorless
18:28	8.6	0.117	16.51	6.17	99.1	36.2	200	0.36	cloudy grey, odorless
18:31	8.7	0.119	15.54	6.20	97.9	28.8	200	0.52	cloudy grey, odorless
18:34	8.3	0.123	15.26	6.22	96.9	28.9	200	0.68	cloudy grey, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-002-002	7/8/19 18:45	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-003-B-MW-002-902	7/8/19 18:55	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-002 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.9490407
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62618257
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.20

TOC Elevation (ft NAVD88): 80.86 **Sampler:** MK
Depth to Water (ft BTOC): 9.96 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.05 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.62 - 12.62 **Casing Volume (gallons):** 0.012
Screen Interval (ft BTOC): 2.28 - 12.28 **3 Casing Volumes (gallons):** 0.036
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 12

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
10:34	6.5	0.176	10.66	7.45	71.0	999.0	300	0.75	
10:39	6.6	0.182	8.15	7.37	73.0	999.0	200	1	
10:44	6.9	0.183	7.99	7.32	73.0	999.0	200	1.25	
10:49	6.7	0.185	8.50	7.28	75.0	345.0	200	1.5	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-002-002	9/19/19 10:53	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-003 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/8/2019 **Latitude (Decimal Degrees):** 56.94699967
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62477164
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 84.00

TOC Elevation (ft NAVD88): 83.70 **Sampler:** KH
Depth to Water (ft BTOC): 12.45 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.69 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 3.63 - 13.63 **Casing Volume (gallons):** 0.007
Screen Interval (ft BTOC): 3.33 - 13.33 **3 Casing Volumes (gallons):** 0.021
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 13.4

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
10:35	9.7	0.195	13.75	6.09	111.9	46.7	100	0.2	clear, slight POL odor
10:38	9.5	0.181	11.45	6.21	103.8	27.2	100	0.28	clear, slight POL odor
10:39									Well dry
11:17	15.5	0.183	12.72	6.65	111.5	13.5	100	0.3	clear, slight POL odor
11:20	11.1	0.158	10.46	6.62	114.5	8.6	100	0.38	clear, slight POL odor
11:23	11.5	0.159	10.75	6.49	123.3	8.0	100	0.46	clear, slight POL odor
11:26	11.8	0.158	10.38	6.58	120.4	7.6	100	0.52	clear, slight POL odor

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-003-003	7/8/19 11:45	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Well pumped dry once and allowed to fully recharge before water quality parameters stabilized.

Groundwater Purging and Sampling Log

Well ID: B-MW-003 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94699967
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62477164
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 84.00

TOC Elevation (ft NAVD88): 83.70 **Sampler:** MB
Depth to Water (ft BTOC): 13.92 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.69 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 3.63 - 13.63 **Casing Volume (gallons):** 0.002
Screen Interval (ft BTOC): 3.33 - 13.33 **3 Casing Volumes (gallons):** 0.006
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 13.69

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
7:25									Not purged

Notes: Insufficient water column to reach pump inlet. Not purged.

Groundwater Purging and Sampling Log

Well ID: B-MW-004 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/8/2019 **Latitude (Decimal Degrees):** 56.94691133
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62498313
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 83.80

TOC Elevation (ft NAVD88): 83.61 **Sampler:** KH
Depth to Water (ft BTOC): 12.40 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 19.45 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 8.2 - 18.2 **Casing Volume (gallons):** 0.021
Screen Interval (ft BTOC): 8.01 - 18.01 **3 Casing Volumes (gallons):** 0.063
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 15.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:50	7.3	0.089	18.25	6.93	153.3	999.0	250	1	cloudy grey, odorless
12:53	7.2	0.089	18.07	6.93	152.9	960.0	250	1.2	cloudy grey, odorless
12:56	7.1	0.089	17.98	6.93	153.1	776.0	250	1.4	cloudy grey, odorless
12:59	7.1	0.089	17.95	6.94	152.5	565.0	250	1.6	cloudy grey, odorless
13:02	7.1	0.089	17.55	6.95	151.3	486.0	250	1.8	cloudy grey, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-004-004	7/8/19 13:15	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-004 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94691133
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62498313
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 83.80

TOC Elevation (ft NAVD88): 83.61 **Sampler:** MB
Depth to Water (ft BTOC): 13.90 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 19.47 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 8.2 - 18.2 **Casing Volume (gallons):** 0.016
Screen Interval (ft BTOC): 8.01 - 18.01 **3 Casing Volumes (gallons):** 0.048
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
16:03	7.2	0.090	11.83	7.43	197.4	999.0	150	0.4	
16:08	6.6	0.089	11.50	7.35	201.4	999.0	150	0.6	
16:13	6.4	0.089	11.44	7.31	204.4	999.0	150	0.8	
16:18	6.3	0.090	11.59	7.29	205.7	999.0	150	1	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-004-004	9/19/19 16:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19F-FM-B-DA-003-B-MW-004-904	9/19/19 16:25	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-005 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/7/2019 **Latitude (Decimal Degrees):** 56.94513653
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62335939
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.20

TOC Elevation (ft NAVD88): 81.10 **Sampler:** KH
Depth to Water (ft BTOC): 11.00 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.55 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.93 - 12.93 **Casing Volume (gallons):** 0.01
Screen Interval (ft BTOC): 2.83 - 12.83 **3 Casing Volumes (gallons):** 0.03
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 12.45

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:25	10.7	0.123	3.53	6.37	110.7	716.0	100	0.5	cloudy grey, and odorless
11:28	10.5	0.121	3.37	6.36	110.7	528.0	100	0.58	cloudy grey, and odorless
11:31	10.6	0.120	3.27	6.35	110.6	375.0	100	0.66	cloudy grey, and odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-005-B-MW-005-005	7/7/19 11:40	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-005-B-MW-005-905	7/7/19 11:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-005 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94513653
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62335939
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.20

TOC Elevation (ft NAVD88): 81.10 **Sampler:** MB
Depth to Water (ft BTOC): 12.51 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.27 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.93 - 12.93 **Casing Volume (gallons):** 0.005
Screen Interval (ft BTOC): 2.83 - 12.83 **3 Casing Volumes (gallons):** 0.015
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 13

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
8:55									Well dry

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-005-B-MW-005-005	9/19/19 18:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Flow rate reduced to very low to avoid drawing water level below pump intake. Well purged down below pump intake prior to any water discharging from flow thru cell.

Groundwater Purging and Sampling Log

Well ID: B-MW-006 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/6/2019 **Latitude (Decimal Degrees):** 56.94504042
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62353351
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.90

TOC Elevation (ft NAVD88): 81.67 **Sampler:** KH
Depth to Water (ft BTOC): 11.84 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 13.56 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.25 - 12.25 **Casing Volume (gallons):** 0.005
Screen Interval (ft BTOC): 2.02 - 12.02 **3 Casing Volumes (gallons):** 0.015
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 12.3

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:51									Well dry

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-005-B-MW-006-006	7/7/19 16:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-006 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/7/2019 **Latitude (Decimal Degrees):** 56.94504042
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62353351
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.90

TOC Elevation (ft NAVD88): 81.67 **Sampler:** KH
Depth to Water (ft BTOC): 11.84 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 13.56 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.25 - 12.25 **Casing Volume (gallons):** 0.005
Screen Interval (ft BTOC): 2.02 - 12.02 **3 Casing Volumes (gallons):** 0.015
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 12.3

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:50	9.5	0.089	11.30	6.49	116.4	318.0	100	0.2	cloudy grey, and odorless
14:00	23.5	0.089	9.63	6.74	112.3	118.0	100	0.4	cloudy grey, and odorless
14:03	10.0	0.082	11.44	6.94	112.9	576.0	100	0.48	cloudy grey, and odorless
14:06	9.5	0.082	11.17	6.77	122.7	966.0	100	0.56	cloudy grey, and odorless
14:09	9.6	0.081	10.88	6.71	125.8	999.0	100	0.64	cloudy grey, and odorless
14:12									pumped well dry before water quality parameters obtained Well dry
15:37	15.0	0.087	11.80	7.04	125.1	501.0	100	0.8	cloudy grey, and odorless
15:40	11.7	0.083	10.61	7.00	128.7	435.0	100	0.88	cloudy grey, and odorless
15:43	10.8	0.082	10.18	6.96	132.6	606.0	100	0.96	cloudy grey, and odorless
15:46	10.5	0.082	10.82	6.85	138.7	500.0	100	1.04	cloudy grey, and odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-005-B-MW-006-006	7/7/19 16:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-007 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/24/2019 **Latitude (Decimal Degrees):** 56.9484273
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62668082
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 84.60

TOC Elevation (ft NAVD88): 87.32 **Sampler:** FR
Depth to Water (ft BTOC): 16.20 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.40 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.65 - 17.65 **Casing Volume (gallons):** 0.012
Screen Interval (ft BTOC): 10.37 - 20.37 **3 Casing Volumes (gallons):** 0.036
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 17.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
22:15	5.7	0.085	19.31	7.29	128.7	490.0	225	20.25	clear, odorless
22:18	5.4	0.085	15.23	6.98	143.5	593.0	225	20.5	clear, odorless
22:21	5.3	0.086	14.14	6.92	145.4	671.0	225	20.75	clear, odorless
22:24	5.2	0.086	13.80	7.01	140.7	656.0	225	21	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-007-007	7/24/19 22:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: 20 gallons removed during development.

