

Preliminary Investigation of the Paleo-Channels of the AuSable River Floodplain

Wurtsmith Air Force Base

Project number: 60518528

October 25, 2017

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1. Introduction

This technical memorandum summarizes and reports the findings of the preliminary Paleo-Channel investigation completed between January 10 and March 3 of 2017 in Oscoda, MI southeast of the former Wurtsmith Air Force Base (WAFB). AECOM conducted this investigation to address the following objectives:

- 1. Understand the geology within the Au Sable River floodplain;
- 2. Identify the presence of PFAS in groundwater within the potential paleo-channels of the Au Sable River floodplain; and
- Develop a better understanding of the site with respect to regional/base-wide geology to continue to improve the base-wide Conceptual Site Model (CSM).

2. Background

The geology at WAFB is generally characterized as lacustrine and eolian sands overlying lacustrine clay, till, and ultimately bedrock consisting of the Marshall Sandstone and Coldwater Shale. The lacustrine sands and gravels are better characterized as deltaic, which were deposited as a series of large deltaic deposits created by the Glacial Au Sable River at the point it entered an evolving series of late Wisconsinan pro glacial lakes (**Figure 1**) (Burgis, 1977). As illustrated on **Figure 1**, WAFB is located on the northern limb of a large, fan-like delta, designated as part of the Algonquin Delta with several nearby paleo shorelines.

Site stratigraphy consists of progradational deltaic sediments, which are expected to dip to the east/north-east. A general depositional model suggestive of what was present at the time of deposition is shown in **Figure 2** (Larson and Schaetzl, 2001; Reineck and Singh, 1975). In a system with a high sediment load and a fan-like fluvial to slightly wave modified morphology, flat-lying, upper portions of the delta stratigraphy (topset bedding) are expected to be sandy, with only minor and spatially limited fine grained (silt and clay) delta plain facies present. Delta mouth bar deposits of coarse sand, upward-fining (gravel to fine sand) distributary channel fills, and minor medium to fine-grained beach ridge/shore face sands will also be present until the transition to delta slope (foreset) beds. The focus of the investigation is on the coarse-grain filled, distributary channels (i.e. paleo-channels) within the delta complex that could provide preferential pathways for offsite contaminant transport.

Understanding WAFB's deltaic stratigraphy and how specific observations from borings logs and analytical data fit in to an overall depositional model described above can help with issues at a range of scales, from base-wide to individual areas such as the Au Sable River floodplain.

3. Paleo-Channel Investigation

Beginning on January 11 2017, AECOM, contracted with subcontractor Cascade DrillingTM, to complete 13 soil borings within the Au Sable River floodplain at the locations shown in **Figure 3**. Soil boring logs are included in **Appendix A** and photo logs for each boring are included in **Appendix B**. AECOM collected continuous soil cores to evaluate lithology using a Roto-Sonic Mini Rig (operated by Cascade DrillingTM) with 4 inch core barrel and 6 inch outer casing. The soil cores were logged for lithological description. Soil samples were not submitted for laboratory analyses.

Vertical aguifer sampling (VAS) was used to collect groundwater samples from each of the 13 boring locations for laboratory analyses. VAS conducted at locations PCB10 through PCB14 utilized a "top down" approach, during which the sampling intervals are selected as zones of interest are encountered during drilling operations. Alternatively, VAS conducted at locations PCB1 through PCB3 and PCB5 through PCB9, utilized a "bottom up" approach, during which a boring is drilled to its maximum depth and sampling intervals are selected after reviewing the boring log developed from the soils encountered during the initial drilling. A 2-foot (ft) long temporary well screen was deployed at the bottom of the boring and exposed to the formation. The VAS samples for both "top down" and "bottom up" approaches were collected by purging water from the screen interval (two times the amount of water injected during drilling). After purging, groundwater samples were collected for PFAS analysis in laboratory supplied containers. During VAS water quality parameters (temperature, specific conductance, pH, dissolved solids, oxidation-reduction potential, and turbidity) were recorded following AECOM groundwater Standard Operating Procedures using an YSI Pro DDS water quality meter. Water quality measurements recorded during purging are included in Appendix C and stabilized parameters for each sample are summarized in Table 2. Parameters for boring PCB10 were not recorded due to faulty field equipment. The drilling subcontractor then withdrew the drill rods up through the formation until it was positioned at the next sample interval where the screen was again deployed and purged prior to sample collection.

VAS samples collected were submitted to Vista Analytical Laboratories and analyzed for a list of 21 PFAS which included:

- 6:2 Fluorotelomer sulfonic acid (6:2 FTS),
- 8:2 Fluorotelomer sulfonic acid (8:2 FTS),
- Perfluorooctane sulfonamide (FOSA),
- Perfluorobutanoic acid (PFBA),
- Perfluorobutane sulfonic acid (PFBS),
- Perfluorodecanoic acid (PFDA),
- Perfluorododecanoic acid (PFDoDA),
- Perfluorodecane sulfonic acid (PFDS),
- Perfluoroheptanoic acid (PFHpA),
- Perfluoroheptane sulfonic acid (PFHpS),
- Perfluorohexanoic acid (PFHxA),
- Perfluorohexadecanoic acid (PFHxDA),
- Perfluorohexane sulfonic acid (PFHxS),
- Perfluorononanoic acid (PFNA),
- Perfluorooctanoic acid (PFOA),
- Perfluorooctadecanoic acid (PFODA),
- Perfluorooctane sulfonic acid (PFOS),
- Perfluoropentanoic acid (PFPeA),
- Perfluorotetradecanoic acid (PFTeDA),
- Perfluorotridecanoic acid (PFTrDA), and
- Perfluoroundecanoic acid (PFUnDA).

Analytical results are summarized in Table 3.

Drill water and decontamination water was brought to site each morning by the subcontractor in 300 gallon totes. Composite samples of 50 milliliter (mL) from each tote, per day, were collected in 250mL high-density polyethylene jars and submitted for analysis. Between January 10 and February 13, 2017, the source of drill water was the Au Gres, MI water tower. However, a water sample collected directly from the Au Gres Water Tower on January 23, 2017 reported trace amounts of PFAS compounds. As a result, an alternate water source was identified in Harrisville, MI, approximately 20 miles north of the Site, where AECOM was granted access to obtain water from a hydrant near the Harrisville Airport. Drill water totes were rinsed and flushed with a mixture of Alconox and Harrisville water prior to being used. A water sample collected directly from the hydrant and analyzed by Vista Analytical Laboratory reported no detectable PFAS compounds. Water from this location was utilized for drilling and decontamination from February 13, 2017 until the end of the project.

Borings PCB2, PCB6, and PCB9 through PCB14 were drilled 10 ft to 15 ft below the top of the glacial till, which underlies the progradational deltaic deposits at a depth ranging between 23 ft to 41ft below ground surface (bgs). Borings PCB1, PCB3, PCB5, PCB7, and PCB8 were drilled to a total depth of 150 ft bgs.

The boreholes were backfilled using soil cuttings, hole plug, and bentonite chips. All equipment that came into contact with soil and/or ground water was decontaminated with an Alconox mixture and/or pressure washer with the exception of equipment that was dedicated (e.g. tubing). Global positioning system coordinates were collected for each location to provide an x, y coordinate and a ground surface elevation, as shown in **Table 1.** Field work was recorded daily in Field Activity Logs which are included in **Appendix D**.

4. Results

Two cross sections have been developed utilizing the boring logs developed from this effort to visualize and provide further insight into the complexity of the underlying geology within this study area. **Figure 4** depicts a transect map showing the locations and orientations of Cross Sections A-A' (**Figure 5**) and B-B' (**Figure 6**) in relation to the existing plume data on, and around, the Former Wurtsmith Air Force Base. The sediments observed throughout the area of investigation primarily consist of 23 ft to 41 ft of medium grained deltaic sands with occasional gravel zones, overlaying stiff, sandy clay with pebbles (possibly glacial till), as seen in borings PCB1, and PCB8 through PCB14. Borings PCB2, PCB3, PCB5, and PCB6 also include soft, sticky clay with shells (possibly lacustrine), that ranges from 2 ft to 21ft thick above stiff sandy clay with pebbles (possibly glacial till) encountered between 27 ft and 37 ft bgs. A potential channel was identified in the boring PCB7, which consisted of approximately 50 ft of soft, sticky clay with shells and increasing sand content with depth, overlaying medium to coarse grained sand and gravel before encountering stiff sandy clay with pebbles at approximately 72 ft bgs.

PFAS was detected in the VAS samples collected from all of the 13 borings. Overall, the PFAS concentrations were consistent with previous site investigations including residential wells samples. The majority of the samples were collected from the progradational deltaic deposits and a limited number of samples were collected from interbedded sands located beneath the lacustrine clay and/or glacier till.

The highest PFAS concentrations were found in VAS samples collected from deltaic deposits at PCB1 and PCB2, which are closer to the former base boundary and identified PFAS sources. PFAS were also detected across Van Etten Creek and south of Au Sable River at concentrations similar to those detected in residential wells from those areas. Trace levels of PFAS have been also found in some interbedded sands. However, trace level of PFAS were also found in the drilling and decontamination water obtained from the Au Gres Water Tower municipal water used initially during the investigation. Trace level of PFAS detections in the VAS samples might be the result of cross contamination during drilling. Further remedial investigation within this area is being conducted beginning July 2017 to further evaluate the potential paleo channel, delineate the extent of PFAS in groundwater, and to further develop upon the current CSM. Also, with the results from the follow up investigation it will be possible to verify if the PFAS trace

levels detected in the VAS samples were due to cross contamination from the drilling water. This investigation will include installation of a number of nested monitoring wells that will provide a more accurate delineation of the PFAS plume and hydraulic potential within the study area. The proposed location for the MDEQ PFAS RI can be found in **Figure 7**.

5. References

Burgis, Winifred A., 1977. Late-Wisconsinan History of Northeastern Lower Michigan. PhD Thesis, University of Michigan.

Larson, Grahame and Randall Schaetzl, 2001. Origin and Evolution of the Great Lakes. Journal of Great Lakes Research, 27(4): 518-546.

Reineck, H.E. and I.B. Singh, 1975, Depositional Sedimentary Environments with reference to terrigenous clastics. Springer-Verlag, Berlin.

Figures

Figure 1- Wurtsmith Air Force Base Location Relative to Paleo AuSable River Delta Landforms

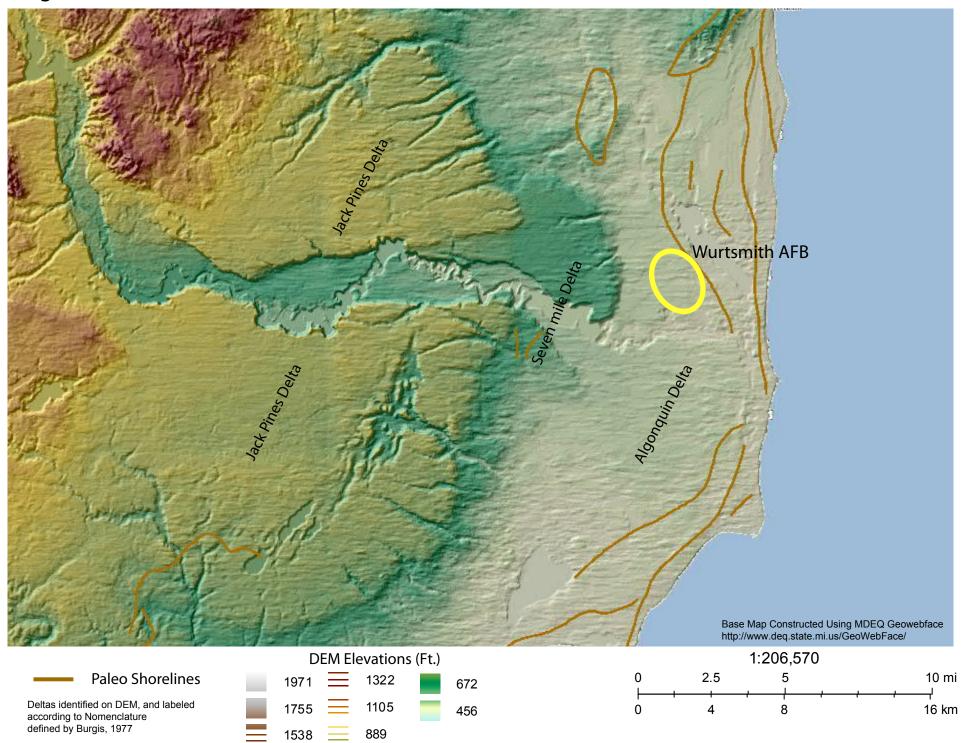
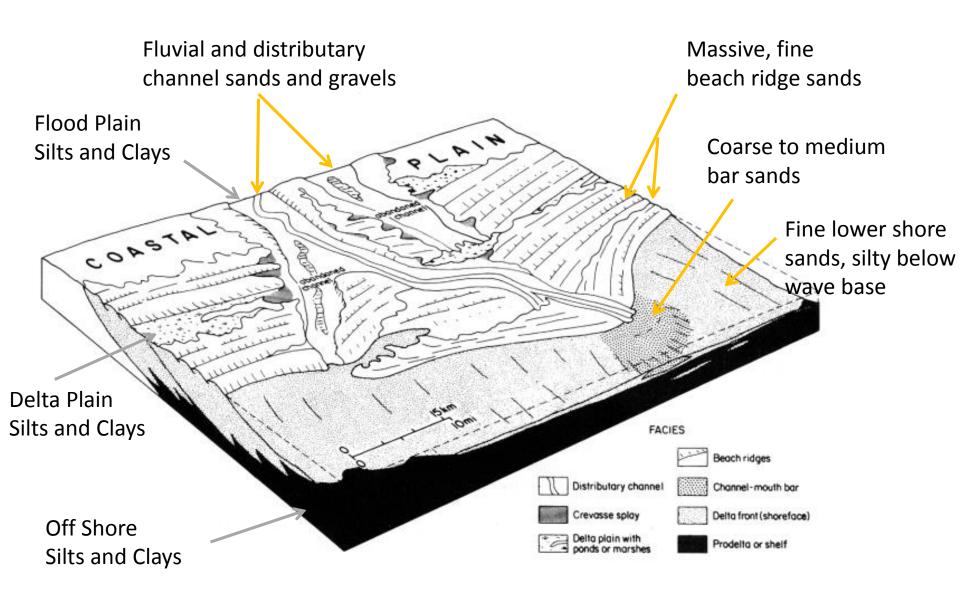
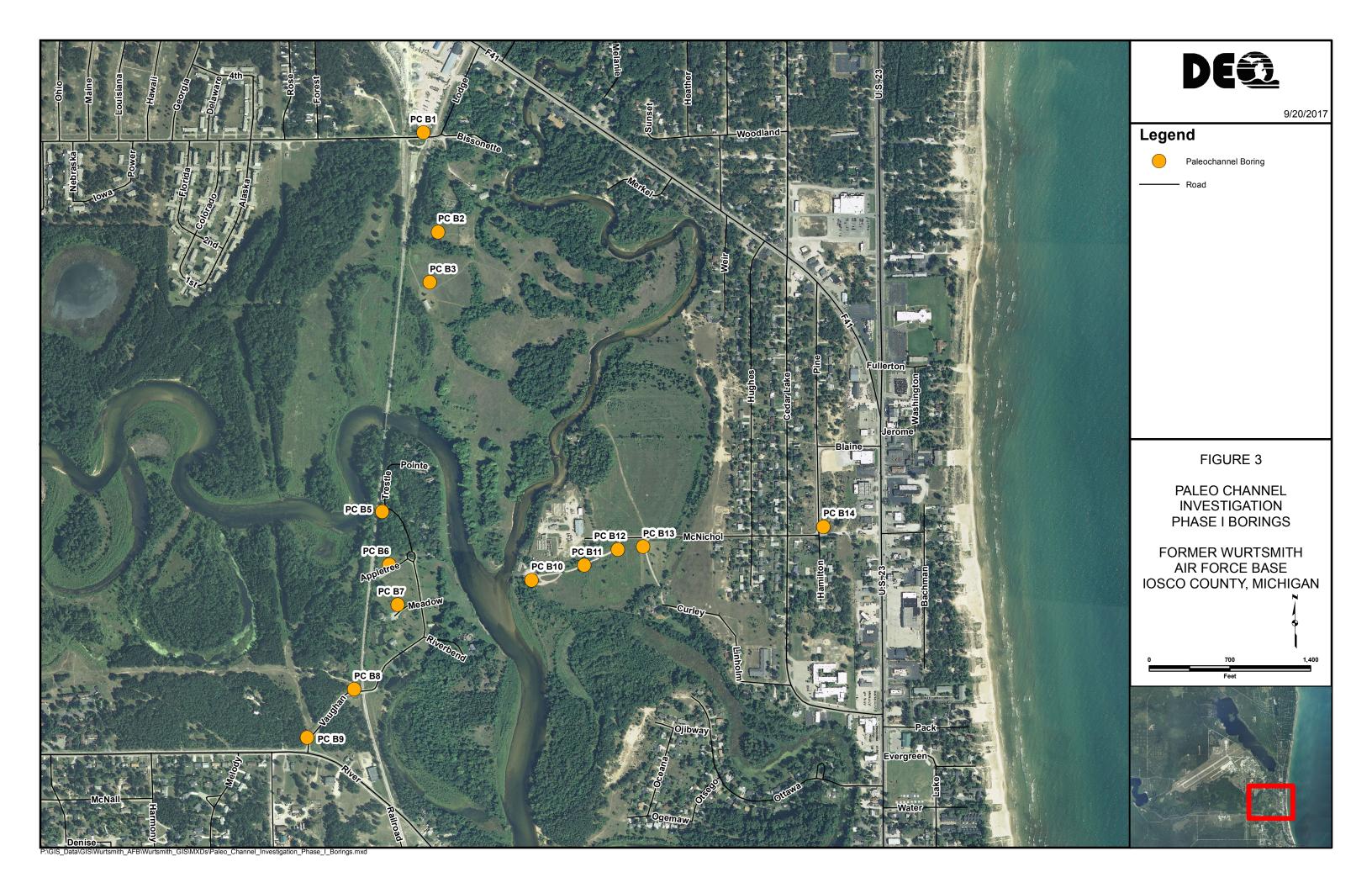
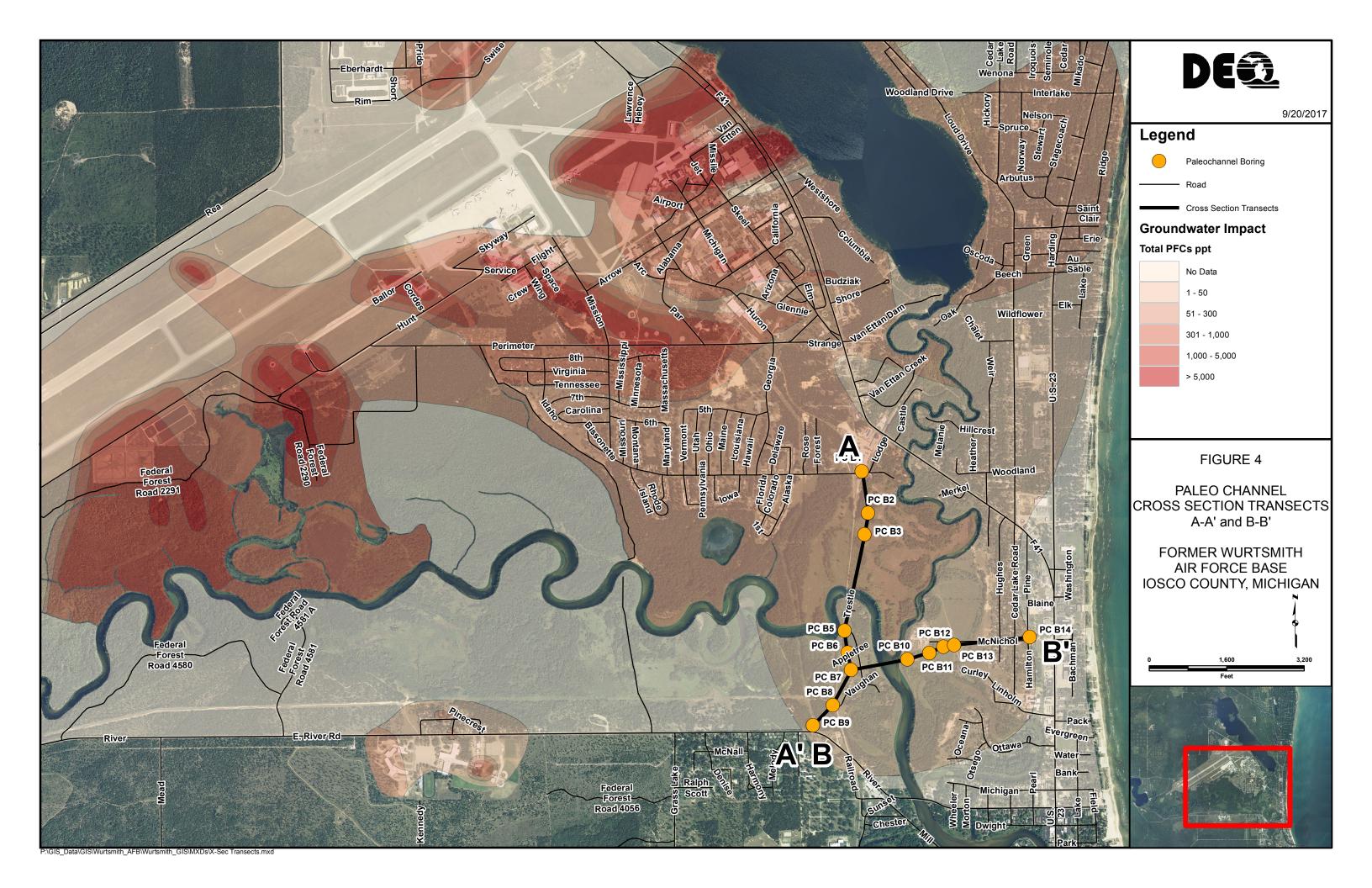