Groundwater Purging and Sampling Log

Well ID: B-MW-007 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.9484273
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62668082
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 84.60

TOC Elevation (ft NAVD88): 87.32 **Sampler:** MK
Depth to Water (ft BTOC): 17.01 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.35 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.65 - 17.65 **Casing Volume (gallons):** 0.01
Screen Interval (ft BTOC): 10.37 - 20.37 **3 Casing Volumes (gallons):** 0.03
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
16:15	6.5	0.093	13.00	7.94	136.5	999.0	200	0.1	DO out of range, TB out of range
16:20	6.4	0.093	13.00	8.06	135.6	999.0	200	0.25	DO out of range, TB out of range
16:25	6.4	0.093	13.00	8.16	135.1	999.0	200	0.5	DO out of range, TB out of range
16:30	6.3	0.093	13.00	8.23	135.2	999.0	200	0.75	DO out of range, TB out of range
16:35	6.2	0.093	13.00	8.26	135.3	999.0	200	1	DO out of range, TB out of range

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-007-007	9/18/19 16:36	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-008 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/24/2019 **Latitude (Decimal Degrees):** 56.94909956
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62704726
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 82.70

TOC Elevation (ft NAVD88): 85.39 **Sampler:** KH
Depth to Water (ft BTOC): 13.95 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 17.00 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 4.02 - 14.02 **Casing Volume (gallons):** 0.009
Screen Interval (ft BTOC): 6.71 - 16.71 **3 Casing Volumes (gallons):** 0.027
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 15

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
19:38	7.7	0.096	14.37	7.15	151.1	999.0	125	18	light brown and cloudy, odorless
19:41	7.7	0.094	13.66	7.29	142.1	999.0	125	18.16	light brown and cloudy, odorless
19:46	7.7	0.094	12.95	7.60	129.8	771.0	125	18.32	light brown and cloudy, odorless
19:51	7.7	0.094	12.60	7.76	124.0	630.0	125	18.48	light brown and cloudy, odorless
19:54	7.4	0.094	12.33	7.84	122.5	601.0	125	18.62	light brown and cloudy, odorless
19:57	7.6	0.093	12.41	7.85	122.4	563.0	125	18.78	light brown and cloudy, odorless
20:00	7.4	0.093	12.56	7.84	122.5	550.0	125	18.94	light brown and cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-008-008	7/24/19 20:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-003-B-MW-008-908	7/24/19 20:15	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-008 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94909956
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62704726
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 82.70

TOC Elevation (ft NAVD88): 85.39 **Sampler:** MK
Depth to Water (ft BTOC): 14.97 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 16.60 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 4.02 - 14.02 **Casing Volume (gallons):** 0.005
Screen Interval (ft BTOC): 6.71 - 16.71 **3 Casing Volumes (gallons):** 0.015
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 16

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
15:07	6.0	0.098	13.96	8.16	127.7	111.0	259	0.5	DO out of range
15:12	5.9	0.098	13.63	8.20	127.3	86.0	250	0.65	DO out of range
15:17	5.8	0.098	13.48	8.13	127.5	91.0	250	1	DO out of range

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-008-008	9/18/19 15:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-009 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/27/2019 **Latitude (Decimal Degrees):** 56.94657649
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62482379
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 83.80

TOC Elevation (ft NAVD88): 86.13 **Sampler:** KH
Depth to Water (ft BTOC): 15.61 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.15 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13 - 23 **Casing Volume (gallons):** 0.028
Screen Interval (ft BTOC): 15.33 - 25.33 **3 Casing Volumes (gallons):** 0.084
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 16.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
10:55	6.6	0.103	13.38	6.87	114.1	215.0	200	40.2	light brown, cloudy, odorless
10:58	6.5	0.102	12.75	6.84	112.4	220.0	200	40.4	light brown, cloudy, odorless
11:01	6.6	0.102	12.72	6.88	109.3	193.0	200	40.6	light brown, cloudy, odorless
11:05	6.4	0.101	12.72	6.97	103.4	211.0	200	40.8	light brown, cloudy, odorless
11:08	6.6	0.101	12.52	6.95	102.7	190.0	200	41	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-009-009	7/27/19 11:10	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-003-B-MW-009-909	7/27/19 11:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-009 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94657649
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62482379
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 83.80

TOC Elevation (ft NAVD88): 86.13 **Sampler:** MB
Depth to Water (ft BTOC): 16.50 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.15 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13 - 23 **Casing Volume (gallons):** 0.025
Screen Interval (ft BTOC): 15.33 - 25.33 **3 Casing Volumes (gallons):** 0.075
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 21

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:42	6.7	0.095	12.13	7.11	199.4	999.0	300	0.3	
14:47	6.1	0.093	11.51	7.32	205.3	999.0	280	0.6	
14:52	6.0	0.092	11.34	7.21	209.8	999.0	280	0.9	
14:57	5.9	0.091	11.52	7.23	208.1	999.0	280	1.2	
15:02	5.8	0.091	11.37	7.23	207.2	999.0	280	1.5	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-009-009	9/19/19 15:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID:	B-MW-010	Client:	USACE-Alaska District
Sampling Event:	Summer	Date:	7/26/2019
Project Name:	RI Phase III, Port Heiden / Fort Morrow	Latitude (Decimal Degrees):	56.94706475
Project Number:	05172.001	Longitude (Decimal Degrees):	-158.62653646
TOC Elevation (ft NAVD88):	90.55	Ground Elevation (NAVD88-GEOID12B):	88.10
Depth to Water (ft BTOC):	19.90	Sampler:	KH
Total Well Depth (ft BTOC):	24.55	Water Quality Meter 1:	YSI ProPlus
Screen Interval (ft BGS):	11.86 - 21.86	Water Quality Meter 2:	Hach 2100Q
Screen Interval (ft BTOC):	14.31 - 24.31	Casing Volume (gallons):	0.014
Well Diameter (inch):	2	3 Casing Volumes (gallons):	0.042
Casing Material:	Schedule 40 PVC	Purging Method:	Low-Flow
Screen Material:	0.01-inch Schedule 40 PVC	Purging Equipment:	Bladder Pump
		Pump Placement (ft BTOC):	21

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:05	6.4	0.106	12.97	6.87	120.8	369.0	200	30	light brown, cloudy, odorless
11:10	6.5	0.104	11.96	6.83	114.5	278.0	200	30.2	light brown, cloudy, odorless
11:13	6.4	0.103	11.66	6.86	111.0	217.0	200	30.4	light brown, cloudy, odorless
11:16	6.4	0.103	11.76	6.89	117.9	194.0	200	30.6	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-010-010	7/26/19 11:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-003-B-MW-010-910	7/26/19 11:40	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-010 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94706475
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62653646
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 88.10

TOC Elevation (ft NAVD88): 90.55 **Sampler:** MB
Depth to Water (ft BTOC): 20.84 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 24.52 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 11.86 - 21.86 **Casing Volume (gallons):** 0.011
Screen Interval (ft BTOC): 14.31 - 24.31 **3 Casing Volumes (gallons):** 0.033
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 23

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:57	5.4	0.085	11.78	7.30	199.0	999.0	360	0.3	
13:02	7.0	0.085	10.57	7.11	206.1	999.0	200	0.5	
13:07	7.2	0.085	10.82	7.16	202.0	999.0	200	0.65	
13:12	7.1	0.085	10.84	7.19	200.0	999.0	200	0.8	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-010-010	9/19/19 13:15	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-011 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/26/2019 **Latitude (Decimal Degrees):** 56.94771241
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62535904
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 83.10

TOC Elevation (ft NAVD88): 85.51 **Sampler:** KH
Depth to Water (ft BTOC): 14.01 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 18.60 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 6.28 - 16.28 **Casing Volume (gallons):** 0.013
Screen Interval (ft BTOC): 8.69 - 18.69 **3 Casing Volumes (gallons):** 0.039
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 15

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
13:51	11.2	0.100	10.33	7.36	106.6	279.0	75	17.1	light brown, cloudy, odorless
13:57	9.1	0.099	11.40	7.58	104.5	219.0	100	17.2	light brown, cloudy, odorless
14:00	8.7	0.099	11.04	7.72	106.0	219.0	100	17.3	light brown, cloudy, odorless
14:03	8.7	0.099	11.04	7.72	106.0	193.0	100	17.4	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-011-011	7/26/19 14:35	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-011 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94771241
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62535904
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 83.10

TOC Elevation (ft NAVD88): 85.51 **Sampler:** MB
Depth to Water (ft BTOC): 15.50 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 18.57 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 6.28 - 16.28 **Casing Volume (gallons):** 0.009
Screen Interval (ft BTOC): 8.69 - 18.69 **3 Casing Volumes (gallons):** 0.027
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 17

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:26	7.1	0.088	10.98	7.19	199.2	53.5	150	0.1	
11:31	6.2	0.085	10.64	7.09	206.0	94.1	150	0.25	
11:36	6.4	0.085	10.41	6.99	210.3	82.0	150	0.5	
11:41	6.3	0.085	10.35	7.04	207.9	69.4	150	0.65	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-011-011	9/19/19 11:45	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-012 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/25/2019 **Latitude (Decimal Degrees):** 56.94939478
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62520104
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 79.70

TOC Elevation (ft NAVD88): 82.10 **Sampler:** KH
Depth to Water (ft BTOC): 8.91 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.92 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.4 - 12.4 **Casing Volume (gallons):** 0.018
Screen Interval (ft BTOC): 4.8 - 14.8 **3 Casing Volumes (gallons):** 0.054
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 10

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:27	6.4	0.084	18.27	7.23	100.8	148.0	225	30.2	light brown, cloudy, odorless
17:30	6.3	0.084	15.32	6.95	113.9	142.0	225	30.4	light brown, cloudy, odorless
17:35	6.3	0.084	11.73	7.00	108.3	116.0	225	30.7	light brown, cloudy, odorless
17:38	6.2	0.084	11.06	7.10	102.0	100.0	225	30.9	light brown, cloudy, odorless
17:41	6.2	0.084	11.24	7.16	97.8	71.1	225	31.1	light brown, cloudy, odorless
17:44	6.1	0.084	11.00	7.19	95.6	65.9	225	31.3	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-012-012	7/25/19 17:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-012 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94939478
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62520104
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 79.70

TOC Elevation (ft NAVD88): 82.10 **Sampler:** MK
Depth to Water (ft BTOC): 9.77 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.92 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.4 - 12.4 **Casing Volume (gallons):** 0.015
Screen Interval (ft BTOC): 4.8 - 14.8 **3 Casing Volumes (gallons):** 0.045
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 13

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
9:11	6.2	0.093	8.80	7.35	122.0	60.0	350	1	
9:15	6.3	0.094	8.63	7.34	118.0	50.0	350	1.5	
9:20	6.3	0.092	8.78	7.35	115.0	46.0	350	2	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-012-012	9/19/19 09:25	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-013 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/25/2019 **Latitude (Decimal Degrees):** 56.94993184
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62579798
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.30

TOC Elevation (ft NAVD88): 83.54 **Sampler:** KH
Depth to Water (ft BTOC): 10.35 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 15.50 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 3 - 13 **Casing Volume (gallons):** 0.015
Screen Interval (ft BTOC): 5.24 - 15.24 **3 Casing Volumes (gallons):** 0.045
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 11.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:20	6.6	0.108	16.87	7.33	116.6	955.0	200	48	light brown, cloudy, odorless
14:23	6.5	0.090	14.58	7.54	113.7	862.0	200	48.16	light brown, cloudy, odorless
14:26	6.5	0.085	13.99	7.72	107.9	796.0	200	48.25	light brown, cloudy, odorless
14:29	6.4	0.085	13.66	7.87	101.8	723.0	200	48.6	light brown, cloudy, odorless
14:32	6.4	0.085	13.46	8.00	96.5	695.0	200	48.76	light brown, cloudy, odorless
14:35	6.5	0.085	13.48	8.10	93.1	613.0	200	48.86	light brown, cloudy, odorless
14:38	6.3	0.085	13.37	8.16	91.3	570.0	200	48.9	light brown, cloudy, odorless
14:41	6.4	0.085	13.26	8.19	90.8	584.0	200	29.05	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-013-013	7/25/19 14:45	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-B-DA-003-B-MW-013-913	7/25/19 14:55	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-013 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94993184
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62579798
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.30

TOC Elevation (ft NAVD88): 83.54 **Sampler:** MK
Depth to Water (ft BTOC): 11.48 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 15.50 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 3 - 13 **Casing Volume (gallons):** 0.012
Screen Interval (ft BTOC): 5.24 - 15.24 **3 Casing Volumes (gallons):** 0.036
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 13.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
8:40	6.1	0.100	10.01	7.44	126.6	85.9	300	0.1	
8:46	6.0	0.097	10.23	7.50	115.4	65.1	300	0.25	
8:51	6.1	0.095	10.13	7.52	117.1	44.6	300	0.45	
8:57	6.0	0.095	10.42	7.55	124.7	32.0	300	0.6	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-013-013	9/19/19 09:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-014 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/26/2019 **Latitude (Decimal Degrees):** 56.9467381
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62391396
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.90

TOC Elevation (ft NAVD88): 84.90 **Sampler:** KH
Depth to Water (ft BTOC): 13.89 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 19.55 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.38 - 17.38 **Casing Volume (gallons):** 0.016
Screen Interval (ft BTOC): 10.38 - 20.38 **3 Casing Volumes (gallons):** 0.048
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 15

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
20:08	6.8	0.112	18.11	7.19	150.5	999.0	150	21	light brown, cloudy, odorless
20:13	6.7	0.111	14.05	7.09	148.3	983.0	150	21.2	light brown, cloudy, odorless
20:16	6.7	0.110	12.77	7.15	142.9	750.0	150	21.4	light brown, cloudy, odorless
20:19	6.7	0.110	12.65	7.18	140.4	656.0	150	21.6	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-014-014	7/26/19 20:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Started purging with bladder pump 144346, but pumped stopped working. Switched and sampled with bladder pump unk2019.

Groundwater Purging and Sampling Log

Well ID: B-MW-014 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.9467381
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62391396
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.90

TOC Elevation (ft NAVD88): 84.90 **Sampler:** MB
Depth to Water (ft BTOC): 15.01 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 19.50 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.38 - 17.38 **Casing Volume (gallons):** 0.013
Screen Interval (ft BTOC): 10.38 - 20.38 **3 Casing Volumes (gallons):** 0.039
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
9:55	5.5	0.100	11.98	6.84	172.1	999.0	320	0.2	brown, cloudy
10:00	5.4	0.101	11.85	6.92	168.1	999.0	320	0.4	
10:05	5.4	0.102	11.73	6.96	164.6	999.0	320	0.6	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-014-014	9/18/19 10:10	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-015 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/24/2019 **Latitude (Decimal Degrees):** 56.94963199
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.6271357
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.60

TOC Elevation (ft NAVD88): 84.24 **Sampler:** KH
Depth to Water (ft BTOC): 12.20 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 15.90 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 3.5 - 13.5 **Casing Volume (gallons):** 0.011
Screen Interval (ft BTOC): 6.14 - 16.14 **3 Casing Volumes (gallons):** 0.033
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 13.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:40	6.4	0.161	13.95	6.62	173.6	999.0	175	12	light brown and cloudy, odorless
12:45	6.3	0.161	12.62	6.82	168.5	832.0	175	12	light brown and cloudy, odorless
12:48	6.1	0.161	11.11	6.91	162.7	703.0	175	12	light brown and cloudy, odorless
12:51	6.2	0.161	10.69	6.93	158.3	553.0	175	12	light brown and cloudy, odorless
12:54	6.1	0.160	10.83	6.96	156.0	467.0	175	12.2	light brown and cloudy, odorless
12:57	6.1	0.160	10.56	6.98	154.2	419.0	175	12.2	light brown and cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-015-015	7/24/19 13:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-015 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94963199
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.6271357
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.60