Figure 2 -Delta: Facies Components



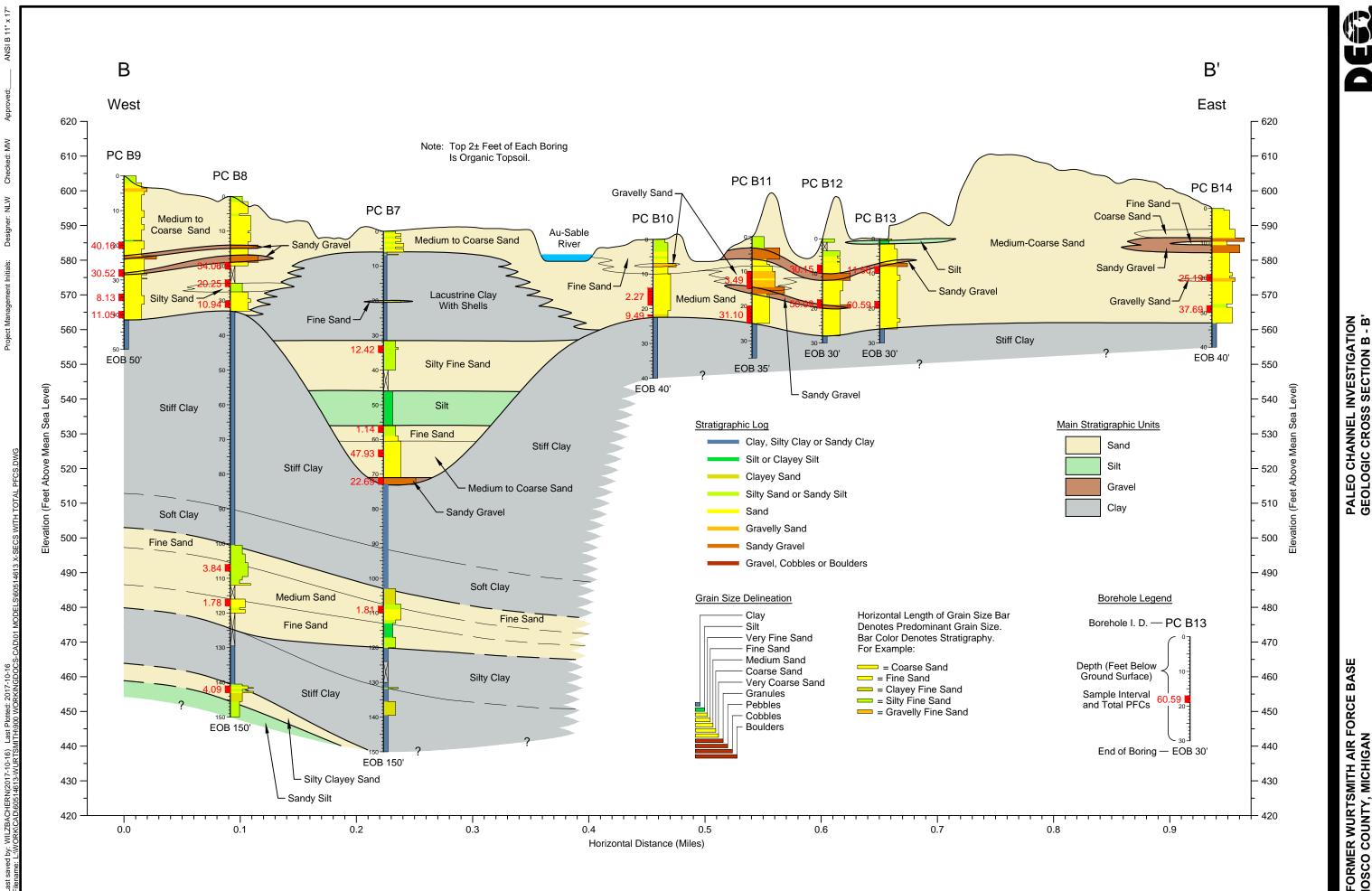






Date: 2017-10-16 Project No.: 60514613

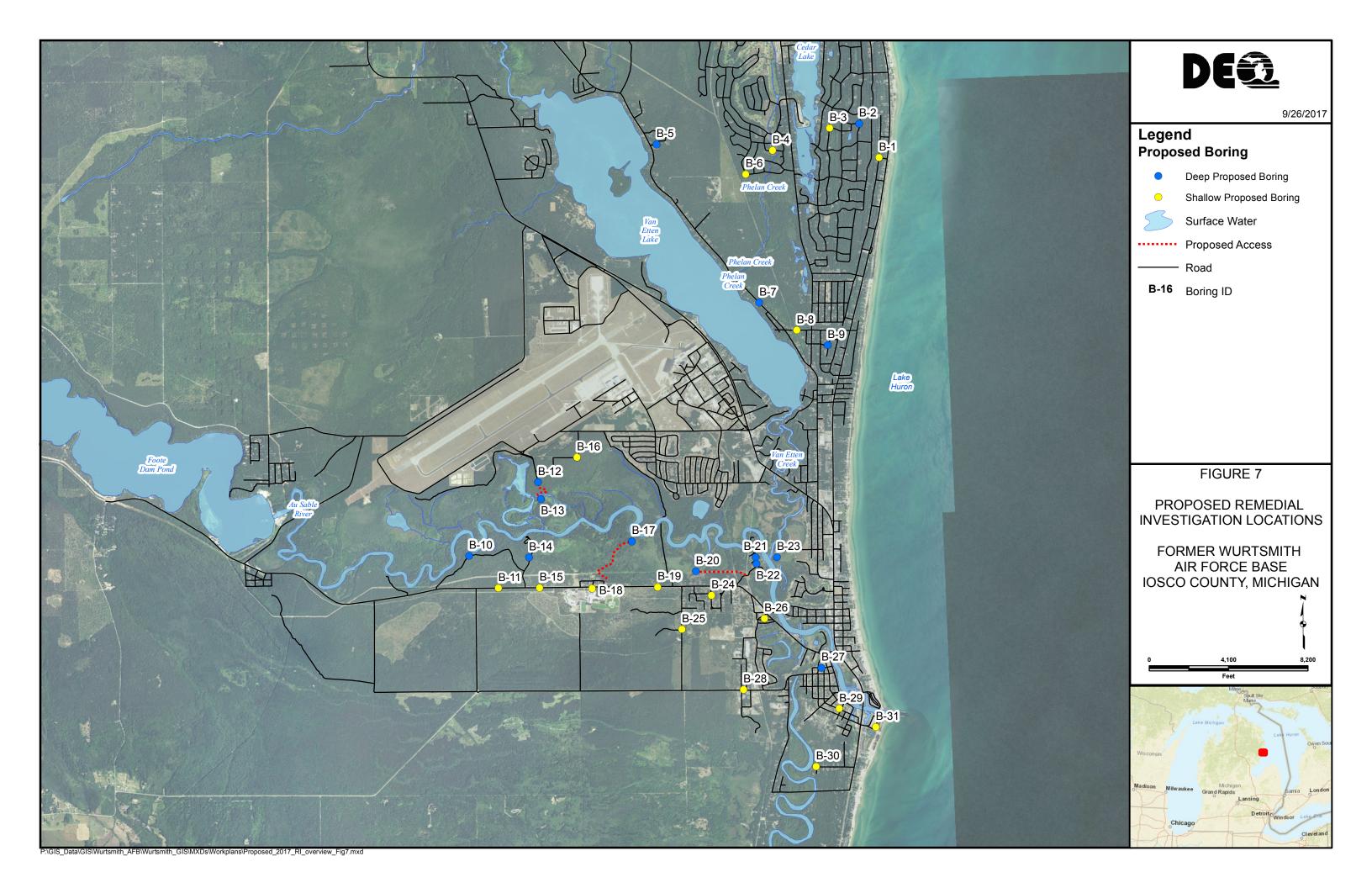
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R WURTSMITH AIR FORCE BASE COUNTY, MICHIGAN losco

Date: 2017-10-16



Tables

Table 1
GPS Coordinates

LOCATION	LATITUDE	LONGITUDE	NORTHING	EASTING
PC B1	44.439545	-83.345201	411047.80	19951819.11
PC B2	44.43717	-83.344755	410183.48	19951946.48
PC B3	44.435976	-83.345056	409746.94	19951873.56
PC B5	44.430538	-83.34673	407759.32	19951461.15
PC B6	44.429276	-83.346517	407299.95	19951522.47
PC B7	44.428317	-83.346249	406951.40	19951596.94
PC B8	44.426323	-83.347734	406219.41	19951218.29
PC B9	44.425194	-83.349317	405802.86	19950810.00
PC B10	44.428869	-83.341805	407167.33	19952755.37
PC B11	44.429254	-83.340045	407294.39	19953214.10
PC B12	44.42957	-83.338925	407432.21	19953504.28
PC B13	44.429628	-83.33808	407456.20	19953724.68
PC B14	44.430048	-83.332091	407629.15	19955287.14
Au Gres Water Tower	44.03810	-83.69653	263747.85	19861273.25
Harrisville Well #2	44.668597	-83.302383	494685.91	19961905.97

Table 2
Stablized Water Quality Parameters

	1	1	`		1				1
Well ID	Date	Sample Interval	Time Collected	рН	Specific Cond.	Turbidity	D.O.	Temp	ORP
VVCII ID	Date	ft	24hr	SU	uS/cm	NTU	mg/L	°C	mV
PC B11	1/12/2017	10-15	16:45	7.25	599.4	155	0.91	9.03	-418.1
PC B11	1/16/2017	20-25	15:20	7.21	611.8	1241	0.33	8.55	-534
PC B12	1/18/2017	7.5-10	10:05	6.92	508.6	176	0.44	5.71	-495
PC B12	1/18/2017	17.5-20	17:00	6.99	573.2	14	0.4	8.76	-425.8
PC B14	1/19/2017	19-21	11:55	7.76	639	1144	1.53	11.48	-380
PC B14	1/19/2017	28-30	16:00	8.03	419.6	20.82	9.86	10.19	-37.2
PC B13	1/20/2017	8-10	12:30	6.95	453.9	29	0.19	8.33	-503
PC B13	1/21/2017	18-20	15:40	7.15	591.3	19	1.51	9.45	-251.6
PC B9	1/22/2017	39-41	17:15	8.08	205.8	2130	0.08	11.54	-576.6
PC B9	1/23/2017	34-36	9:55	8.08	195.4	38	0.14	9.81	-494.9
PC B9	1/23/2017	27-29	13:45	8.22	196.6	12	3.07	9.93	-84.2
PC B9	1/23/2017	19-21	15:10	8.57	212.4	31	0.33	10.8	-527.1
PC B8	1/24/2017	30-32	15:50	7.98	193.1	331	0.08	9.45	-544.4
PC B8	1/25/2017	19-21	13:30	8.6	221.2	1005	0.06	10.65	-598
PC B8	1/25/2017	24-26	12:10	7.8	270.4	2	2.2	7.61	-373.4
PC B8	1/31/2017	141-143	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PC B8	1/31/2017	116-118	16:45	7.91	5123	1741	0.14	8.5	-621.2
PC B8	2/1/2017	106-108	12:10	8.02	2338	6738	0.05	9.72	-534
PC B7	2/2/2017	71-73	15:10	7.99	339.8	74	9.48	6.8	-191
PC B7	2/2/2017	63-65	16:40	7.35	491.3	396	0.13	7.7	-442
PC B7	2/3/2017	56-58	9:30	6.65	677	517	0.12	7.25	-468
PC B7	2/3/2017	33-35	10:30	7.85	387	3978	0.08	8.4	-531
PC B7	2/3/2017	108-110	17:35	7.97	5449	407	0.19	3.75	-347
PC B6	2/5/2017	35-37	15:15	7.15	700	402	1.13	8.4	-513
PC B5	2/6/2017	35-37	11:05	7.04	969	377	1.81	5.2	-503.4
Drill Water	1/25/2017	Au Gres Water Tower	17:15	7.44	224.5	1.86	13.36	0.265	654.5
Harrisville Drill Water	2/13/2017	Hydrant	12:20	7.45	445.1	0	5.02	7.7	468.3
PC B1	2/22/2017	34-36	9:55	7.91	717	1064	2.56	10.2	-393
PC B1	2/22/2017	26-28	12:20	7.95	397.9	54	6.75	11.1	-238
PC B1	2/22/2017	78-80	17:20	8.05	4400	69	1.01	11.4	-572
PC B2	2/27/2017	33-35	15:40	7.93	414.3	1330	3.23	10.1	-186.5
PC B2	2/27/2017	20-22	17:20	8	435.5	42	2.29	10.3	-411.3
PC B2	2/27/2017	8-10	18:15	8.15	413.5	170	1.18	8.9	-580.8
PC B3	2/28/2017	28-30	14:40	7.94	425.3	32	1.35	10.1	-455.6
PC B3	2/28/2017	20-22	16:20	7.99	507	29	1.25	10.3	-480.2
PC B3	2/28/2017	7-9	17:25	7.73	446.3	91	1.29	6.9	-509.1

Notes:

ft = FeetCond. = ConductivitySU = Standard UnitD.O. = Dissolved OxygenuS/cm = Microsiemens/centimeterTemp. = Temperature