TOC Elevation (ft NAVD88): 84.24 **Sampler:** MK
Depth to Water (ft BTOC): 13.14 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 15.91 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 3.5 - 13.5 **Casing Volume (gallons):** 0.008
Screen Interval (ft BTOC): 6.14 - 16.14 **3 Casing Volumes (gallons):** 0.024
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 15

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:05	6.6	0.159	11.24	7.33	141.5	281.0	300	0.1	
14:10	6.2	0.166	7.96	7.57	138.5	111.0	300	0.25	
14:15	5.9	0.168	7.45	7.63	138.2	73.2	300	0.45	
14:20	5.9	0.169	7.19	7.71	136.6	79.1	300	0.65	
14:25	5.9	0.171	6.95	7.74	136.0	73.8	300	0.85	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-015-015	9/18/19 14:31	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-016 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/27/2019 **Latitude (Decimal Degrees):** 56.94719617
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62412313
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.90

TOC Elevation (ft NAVD88): 84.54 **Sampler:** KH
Depth to Water (ft BTOC): 12.95 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 16.80 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 4.05 - 14.05 **Casing Volume (gallons):** 0.011
Screen Interval (ft BTOC): 6.69 - 16.69 **3 Casing Volumes (gallons):** 0.033
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 14

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:12	7.2	0.096	12.18	7.53	101.3	352.0	75	10	light brown, cloudy, odorless
14:17	6.7	0.095	11.75	7.50	102.4	337.0	75	10.1	light brown, cloudy, odorless
14:20	6.9	0.095	11.90	7.33	111.6	316.0	75	10.2	light brown, cloudy, odorless
14:23	6.8	0.095	11.98	7.27	113.7	288.0	75	10.3	light brown, cloudy, odorless
14:26	7.2	0.094	11.94	7.31	110.8	287.0	75	10.4	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-016-016	7/27/19 14:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-016 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94719617
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62412313
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 81.90

TOC Elevation (ft NAVD88): 84.54 **Sampler:** MB
Depth to Water (ft BTOC): 14.07 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 16.74 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 4.05 - 14.05 **Casing Volume (gallons):** 0.008
Screen Interval (ft BTOC): 6.69 - 16.69 **3 Casing Volumes (gallons):** 0.024
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 15.6

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:24	8.1	0.098	9.93	7.11	139.6	999.0	180	0.1	light brown, cloudy
11:30	7.5	0.098	9.87	7.10	144.0	999.0	180	0.2	
11:34	7.8	0.098	9.92	6.97	152.3	999.0	180	0.3	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-016-016	9/18/19 11:40	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-017 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/25/2019 **Latitude (Decimal Degrees):** 56.94869833
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62426338
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 79.00

TOC Elevation (ft NAVD88): 81.43 **Sampler:** AO
Depth to Water (ft BTOC): 8.53 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.85 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.1 - 12.1 **Casing Volume (gallons):** 0.018
Screen Interval (ft BTOC): 4.53 - 14.53 **3 Casing Volumes (gallons):** 0.054
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 9.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
19:30	7.5	0.086	16.80	7.82	93.9	426.0	200	10	light brown, cloudy, odorless
19:35	7.4	0.086	13.43	7.82	94.5	418.0	200	10.26	light brown, cloudy, odorless
19:38	7.2	0.087	13.24	7.85	92.7	436.0	200	10.42	light brown, cloudy, odorless
19:41	7.4	0.086	13.22	7.87	91.4	427.0	200	10.58	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-B-DA-003-B-MW-017-017	7/25/19 19:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: B-MW-017 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94869833
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.62426338
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 79.00

TOC Elevation (ft NAVD88): 81.43 **Sampler:** MK
Depth to Water (ft BTOC): 9.19 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 14.82 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 2.1 - 12.1 **Casing Volume (gallons):** 0.016
Screen Interval (ft BTOC): 4.53 - 14.53 **3 Casing Volumes (gallons):** 0.048
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 12.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:45	7.4	0.095	10.04	7.53	72.9	218.0	300	0.15	
11:50	6.8	0.094	10.21	7.70	71.9	165.6	300	0.3	
11:55	6.9	0.093	10.21	7.76	71.8	109.5	300	0.5	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-B-DA-003-B-MW-017-017	9/19/19 11:59	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-001 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/11/2019 **Latitude (Decimal Degrees):** 56.94451168
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57399106
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 133.20

TOC Elevation (ft NAVD88): 135.54 **Sampler:** KH
Depth to Water (ft BTOC): 17.41 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.14 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 12.8 - 17.8 **Casing Volume (gallons):** 0.008
Screen Interval (ft BTOC): 15.14 - 20.14 **3 Casing Volumes (gallons):** 0.024
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:37	12.6	0.124	4.34	6.07	71.4	13.6	100	0.2	clear, slight POL odor
11:40	8.7	0.117	2.31	6.08	68.8	15.4	100	0.28	clear, slight POL odor
11:43	8.3	0.113	1.23	5.92	75.6	16.9	100	0.36	clear, slight POL odor
11:46	8.3	0.112	1.24	5.85	78.4	12.9	100	0.44	clear, slight POL odor
11:49	8.5	0.111	1.35	5.91	75.3	13.2	100	0.52	clear, slight POL odor

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-001-001	7/11/19 12:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-C-LT-002-C-MW-001-901	7/11/19 12:40	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes: Broken PVC stickup with rubber coupling binding two pieces approximately 1.5' above ground surface.

Groundwater Purging and Sampling Log

Well ID: C-MW-001 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.94451168
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57399106
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 133.20

TOC Elevation (ft NAVD88): 135.54 **Sampler:** MB
Depth to Water (ft BTOC): 18.82 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.12 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 12.8 - 17.8 **Casing Volume (gallons):** 0.004
Screen Interval (ft BTOC): 15.14 - 20.14 **3 Casing Volumes (gallons):** 0.012
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 19

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
5:12									Not purged

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-002 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/11/2019 **Latitude (Decimal Degrees):** 56.94427626
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57441573
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 134.30

TOC Elevation (ft NAVD88): 136.20 **Sampler:** KH
Depth to Water (ft BTOC): 18.28 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.51 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13.3 - 23.3 **Casing Volume (gallons):** 0.021
Screen Interval (ft BTOC): 15.2 - 25.2 **3 Casing Volumes (gallons):** 0.063
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 20.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:04	8.2	0.119	13.60	6.09	122.0	26.5	150	0.2	clear, odorless
17:07	8.2	0.107	11.14	6.15	122.0	22.8	150	0.32	clear, odorless
17:10	7.8	0.099	10.40	6.29	115.0	17.8	150	0.44	clear, odorless
17:13	7.4	0.094	10.22	6.40	111.4	25.8	150	0.56	clear, odorless
17:16	7.1	0.091	9.93	6.44	109.8	28.6	150	0.68	clear, odorless
17:19	6.9	0.091	9.90	6.49	107.5	31.4	150	0.8	clear, odorless
17:22	6.6	0.091	9.85	6.53	106.4	29.8	150	0.92	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-002-002	7/11/19 17:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-002 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.94427626
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57441573
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 134.30

TOC Elevation (ft NAVD88): 136.20 **Sampler:** MB
Depth to Water (ft BTOC): 19.80 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.53 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13.3 - 23.3 **Casing Volume (gallons):** 0.017
Screen Interval (ft BTOC): 15.2 - 25.2 **3 Casing Volumes (gallons):** 0.051
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 21.25

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:26	6.5	0.105	12.65	7.22	113.6	408.0	250	0.1	
14:31	6.0	0.104	12.45	6.99	130.4	999.0	250	0.2	brown, milky
14:36	5.8	0.104	12.27	7.01	132.1	999.0	250	0.3	
14:41	5.7	0.103	12.08	7.06	130.2	999.0	250	0.4	brown, milky
14:46	5.6	0.103	12.20	7.13	128.2	999.0	250	0.5	light brown, milky

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-002-002	9/17/19 14:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-003 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/9/2019 **Latitude (Decimal Degrees):** 56.9447212
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57497267
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 131.80