NTU = Nephelometric Turbidity Units ORP = Oxidization-Reduction Potential

mg/L = Milligrams/Liter

°C = Degrees Celsius

mV = Millivolt

* Values in this table are the final "Stabilized" parameters

Table 3
PFAS Detection Summary

Location (Depth in Feet)	Sample Date	Report ID	Type	Total PFASs	PFOA + PFOS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	PFHxDA	PFODA	PFBS	PFHxS	PFHpS	PFOS	PFDS	FOSA
PC B10 14-19 FT	1/11/2017	170081	VAS Boring	2.27	0.00	0.59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.68	ND	ND	ND	ND
PC B10 22 FT	1/11/2017	170081	VAS Boring	9.49	3.67	1.80	0.93	ND	1.01	0.94	ND	ND	ND	ND	ND	ND	0.33	ND	ND	1.75	ND	2.73	ND	ND
PC B11 10-15 FT	1/12/2017	170081	VAS Boring	3.49	0.00	0.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.00	1.97	ND	ND	ND	ND
FB1-011317-JB	1/13/2017	170081	Field Blank	0.61	0.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND
PC B11 20-25 FT	1/16/2017	1700123 Rev 2	VAS Boring	31.09	3.18	1.86	ND	ND	0.66	2.19	0.62	1.80	1.31	0.73	ND	1.00	ND	ND	1.30	15.50	3.13	0.99	ND	ND
PC B12 7.5-10 FT	1/18/2017	1700123 Rev 2	VAS Boring	30.15	5.99	3.22	1.71	2.02	1.51	1.29	0.73	ND	1.27	0.75	ND	0.95	ND	ND	2.81	6.71	2.48	4.70	ND	ND
PC B12 17.5-20 FT	1/18/2017	1700123 Rev 2	VAS Boring	50.10	5.79	6.74	1.68	4.13	0.92	4.78	0.40	1.76	1.06	0.58	ND	1.28	ND	ND	2.52	21.30	1.93	1.01	ND	ND
PC B14 19-21 FT	1/19/2017	1700123 Rev 2	VAS Boring	25.19	3.36	3.68	3.26	3.05	1.04	1.99	0.51	1.68	1.26	0.91	ND	0.69	ND	ND	2.81	1.53	1.41	1.37	ND	ND
PC B12 7.5-10 FT-DUP	1/18/2017	1700123 Rev 2	VAS Boring	30.68	4.57	2.65	1.38	1.59	1.28	1.91	0.83	2.68	1.30	0.81	ND	0.76	ND	ND	3.05	6.84	2.93	2.66	ND	ND
FB1-011917-JB	1/19/2017	1700123 Rev 2	Field Blank	3.24	0.46	ND	ND	ND	ND	0.46	ND	ND	1.28	0.83	ND	0.68	ND	ND	ND	ND	ND	ND	ND	ND
PC B14 28-30 FT	1/19/2017	1700123 Rev 2	VAS Boring	37.69	9.05	3.56	1.63	2.65	1.36	7.10	0.42	1.97	1.15	1.43	ND	0.70	ND	ND	1.97	11.80	ND	1.95	ND	ND
PC B13 8-10 FT	1/20/2017	1700123 Rev 2	VAS Boring	11.56	1.00	ND	ND	ND	0.64	1.00	ND	2.10	0.88	1.04	ND	0.64	ND	ND	ND	3.01	2.25	ND	ND	ND
PC B13 18-20 FT	1/21/2017	1700123 Rev 2	VAS Boring	60.59	7.20	3.93	6.67	13.30	3.03	6.63	0.41	1.46	1.03	0.82	ND	1.00	ND	ND	7.44	12.40	1.90	0.57	ND	ND
PC B9 39-41 FT	1/22/2017	1700122	VAS Boring	11.05	1.55	ND	ND	ND	0.77	0.44	0.39	0.73	1.16	0.92	ND	1.18	ND	ND	ND	0.71	3.64	1.11	ND	ND
PC B9 34-36 FT	1/23/2017	1700122	VAS Boring	8.13	1.47	ND	ND	ND	0.82	0.54	0.52	1.25	1.61	1.03	ND	0.69	ND	ND	ND	0.74	ND	0.93	ND	ND
PC B9 27-29 FT	1/23/2017	1700122	VAS Boring	30.52	9.26	3.13	6.92	ND	2.99	3.93	ND	ND	1.15	1.34	ND	0.42	ND	ND	1.95	3.36	ND	5.33	ND	ND
PC B9 19-21 FT	1/23/2017	1700122	VAS Boring	40.16	10.37	3.58	5.79	5.33	3.12	6.04	0.90	ND	1.09	1.14	ND	0.76	ND	ND	1.55	3.46	3.07	4.33	ND	ND
Decon Drill Water 012517	1/23/2017	1700123 Rev 2	Grab	15.41	3.65	1.60	0.95	ND	1.18	1.53	0.72	1.92	1.76	1.36	ND	0.88	ND	ND	ND	1.39	ND	2.12	ND	ND
PC B8 30-32 FT	1/24/2017	1700123 Rev 2	VAS Boring	10.94	0.93	ND	ND	ND	0.70	0.93	0.42	1.73	0.86	0.82	ND	0.75	ND	ND	ND	0.54	4.19	ND	ND	ND
Au Gres Water Tower	1/23/2017	1700122	Grab	12.62	4.19	1.56	0.82	ND	0.91	1.00	ND	ND	1.09	0.82	ND	0.94	ND	ND	0.88	1.43	ND	3.19	ND	ND
PC B8 24-26 FT	1/25/2017	1700123 Rev 2	VAS Boring	20.25	6.52	ND	1.18	1.58	2.18	5.20	0.61	1.86	1.17	1.32	ND	0.65	ND	ND	1.30	1.88	ND	1.32	ND	ND
PC B8 19-21 FT	1/25/2017	1700123 Rev 2	VAS Boring	34.06	7.24	2.09	3.61	3.60	2.67	5.20	0.84	2.08	1.59	1.06	ND	0.70	ND	ND	2.94	3.03	2.61	2.04	ND	ND
FB2-012517-JB	1/25/2017	1700123 Rev 2	Field Blank	5.64	0.51	ND	ND	ND	0.58	0.51	ND	2.01	0.97	0.70	ND	0.88	ND	ND	ND	ND	ND	ND	ND	ND
PC B8 116-118 A	1/31/2017	1700135	VAS Boring	1.78	0.00	ND	ND	ND	ND	ND	0.56	ND	ND	0.34	ND	ND	ND	ND	ND	ND	0.88	ND	ND	ND
PC B8 116-118 B	1/31/2017	1700135	VAS Boring	3.57	0.77	ND	ND	1.10	0.28	0.77	ND	ND	ND	0.46	ND	ND	ND	ND	ND	0.49	0.48	ND	ND	ND
PC B8 141-143	1/31/2017	1700135	VAS Boring	4.09	0.73	ND	ND	0.81	0.37	0.73	ND	ND	ND	0.47	ND	ND	ND	ND	ND	0.34	1.37	ND	ND	ND
PC B8 106-108 FT	2/1/2017	1700172	VAS Boring	3.84	1.33	1.37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.14	1.33	ND	ND
EB1-020117-JB	2/1/2017	1700172	Equipment Blank	3.43	2.06	0.78	ND	ND	ND	ND	ND	ND	ND	0.59	ND	ND	ND	ND	ND	ND	ND	2.06	ND	ND
Drill Water Tote 1	2/1/2017	1700172	Grab	3.24	1.64	0.97	ND	ND	ND	ND	ND	ND	ND	0.63	ND	ND	ND	ND	ND	ND	ND	1.64	ND	ND
Drill Water Tote 2	2/1/2017	1700172	Grab	3.67	1.71	0.84	ND	ND	ND	ND	ND	ND	ND	0.65	ND	ND	ND	ND	ND	0.47	ND	1.71	ND	ND
PC B7 71-73FT	2/2/2017	1700172	VAS Boring	22.69	1.62	2.49	3.55	6.14	0.56	ND	ND	ND	ND	1.06	ND	ND	ND	ND	5.41	0.96	0.90	1.62	ND	ND
DUP 1	2/2/2017	1700172	VAS Boring	22.22	1.89	2.78	3.39	5.62	0.38	ND	ND	ND	ND	0.63	ND	ND	0.15	ND	5.44	0.93	1.01	1.89	ND	ND
PC B7 63-65FT	2/2/2017	1700172	VAS Boring	47.93	1.04	4.85	8.53	14.50	0.89	ND	ND	ND	ND	0.39	ND	ND	ND	ND	15.70	2.03	ND	1.04	ND	ND
PC B7 63-65FT DUP	2/2/2017	1700172	VAS Boring	44.62	0.43	4.26	8.16	14.00	0.95	ND	ND	ND	ND	0.38	ND	ND	ND	ND	14.70	1.74	ND	0.43	ND	ND
Decon/Drill Water	2/3/2017	1700172	Composite	4.41	2.60	0.92	ND	ND	ND	0.56	ND	ND	ND	0.89	ND	ND	ND	ND	ND	ND	ND	2.04	ND	ND
PC B7 56-58FT	2/3/2017	1700172	VAS Boring	1.14	0.50	ND	ND	ND	ND	ND	ND	ND	ND	0.64	ND	ND	ND	ND	ND	ND	ND	0.50	ND	ND
PC B7 33-35FT	2/3/2017	1700172	VAS Boring	12.42	1.46	1.96	1.56	3.16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.06	0.55	0.67	1.46	ND	ND
PC B7 108-110FT	2/3/2017	1700172	VAS Boring	1.81	0.43	ND	ND	ND	ND	ND	ND	ND	ND	0.65	ND	ND	ND	ND	ND	ND	0.73	0.43	ND	ND
PC B6 35-37FT	2/5/2017	1700172	VAS Boring	2.10	0.85	ND	0.74	ND	ND	ND	ND	ND	ND	0.51	ND	ND	ND	ND	ND	ND	ND	0.85	ND	ND
PC B5 25-27FT	2/5/2017	1700172	VAS Boring	1.41	0.48	ND	ND	ND	ND	ND	ND	ND	ND	0.93	ND	ND	ND	ND	ND	ND	ND	0.48	ND	ND
Harrisville Well #2	2/13/2017	1700184	Grab	0.00	0.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PC B1 26-28 FT	2/22/2017	1700266	VAS Boring	57.10	7.39	1.24	3.35	5.79	1.89	7.39	ND	1.06	ND	ND	ND	ND	ND	ND	1.78	34.60	ND	ND	ND	ND
PC B1 34-36 FT	2/22/2017	1700266	VAS Boring	46.08	4.38	1.34	4.49	7.28	2.37	3.97	ND	1.14	ND	ND	ND	ND	ND	ND	1.78	23.30	ND	0.41	ND	ND
PC B1 78-80 FT	2/22/2017	1700266	VAS Boring	1.79	0.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30	ND	ND	ND	1.49	ND	ND	ND
PC B1 78-80 FT TA	2/22/2017	J26362	VAS Boring	1.02	0.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.45	0.57	ND	ND	ND	ND	ND	ND	ND
Drill Water Comp 022417	2/22/2017	1700266	Composite	0.00	0.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PC B2 20-22FT	2/27/2017	1700305	VAS Boring	20.55	4.44	0.68	1.61	3.47	0.80	2.64	ND	1.29	ND	ND	ND	0.69	ND	ND	ND	5.84	1.73	1.80	ND	ND
PC B2 20-22FT TA	2/27/2017	J26362	VAS Boring	23.47	3.40	1.90	1.80	4.50	1.20	3.40	0.67	ND	ND	ND	ND	0.85	0.65	ND	1.00	7.50	ND	ND	ND	ND
PC B2 33-35FT	2/27/2017	1700305	VAS Boring	77.03	1.89	3.43	7.00	20.90	2.46	1.89	ND	ND	ND	ND	ND	0.43	ND	ND	10.60		2.02	ND	ND	ND
PC B2 8-10FT	2/27/2017	1700305	VAS Boring	35.48	6.66	1.19	1.37	3.42	1.49	4.80	ND	1.04	ND	ND	ND	0.60	ND	ND		16.40	1.99	1.86	ND	ND
Drill Water Comp 022817	2/28/2017	1700305	Composite	2.13	1.08	ND	ND	ND	ND	ND	ND	ND	0.53	ND	ND	0.52	ND	ND	ND	ND	ND	1.08	ND	ND
Drill Water Comp 02 2817 TA	2/28/2017	J26362	Composite	1.22	0.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.44	0.78	ND	ND	ND	ND	ND	ND	ND
PC B3 28-30FT	2/28/2017	1700305	VAS Boring	117.50	5.95	5.03	10.90	31.70	3.10	5.95	ND	0.72	ND	ND	ND	ND	ND	ND		37.80	ND	ND	ND	ND
PC B3 20-22FT	2/28/2017	1700305	VAS Boring	242.39	25.70	4.33	10.30	22.90	7.88	25.70	ND	1.00	0.56	ND	ND	0.48	ND	ND		161.00	ND	ND	ND	ND
PC B3 7-9FT	2/28/2017	1700305	VAS Boring	36.74	3.17	2.52	2.65	6.24	0.72	2.21	ND	0.87	ND	ND	ND	0.55	ND	ND	4.78	12.70	2.54	0.96	ND	ND
FB1-030317-JB	3/3/2017	1700305	Field Blank	1.81	0.00	ND	ND	ND	ND	ND	ND	0.81	ND	0.40	ND	0.60	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non Detect

Concentrations are reported as ng/L or ppt

EB = Equipment Blank

FB = Field Blank

Drill water / Decon Water Composite samples were collected 50mL per tote of water used

TA = Duplicates were also sent to Test America

FOSA = Perfluorooctane sulfonamide PFBA = Perfluorobutanoic acid PFBS = Perfluorobutane sulfonic acid PFDA = Perfluorodecanoic acid PFDODA = Perfluorododecanoic acid PFDS = Perfluorodecane sulfonic acid PFHPA = Perfluoroheptanoic acid PFHpS = Perfluoroheptane sulfonic acid PFHxA = Perfluorohexanoic acid PFHxDA = Perfluorohexadecanoic acid PFHxS = Perfluorohexane sulfonic acid PFNA = Perfluorononanoic acid PFOA = Perfluorooctanoic acid PFODA = Perfluorooctadecanoic acid PFOS = Perfluorooctane sulfonic acid PFPeA = Perfluoropentanoic acid PFTeDA = Perfluorotetradecanoic acid PFTrDA = Perfluorotridecanoic acid PFUnDA = Perfluoroundecanoic acid

Appendix A

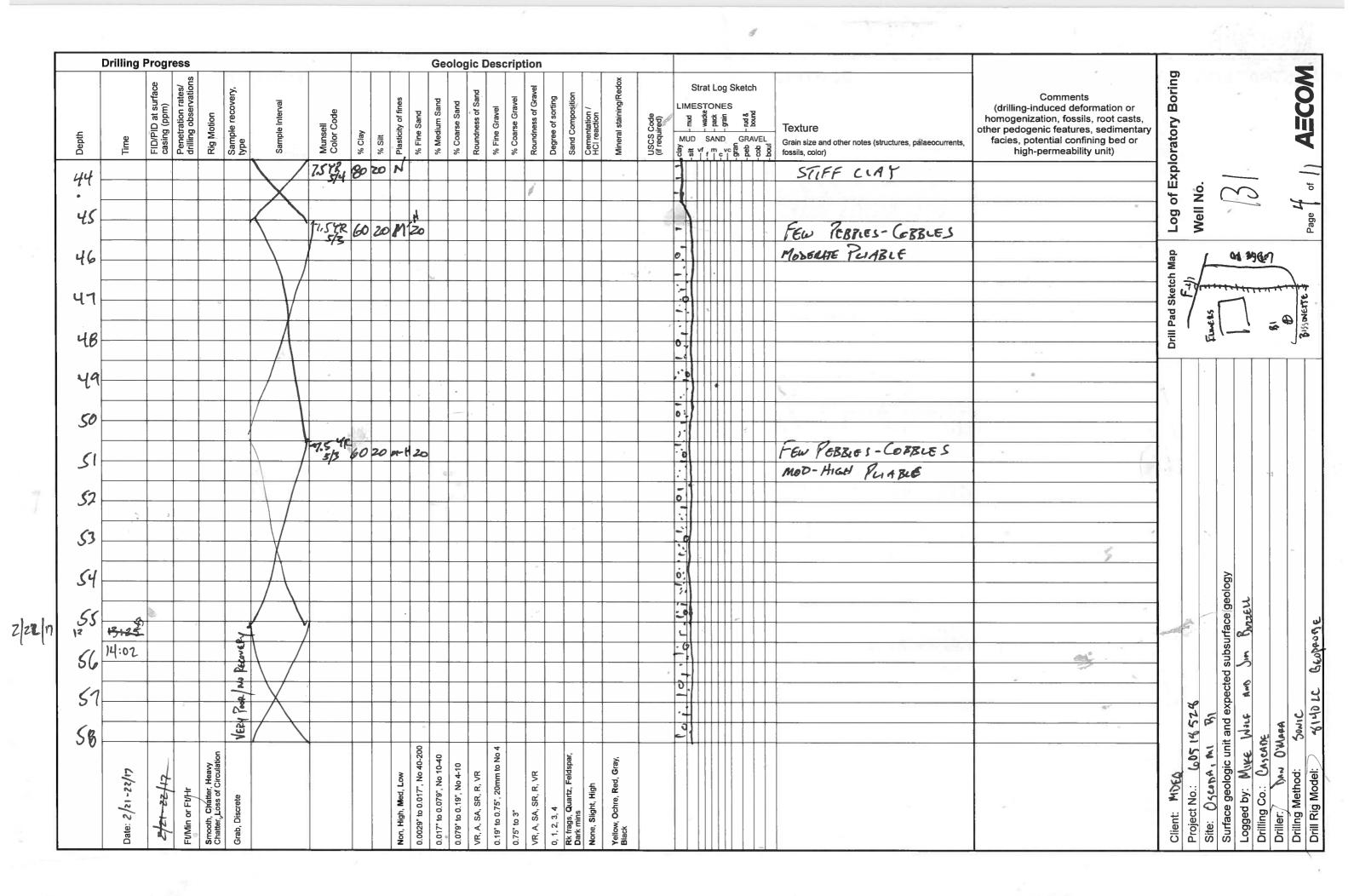
\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		Orilling	Prog	ress								G	eolog	ic De	scrip	tion														
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Client: NOCO Client: NOCO Cratter, Loss of Circulation Grab, Discrete Grab, Discrete Ocose* to 0.017*, No 40-200 0.0029* to 0.017*, No 40-200 0.017* to 0.079*, No 10-40 0.079* to 0.079*, No 10-40 0.075* to 3* Surface geologic unit Cogged by: M. A. Vellow, Ochre, Red, Gray, Black Drilling Co.: CA 1.c Driller: D. A.M. Driller: D. A.M. Driller: D. A.M. Driller: D. A.M. Driller: D. M.M.	4							2.57 10 TR9	1/3			1	0 20				M5 (2			00	·			FEW 1688 LES		Client: Moto Project No.: 605/4574	it and expe	100F/J	O'MARA

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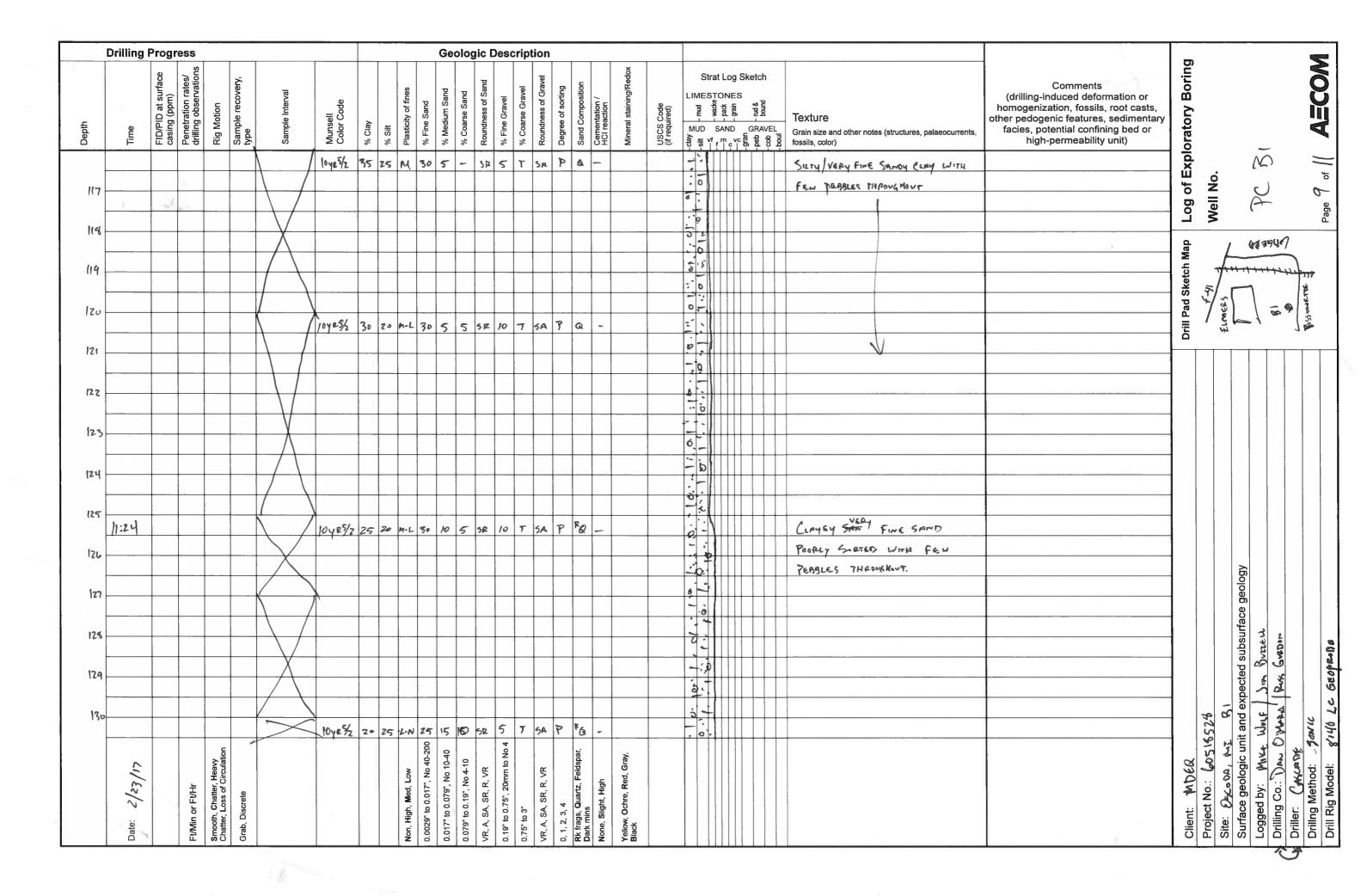
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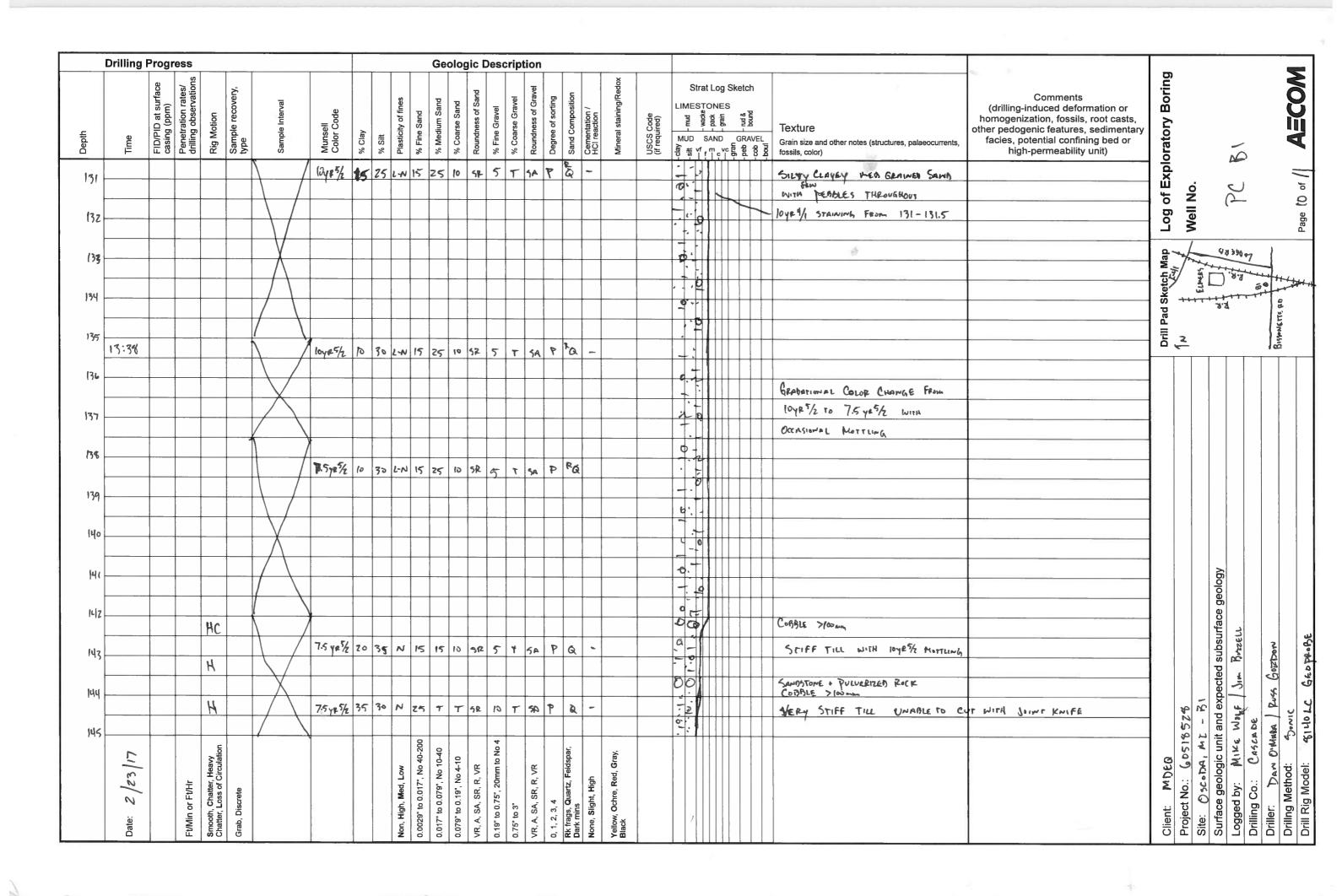
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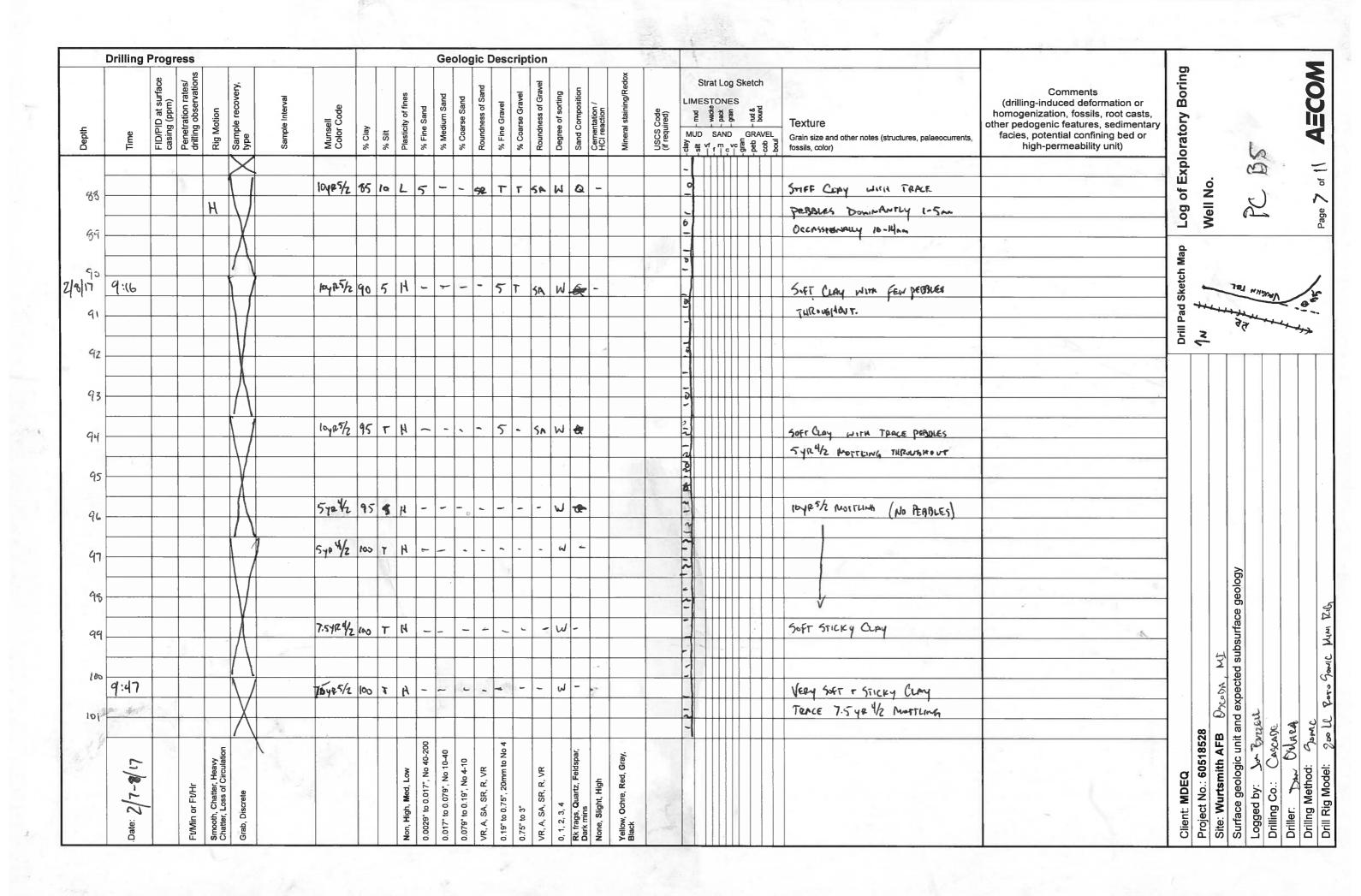
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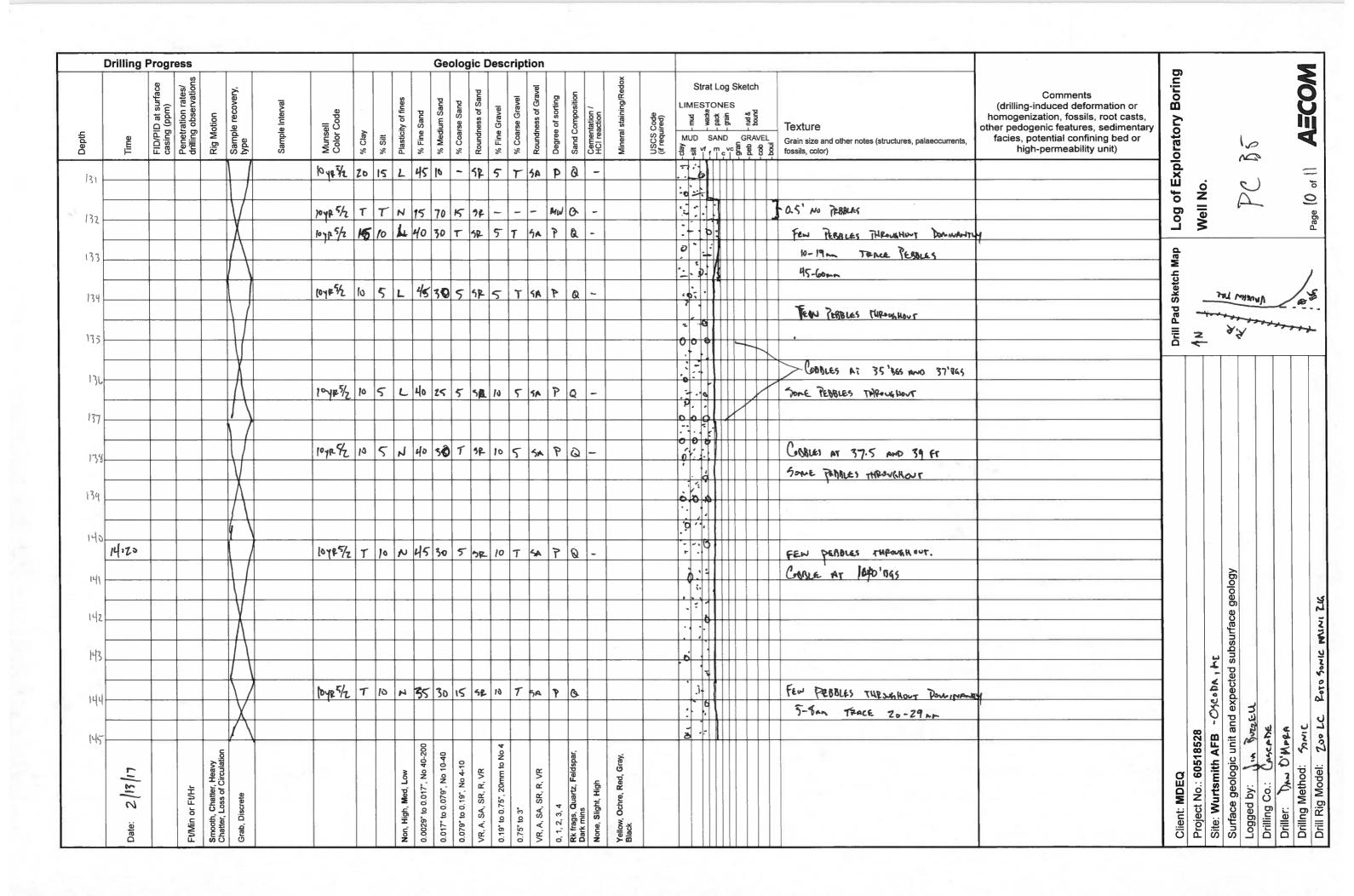
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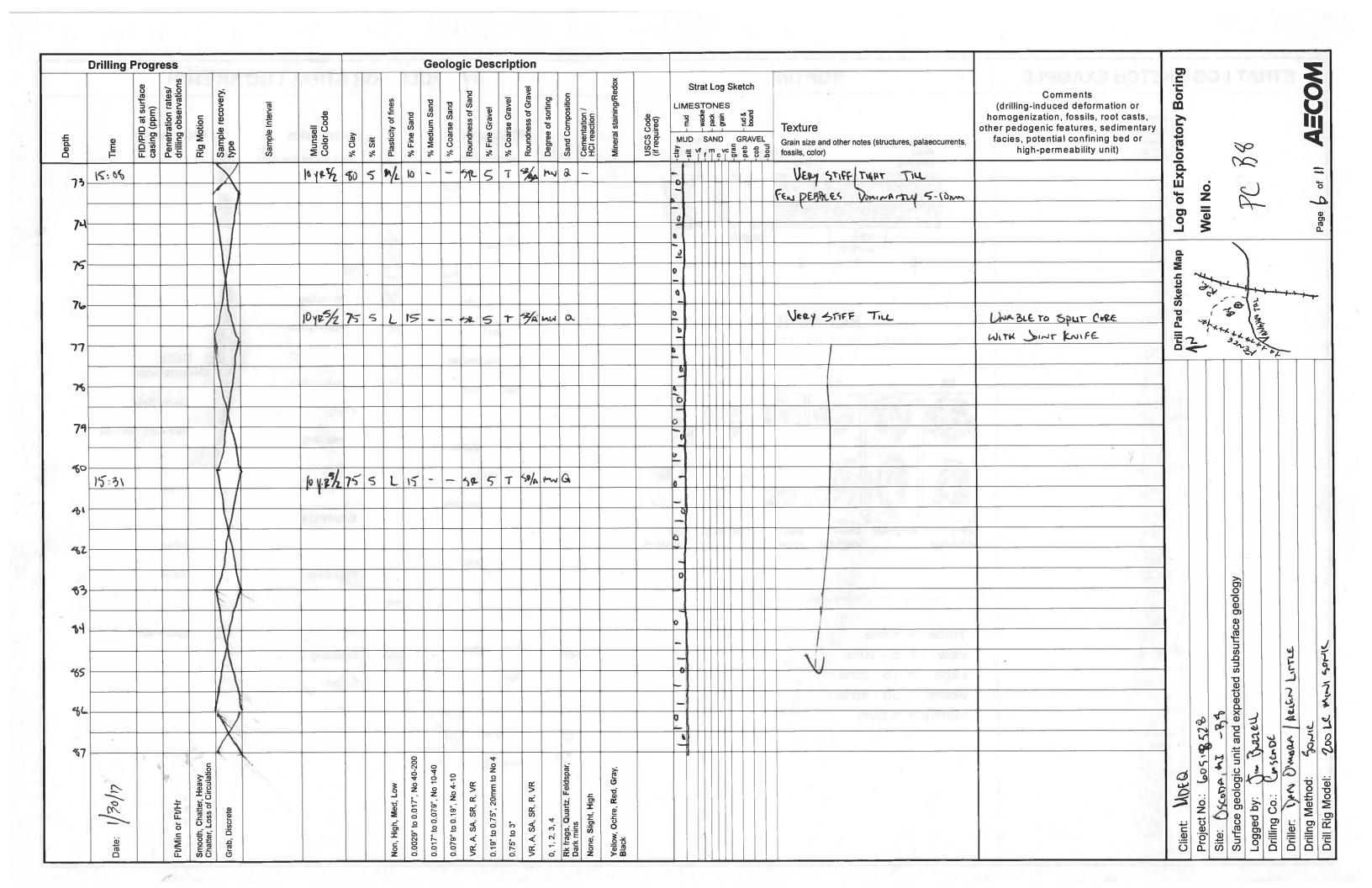
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Appendix B



Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 0-5ft



Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 5-10ft





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 10-20ft



Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 25-30ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 30-35ft



Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 35-45ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 35-45ft (2)



Photo No.

Date: 2/21/17

Direction Photo Taken:

N/A

Description:

PC B1: 45-50ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 55-60ft

*No Recovery of sediments from 50-55ft



Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 60-62ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 62-65ft (1)



Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 62-65ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 65-67.5ft (1)



Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 65-67.5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

>100mm Cobble stuck in drill shoe, block core barrel from collection of sediments 67.5-75ft

PC B1: 67.5ft bgs



Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 75-80ft (1)

*No Recovery of sediments from 67.5-80ft

bgs.





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 75-80ft (2)



Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 75-80ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 80-85ft (1)



Photo No. 20

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 80-85ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 2/22/17

Direction Photo Taken:

N/A

Description:

PC B1: 80-85ft (3)



Photo No. 22

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 85-90ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 85-90ft (2)



Photo No. 24

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 85-90ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 25

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 90-95ft (1)



Photo No. 26

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 90-95ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 90-95ft (3)



Photo No. 28

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

Clay with sand/Clay contact.

PC B1: 92ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 95-100ft (1)



Photo No. 30

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 95-100ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 95-100ft (3)



Photo No. 32

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 100-105ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 33

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 100-105ft (2)



Photo No. 34

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 100-105ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 35

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 105-110ft (1)

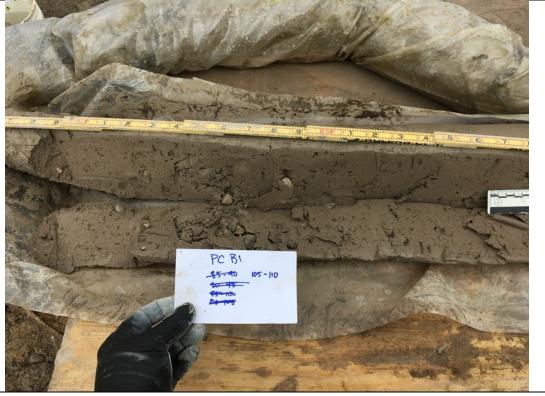


Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 105-110ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 37

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 105-110ft (3)



Photo No. 38

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 110-115ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 39

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 110-115ft (2)



Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 110-115ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

Thin bed of Silty Gravel

PC B1: 112ft bgs



Photo No. 42

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 115-120ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 115-120ft (2)



Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 115-120ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 45

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 120-125ft (1)



Photo No. 46

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 120-125ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 47

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 120-125ft (3)



Photo No. 48

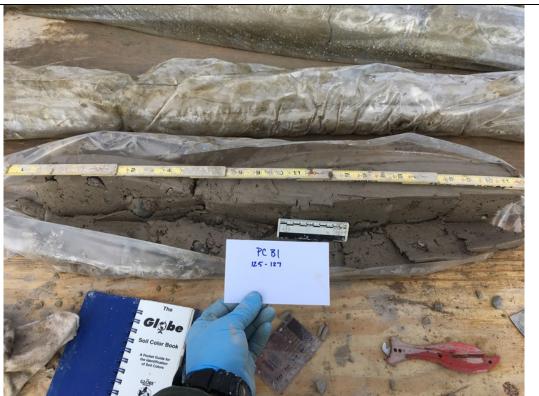
Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 125-127ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 49

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

Soft Clay/Clayey fine sand.

PC B1: 126ft bgs



Photo No. **50**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 127-130ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 51

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 127-130ft (2)



Photo No. **52**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 130-135ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 53

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 130-135ft (2)

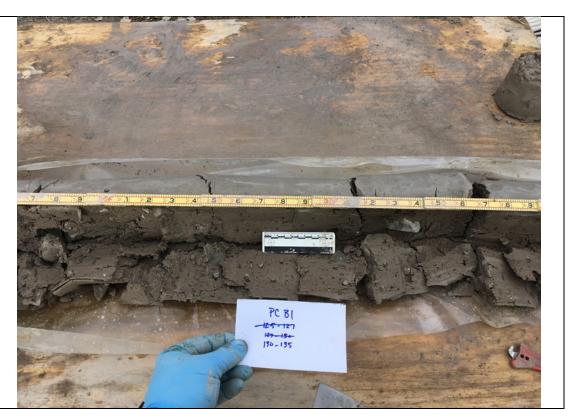


Photo No. **54**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 130-135ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **55**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

10YR 4/1 staining

PC B1: 131-131.5ft bgs



Photo No. **56**

Date: 2/23/17

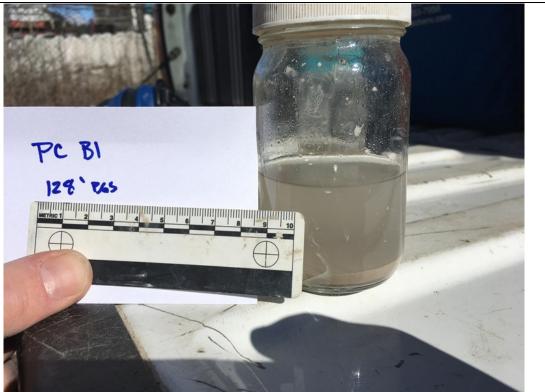
Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B1: 128ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **57**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B1: 134ft bgs

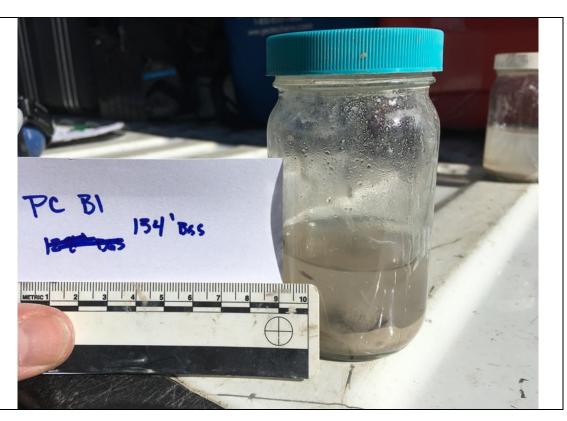


Photo No. 58

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 135-137.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **59**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 135-137.5ft (2)



Photo No. **60**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 137.5-142ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 61

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 137.5-142ft (2)



Photo No. 62

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 137.5-140ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **63**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 142-145ft (1)



Photo No. 64

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 142-145ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **65**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 142-145ft (3)



Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

Cobbles/Boulders immediately above hard dry till.

PC B1: 143-144ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **67**

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 145-150ft (1)



Photo No.

Date: 2/23/17

Direction Photo Taken:

N/A

Description:

PC B1: 145-150ft (2)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. Date: 2/23/17

Direction Photo Taken:

N/A

Description:

Stiff sandy till with pebbles throughout.

PC B1: 147ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo

Taken:

N/A

Description:

PC B2: 0-5ft (1)



Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 0-5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 5-10ft (1)



Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 5-10ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 5-10ft (3)



Photo No.

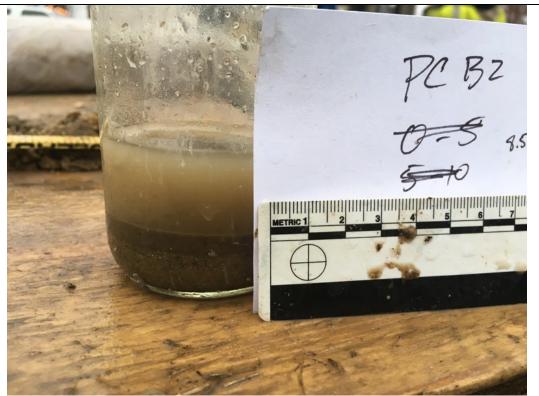
Date: 2/24/17

Direction Photo Taken:

N/A

Description:

Sediment settling jar - PC B2: 8.5ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 10-15ft (1)



Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 10-15ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 10-15ft (3)



Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 15-20ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 15-20ft (2)



Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 20-25ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

PC B2: 20-25ft (2)



Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar - PC B2: 21.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/24/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar -PC B2: 24ft bgs



Photo No.

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 25-30ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 25-30ft (2)



Photo No.

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 25-30ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No.

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 30-35ft (1)



Photo No. 20

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 30-35ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 35ft bgs – Sand/Clay Contact



Photo No. 22

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 35-40ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 35-40ft (2)



Photo No. 24

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 35-40ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 25

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 35ft Clean Fat Clay



Photo No. 26

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 40-45ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 40-45ft (2)



Photo No. 28

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 40-45ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 43ft - Sandy Clay with pebbles



Photo No. 30

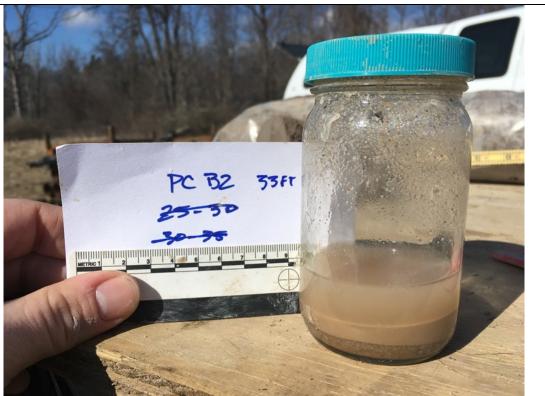
Date: 2/27/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar - PC B2: 33ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 45-50ft (1)



Photo No. 32

Date: 2/27/17

Direction Photo Taken:

N/A

Description:

PC B2: 45-50ft (2)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No.

Date: 2/27/17

Direction Photo Taken:

N/A

. .,, .