TOC Elevation (ft NAVD88): 134.02 **Sampler:** KH
Depth to Water (ft BTOC): 16.47 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 23.72 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 16.7 - 21.7 **Casing Volume (gallons):** 0.021
Screen Interval (ft BTOC): 18.92 - 23.92 **3 Casing Volumes (gallons):** 0.063
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:32	7.8	0.091	15.74	6.03	127.3	43.7	200	0.2	clear, odorless
12:35	7.3	0.090	15.40	6.11	124.2	93.2	200	0.36	clear, odorless
12:38	7.3	0.089	15.27	6.22	119.0	74.8	200	0.52	clear, odorless
12:41	7.4	0.088	15.36	6.31	114.9	57.5	200	0.68	clear, odorless
12:44	7.4	0.088	14.87	6.41	110.2	51.0	200	0.84	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-003-003	7/9/19 13:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-003 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.9447212
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57497267
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 131.80

TOC Elevation (ft NAVD88): 134.02 **Sampler:** MB
Depth to Water (ft BTOC): 18.03 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 23.74 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 16.7 - 21.7 **Casing Volume (gallons):** 0.017
Screen Interval (ft BTOC): 18.92 - 23.92 **3 Casing Volumes (gallons):** 0.051
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 21

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
15:30	6.4	0.104	13.08	7.28	137.0	999.0	350	0.25	
15:35	6.1	0.104	13.11	7.09	148.3	999.0	350	0.75	
15:39	5.9	0.103	13.18	7.12	149.1	999.0	350	1	
15:45	5.7	0.103	12.84	7.22	145.6	999.0	350	1.25	
15:50	5.7	0.103	12.93	7.28	143.7	999.0	350	1.5	
15:55	5.7	0.103	12.98	7.30	142.3	999.0	350	1.75	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-003-003	9/17/19 16:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-004 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/11/2019 **Latitude (Decimal Degrees):** 56.94510241
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57587073
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 127.10

TOC Elevation (ft NAVD88): 129.00 **Sampler:** KH
Depth to Water (ft BTOC): 12.56 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.45 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 23.77 - 28.77 **Casing Volume (gallons):** 0.023
Screen Interval (ft BTOC): 25.67 - 30.67 **3 Casing Volumes (gallons):** 0.069
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 16.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
18:49	5.6	0.089	9.44	6.58	100.7	999.0	200	0.5	cloudy brown, odorless
18:52	5.6	0.089	9.55	6.62	99.0	999.0	200	0.66	cloudy brown, odorless
18:55	5.5	0.090	9.35	6.66	97.6	999.0	200	0.82	cloudy brown, odorless
18:58	5.5	0.090	9.56	6.68	97.0	999.0	200	0.98	cloudy brown, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-004-004	7/11/19 19:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: The total well depth reported by the 2013 well construction log is 30.67 ft TOC.

Groundwater Purging and Sampling Log

Well ID: C-MW-004 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.94510241
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57587073
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 127.10

TOC Elevation (ft NAVD88): 129.00 **Sampler:** MB
Depth to Water (ft BTOC): 13.97 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.44 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 23.77 - 28.77 **Casing Volume (gallons):** 0.019
Screen Interval (ft BTOC): 25.67 - 30.67 **3 Casing Volumes (gallons):** 0.057
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 17

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:20	8.1	0.104	12.93	7.47	146.9	999.0	140	0.15	
17:25	7.7	0.105	12.35	7.38	149.6	999.0	140	0.2	
17:30	7.0	0.104	12.17	7.25	159.6	999.0	140	0.4	white vapor venting from wellhead

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-004-004	9/17/19 17:35	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19F-FM-C-LT-002-C-MW-004-904	9/17/19 17:40	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes: The total well depth reported by the 2013 well construction log is 30.67 ft TOC.

Groundwater Purging and Sampling Log

Well ID: C-MW-005 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/11/2019 **Latitude (Decimal Degrees):** 56.94462848
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57322486
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 131.20

TOC Elevation (ft NAVD88): 133.63 **Sampler:** KH
Depth to Water (ft BTOC): 14.82 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 21.75 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 10.33 - 20.33 **Casing Volume (gallons):** 0.02
Screen Interval (ft BTOC): 12.76 - 22.76 **3 Casing Volumes (gallons):** 0.06
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 17

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
13:30	6.7	0.096	11.63	6.26	117.1	512.0	200	0.2	cloudy light grey, odorless
13:33	6.5	0.094	11.41	6.43	111.6	435.0	200	0.36	clear, slight POL odor
13:36	6.4	0.093	11.22	6.54	106.8	377.0	200	0.72	clear, slight POL odor
13:41	6.3	0.092	10.91	6.59	104.2	301.0	200	0.99	clear, slight POL odor
13:44	6.2	0.092	10.92	6.62	103.1	254.0	200	1.15	clear, slight POL odor

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-005-005	7/11/19 14:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Bentonite identified at the bottom of the well with interface meter.

Groundwater Purging and Sampling Log

Well ID: C-MW-005 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.94462848
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57322486
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 131.20

TOC Elevation (ft NAVD88): 133.63 **Sampler:** MK
Depth to Water (ft BTOC): 16.40 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 21.78 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 10.33 - 20.33 **Casing Volume (gallons):** 0.016
Screen Interval (ft BTOC): 12.76 - 22.76 **3 Casing Volumes (gallons):** 0.048
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 19

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:30	5.4	0.107	13.25	6.70	194.5	999.0	250	0.5	milky
11:35	5.3	0.106	12.67	6.74	192.5	999.0	250	1	milky
11:40	5.3	0.106	12.49	6.86	188.1	999.0	250	0.7	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-005-005	9/17/19 11:45	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-006 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/27/2019 **Latitude (Decimal Degrees):** 56.94457382
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57364928
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 132.80

TOC Elevation (ft NAVD88): 135.35 **Sampler:** KH
Depth to Water (ft BTOC): 18.39 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.86 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13.3 - 23.3 **Casing Volume (gallons):** 0.022
Screen Interval (ft BTOC): 15.85 - 25.85 **3 Casing Volumes (gallons):** 0.066
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 19.3

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
16:58	7.5	0.100	16.51	7.02	116.6	236.0	150	25.2	light brown, cloudy, odorless
17:03	7.2	0.099	11.92	6.97	118.6	227.0	150	25.4	light brown, cloudy, odorless
17:06	7.2	0.099	11.20	6.78	127.1	213.0	150	25.6	light brown, cloudy, odorless
17:09	6.9	0.099	10.75	6.73	128.3	214.0	150	25.8	light brown, cloudy, odorless
17:12	6.9	0.099	10.81	6.76	126.4	208.0	150	26	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-006-006	7/27/19 17:27	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-006 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94457382
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57364928
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 132.80

TOC Elevation (ft NAVD88): 135.35 **Sampler:** MB
Depth to Water (ft BTOC): 18.46 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.20 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13.3 - 23.3 **Casing Volume (gallons):** 0.02
Screen Interval (ft BTOC): 15.85 - 25.85 **3 Casing Volumes (gallons):** 0.06
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 23

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
15:59	6.7	0.101	11.02	7.22	167.6	755.0	280	0.1	
16:04	6.4	0.099	10.66	6.90	183.4	442.0	280	0.2	
16:09	6.2	0.099	10.71	6.84	186.6	187.0	280	0.3	
16:14	6.2	0.100	10.60	6.90	183.8	139.0	280	0.4	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-006-006	9/18/19 16:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-007 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/28/2019 **Latitude (Decimal Degrees):** 56.94446057
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57467167
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 134.00

TOC Elevation (ft NAVD88): 136.82 **Sampler:** KH
Depth to Water (ft BTOC): 19.52 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 24.70 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 11.7 - 21.7 **Casing Volume (gallons):** 0.015
Screen Interval (ft BTOC): 14.52 - 24.52 **3 Casing Volumes (gallons):** 0.045
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 20.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
13:47	6.7	0.104	18.42	7.51	113.7	139.0	200	22.2	light brown, cloudy, odorless
13:50	6.5	0.103	15.85	7.33	119.5	77.0	200	22.4	light brown, cloudy, odorless
13:53	6.3	0.102	15.00	7.34	117.4	76.8	200	22.6	light brown, cloudy, odorless
13:56	6.3	0.101	14.61	7.34	116.4	81.6	200	22.8	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-007-014	7/28/19 14:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-007 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.94446057
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57467167
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 134.00

TOC Elevation (ft NAVD88): 136.82 **Sampler:** MB
Depth to Water (ft BTOC): 20.62 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 24.70 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 11.7 - 21.7 **Casing Volume (gallons):** 0.012
Screen Interval (ft BTOC): 14.52 - 24.52 **3 Casing Volumes (gallons):** 0.036
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 22.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
8:30	6.8	0.096	9.71	6.57	215.9	157.0	160	0.5	
8:35	5.4	0.094	10.30	6.50	232.2	165.0	200	0.8	
8:40	5.2	0.094	10.26	6.64	229.8	135.0	200	1.1	
8:45	5.2	0.094	10.04	6.78	223.9	93.1	200	1.4	
8:50	5.2	0.094	10.01	6.86	220.0	69.3	200	1.7	
8:55	5.3	0.094	9.89	6.91	218.0	40.2	200	2	
9:00	5.3	0.094	9.95	6.93	217.6	31.1	200	2.6	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-007-014	9/19/19 09:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-008 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/29/2019 **Latitude (Decimal Degrees):** 56.94464003
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57417891
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 132.80

TOC Elevation (ft NAVD88): 135.48 **Sampler:** KH
Depth to Water (ft BTOC): 18.30 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 24.59 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 12.1 - 22.1 **Casing Volume (gallons):** 0.018
Screen Interval (ft BTOC): 14.78 - 24.78 **3 Casing Volumes (gallons):** 0.054
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 19.3

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
8:03	6.2	0.096	15.75	6.82	123.9	41.0	225	22.2	clear, odorless
8:06	6.3	0.096	14.02	7.00	114.4	32.2	225	22.4	clear, odorless
8:09	6.2	0.096	12.64	7.06	110.6	27.8	225	22.6	clear, odorless
8:12	6.2	0.096	11.79	7.10	108.1	25.4	225	22.8	clear, odorless
8:15	6.2	0.096	11.51	7.14	105.1	24.2	225	23	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-008-022	7/29/19 10:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-008 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94464003
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57417891
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 132.80

TOC Elevation (ft NAVD88): 135.48 **Sampler:** MB
Depth to Water (ft BTOC): 18.80 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 24.50 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 12.1 - 22.1 **Casing Volume (gallons):** 0.017
Screen Interval (ft BTOC): 14.78 - 24.78 **3 Casing Volumes (gallons):** 0.051
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 23

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
16:58	7.6	0.118	11.01	7.35	175.1	999.0	300	0.25	
17:03	7.2	0.106	10.99	7.30	177.1	627.0	300	0.5	
17:08	7.3	0.102	10.73	7.24	178.0	203.0	300	0.75	
17:13	7.0	0.100	10.82	7.21	178.1	133.0	300	1	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-008-022	9/18/19 17:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: C-MW-009 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/28/2019 **Latitude (Decimal Degrees):** 56.94425163
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57364376
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 134.00

TOC Elevation (ft NAVD88): 136.91 **Sampler:** KH
Depth to Water (ft BTOC): 19.06 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.35 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.7 - 17.7 **Casing Volume (gallons):** 0.018
Screen Interval (ft BTOC): 10.61 - 20.61 **3 Casing Volumes (gallons):** 0.054
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 20.4

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:08	6.2	0.080	15.72	7.59	124.6	135.0	175	19	light brown, cloudy, odorless
12:11	6.2	0.079	15.02	7.64	120.0	128.0	175	19.2	light brown, cloudy, odorless
12:14	6.2	0.079	14.65	7.70	114.1	124.0	175	19.4	light brown, cloudy, odorless
12:17	6.3	0.079	14.88	7.71	112.0	105.0	175	19.6	light brown, cloudy, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-C-LT-002-C-MW-009-007	7/28/19 12:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary
19S-FM-C-LT-002-C-MW-009-907	7/28/19 12:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Duplicate

Notes: Well depth doesn't match well construction log. Screen assumed set between 15.3 - 25.3. L. Hoffmann notified and will investigate discrepancy.

Groundwater Purging and Sampling Log

Well ID: C-MW-009 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.94425163
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.57364376
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 134.00

TOC Elevation (ft NAVD88): 136.91 **Sampler:** MB
Depth to Water (ft BTOC): 20.18 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.17 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.7 - 17.7 **Casing Volume (gallons):** 0.015
Screen Interval (ft BTOC): 10.61 - 20.61 **3 Casing Volumes (gallons):** 0.045
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 23.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
14:56	7.5	0.081	11.22	7.37	161.0	624.0	380	0.1	
15:01	8.1	0.080	10.54	7.22	169.2	387.0	160	0.2	
15:06	8.1	0.080	10.59	7.26	167.4	258.0	160	0.3	
15:11	7.9	0.080	10.55	7.29	166.7	252.0	160	0.4	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-C-LT-002-C-MW-009-007	9/18/19 15:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Well depth doesn't match well construction log. Screen assumed set between 15.3 - 25.3. L. Hoffmann notified and will investigate discrepancy.

Groundwater Purging and Sampling Log

Well ID: E-MW-001 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/13/2019 **Latitude (Decimal Degrees):** 56.93445456
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64251654
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 40.70

TOC Elevation (ft NAVD88): 43.09 **Sampler:** KH
Depth to Water (ft BTOC): 6.71 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 9.65 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): Unknown **Casing Volume (gallons):** 0.009
Screen Interval (ft BTOC): Unknown **3 Casing Volumes (gallons):** 0.027
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: Unknown **Pump Placement (ft BTOC):** 8.3

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
10:22	7.9	0.112	7.13	5.66	130.7	90.7	125	0.2	clear, odorless
10:25	7.6	0.113	6.47	5.79	124.3	43.1	125	0.29	clear, odorless
10:28	7.6	0.113	6.29	5.84	121.8	31.7	125	0.38	clear, odorless
10:31	7.7	0.113	6.03	5.93	117.3	20.6	125	0.47	clear, odorless
10:34	7.3	0.114	5.82	5.98	114.6	19.9	125	0.56	clear, odorless
10:37	7.4	0.114	6.06	6.01	113.5	15.9	125	0.65	clear, odorless
10:40	7.5	0.114	6.00	6.02	113.1	24.8	125	0.74	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-E-DS-001-E-MW-001-001	7/13/19 10:45	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary
19S-FM-E-DS-001-E-MW-001-901	7/13/19 10:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Duplicate

Notes: Well construction information unavailable. No well construction log or previous sampling methodology identified.

Groundwater Purging and Sampling Log

Well ID: E-MW-001 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.93445456
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64251654
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 40.70

TOC Elevation (ft NAVD88): 43.09 **Sampler:** MB
Depth to Water (ft BTOC): 7.25 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 9.55 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): Unknown **Casing Volume (gallons):** 0.007
Screen Interval (ft BTOC): Unknown **3 Casing Volumes (gallons):** 0.021
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: Unknown **Pump Placement (ft BTOC):** 8.55

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
10:16	9.0	0.137	7.39	6.66	210.1	143.0	100	0.1	
10:21	8.5	0.132	6.93	6.58	210.8	105.0	100	0.2	
10:26	8.3	0.131	6.83	6.58	210.9	43.6	100	0.3	
10:32	8.2	0.131	6.45	6.57	210.9	15.8	100	0.4	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-E-DS-001-E-MW-001-001	9/19/19 10:35	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Well construction information unavailable. No well construction log or previous sampling methodology identified.