Description:

PC B2: 45-50ft (3)





















Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 0-5ft (1)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 0-5ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 5-10ft (1)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 5-10ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 5-10ft (3)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 9ft bgs – Sand/Clay Contanct





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 10-15ft (1)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 10-15ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 10-15ft (3)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 15ft bgs – Shells in lacustrine clay





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 15-20ft (1)



Photo No. 12

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 15-20ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 15-20ft (3)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 19.2ft bgs Clay/Sand contanct





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI

Project No. 60518528

Photo No. 15

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar - PC B3: 19.5ft bgs

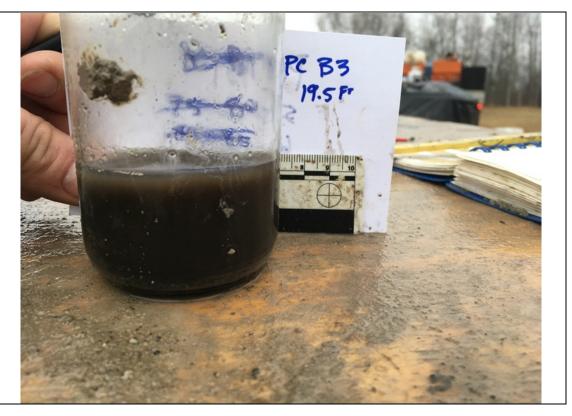


Photo No. 16

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 23-25ft (No Recovery: 20-23ft)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 25-30ft (1)



Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3:25-30ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No.

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 25-30ft (3)



Photo No. **20**

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 30-35ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 30-35ft (2)



Photo No. 22

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 30-35ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 23

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 35-40ft(1)



Photo No. 24

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

PC B3: 35-40ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **25**

Date: 2/28/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar PC B3: 32.5ft bgs

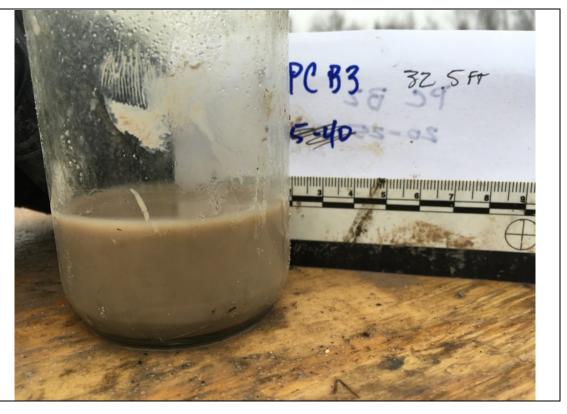


Photo No. 26

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 40-45ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 27

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 40-45ft (1)



Photo No. 28

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 40-45ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 45-50ft (1)



Photo No. 30

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 45-50ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 45-50ft (3)



Photo No. 32

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 50-55ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 33

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 50-55ft (2)



Photo No. 34

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 55-60ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 35

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 55-60ft (2)



Photo No. 36

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 60-65ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 37

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 60-65ft (2)



Photo No. 38

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 60-65ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 39

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 65-70ft (1)



Photo No. 40

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 65-70ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 70-75ft (1)



Photo No. 42

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 70-75ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 70-75ft (3)



Photo No.

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 75-80ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 45

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 75-80ft (2)



Photo No. 46

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 80-85ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 47

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 80-85ft (2)



Photo No. 48

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 85-90ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 49

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 85-90ft (2)



Photo No. 50

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 90-95ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 51

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 90-95ft (2)



Photo No. 52

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 90-95ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 53

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 95-100ft (1)



Photo No. **54**

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 95-100ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **55**

Date: 3/02/17

Direction Photo Taken:

N/A

Description:

PC B3: 95-100ft (3)



Photo No. **56**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 100-105ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **57**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 100-105ft (2)



Photo No. 58

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 100-105ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **59**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 105-110ft (1)



Photo No. **60**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 105-110ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **61**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 105-110ft (3)



Photo No. **62**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 110-115ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **63**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

Soft Fat Clay/Soft Sandy Clay Contact PC B3: 112.5ft bgs



Photo No. **64**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 110-115ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **65**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 115-120ft (1)



Photo No.

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 115-120ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **67**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 115-120ft (3)



Photo No. 68

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 120-125ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **69**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 120-125ft (2)



Photo No. **70**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 125-130ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **71**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 125-130ft (2)



Photo No. **72**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 130-135ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **73**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 130-135ft (2)



Photo No. **74**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 135-140ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **75**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 135-140ft (2)



Photo No. **76**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 140-145ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 77

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 140-145ft (2)



Photo No. **78**

Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 145-150ft (1)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. Date: 3/03/17

Direction Photo Taken:

N/A

Description:

PC B3: 145-150ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 0-2ft



Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 7.5-10ft (1)

*No Recovery 2-7.5ft





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 7.5-10ft (2)



Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 10-13ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 10-13ft (2)



Photo No.

Date: 02/06/17

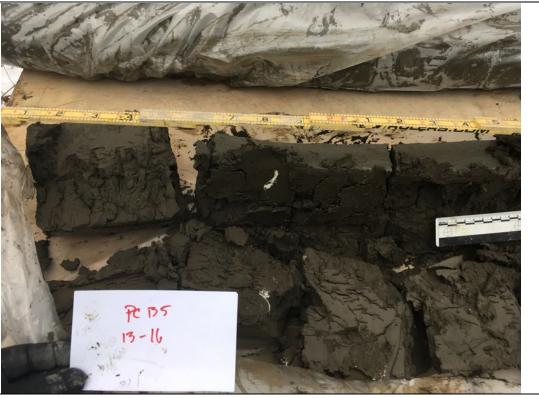
Direction Photo

Taken:

N/A

Description:

PC B5: 13-16ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 13-16ft (2)



Photo No.

Date: 02/06/17

Direction Photo

Taken:

N/A

Description:

PC B5: 16-20ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 16-20ft (2)



Photo No.

Date: 02/06/17

Direction Photo

Taken:

N/A

Description:

PC B5: 16-20ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 20-23ft (1)



Photo No. 12

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 20-23ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

Description:

PC B5: 20-23ft (3)

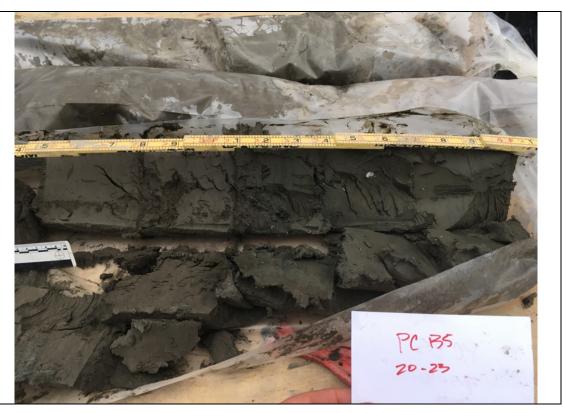


Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 23-26.5ft (1)



AECOM

PHOTOGRAPH LOG

Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 23-26.5ft (2)



Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 23-26.5ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 17

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 26.5-30ft (1)



Photo No.

Date: 02/06/17

Direction Photo

Taken:

N/A

Description:

PC B5: 26.5-30ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 26.5-30ft (3)



Photo No. 20

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 30-33.5ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 30-33.5ft (2)



Photo No. 22

Date: 02/06/17

Direction Photo

Taken:

N/A

Description:

PC B5: 30-33.5ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 33.5-37ft (1)



Photo No. 24

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 33.5-37ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **25**

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 33.5-37ft (3)



Photo No. 26

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 37-40ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 37-40ft (2)



Photo No. 28

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 40-43.5ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 40-43.5ft (2)



Photo No. 30

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5:43.5-46.5ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 31

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 43.5-46.5ft (2)



Photo No. 32

Date: 02/06/17

Direction Photo

Taken:

N/A

Description:

PC B5: 46.5-50ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 33

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 46.5-50ft (2)



Photo No. 34

Date: 02/06/17

Direction Photo

Taken:

N/A

Description:

PC B5: 50-53ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 35

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 50-53ft (2)



Photo No. 36

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 53-56ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 37

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 53-56ft (2)



Photo No.

Date: 02/06/17

38 02/ Direction Photo

Taken:

N/A

Description:

PC B5: 56-60ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 39

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 56-60ft(2)



Photo No. 40

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 56-60ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI

Project No. 60518528

Photo No. 41

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 60-64ft (1)



Photo No.

Date: 42 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 60-64ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 43

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 64-67ft (1)



Photo No.

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 64-67ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 45

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 64-67ft (3)



Photo No. 46

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 67-70ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 47

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 67-70ft (2)



Photo No. 48

Date: 02/06/17

Direction Photo Taken:

N/A

Description:

PC B5: 67-70ft (3)



AECOM

PHOTOGRAPH LOG

Facility Name: MDEQ Wurtsmith Site Location: Oscoda, MI

Project No. 60518528

Photo No. 49

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 70-72.5ft (1)



Photo No.

Date: **50** 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 70-72.5ft (2)





Facility Name: MDEQ Wurtsmith Site Location: Oscoda, MI

Project No. 60518528

Photo No. 51

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 72.5-76ft (1)

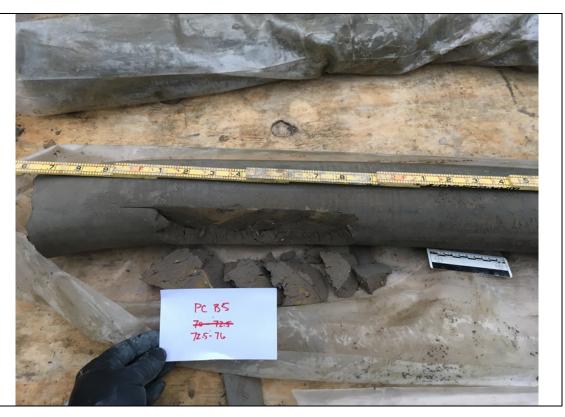


Photo No.

Date: **52** 02/07/17

Direction Photo

Taken:

N/A

Description:

PC B5: 72.6-76ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 53

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 76-80ft (1)



Photo No. **54**

Date: 02/07/17

Direction Photo

Taken:

N/A

Description:

PC B5: 76-80ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **55**

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 76-80ft (3)



Photo No. **56**

Date: 02/07/17

Direction Photo Taken:

Iakc

N/A

Description:

PC B5: 80-84ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **57**

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 80-84ft (2)



Photo No. 58

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 80-84ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 59

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 84-87.5ft (1)



Photo No. **60**

Date: 02/07/17

Direction Photo

Taken:

N/A

Description:

PC B5: 84-87.5ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI

Project No. 60518528

Photo No. 61

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 84-87.5ft (3)



Photo No. 62

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 87.5-90ft (1)





Facility Name: MDEQ Wurtsmith Site Location: Oscoda, MI

Project No. 60518528

Photo No. 63

Date: 02/07/17

Direction Photo Taken:

N/A

Description:

PC B5: 87.5-90ft (2)

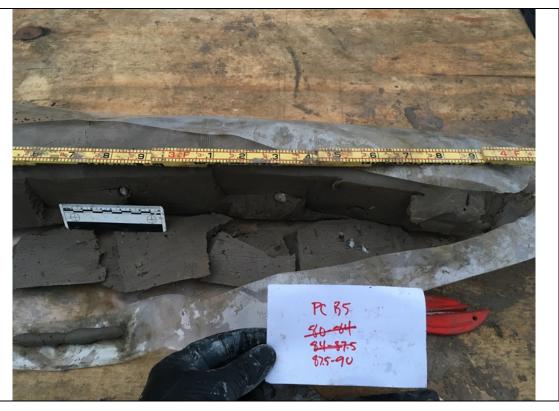


Photo No.

Date: 64 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 90-93.5ft (1)





Facility Name: MDEQ Wurtsmith Site Location: Oscoda, MI

Project No. 60518528

Photo No. 65

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 90-93.5ft (2)



Photo No.

Date: 66 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 90-93.5ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **67**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 93.5-96.5ft (1)



Photo No. 68

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 93.5-96.5ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **69**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 93.5-96.5ft (3)



Photo No. **70**

Date: 02/08/17

Direction Photo

Taken:

N/A

Description:

PC B5: 96.5-100ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **71**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 96.5-100ft (2)



Photo No. 72

Date: 02/08/17

Direction Photo

Taken:

N/A

Description:

PC B5: 96.5-100ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 73

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 100-102ft



Photo No. **74**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 102-105.5ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **75**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 102-105.5ft (2)



Photo No. 76

Date: 02/08/17

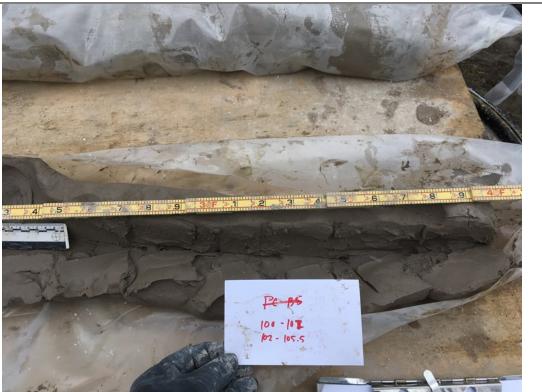
Direction Photo

Taken:

N/A

Description:

PC B5: 102-105.5ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 77

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 105.5-110ft (1)

*Card shown in photo is incorrect.



Photo No. 78

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 105.5-110ft (2)

*Card shown in photo is

incorrect





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **79**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

Clay/Fine Clayey Sand Contact PC B5: 110ft bgs

*Card shown in photo is incorrect.



Photo No. 80

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 110-113ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI

Project No. 60518528

Photo No. 81

Date: 02/08/17

Direction Photo Taken:

Description:

PC B5: 110-113ft (2)



Photo No.

Date: 82 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 113-116.5ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 83

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 113-116.5ft (2)



Photo No. **84**

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 116.5-120ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 85

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 116.5-120ft (2)



Photo No. 86

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 120-124ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 87

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 120-124ft (2)



Photo No.

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5:120-124ft (3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 89

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 124-126ft



Photo No.

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 126-130ft (1)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 91

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 126-103ft (2)



Photo No. 92

Date: 02/08/17

Direction Photo Taken:

N/A

Description:

PC B5: 126-130ft(3)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 93

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 130-133.5ft (1)



Photo No. 94

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5:130-133.5ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 95

Date: 02/13/17

Direction Photo Taken:

Description:

PC B5: 133.5-137ft (1)



Photo No. 96

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 133.5-137ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 97

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 137-140ft (1)



Photo No. 98

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 137-140ft(2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 140-143.5ft (1)



Photo No. 100

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 140-143.5ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 101

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 143.5-147ft (1)



Photo No. 102

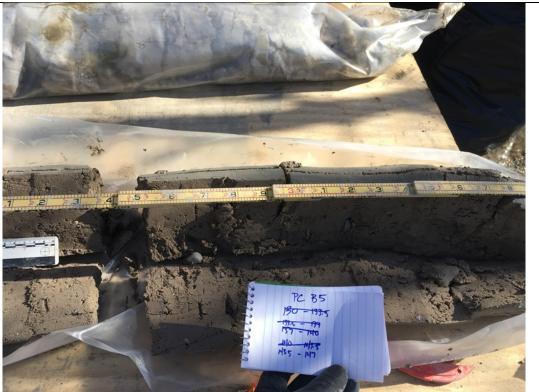
Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 143.5-147ft (2)





Facility Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 103

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 147-150ft (1)



Photo No. 104

Date: 02/13/17

Direction Photo Taken:

N/A

Description:

PC B5: 147-150ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI

Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 0-2ft



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 2.5-6.5ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 2.5-6.5ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 6.5-10ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 6.5-10ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 10-13ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 10-13ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 13-16ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 13-16ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 16-20ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 16-20ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 20-22.5ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 20-22.5ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 26.5-30ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 15

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 26.5-30ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 30-32.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 30-32.5ft (2)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 32.5ft bgs Organic woody debris at base of lacustrine clay/top of sand interval.





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 19

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 32.5-36.5ft (1)



Photo No. 20

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 32.5-36.5ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 21

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 32.5-36.5ft (3)



Photo No. **22**

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 36.5-40ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 36.5-40ft (2)



Photo No. 24

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 36.5-40ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 25

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 40-43ft (1)



Photo No. 26

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 40-43ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 43-46ft (1)



Photo No. 28

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 43-46ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 46-50ft (1)



Photo No.

Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 46-50ft (2)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. Date: 2/5/17

Direction Photo Taken:

N/A

Description:

PC B6: 46-50ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 0-1.5ft



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 1.5-5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 1.5-5ft (2)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 5-7ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 5-7ft (2)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 10-13ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 10-13ft (2)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

Shell fragments throughout clay sediment. PC B7:12ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 13-16ft (1)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 13-16ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 16-20ft (1)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7; 16-20ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7:16-20ft (3)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 20-23ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 20-23ft (2)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 20-23ft (5GY 4/1 Mottling)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 23-27ft (1)



Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 23-27ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 23-27ft (3)



Photo No. 20

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7:23-27ft (gradational change in dominant color)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 27-30ft (1)



Photo No. 22

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 27-30ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 30-33ft (1)



Photo No. 24

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 30-33ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 25

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 33-36ft (1)



Photo No. 26

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 33-36ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 36-40ft (1)



Photo No. 28

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 36-40ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

Organic/Woody debris

PC B7: 40ft



Photo No. 30

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 46-50ft (1)

* No Recovery 40-46ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/01/17

Direction Photo Taken:

N/A

Description:

PC B7: 46-50ft (2)

* No Recovery 40-46ft bgs



Photo No. 32

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 50-52ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 52-56ft (1)



Photo No. 34

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 52-56ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 35

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 52-56ft (3)



Photo No. 36

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

Woody debris

PC B7: 55.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 37

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 56-60ft (1)



Photo No. 38

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 56-60ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 39

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 56-60ft (3)



Photo No. 40

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

Woody debris

PC B7: 56ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

Medium grained sand lens with reddish clay fines

PC B7: 60ft bgs

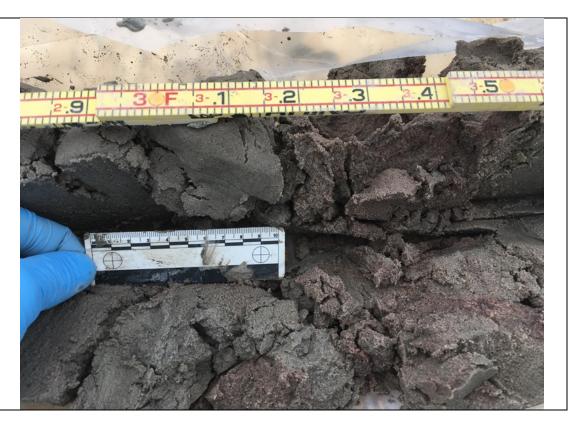


Photo No. 42

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B7: 59.5





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 60-63ft (1)



Photo No.

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 60-63ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 45

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 63-66.5ft (1)



Photo No.

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 63-66.5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 47

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 66.5-70ft (1)



Photo No. 48

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 66.5-70ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 49

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 69ft bgs



Photo No. 50

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 70-74ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 51

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 70-74ft (2)



Photo No. **52**

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

Cobbles

PC B7: 72.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 53

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 74-77ft (1)



Photo No. **54**

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 74-77ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **55**

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

Hard very stiff clay

PC B7: 75ft bgs



Photo No. **56**

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 77-80ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **57**

Date: 02/02/17

Direction Photo Taken:

N/A

Description:

PC B7: 77-80ft (2)



Photo No. 58

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 80-82.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **59**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 80-82.5ft (2)



Photo No. **60**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 82.5-85.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 82.5-85.5ft (2)



Photo No. **62**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 85.5-90ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 85.5-90ft (2)



Photo No. **64**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 90-94.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **65**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 90-94.5ft (2)



Photo No.

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 90-94.5ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 67

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 94.5-98ft (1)



Photo No.

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 94.5-98ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 94.5-98ft (3)



Photo No. **70**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 98-100ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 71

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 98-100ft (2)



Photo No. **72**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

Soft Fat Clay

PC B7: 98-100ft





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 73

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 100-105ft (1)



Photo No. **74**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 100-105ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **75**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 105-110ft (1)



Photo No. **76**

Date: 02/03/17

Direction Photo Taken:

N/A

Description:

PC B7: 105-110ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 110-114ft (1)



Photo No. 78

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 110-114ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 79

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 114-117ft (1)



Photo No. **80**

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 114-117ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 81

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 117-120ft (1)



Photo No. 82

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 117-120ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 83

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 120-124ft (1)



Photo No. **84**

Date: 02/04/17

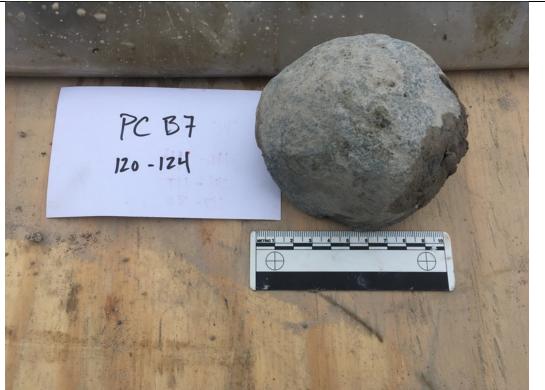
Direction Photo Taken:

N/A

Description:

Cobble lodged in drill shoe, no recovery 124-130ft bgs

PC B7: 124ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 85

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

Low Plasticity Sandy Clay

PC B7: 120-124ft



Photo No.

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 130-133ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 87

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 130-133ft (2)



Photo No.

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 136-140ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 89

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 136-140ft (2)



Photo No.

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 140-144ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 91

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 140-144ft (2)



Photo No. 92

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 144-147ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 93

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 144-147ft (2)



Photo No. 94

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 147-150ft (1)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. 95

Date: 02/04/17

Direction Photo Taken:

N/A

Description:

PC B7: 147-150ft (2)







Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 0-1.5ft



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 1.5-5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 1.5-5ft (2)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 5-10ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 5-10ft (2)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 10-13ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 10-13ft (2)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 13-16ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 13-16ft (2)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Coarse base of fining up sequence.

PC B9: 15ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 16-20ft (1)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 16-20FT (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Thin dry silt above water table.

PC B9: 18-19ft bgs



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 20-23ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 20-23ft (2)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 23-26ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 23-26ft (2)



Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Coarse sand and gravel, very high transmissivity zone.

PC B9: 23ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 26-30ft (1)



Photo No. 20

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 26-30ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Coarse sand and gravel, very high transmissivity zone.

PC B9: 28.5ft bgs



Photo No. 22

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Thin very coarse sand lense.

PC B9: 29.5ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 30-35ft (1)



Photo No. 24

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 30-35ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 25

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Fining up sequence with pebbles at base.

PC B9: 34-35ft bgs



Photo No. 26

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 35-40ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 35-40ft (1)



Photo No. 28

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 40-42ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

Stiff Fat Clay, no pebbles in top 2 ft.

PC B9: 41ft bgs



Photo No. 30

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 42-45ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 42-45ft (1)



Photo No. 32

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 42-45ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 45-50ft (1)



Photo No. 34

Date: 1/22/17

Direction Photo Taken:

N/A

Description:

PC B9: 45-50ft (1)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. 35

Date: 1/22/17

Direction Photo Taken:

ı ancıı.

N/A

Description:

Increased Pebble/Gravel Content

PC B9: 48ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 0-10ft (1)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 0-10ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 10-20ft (1)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 10-20ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 10-20ft (3)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 10-20ft (4)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 10-20ft (5)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 10-20ft (6)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 20-30ft (1)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 20-30ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 20-30ft (3)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

Pebbles throughout clay.

PC B10: 26ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: Pebbles throughout Clay



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 30-40ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 30-40ft (2)



Photo No.

Date: 1/11/17

Direction Photo Taken:

N/A

Description:

PC B10: 30-40ft (3)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 0-5ft (1)



Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 0-5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 5-10ft (1)



Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 5-10ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 10-15ft (1)



Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 10-15ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 10-15ft (3)



Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 15-20ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 15-20ft (2)



Photo No.

Date: 1/12/17

Direction Photo Taken:

N/A

Description:

PC B11: 15-20ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

PC B11: 20-25ft (1)



Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

10YR 5/6 Mottling

PC B11: 21ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

PC B11: 20-25ft (2)



Photo No.

oto No. Date: 1/13/17

Direction Photo Taken:

N/A

Description:

PC B11: 20-25ft (3)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

Clay extracted from drill shoe

PC B11: 25ft bgs



Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

Clay extracted from drill shoe

PC B11: 25ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

PC B11: 25ft bgs



Photo No.

Date: 1/13/17

Direction Photo

Taken:

N/A

Description:

PC B11: 25-30ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

PC B11: 25-30ft (2)



Photo No. 20

Date: 1/13/17

Direction Photo Taken:

N/A

Description:

Clay/Clay with pebbles contact.

PC B11: 25-25.5ft bgs





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. Date: 1/13/17
Direction Photo

Taken:

N/A

Description:

Clay with Silt and pebbles.

PC B11: 27ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/16/17

Direction Photo Taken:

N/A

Description:

PC B12: 0-5ft



Photo No.

Date: 1/16/17

Direction Photo Taken:

N/A

Description:

PC B12: 5-7.5ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/16/17

Direction Photo Taken:

N/A

Description:

PC B12: 7.5-10ft (1)



Photo No.

Date: 1/16/17

Direction Photo Taken:

N/A

Description:

PC B12: 7.5-10ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/16/17

Direction Photo Taken:

N/A

Description:

PC B12: 8.5ft bgs



Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

PC B12: 10-15ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

PC B12: 10-15ft (2)



Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

Coarse Sandy Gravel – Fining up sequence

PC B12: 11.5-12ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

PC B12: 15-20ft (1)



Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

PC B12: 15-20ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

High transmissivity, coarse sand and gravel seam.

PC B12: 19.5-20.5 ft bgs



Photo No.

Date: 1/18/17

Direction Photo Taken:

N/A

Description:

PC B12: 20-25ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B12: 20-25ft (2)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B12: 25-30ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B12: 25-30ft (2)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B12: 28ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Dominant pebble/gravel size 10-25mm; Field Plasticity test: high Plasticity.

PC B12: 29ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/20/17

Direction Photo

Taken:

N/A

Description:

PC B13: 0-5ft (1)



Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 0-5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 5-10ft (1)



Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 5-10ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 7ft bgs

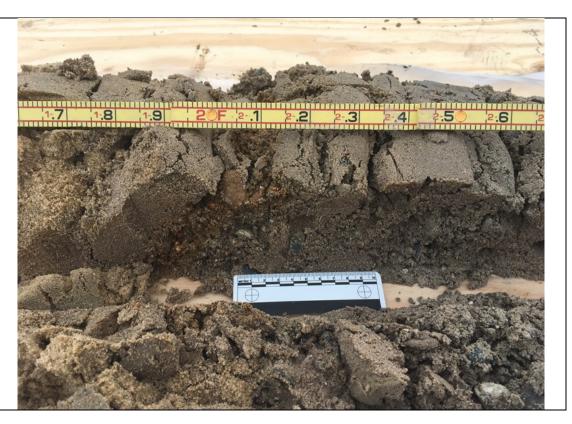


Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 10-12ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 12-16ft (1)



Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 12-16ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 16-20ft (1)



Photo No.

Date: 1/20/17

Direction Photo Taken:

N/A

Description:

PC B13: 16-20ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 20-23ft



Photo No.

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 23-26ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 23-26ft (2)



Photo No.

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 26-27ft





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 26.5ft bgs



Photo No. 16

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 27-30ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 27-30ft (2)



Photo No. 18

Date: 1/21/17

Direction Photo Taken:

N/A

Description:

PC B13: 27.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo

Taken:

N/A

Description:

PC B14: 0-2.5ft (1)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 0-2.5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Transitional weathering; 10YR 4/1 Mottling

PC B14: 1ft bgs



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 2.5-6ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 2.5-6ft (2)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 6-10ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 6-10ft (2)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Large pebbles and 68mm cobble.

PC B14: 9.75ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 10-14ft (1)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 10-14ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Interbedded sands and gravels.

PC B14: 11ft bgs



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 14-17.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 14-17.5



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Moist sediments: Massive medium sand.

PC B14: 17.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 17.5-20ft (1)



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 17.5-20ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Encountered water table at 19ft bgs.

PC B14: 19ft bgs



Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 20-24ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 20-24ft (2)



Photo No. 20

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 20ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 24-27.5ft (1)



Photo No. 22

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 24-27.5ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 27.5-30ft (1)



Photo No. 24

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 27.5-30ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 25

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 30ft bgs



Photo No. 26

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 30-33ft

* No recovery of soils from 30-31ft





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 33-36ft (1)



Photo No. 28

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 33-36ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Clean clay with high plasticity, no pebbles

PC B14: 33ft bgs



Photo No. 30

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

Clay with pebbles throughout.

PC B14: 34ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 36-40ft (1)



Photo No. 32

Date: 1/19/17

Direction Photo Taken:

N/A

Description:

PC B14: 36-40ft (2)





Project Name:
MDEQ WurtsmithSite Location:
Oscoda, MIProject No.
60518528

Photo No. Date: 1/19/17
Direction Photo Taken:

N/A

Description:

Plasticity field test of clay

– High plasticity.

PC B14: 36-40ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo

Taken:

N/A

Description:

PC B8: 0-3ft (1)



Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 0-3ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 3-6ft (1)



Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 3-6ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 6-10ft (1)



Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 6-10ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo Taken:

.

N/A

Description:

PC B8: 10-13ft (1)



Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 10-13ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 13-16ft (1)



Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 13-16ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 14.5ft bgs



Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 16-20ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/23/17

Direction Photo Taken:

N/A

Description:

PC B8: 16-20ft (2)



Photo No.

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

PC B8: 25-28ft (1)

* No recovery of sediments from 20-25ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

PC B8: 25-28ft (2)



Photo No.

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

PC B8: 28-31.5ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

PC B8: 28-31.5ft (2)



Photo No.

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

PC B8: 31.5-35ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

PC B8: 31.5-35ft (2)



Photo No. 20

Date: 01/24/17

Direction Photo Taken:

N/A

Description:

Clay/Clay with pebbles contact

PC B8: 33.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 21

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 35-40ft (1)



Photo No. 22

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 35-40ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 23

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 35-40ft (3)



Photo No. 24

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 35-40ft (4)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 25

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 40-43ft (1)



Photo No. 26

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 40-43ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 27

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

Sand Clay with Pebbles PC B8: 42.5ft bgs



Photo No. 28

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 43-46.5ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 29

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 43-46.5ft (2)



Photo No. 30

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 46.5-50ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 46.5-50ft (2)



Photo No. 32

Date: 01/25/17

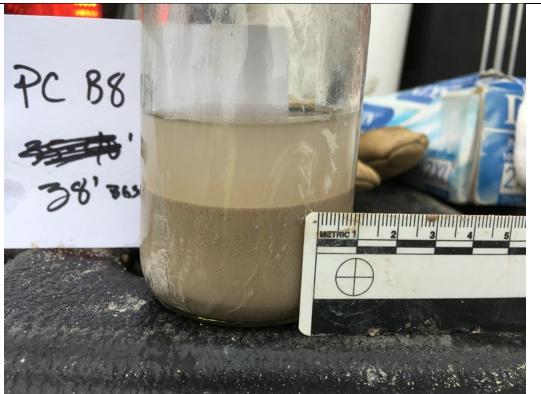
Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B8: 38ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B8: 45ft bgs



Photo No. 34

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

2cm³ sediment used for settling jar.

PC B8: 50ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 35

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B8: 50ft bgs

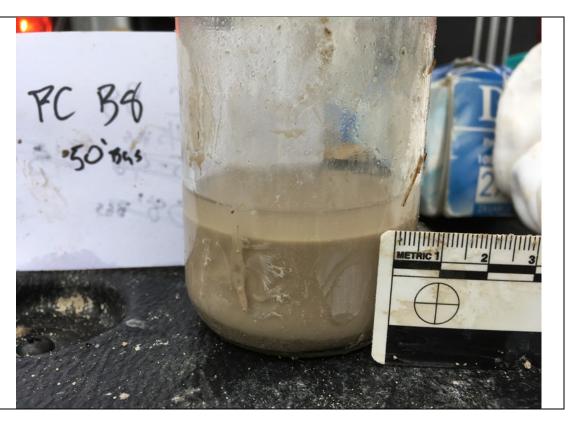


Photo No.

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 50-52ft





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 37

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 52-56ft (1)



Photo No. 38

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 52-56ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 39

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 56-60ft (1)



Photo No.

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

PC B8: 56-60ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

Clay becoming more stiff Decreasing sand content

PC B8: 58-58.5ft bgs



Photo No. 42

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

2cm³ sediment for settling jar, field plasticity test – Moderate.

PC B8: 60ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/25/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar.

PC B8: 60ft bgs



Photo No.

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 60-63ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 45

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 60-63ft (2)



Photo No.

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 63-66ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 47

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 63-66ft (2)



Photo No. 48

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 66-70ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 49

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 66-70ft (2)



Photo No. **50**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 70-73.3ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 51

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 70-73.3ft (2)



Photo No. **52**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 73.3-76.6ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 53

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 73.3-76.6ft (2)



Photo No. **54**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 76.6-80ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **55**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 76.6-80ft (2)



Photo No. **56**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8 -

Top: 80-83ft (1) Middle: 83-86ft (1) Bottom: 86-90ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **57**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8 -

Top: 80-83ft (2) Middle: 83-86ft (2) Bottom: 86-90ft (2)



Photo No. 58

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 90-93ft (1)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **59**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 90-93ft (2)



Photo No. **60**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 93-96ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **61**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 93-96ft (2)



Photo No. **62**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

Field Plasticity Test: Very High Plasticity

PC B8: 93-96ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI **Project No.** 60518528

Photo No. 63

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 96-100ft (1)



Photo No. **64**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 96-100ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **65**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 100-103ft (1)



Photo No.

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 100-103ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. **67**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

Clay/Clayey fine sands contact.

PC B8: 100.5ft bgs



Photo No. 68

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8:103-106ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 103-106ft (2)



Photo No. **70**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

Clayey Fine Sand/Medium Sand Contact.

PC B8: 104ft bgs





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 71

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 106-110ft (1)



Photo No. **72**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

PC B8: 106-110ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 73

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

Silt Laminations within sandy unit.

PC B8: 108ft bgs



Photo No. **74**

Date: 01/30/17

Direction Photo Taken:

N/A

Description:

Silt Laminations within sandy unit.

PC B8: 108.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **75**

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 110-112ft (1)



Photo No. **76**

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 110-112ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 77

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 116-120ft (1)

* No Recovery of sediments from 112-116ft bgs



Photo No. 78

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 116-120ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 79

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 116-120ft (3)



Photo No. **80**

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

Thin silt bed within medium sandy interval.

PC B8: 118.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 81

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar.

PC B8: 112ft bgs

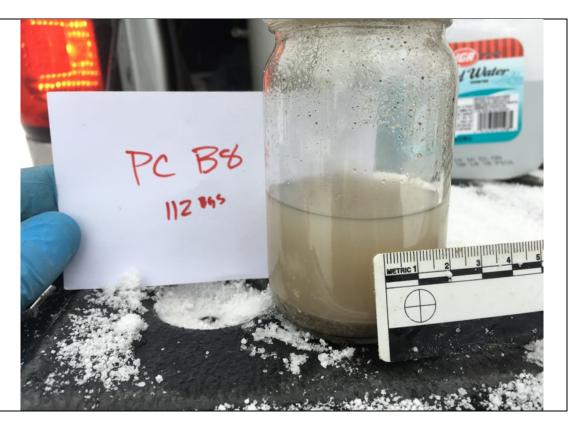


Photo No. 82

Date: 01/31/17

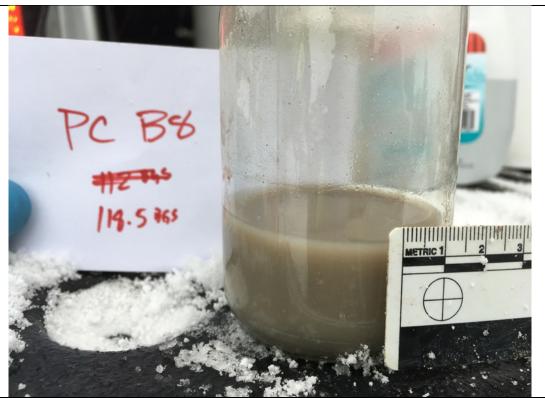
Direction Photo Taken:

N/A

Description:

Sediment Settling Jar.

PC B8: 118.5ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 83

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

Sediment Settling Jar.

PC B8: 120ft bgs

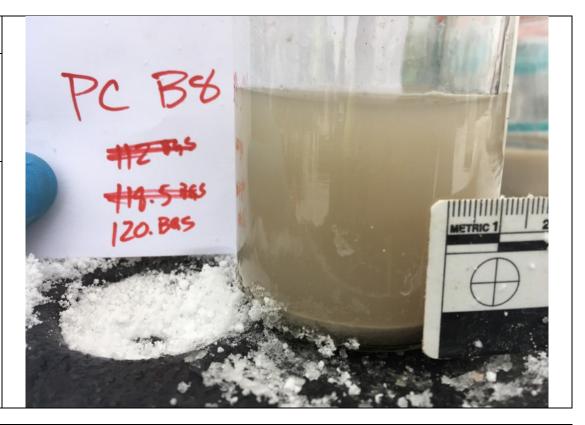


Photo No. **84**

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

100mm Cobble lodged in drill shoe after drilling 120-130ft interval. No recovery of Sediments throughout this interval.





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI **Project No.** 60518528

Photo No. **85**

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 130-133ft (1)



Photo No.

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8:130-133ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 87

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 133-136ft (1)



Photo No.

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 133-136ft (2)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 89

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 136-140ft (1)



Photo No.

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 136-140ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 91

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 136-140ft (3)



Photo No. 92

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

Dominant pebble size 5-30m. Field plasticity test – High Plasticity

PC B8: 136-140ft Interval





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. 93

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 140-143ft (1)



Photo No. 94

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 140-143ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No. **95**

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

Thin Sand bed within Clay unit.

PC B8: 141.5ft bgs



Photo No. 96

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 143-146.5ft (1)





Project Name: MDEQ Wurtsmith Site Location: Oscoda, MI Project No. 60518528

Photo No. 97

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 143-146.5ft (2)



Photo No. 98

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

Coarse sand interbedded within clay unit.

PC B8: 143ft bgs





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 146.5-150ft (1)



Photo No. 100

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 146.5-150ft (2)





Project Name: MDEQ Wurtsmith

Site Location: Oscoda, MI Project No. 60518528

Photo No.

Date: 01/31/17

Direction Photo Taken:

N/A

Description:

PC B8: 148ft bgs



Photo No. 102

Date: 01/31/17

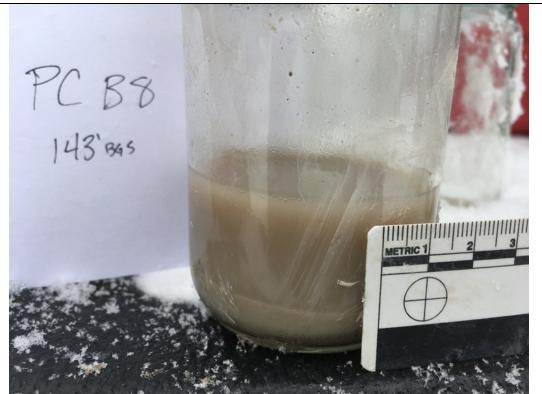
Direction Photo Taken:

N/A

Description:

Sediment Settling Jar

PC B8: 143ft bgs





Project No. 60518528 Site Location: Project Name: MDEQ Wurtsmith Oscoda, MI

Photo No. Date: 103

01/31/17

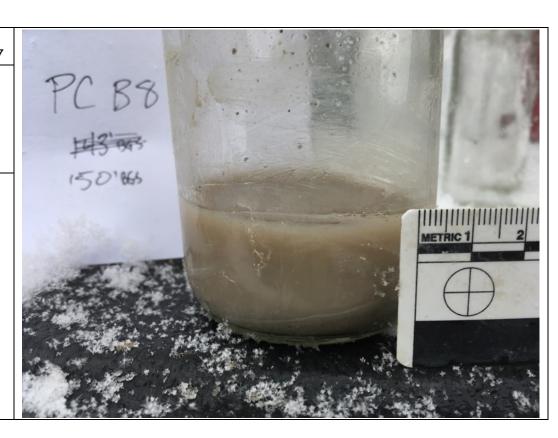
Direction Photo Taken:

N/A

Description:

Sediment Settling Jar.