Groundwater Purging and Sampling Log

Well ID:	F-MW-001	Client:	USACE-Alaska District
Sampling Event:	Summer	Date:	7/10/2019
Project Name:	RI Phase III, Port Heiden / Fort Morrow	Latitude (Decimal Degrees):	56.9096500667
Project Number:	05172.001	Longitude (Decimal Degrees):	-158.6840106472
TOC Elevation (ft NAVD88):	23.81	Sampler:	KH
Depth to Water (ft BTOC):	12.55	Water Quality Meter 1:	YSI ProPlus
Total Well Depth (ft BTOC):	20.89	Water Quality Meter 2:	Hach 2100Q
Screen Interval (ft BGS):	8.68 - 18.68	Casing Volume (gallons):	0.024
Screen Interval (ft BTOC):	10.39 - 20.39	3 Casing Volumes (gallons):	0.072
Well Diameter (inch):	2	Purging Method:	Low-Flow
Casing Material:	Schedule 40 PVC	Purging Equipment:	Bladder Pump
Screen Material:	0.01-inch Geoprobe Pre-Pack	Pump Placement (ft BTOC):	15

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:27	10.0	0.154	2.22	5.53	94.8	9.3	150	0.25	clear, odorless
17:30	9.9	0.159	1.80	5.67	82.7	10.5	150	0.37	clear, odorless
17:33	9.9	0.166	1.37	5.74	74.1	18.2	150	0.49	clear, odorless
17:36	10.1	0.170	1.17	5.76	70.6	13.7	150	0.61	clear, odorless
17:39	10.3	0.177	0.92	5.81	62.6	16.8	150	0.73	clear, odorless
17:43	10.5	0.182	0.73	5.84	56.7	18.5	150	0.89	clear, odorless
17:46	10.2	0.185	0.68	5.87	54.1	15.2	150	1.01	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-F-OT-001-F-MW-001-001	7/10/19 17:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary
19S-FM-F-OT-001-F-MW-001-901	7/10/19 18:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: F-MW-001 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/19/2019 **Latitude (Decimal Degrees):** 56.9096500667
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.6840106472
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 22.10

TOC Elevation (ft NAVD88): 23.81 **Sampler:** MK
Depth to Water (ft BTOC): 12.89 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.86 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 8.68 - 18.68 **Casing Volume (gallons):** 0.023
Screen Interval (ft BTOC): 10.39 - 20.39 **3 Casing Volumes (gallons):** 0.069
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 17

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
15:00	6.7	0.231	3.24	7.06	63.3	117.6	275	0.2	
15:05	7.5	0.230	2.37	7.18	55.0	162.0	250	0.3	
15:10	7.1	0.232	2.45	7.28	47.5	136.1	250	0.4	
15:15	7.1	0.233	2.12	7.38	42.1	110.4	250	0.5	
15:20	7.0	0.234	1.84	7.46	39.1	77.2	250	0.6	
15:25	7.0	0.235	1.57	7.57	36.5	58.2	250	0.7	
15:30	7.1	0.236	1.38	7.60	34.7	51.4	250	0.8	
15:35	7.1	0.237	1.16	7.64	32.3	50.1	250	0.9	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-F-OT-001-F-MW-001-001	9/19/19 15:39	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary
19F-FM-F-OT-001-F-MW-001-901	9/19/19 15:41	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: J-MW-002 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/6/2019 **Latitude (Decimal Degrees):** 56.96693819
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.66880804
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 43.30

TOC Elevation (ft NAVD88): 46.38 **Sampler:** KH
Depth to Water (ft BTOC): 8.39 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 15.75 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.93 - 12.93 **Casing Volume (gallons):** 0.021
Screen Interval (ft BTOC): 11.01 - 16.01 **3 Casing Volumes (gallons):** 0.063
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 12

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
11:40	9.3	0.124	5.52	5.89	163.7	999.0	150	1	cloudy grey, odorless
11:45	9.4	0.123	4.65	5.93	151.8	999.0	150	1.2	cloudy grey, odorless
11:50	9.7	0.124	4.30	5.95	151.6	999.0	150	1.4	cloudy grey, odorless. Water level dropped below top of pump after collecting water quality parameters. Water level was >12.1
11:51									Well dry
12:05	13.4	0.136	3.84	6.04	140.3	999.0	150	2	cloudy grey, odorless
12:10	10.2	0.127	5.13	5.95	148.3	999.0	150	2.2	cloudy grey, odorless. Water level dropped below top of pump after collecting water quality parameters.
12:11									Well dry
19:00	7.5	0.119	6.94	6.04	244.7	999.0	125	2.8	cloudy grey, odorless
19:03	8.8	0.121	6.24	5.63	252.6	999.0	125	2.89	cloudy grey, odorless
19:06	8.5	0.121	5.73	6.11	215.5	999.0	125	2.98	cloudy grey, odorless
19:09	8.2	0.119	5.52	6.10	208.7	916.0	125	3.07	cloudy grey, odorless
19:12	8.0	0.119	5.35	6.08	204.4	641.0	125	3.16	cloudy grey, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-J-WH-002-J-MW-002-002	7/6/19 19:20	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary

Notes: Well pumped dry and allowed to recharge at least 80% (twice) to sample, due to slow recharge before stable parameters achieved.

Groundwater Purging and Sampling Log

Well ID: J-MW-002 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.96693819
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.66880804
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 43.30

TOC Elevation (ft NAVD88): 46.38 **Sampler:** MK
Depth to Water (ft BTOC): 9.87 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 15.77 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.93 - 12.93 **Casing Volume (gallons):** 0.017
Screen Interval (ft BTOC): 11.01 - 16.01 **3 Casing Volumes (gallons):** 0.051
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 10.77

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
10:59	9.2	0.158	4.58	6.66	131.1	69.9	150	0	pump at 11.77
11:04	8.6	0.158	3.28	6.67	131.0	92.1	150	0.1	
11:08	8.6	0.158	2.37	6.69	132.6	314.0	150	0.25	pump at 12.77
11:13	8.2	0.157	2.29	6.73	132.6	540.0	150	0.3	
11:20	9.0	0.157	3.13	6.74	133.2	999.0	150	0.35	pump placed at 14.77. TB out of range

Sample ID	Time	Sample Analyses	QC Type
19F-FM-J-WH-002-J-MW-002-002	9/17/19 11:41	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary

Notes: Well pumped dry and allowed to recharge at least 80% (twice) to sample, due to slow recharge before stable parameters achieved.

Groundwater Purging and Sampling Log

Well ID:	J-MW-003	Client:	USACE-Alaska District
Sampling Event:	Summer	Date:	7/6/2019
Project Name:	RI Phase III, Port Heiden / Fort Morrow	Latitude (Decimal Degrees):	56.96716873
Project Number:	05172.001	Longitude (Decimal Degrees):	-158.66762754
TOC Elevation (ft NAVD88):	52.49	Sampler:	KH
Depth to Water (ft BTOC):	14.11	Water Quality Meter 1:	YSI ProPlus
Total Well Depth (ft BTOC):	24.09	Water Quality Meter 2:	Hach 2100Q
Screen Interval (ft BGS):	13.35 - 23.35	Casing Volume (gallons):	0.029
Screen Interval (ft BTOC):	15.44 - 25.44	3 Casing Volumes (gallons):	0.087
Well Diameter (inch):	2	Purging Method:	Low-Flow
Casing Material:	Schedule 40 PVC	Purging Equipment:	Bladder Pump
Screen Material:	0.01-inch Geoprobe Pre-Pack	Pump Placement (ft BTOC):	18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:18	8.9	0.107	9.65	6.64	104.5	999.0	125	0.5	cloudy grey, odorless
17:21	8.8	0.107	9.12	6.67	100.3	999.0	125	0.59	cloudy grey, odorless
17:24	8.8	0.106	8.40	6.66	95.1	891.0	125	0.68	cloudy grey, odorless
17:27	8.8	0.106	8.04	6.64	91.1	897.0	125	0.77	cloudy grey, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-J-WH-003-J-MW-003-003	7/6/19 17:40	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary
19S-FM-J-WH-003-J-MW-003-903	7/6/19 17:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: J-MW-003 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.96716873
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.66762754
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 50.40

TOC Elevation (ft NAVD88): 52.49 **Sampler:** MK
Depth to Water (ft BTOC): 15.62 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 24.03 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 13.35 - 23.35 **Casing Volume (gallons):** 0.025
Screen Interval (ft BTOC): 15.44 - 25.44 **3 Casing Volumes (gallons):** 0.075
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 19

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
12:05	6.5	0.128	1.13	6.95	96.7	85.3	400	0.1	
12:10	7.5	0.128	0.86	7.06	87.0	102.0	200	0.25	
12:15	7.6	0.127	0.84	7.19	77.0	247.0	200	0.5	
12:20	7.6	0.127	0.97	7.22	72.6	448.0	200	0.5	pump at 22
12:25	6.9	0.130	0.90	7.25	69.2	269.0	200	0.75	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-J-WH-003-J-MW-003-003	9/17/19 12:40	PAH-8270SIM, POL VOCs-8260	Primary
19F-FM-J-WH-003-J-MW-003-003	9/19/19 17:07	DRO/RRO-AK102/AK103	Primary
19F-FM-J-WH-003-J-MW-003-903	9/17/19 12:45	DRO/RRO-AK102/AK103	Duplicate
19F-FM-J-WH-003-J-MW-003-903	9/19/19 17:32	PAH-8270SIM, POL VOCs-8260	Duplicate

Notes: Well pumped dry and allowed to recharge at least 80% (twice) to sample, due to slow recharge before stable parameters achieved.