PC B8: 150ft bgs



Appendix C

Low Flow Ground Water Sample Collection Record

Well ID: PC B1 34-36FT

Client: MDEQ Location: Oscoda, MI - Wurtsmith AFB

Label on well? Is reference mark visible? Condition of well Weather Notes: No Standing water present? Any indication of surface runoff in well? Any indication of surface runoff in well? Any indication of surface runoff in well? YES NO Any indication of surface runoff in well? YES NO Any indication of surface runoff in well? YES NO STATIC WATER LEVEL PRIOR TO PURGING Date: 2/22 T Time: 6:37 AMPM Depth to Water: 1.65 - 3.3 = 6.35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: 36 Decontamination: Pre Steam Cleaned DHWater Other WELL PURGING Date: 2/22 T Begin Time: 4:47 AMPM Purging Equipment: MCGA Manyoux XL	ər
Any indication of surface runoff in well? Weather Notes: No WAIFR INSCRED WILLE DRILLING INTERVAL STATIC WATER LEVEL PRIOR TO PURGING Date: 2/22 17 Time: 5:37 AMPM Depth to Water: 11.65-3.3 = 5.35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: 361 Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	ər
Any indication of surface runoff in well? Weather Notes: No WAIFR INSCRED WILLE DRILLING INTERVAL STATIC WATER LEVEL PRIOR TO PURGING Date: 2/22 17 Time: 5:37 AMPM Depth to Water: 11.65-3.3 = 5.35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: 361 Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	ər
Weather No WAIER INSCRESS WILLE DRILLING ENTERVAL STATIC WATER LEVEL PRIOR TO PURGING Date: 2/22/17 Time: 4:37 AMPM Depth to Water: 11:65 - 3.3 - 8.35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: 3c1 Decontamination: Pre Steam Cleaned Dt Water Other WELL PURGING	ər
Notes: No WAGER INSCRESS WILLE DELLING ENTERVAL STATIC WATER LEVEL PRIOR TO PURGING Date: 2/22/17 Time: \$:37 AMPM Depth to Water: 11.65 - 3.3 = 8.35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: 36 Decontamination: Pre Steam Cleaned DI Water Other WELL PURGING	ər
STATIC WATER LEVEL PRIOR TO PURGING Date: 2 22 17 Time: \$ 37 AMPM Depth to Water: 11.65 - 3.3	ər
Date: 2 22 17 Time: \$ 37 AMPM Depth to Water: 11.65 - 3.3 = \$ 35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	ər
Date: 2 22 17 Time: \$ 37 AMPM Depth to Water: 11.65 - 3.3 = \$ 35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	er
Date: 2 22 17 Time: \$ 37 AMPM Depth to Water: 11.65 - 3.3 = \$ 35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	ər
Date: 2 22 17 Time: \$ 37 AMPM Depth to Water: 11.65 - 3.3 = \$ 35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	ər
Depth to Water: 11.65 - 3.3 = 8.35 Measured with: Electronic Tape Chalk & Steel Tape Length of Well: Decontamination: Pre Steam Cleaned DHWater Other WELL PURGING	ər
Length of Well: 36 Decontamination: Pre Steam Cleaned DrWater Other WELL PURGING	ər
WELL PURGING	ər
	ər
Date: 2/22/17 Begin Time: 5:47 (AM/PM Purging Equipment: MEGA WANSON XL	er
Date: 2 21 Begin Time: 511 (AM/PM Puraina Equipment: M (-GA Dansaca) XL	er
	er
End Time: 4'.55 AM/PM Decontamination: Pre Steam Cleaned DI Water Oth	
CALCULATION OF 1 CASING VOLUME	
i ft. Length of well Yield: HIGH LOW	
ft depth of water (before purge start) If low, recovery time: If low, recovery time:	
ft. =length of water column	
x conversion factor (2" well) 0.16 Actual volume purged	
Gal. =1 casing volume Actual purge flow rate	
Notes YEELD FOR LOW FOR MUNICIPAL PURPLE THEN PURPLE	
WITH PERISTALTIC. PURIE FLOW RATE WITH PERISTALTIC: 384 allana	
Spe	
Time Volume Depth to pH Conductivity Turbidity D.O. Temp ORP	
(gallons) Water (SU) (m8fcm) (NTU) (mg/L) (°C)	
(1 eet/ <0.33' +/- 0.1 +-3% +-10% +/- 10% +/- 5% +/- 10 mV	
Start: 9:40 1.25 14.50 7.40 760 1020 2.62 10.1 -400	
9:45 1.75 14.65 7.90 739 1157 2.66 10.2 -390	
9:50 2.25 14.80 7.91 727 1032 2.58 10.2 -391	
9:55 2:75 14.92 7.91 717 1064 2:56 10:2 -393	
	10
	_
	_
Final:	_
SAMPLE COLLECTION	_
Date: 2/22/17 Time: 9:55 AM/PM Method PERISTRICE	
Appearance of Sample: Actual Sample Flow Rate: 3544 mil/min or	
Appearance of Sample: Actual Sample Flow Rate: 774 (ml/min or L/min	
SAMPLE BOTTLE COLLECTED: X2 250 mL HDPE PFC SCAN	
SAMPLING PERSONNEL	
Name: Company: AECOM	

Low Flow Ground Water Sample Collection Record

PC 31 26-28' Well ID:

Client: MDEQ

Location: Oscoda, MI - Wurtsmith AFB Project #: 60518528

INSPECTION						_		
Label on well?		YES	NO		Is cap locked?		YÈS NO	
Is reference mai	k visible?	YES	NO		Standing wate	r present?	YES NO	
Condition of wel	1	N/M	\		Any indication	of surface runoff in well?	YES NO	
Weather		CLOUD	1		Air Temperatu	re:	474	_
Notes:			Ţ.				_	
İ								
							_	
STATIC WATER	LEVEL PRIC	R TO PURGING	1				· .	
Date: Z 27	1	Time: 10:38	(AM)PN	1				
Depth to Water:		10.8		Measured	with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:		261		Decontam	ination:	Pre Steam Cleaned	DI Water Other	
WELL PURGIN	-							-
Date: 2 2	2/17		Begin Time:	10:40	AMPM	Purging Equipment:	MEGA MONSON X	L
,			End Time:]]153	AM/PM	Decontamination	Pre Steam Cleaned	DI Water Other
			Life Time.		7 (1917) 191	Decontainination.	New Tubing	Di Water Other
CALCULATION								
	ft. Length				Yield:	HIGH LOW		
	ft depth	of water (before	purge start)	-	If low, recovery	y time:	_	
<u> </u>	ft. ≃length	of water column				O		
	x conve	ersion factor (2" w	vell) 0.16		Actual volume		gallons	
1	Gal. =1 casi	ng volume			Actual purge fl	low rate2	_ m/min or gal mm	
Notes		100gal TAKE	CLED BEIN	15 BE - 38 F	r 045		L /min	
	SHUT D	1 - 1	() () () () ()		which at	11:53		
	Punping		TALTIC ONLY	FOR PARAMETER	RECORDING	364 ml/min		GP.
								0
Time	Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water (Feet)	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
		<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 12:00	0.6	11.95	7.91	399.0	54	7.28	RA	- 220.4
12105	lal.	11.62	7.91	398.3	55	7.08	Hal	-227.4
12:10	1.6	11.56	7.94	399.4	53	6.83	lla	-237. Z
12:15	2.25	11.55	7.14	348.1	51	6.83	11.1	-232.2
12:20	2.75	11.55	7.45	347.9	54	6.75	114	- 238,0
		\				Ĭ.		1
				1				
E.								
The state of the s								
9		\		\				\
Final:	<u> </u>			`				
SAMPLE COLL	ECTION	Time: 12:20	6.4	.	Dr		30 %	
Date: 2 22			AMIPN	Method	PERISTA		·-	
Appearance of	Sample:	CLEPR		_ Actual Sar	mple Flow Rate	: 364 mil/m	in or	
			am14	Doc DC -		Hmir	D.	
SAMPLE BOTT	LE COLLECT	ED: <u>XL</u>	250 ml H	DPE PFC Scan	<u> </u>			
SAMPLING PE	RSONNEL				_		N. Well	-
Name:	In Brien			0		45004		
Name:	· · · · · · · · · · · · · · · · · · ·			Company:		AECOM		

Low Flow Ground Water Sample Collection Record

Well ID:	PC BI	78-80FT	··
**		_	

Client: MDEQ Location: Oscoda, MI - Wurtsmith AFB

Label on well? Is reference mark visible? Condition of well Weather Notes:			Is cap locked? Standing water Any indication of	YES NO YES NO	-			
STATIC WATER Date: 2 2 17 Depth to Water: Length of Well: WELL PURGING		7.92	AM/ÉN	Measured Decontami		Electronic Tape Pre Steam Cleaned	Chalk & Steel Tape DI Water Other	
CALCULATION (DF 1 CASING Length depth elength x conve	VOLUME of well of water (before point of water column resion factor (2" wong volume Gris Wasse	ell) 0.16			ourged 40	Pre Steam Cleaned New Tubing gallons ml/min or gal / hm	DI Water Other
Time	Volume (gallons)	Depth to Water (Feet)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (°C)	ÖRP
Start: 16:45 16:55 16:55 17:05 17:10 17:15 17:20 Final: SAMPLE COLLE Date: 2 22 17		<0.33' 24.55 23.57 20.45 19.05 15.15 17.55 11.18 16.75 Time: 17:2	+/- 0.1 7.86 7.97 7.98 7.99 8.02 8.02 8.02 8.03	Actual Sa	+-10% 646 338 49 119 49 78 68 69 MEGA MAN			+/- 10 mV490556574531516567580572
SAMPLE BOTTL SAMPLING PER			250mL 11	OPE PFC Scar			PC B1 78-80 FT TA	

Low Flow Ground Water Sample Collection Record

Well ID: PC BZ 33-35Fr

Client: MDEQ Location: Oscoda, MI - Wurtsmith AFB

INSPECTION						-000		
Label on well?		YES	NO		is cap locked?		YES NO	
Is reference mark	visible?	YES	NO		Standing water	present?	YES NO	
Condition of well	- 100 miles	N				f surface runoff in well?	YES NO	
Weather		CLEAR			Air Temperature		39°F	
Notes:			and a literature of the same o					-
							-	
	×	S 15-35-5					-	
STATIC WATER	LEVEL PRIO	R TO PURGING						
Date: 2/27/		Time: 14:40	AMIPN	P				
Depth to Water:		5.55		Measured	d with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:	-			Decontar	nination:	Pre Steam Cleaned	DI Water Other	
WELL PURGING)	1				***		,
Date: 2 27	7		Begin Time:	14:42	AM/PM)	Purging Equipment:	MEGA Marson X	<u>L</u>
			End Time:	15:40	AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION					Yield:	CHOIL A OW	Hew running	
		of water (before	nurae etart)		If low, recovery	HIGH LOW		
				•	ii low, recovery	ume.	_	
│ 		of water column				ourged 90 .5		
		rsion factor (2" v	vell) 0,16	•	Actual volume		_gallons	
		ng volume			Actual purge flo	w rate	_ml/plin or gal/min	
Notes \	20	ogal injected	BETWEEN	30-35FF			7	
		1.5 (1.5)						
-								
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
	1	(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 15:20	0.1	7.1	7,44	416.0	2074	3.33	10.5	-198.1
15:25	0.5	6.4	7.43	4)4.9	1561	3.38	10.5	-183.4
15:30	0.75	6.65	7.92	414.2	1377	3.39	10.1	- 177.8
15:35		5.92	7.92	414.6	1363	3.32	10.2	-180.3
15:40	1.25	5.89	* 7.93	414.3	1330	3.23	10.1	-186.5
1,7:43	di.	3,00	1717		1770	7-7		1,000
(E1)2	1(4)				†			
					1			
***					1			
					1			
Final:								-
SAMPLE COLL			•	<u> </u>	and the state of t			Mat. M
Date: 2 27 1	7	Time: 15:4	AM/PN	<u>Method</u>	DERISTALT	ic		
Appearance of S	ample: (LOUDY		Actual Sa	ample Flow Rate:	2/00 ml/mir	or	
						L/min		
SAMPLE BOTTI	E COLLECTE	D: <u>X2</u>	2 \$50ml W	DPE PFC Sci	2			
SAMPLING PER	SONNEL							
	alla	7	MIELL	0		AECOM		
Name:	1//	O'E I	- Will	Company		AECOM		

Low Flow Ground Water Sample Collection Record

Well ID: B2 20-22FT

Client: MDEQ Location: Oscoda, MI - Wurtsmith AFB

INSPE	CTION			-					
Label	on well?		YES	NO		Is cap locked?		YES NO	
ls refe	rence mar	rk visible?	YES	NO		Standing water	present?	YES NO	
Condit	ion of well	I	100			Any indication	of surface runoff in well?	YES NO	
Weath	er			,		Air Temperatur	e:		_
Notes:					ne				
								- trips	
								_	
STATI	C WATER	R LEVEL PRIO	R TO PURGING	3					
Date:	2/27/	117	Time: (61)	2 AM/PM	l				
Depth	to Water:		4.0		Measure	d with:	Electronic Tape	Chalk & Steel Tape	
Length	of Well:		22		Decontai	mination:	Pre Steam Cleaned	DI Water Other	
MELL	PURGING		V:						
WELL	PURGING	G							
Date:	2 27	117		Begin Time:	16:28	AM/PM	Purging Equipment:	DERISTALTIC	
		7		End Time:	17:20	AM/PM	Decontamination:	Pre Steam Cleaned	DI Water Other
				End Time.	11.20	AIVI/FIVI	Decontamination	New Tubing	DI Water Other
CALÇ	1	OF 1 CASING	VOLUME				0	ut)	
		ft. Length				Yield:	HIGH LOW	5 30	
	√ —_f	ft depth	of water (before	purge start)		If low, recovery	time:		
	Af	ft. =length	of water column	ו			.1		
		x conve	rsion factor (2"	well) 0.16		Actual volume		gallons	
		Gal. =1 casir	ng volume			Actual purge flo	ow rate <u>332</u>	ml/min or	
Notes		PURGED	WELL DAY	WITH MEGN !	MENSOON KL (5 GAL) PLONE	we Monsion, Usk	L/min	
	•	enty Deer		The second		,			
	-	proc Per	THE THE	HI.C.		-88-	-		
					8		· · · · · · · · · · · · · · · · · · ·		
Time		Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP
		(gallons)	Water (Feet)	(SU)	(mS/cm)	(NTU)	. (mg/L)	(°C)	
			<0.33	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start:	16:40	1.10	16.2	8.12	434.3	387	1.41	106	-489.9
	16:45	1.50	16.17	4.05	435.6	190	1.54	10.4	- 469.1
	16:50	1.75	16.01	3.05	435.7	131	1.69	10.3	-447.1
	16:55	2.10	15.85	46.04	437.0	130	1.76	10.1	-439.4
	17:00	2.50	15,72	8.02	436.7	79	1.88	10.3	-432.7
	17:05	2.90	15.70	45.01	436.6	60.	1.93	10.2	-425.9
	סוירו	3.25	15.75	8,00	42.4	47	207	10.3	-420,9
	17:45	3.60	15.82	4,00	435.7	44	2.27	10.3	-411.7
	17:20	4.00	15.85	4.∞	435.5	42	2.29	10.3	-411.3
	-17								
Final:									1
	LE COLL		Time 17:2	40		Dear			
Date:	2 27 1		A	AM/PM	Method	PERSTAL	10		
Арреа	rance of S	Sample:	CLEAR		Actual S	ample Flow Rate:		nin or	
				11 20- 1	IDOC Des C		L/mi	n	
SAMP	LE BOTTI	LE COLLECTE	ED: K	4 50 00	HINKE ME SCI	in PC	- BZ 20-22FT TA		
SAMP	LING PER	RSONNEL							
Name:	lan	BUTTELL			0		45001		
warne:	- Jim	1) vicele			Compan	у.	AECOM		
		-		- X-1			Minte		-

Low Flow Ground Water Sample Collection Record

Well ID:	PC B2 8-10FT	

Client: MDEQ

Location: Oscoda, MI - Wurtsmith AFB

INSPECTION				ži			111	
Label on well?		YES	No		is cap locked?		YES NO	
Is reference mai	rk visible?	YES	NO		Standing water	YES NO		
Condition of well	II	N	A			f surface runoff in well?	YES NO	
Weather		Ciens	i	•	Air Temperature			
Notes:			516-0X-0-1	•	•			
							_ _	
				1910.			_	
						7	_	
STATIC WATER	R LEVEL PRIC	R TO PURGING						
Date: +17:34		Time: 504		1				
Depth to Water:		5.42	7 (10)	Measured	with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:		10.0		Decontami		Pre Steam Cleaned	DI Water Othe	. 2
			F1	Besontann	matori.	The occam oleaned	Di vvatei Otile	
WELL PURGIN	G	220		22.43		×		
Date: 2/2	7/17		Begin Time:	17:40	AM/PM	Purging Equipment:	PERISTALTIC PL	n D
Date.	111			- / -		Purging Equipment:	1	
			End Time:	18:15	AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION	OF 1 CASING	VOLUME					New Tubing	
A /	ft. Length	of well			Yield:	HIGH LOW		
	ft depth	of water (before	purge start)		If low, recovery			
V	ft. =length	of water column	1					
	x conve	ersion factor (2" v	vell) 0.16		Actual volume p	urged	gallons	
		ng volume		•	Actual purge flo	w rate	ml/roin or	
Near						200 - 100 pt 100	L/min	
Notes -			.					
K					-44			
100	9							
Time	Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 17:56	1.45	5.57	3.27	420.1	92%	1.21	9.3	-610,6
17:55	2.15	5.55	8.24	417.9	725	1,1%	1,3	-615.8
18:00	2.55	5.53	8.09	416.1	307	1.62	9,0	-612,5
18:05	3.40	5.54	3.14	44.7	200	1:14	9.0	- 596.2
15:10	3.90	5.53	8.17	414.3	189	1.18	8.9	-596.9
18:15	4.40	5.53	4115	413.5	170	1.18	4.4	-540.4
,,,,				1.71		1110	V .	3 00. 3
						1		
						-		
Final:				-				
SAMPLE COLL	ECTION							
Date: 2 27	7	Time: 184	5 AMPN	Method	PERISTALI	1		
Appearance of S	Sample:	Curry		Actual San	nple Flow Rate:	460 m1/mi	nor	
		1			p.o i ion itale.	L/min		
SAMPLE BOTT	LE COLLECTI	ED: <u>2</u>	250ml HDP	E PFC SCON				
SAMPLING PE	RSONNEI							
Name:	4 Brown			Company		AECOM		
				134.000				

Low Flow Ground Water Sample Collection Record

Well ID: 24-30FT

Client: MDEQ Location: Oscoda, MI - Wurtsmith AFB

INSPECTION	7/27					= 10 100		
Label on well?		YES	NO		Is cap locked?	YES NO		
Is reference mari	k visible?	YES	NO		Standing water	present?	YES NO	
Condition of well		A(h			Any indication of	of surface runoff in well?	YES NO	
Weather		LIGHT R	Air	-	Air Temperature	9 :	38°F	
Notes:								_
					G.	*	_	
	-						_	
							-	
STATIC WATER	LEVEL PRIC	R TO PURGING	3			1-70		
Date: 2/24/		Time: 12:5%		D				
Depth to Water:		2.58		Measured	with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:			_	Decontam	ination:	Pre Steam Cleaned	DI Water Othe	r
			-				W 28	
WELL PURGING	3							
Date: 2 28	117		Begin Time:	13:00	AM(PM)	Purging Equipment:	MEGIA MONSION)	L
J		-	-/-	14:40				
			End Time:	14:40	AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION	OF 1 CASING	VOLUME					Trow rushing	
f	t. Length	of well			Yield:	HIGH LOW		
f	t depth	of water (before	purge start)	. 7	If low, recovery	time: ^/A		
	t. =length	of water column	1			129,40		
	x conve	ersion factor (2" v	well) 0.16		Actual volume p		_gallons ,	
	Gal. =1 casi	ng volume			Actual purge flo	w rate 20	milmin or Jalhin	
Notes	D	186F 2 125	al Prifore SA	.0.0			1/min	
Indies _			and the same		II. na			
- 14	- 0	HUT DOWN	ICEOIN POLINO	DON AL M P	4102			
		_						
Time	Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	1 1/2
		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 13150	0.0	22.12	7.91	422.4	23	1.92	10.0	-422,2
13:55	0.25	22.45	7,91	422.1	23	1.94	10.0	-405.1
14:00	0,60	22,55	7.92	421.4	30	2.12	9.4	- 346.0
14105	1.00	14.70	7.92	423.2	340	1.85	10.0	-316.9
14:10	1.55	10.20	7,41	424.9	52	1.68	10.1	-378.4
1495	2.10	6,10	7.42	425.2	41	1.57	10.0	-346.8
14:20	260	7.03	7.43	42510	52	1.48	10.0	-414.6
14:25	3.10	6.60	7.43	424.8	40	1.49	10.1	-436.4
月:30	3.75	6.65	7.93	424.3	29	1.47	10.1	- 443.5
A1:35	4,20	6.400	7.94	424.8	30	1.38	10.0	-452.5
Final: 14:46	4.60	6-88	7.44	425.3	32	1:35	10.1	-455.6
SAMPLE COLL						The second second		
Date: 2 25 1	1	Time: 14:4	AM/PN	Method	PERISTALT	16		
Appearance of S	Sample:	CLEAR		Actual Sa	mple Flow Rate:	304 Inl/min	nor .	
						L/min	10 July 1997	
SAMPLE BOTTI	LE COLLECT	ED: X	4 250ml	HOPE PFC SL	AN PC B3	28-30FT TA		
SAMPLING PER	RSONNEL							
Name:	in Bruei	<u> </u>		Company		AECOM	- X to	

Low Flow Ground Water Sample Collection Record

Well ID: PC 33 20-22FT

Client: MDEQ

Location: Oscoda, MI - Wurtsmith AFB

INSPECTION Label on well? Is reference mark Condition of well Weather Notes:	visible?		NO NO NO PLCAST / HEAVY	Pant	Is cap locked? Standing water Any indication of Air Temperature	of surface runoff in well?	YES NO YES NO YES NO	-
STATIC WATER Date: 2/25/1 Depth to Water: Length of Well: WELL PURGING	7		15.00 AMPM	Measure	ed with: mination:	Electronic Lape Pre Steam Cleaned	Chalk & Steel Tape	
Date: Z 25	ř.		Begin Time: _	16:20	AM/PM	Purging Equipment: Decontamination:	MEGA Marson AL Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION (ft ft ft Notes	Length of the dept	of well of water (before) of water column rsion factor (2" w	rell) 0.16	-T BGS	Yield: If low, recovery Actual volume Actual purge flo	ourged 124	gallons ml/min or gal/km	
\		1 1117/0000	7 1112	SPC D				
Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (m8/cm) U5/cm +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 16705	1.0	3.6	797	505	51	1.27	10.3	-485.0
ાજી	17	3.6	7.98	507	37	1.26	10.3	-483.1
16:25	2.45	3.6	7.11	508	35	_1.26	10.3	483.9
1626	3,00	3,6	7.49	507	29	1.25	10,3	7480.2
Final: SAMPLE COLLED Date: 2/26/11 Appearance of S SAMPLE BOTTL	ample: (Time: 16: CLEAR ED: XZ			Sample Flow Rate:	2 Prmp. 460 ml/m		
SAMPLING PER	SONNEL Im Brz	<u>ell</u>		Compar	ny:	AECOM		

Low Flow Ground Water Sample Collection Record

PC B3 7-9FF Well ID:

Client: MDEQ Location: Oscoda, MI - Wurtsmith AFB Project #: 60518528

Label on well? Is reference mark visible? Condition of well Weather Notes:			Is cap locked? Standing water Any indication of Air Temperature	YES NO NO YES NO				
STATIC WATER Date: 2/26 17 Depth to Water: Length of Well:		Time: 16:4	1/4	Measured Decontam		Electronic Tape Pre Steam Cleaned	Chalk & Steel Tape DI Water Other	
Date: 2 24 CALCULATION C ft. ft. G Notes	DF 1 CASING Length c depth c length c x conver			16:45	AM/PM Yield: If low, recovery Actual volume is Actual purge flo	ourged	Pre Steam Cleaned New Tübins gallons ml/min or L/min	DI Water Other
Time	Volume (gallons)	Depth to Water (Feet)	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (°C)	ORP
Start:)7:00)7:05	1.75	<0.33' 3.24 3.28	+/- 0.1 7.43 7.70	+-3% 435() 433.8	+-10% 41%	+/- 10% 1:26 1:54	+1-5% 7.4 7.2	+/- 10 mV -574.7 -579.5
1740 1745 17420 17425	2,75 2,60 3,00 3,40	3.35 3.4 3.48 3.51	7.74 7.74 7.74 7.73	437.4 443.3 444.9 446.3	134 102 95 91	1.30 1.27 1.26 1.29	7.1	-571.2 -558.4 -539.5 -509.1
Final: SAMPLE COLLE Date: 2 28	17	Time: 17 .29	AMPM		PERISTRE			
Appearance of Some Sample BOTTL Sampling PER Name:	E COLLECTE		2 250 N H		mple Flow Rate:	304 LAMIN	g or	

Low Flow Ground Water Sample Collection Record

Well ID: PC BS 35-37 fr

Client: Location: Project #:

INSPECTION

Is reference mark visible? Condition of well Weather Standing water present? Any indication of surface runoff in well? Air Temperature:	Label on well	?	YES	NO		Is cap locked?		YES NO	
Condition of veil			(V.						
Measured with: Section Table Chall & Steel Tape Chall &	Condition of v	veli		~/A					
STATIC WATER LEVEL PRIOR TO PURGING Deate: 2 Lo 17 Time: 10 1/0 Depth to Water 27 \cdot 5 \cdot 6/0 Decontamination: Pris Steam Cleaned Other	Weather		OVERC	AST				37.25	
Despt to Veter 10 10 10 10 10 10 10 1	Notes:						***		_
Despt to Veter 10 10 10 10 10 10 10 1									
Despt to Veter 10 10 10 10 10 10 10 1	N								
Despt to Veter 10 10 10 10 10 10 10 1									
Despt to Veter 10 10 10 10 10 10 10 1	STATIC WAT	ER LEVEL PRIC	OR TO PURGING	•					
Depth to Water Depth to Depth to Conductivity Turbidity Conductivity									
Decontamination: Pre Steam Cleaned Other					Measured	i with:	Electronic Tape	Chalk & Steel Tape	
Date: 10 17 Begin Time: 10 15 AMPM Purging Equipment Pers State Cleaned New Tubing Di Water Other	Length of We	II:			Decontan	nination:			
Date 1	WELL BURG	1210							
End Time: AMPPM Decontamination: Pre Staam Cleaned New Tubing Di Water Other	WELL PURG							PERISTALTIC PUMP	
End Time: AMPPM Decontamination: Pre Staam Cleaned New Tubing Di Water Other	Date:	2/6/17		Begin Time:	10:15	AMPM	Purging Equipment:	1 HEGA Mansoon	×t
CALCULATION OF 1 CASING VOLUME Rt. Length of well Ft. Length of water (before purge start) Rt. Length of water (before purge start) Rt. Length of water column x conversion factor (2' well) 0.16 Actual volume purged Actual purge flow rate Actual			·	_	•				
CALCULATION OF 1 CASING VOLUME T. Length of well T. Length of water (before purge start) If low, recovery time:				End Time:		AM/PM	Decontamination:	New Tubing	DI Water Other
Time	CALCULATIO	ON OF 1 CASING	VOLUME				<i>a</i>)		
Time Volume Depth to (SU) (me/sm) (NTU) (mg/L) (*C) (referm) (gallons) (res) (ft. Length	of well			Yield:	(HIGH) LOV	V	
Sample Collection Sample Class	\/	ftdepth	of water (before	purge start)		If low, recovery t	time:		
Actual purge flow rate 300 Chilming	X	ft. =length	of water column	17.6					
Notes Depth to PH Conductivity Turbidity D.O. Temp ORP	/\	x conve	ersion factor (2" v	vell) 0.16		Actual volume p	urged	gallons	
Notes Spec		Gal. =1 casi	ing volume			Actual purge flow	w rate 300	ml/min or	
Time	Notes							L/min	
Time	140103						· .		
Time			**-				***		
(gallons) Water (Feet) (SU) (FREM) (NTU) (mg/L) (°C) (Feet) (5/4" + 10% + 1				·					
Start: 1050 1.0 21.2 7,64 966 9 2.5 1.4 7.0 -509.6 1055 1.35 21.4 7.04 966 70.2 1.43 7.0 -506.9 11:00 1.70 21.6 7.03 969 6.13 1.53 6.6 -5.7.2 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 21.75 7.04 969 377 1.61 5.2 -503.4 11:05 2.60 2.75 2.75 2.75 2.75 2.75 2.75 2.75 2.75 2.75 11:05 2.60 2.75	Time								ORP
Start:		(gallons)		(SU)		(NTU)	(mg/L)	(°C)	
19.65				+/- 0.1	+-3%		+/- 10%	+/- 5%	+/- 10 mV
11:00	Start: 1056	1.0	21.2	7,04	966	912.5	1.46	7.1	-509.6
	10:55	1.35	21.4	7.04	968	770.2	1.43	7.0	-506.9
Final: SAMPLE COLLECTION Date: 2 6 7 Time: 11:55 AMPM Method PLAISTALTIC Appearance of Sample: CLOUNY Actual Sample Flow Rate: 150 Tumbor Lumin SAMPLE BOTTLE COLLECTED: x2 250.1 ADRE	(1:00	1.70		7.03	969	613		6.6	-547.2
Final: SAMPLE COLLECTION Date: 7/6/17 Time: 11:55 AMIPM Method PIGISFACTIC Appearance of Sample: CLOUPY Actual Sample Flow Rate: 145 Imminor L/min SAMPLE BOTTLE COLLECTED: x2 25011 HDPE SAMPLING PERSONNEL	11:05	2,00	21.75	7.04	969	377	1,41	5.2	-503.4
Final: SAMPLE COLLECTION Date: 7/6/17 Time: 11:55 AMIPM Method PIGISFACTIC Appearance of Sample: CLOUPY Actual Sample Flow Rate: 145 Imminor L/min SAMPLE BOTTLE COLLECTED: x2 25011 HDPE SAMPLING PERSONNEL		- 1		(A	5 Sec. 8_	É	W.		
Final: SAMPLE COLLECTION Date: 7 6 17 Time: 11:55 AMPM Method PLAISTACTIC Appearance of Sample: CLOUDY Actual Sample Flow Rate: 150 rumpor L/min SAMPLE BOTTLE COLLECTED: x2 25011 HDPE SAMPLING PERSONNEL			-=		et,	-			
Final: SAMPLE COLLECTION Date: 7 6 17 Time: 11:55 AMPM Method PLAISTACTIC Appearance of Sample: CLOUDY Actual Sample Flow Rate: 150 rumpor L/min SAMPLE BOTTLE COLLECTED: x2 25011 HDPE SAMPLING PERSONNEL									All and the second
SAMPLE COLLECTION Date: 7 6 7 Time: 11:55 AMPM Method PLAISFACTIC Appearance of Sample: CLOUDY Actual Sample Flow Rate: 150 refinition L/min SAMPLE BOTTLE COLLECTED: x2 250.1 HDPE SAMPLING PERSONNEL									わ
SAMPLE COLLECTION Date: 7 6 7 Time: 155 AMPM Method PERSONNEL SAMPLING PERSONNEL Actual Sample Flow Rate: 150 refinition Limin Actual Sample Flow Rate: 150 refinition Limin									
SAMPLE COLLECTION Date: 7 6 7 Time: 155 AMPM Method PERSONNEL SAMPLING PERSONNEL Actual Sample Flow Rate: 150 refinition Limin Actual Sample Flow Rate: 150 refinition Limin									T ()
Date: 2 6 17 Time: 1:55 AMPM Method PERSONNEL Appearance of Sample: CLOUDY Actual Sample Flow Rate: 150 refinition Limin SAMPLING PERSONNEL					_				aces -
Appearance of Sample: CLOUTY Actual Sample Flow Rate: 140 reminor L/min SAMPLE BOTTLE COLLECTED: x2 25011 HDPE SAMPLING PERSONNEL			Time: 108/	Arm		Dellacor			
SAMPLING PERSONNEL A C 2501-1 HOPE A C 2501-1 HOPE	Date: 616			(AM/PM	Method	PITAISTICTIC			
SAMPLING PERSONNEL A C 2501-1 HOPE A C 2501-1 HOPE	Appearance (of Sample:	CLOUTY		Actual Sa	imple Flow Rate:	140 net/n	nipor	
SAMPLING PERSONNEL				n an in	0.5		L/mi	in	
A. Ram	SAMPLE BO	TTLE COLLECT	ED: X	L 250HL AD	r't	_			
At Casa	SAMPLING F	PERSONNEL							
Ivanie. Company: /	Nome	Jan Buzzell			0				
	ivame:	· · · · · · · · · · · · · · · · · · ·			Company	-	/		
		•					·		

Low Flow Ground Water Sample Collection Record



Well ID: PC B6 35-37'

Client: Location: Project #:

INSPECTION									
Label on well? Is reference mark visible? Condition of well Weather YES NO YES NO YES NO YES NO YES NO NO The proview of the p		YES	NO	Is cap locked?			NO NO		
		YES	Ne		Standing water	present?	YES NO		
		n/4			Any indication of surface runoff in well?				
		`	•	Air Temperature	1	30°F			
Notes:				•				_	
							_		
				,			_	Ψ.	
STATIC WATER	I EVEL PRIC	OR TO PURGING	<u> </u>						
Date: 2 5 (1		Time: 12 25		1					
Depth to Water:	1	6.951		•	ad with:	Electronic Tape	Chalk & Steel Tape		
Length of Well:		37	1704.4	Measured with: Decontamination:		Pre Steam Cleaned	Ol Water Other		
				Decome	arriir ladori.	r re dicam dicaned	Other Other		
WELL PURGING	3								
Date: 2 5 1	7		Begin Time:	12:59	ANDEM	Purging Equipment:	MEGA MENSOON X	1	
Date 1 - [
			End Time:	15:15	AM/PM	Decontamination:	Pre Steam Cleaned New Tubipe	DI Water Other	
CALCULATION	OF 1 CASING	S VOLUME					view rubing		
110	t. Length	of well			Yield:	HIGH LOW			
	t depth	of water (before	purge start)	_	If low, recovery	time:			
	ft. =length	n of water column	ı				_		
	•	ersion factor (2" v			Actual volume p	ourged 53.6	gallons		
		ing volume		•	Actual purge flo		mining or Gilling		
			4			•	L/min		
Notes _	40 40			MILE BRILLING	30-010 87	Grece & bisings			
-	To Boss	gounh few	PATE FOR F	ARABETERS!					
-				<u> </u>					
Time	Volume	Depth to	pH	Spec Conductivity	Turbidity	D.O.	Temp	ORP	
11110	(gallons)	Water	(SU)	(m8/cm)	(NTU)	(mg/L)	(°C)	OKF	
	arth.	(Feet)	1 , 1	US/cm			- 1		
den to	4	<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV	
Start: 14:45	80	14.4	7.13	696	307	18 18-5 Do 7	9.4	-346	
14:50	81.2	14.2	7.14	696	48.5	38 10:0 DOZ	9.1	-398	
14155	\$1.5	9.86	7.14	693	40.7	18 10.71.116	8.0	- 432	
15:90	81.9	9.10	7.13	701	112	38 2-01-13	9.2	- 407	
(5:05	82.5	8:62	7.14	701	160	fitz.	8.9	491	
15110	163.45	8.36	7.15	700	363	1.13	6.7	- รัท	
15:15	43.60	9.11	7.15	700	402	1.13	8.4	- 513	
				` -		-			
		-							
		-	<u> </u>					15.	
Final: SAMPLE COLL	ECTION								
Date: 251		Time: 15:15	AM/PN	Method	Usan Mons	way rL			
			ZIVIT IV	Mediod	Manufactor				
Appearance of S	Sample:	CLEAR		_ Actual S	Sample Flow Rate:		in of		
CANADI E DOTE	LE 00: 150T	'ED. "	7 2.Chl	HOPE PFC	cool	Dmir	1		
SAMPLE BOTT	LE COLLECT	ED:	U DOVAL	inc ne	- ACH-14				
SAMPLING PE	RSONNEL	•				·			
Name:	Ju Br	761		Compa	nv:	LECTON			
Tallie	1,00	WAL.		Compa		Marrie 1			

Low Flow Ground Water Sample Collection Record

Well ID: PC B7 71-73 FT

Client: MOEQ Location: Oscoda MI Project#: Gog 14528

INSPECTION						-2000			
Label on well?			Is cap locked?			YES NO			
Is reference mark visible?				Standing water present?					
Condition of well					of surface runoff in well?	YES NO			
Weather Cusas				Air Temperatu	ıre:	22°F			
Notes:								na.	
· ·									
									
STATIC WATER	R LEVEL PRIC	R TO PURGING	3						
Date: 2 2 1	7	Time: (3:15	_	D					
Depth to Water:		7.08			Measured with: Electronic Tape				
Length of Well:		73		Decontami	Decontamination: Pr		Chalk & Steel Tape Other		
							0.110		
WELL PURGIN									
Date: ZZ	רון		Begin Time:	13:17	AM/RM)	Purging Equipment:	MEGA MONSOO	J KL	
			•						
			End Time:		AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other	
CALCULATION	OF 1 CASING	VOLUME					Trow rubing)		
1	ft. Length	of well			Yield:	HIGH LOV	V		
	ft. <u>- depth</u>	of water (before	purge start)		If low, recover	y time:			
\bigvee	ft. =length	of water column	1						
Λ	x conve	ersion factor (2" v	vell) 0.16		Actual volume	purged <u>ZO</u>	gallons		
	Gal. =1 casi	ng volume			Actual purge f	low rate 0.5	mymin or gallun		
Notes	Cour	TOO	LICATE SPI	man £			Lijikia J \ / Tik		
Notes		un= 0.5 170		THE					
	- CICHADA	045 013 1-10	sec	*******					
			· · · · ·	5PEC					
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP	
	(gallons)	Water	(SU)	(ms/cm) 33	(NTU)	(mg/L)	(°C)		
		(Feet) <0.33'	+/- 0.1	4-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV	
Start: 14:20	15	52.49	8.24	275.8	152	13.33	9,2	-122	
14:25	15:4	52,94	4,21	281.8	148	12.87	8:15	-130	
14130	15.4	53.25	8.22	290,8	141	12.54	5.95	-147	
14:35		53.60	4.07	31211	118	11.38	6,67	Bat690-160	
14:40	lla-6	54.90	7.93	334.5	156	9.02	10.15	-205	
14:45		57,70	8,08	298.3	64	10.29	10.15	-147,1	
14:50		50,70	45,11	303.0	- 76	10.63	9,45	-154	
14:55	1	60,05	6.08	302.6	72	10.42	8.49	-151	
15:00	19.0	60.50	8.08	313.8	75	10.19	7.37	-163	
15:05	19,6	60,95	4.02	328.5	77	9.83	6.89	-180	
Final: 5.110	20.1	61.3	7,99	339.8	74	9,44	6.80	-191	
SAMPLE COLL					110. 41				
Date: 221	1	Time: 151	O AMIPRO	Method	MEGA WA	IS HOUR KL			
Appearance of	Sample:	LOUSY CLEAR		Actual San	nple Flow Rate	: 260 ml/n	nipor		
		1.				L/mi	n		
SAMPLE BOTT	LE COLLECT	ED: <u>\ \ 2</u>	250 MLINA	E + DUPLICATE	PFC				
SAMPLING PE	RSONNFI						<u> </u>		
\	_					AECON			
Name:	Im Borr	N. IL		Company:		אנטיז			
				75 -00-					

Low Flow Ground Water Sample Collection Record

Well ID: PC B7 63-65FT

Client: Location: Project #:

INSPECTION									
Label on well? YES NO			Is cap locked?			YES NO			
Is reference mark visible?				Standing water present?					
Condition of well					of surface runoff in well?	YES			
Weather CLEAR				Air Temperature	e: "	25°F			
Notes:								_	
			-				_		
							_		
				· ·		***	_		
STATIC WATER	LEVEL PRIC	R TO PURGING							
Date: 2 2 1		Time: 15:47	AM/PM)					
Depth to Water:	•	6.73	7 411	Measured	with:	Electronic Tape	Chalk & Steel Tape		
Length of Well:		65			Decontamination: Pre Steam Cleaned				
						The disamination of	DI Water Other		
WELL PURGING	3								
Date: 2/2/1	ר		Begin Time:	15:43	AM/PM>	Purging Equipment:	MEGA Monsoon		
	•		-			3 0			
			End Time: _	16:40	AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other	
CALCULATION	OF 1 CASING	VOLUME					Now Toping		
1	t. Length	of well			Yield:	(HIGH) LOW			
	t. <u>- depth</u>	of water (before p	ourge start)		If low, recovery	time:			
L V 1	t. =length	of water column							
Ι Λ	x conve	ersion factor (2" w	ell) 0.16		Actual volume p	ourged	_gallons		
	3al. =1 casi	ng volume			Actual purge flo	w rate	- marin or galland		
Notes	* Fra	2 STOPPED	AT HAIR				Liftin, J		
_	1 -00	11	7.1 KB-1-1						
		·							
_						-			
Time	Volume	Depth to	рН	Conductivity	Turbidity	D.O.	Temp	ORP	
	(gallons)	Water (Feet)	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)		
	ļ	<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV	
Start: 14 :15	20	6.6	7.26	493	34	0.46	7.42	-366	
* 16.20	1 20.35	6.6	7.34	484	58	2,63	4.13	-157	
16:25	20,95	8 566.85	7.12	491	34	0.54	7.62	v363	
16:30	2.5	6.92	7.26	491.6	355	0.37	9,52	-407	
16:35	22.0	692	7,35	491.1	340	0,15	4.03	-434	
16:40	22.5	60%	7.35	4913	396	0,13	7,70	-442	
			1						
55%									
	<u> </u>								
Final: SAMPLE COLL	ECTION		i		<u> </u>				
Date: 2 2 17		Time: 16:	40 AMPM	Method	MEGA N	ได้เรียดม			
		^ 0		•		10			
Appearance of Sample: 3 (Lovy Actual Sample Flow Rate: 49 ml/mi) or									
SAMPLE BOTTI	E COLLECT	בר ש	250-1 11	OPE + Dupe	CATE	L/min			
		-U. <u>FC</u>	UPPL N	4,10	-11.0				
SAMPLING PER			 -			Λ			
Name: Jw	Bruen	,		Company:		Hacaron			
					16				