Groundwater Purging and Sampling Log

Well ID:	M-MW-001	Client:	USACE-Alaska District
Sampling Event:	Summer	Date:	7/5/2019
Project Name:	RI Phase III, Port Heiden / Fort Morrow	Latitude (Decimal Degrees):	56.97909712
Project Number:	05172.001	Longitude (Decimal Degrees):	-158.64937833
TOC Elevation (ft NAVD88):	53.09	Sampler:	KH
Depth to Water (ft BTOC):	15.59	Water Quality Meter 1:	YSI ProPlus
Total Well Depth (ft BTOC):	25.20	Water Quality Meter 2:	Hach 2100Q
Screen Interval (ft BGS):	12 - 22	Casing Volume (gallons):	0.028
Screen Interval (ft BTOC):	15.79 - 25.79	3 Casing Volumes (gallons):	0.084
Well Diameter (inch):	2	Purging Method:	Low-Flow
Casing Material:	Schedule 40 PVC	Purging Equipment:	Bladder Pump
Screen Material:	0.01-inch Schedule 40 PVC	Pump Placement (ft BTOC):	17.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
15:15	6.5	0.113	12.52	3.29	302.1	57.3	325	0.5	clear and odorless
15:18	6.3	0.112	12.06	4.00	253.1	91.7	325	0.77	clear and odorless
15:21	6.2	0.112	12.29	4.41	224.5	109.0	325	1.04	clear and odorless
15:24	6.1	0.112	12.12	4.75	205.4	121.0	325	1.31	clear and odorless
15:27	6.1	0.113	11.87	5.01	186.0	96.2	325	1.58	clear and odorless
15:30	6.1	0.113	11.95	5.18	175.2	87.7	325	1.85	clear and odorless
15:35	6.1	0.114	11.44	5.43	161.2	71.6	325	2.3	clear and odorless
15:40	6.1	0.114	11.13	5.60	151.7	70.2	325	2.75	clear and odorless
15:45	6.1	0.115	10.82	5.74	147.9	48.6	325	3.2	clear and odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-M-TF-001-M-MW-001-001	7/5/19 16:00	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary
19S-FM-M-TF-001-M-MW-001-901	7/5/19 16:10	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Duplicate

Notes:

Groundwater Purging and Sampling Log

Well ID: M-MW-001 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.97909712
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64937833
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 49.30

TOC Elevation (ft NAVD88): 53.09 **Sampler:** MK
Depth to Water (ft BTOC): 15.59 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 25.20 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 12 - 22 **Casing Volume (gallons):** 0.028
Screen Interval (ft BTOC): 15.79 - 25.79 **3 Casing Volumes (gallons):** 0.084
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 20

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
9:18	5.1	0.137	10.35	7.22	127.2	20.3	400	1	
9:23	5.0	0.137	10.17	7.25	127.0	20.6	400	1.5	
9:28	5.0	0.137	10.22	7.26	127.0	19.8	400	2	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-M-TF-001-M-MW-001-001	9/18/19 09:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: M-MW-002 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/5/2019 **Latitude (Decimal Degrees):** 56.97853619
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64830131
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 46.30

TOC Elevation (ft NAVD88): 50.15 **Sampler:** KH
Depth to Water (ft BTOC): 12.00 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 21.60 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 8 - 18 **Casing Volume (gallons):** 0.028
Screen Interval (ft BTOC): 11.85 - 21.85 **3 Casing Volumes (gallons):** 0.084
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 16

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:30	6.5	0.108	13.55	6.85	137.1	25.9	350	0.75	clear and odorless
17:35	6.3	0.108	12.17	6.82	107.9	22.6	350	1.2	clear and odorless
17:40	6.3	0.108	12.00	6.74	94.4	15.2	350	1.65	clear and odorless
17:45	6.3	0.108	11.90	6.69	93.3	10.1	350	2.1	clear and odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-M-QT-055-M-MW-002-001	7/5/19 17:50	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: M-MW-002 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/17/2019 **Latitude (Decimal Degrees):** 56.97853619
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64830131
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 46.30

TOC Elevation (ft NAVD88): 50.15 **Sampler:** MK
Depth to Water (ft BTOC): 13.04 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 21.64 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 8 - 18 **Casing Volume (gallons):** 0.025
Screen Interval (ft BTOC): 11.85 - 21.85 **3 Casing Volumes (gallons):** 0.075
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Geoprobe Pre-Pack **Pump Placement (ft BTOC):** 17

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:10	7.0	0.132	12.64	7.55	174.0	152.0	300	0.25	
17:14	6.9	0.132	11.00	7.58	174.0	77.3	300	0.75	
17:20	7.0	0.132	11.21	7.60	174.0	52.4	300	1	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-M-QT-055-M-MW-002-002	9/17/19 17:30	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260	Primary

Notes:

Groundwater Purging and Sampling Log

Well ID: M-MW-003 **Client:** USACE-Alaska District
Sampling Event: Summer **Date:** 7/23/2019 **Latitude (Decimal Degrees):** 56.97898473
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64908678
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 49.90

TOC Elevation (ft NAVD88): 52.67 **Sampler:** AO
Depth to Water (ft BTOC): 15.39 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.17 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.46 - 17.46 **Casing Volume (gallons):** 0.014
Screen Interval (ft BTOC): 10.23 - 20.23 **3 Casing Volumes (gallons):** 0.042
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 16.5

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
17:35	6.2	0.103	16.12	7.36	148.4	323.0	300	11	light brown, odorless
17:40	6.1	0.103	15.33	7.65	143.0	270.0	300	11.4	light brown, odorless
17:45	6.0	0.102	14.84	7.92	132.0	212.0	300	11.8	light brown, odorless
17:50	6.1	0.102	14.56	8.09	127.0	140.0	300	12.2	light brown, odorless
17:55	6.2	0.102	14.57	8.45	124.4	102.0	300	12.6	light brown, odorless
17:58	6.0	0.102	14.49	8.59	124.3	87.8	300	12.84	clear, odorless

Sample ID	Time	Sample Analyses	QC Type
19S-FM-M-PR-001-M-MW-003-003	7/23/19 18:05	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: Purged 10 gallons during development.

Groundwater Purging and Sampling Log

Well ID: M-MW-003 **Client:** USACE-Alaska District
Sampling Event: Fall **Date:** 9/18/2019 **Latitude (Decimal Degrees):** 56.97898473
Project Name: RI Phase III, Port Heiden / Fort Morrow **Longitude (Decimal Degrees):** -158.64908678
Project Number: 05172.001 **Ground Elevation (NAVD88-GEOID12B):** 49.90

TOC Elevation (ft NAVD88): 52.67 **Sampler:** MK
Depth to Water (ft BTOC): 15.94 **Water Quality Meter 1:** YSI ProPlus
Total Well Depth (ft BTOC): 20.36 **Water Quality Meter 2:** Hach 2100Q
Screen Interval (ft BGS): 7.46 - 17.46 **Casing Volume (gallons):** 0.013
Screen Interval (ft BTOC): 10.23 - 20.23 **3 Casing Volumes (gallons):** 0.039
Well Diameter (inch): 2 **Purging Method:** Low-Flow
Casing Material: Schedule 40 PVC **Purging Equipment:** Bladder Pump
Screen Material: 0.01-inch Schedule 40 PVC **Pump Placement (ft BTOC):** 18

Time	Temp (C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Flow Rate (mL/min)	Total Volume Purged (gal)	Notes
8:43	5.7	0.122	12.93	6.55	143.2	95.4	250	0.1	
8:48	5.3	0.122	12.93	6.84	128.8	123.0	250	0.2	
8:53	5.1	0.122	12.93	6.97	123.9	71.9	250	0.3	
8:58	5.1	0.119	12.93	6.98	123.3	49.0	250	0.4	
9:03	5.0	0.119	12.93	6.98	123.5	23.9	250	0.5	

Sample ID	Time	Sample Analyses	QC Type
19F-FM-M-PR-001-M-MW-003-003	9/18/19 09:06	DRO/RRO-AK102/AK103, PAH-8270SIM, POL VOCs-8260, EDB-8260SIM	Primary

Notes: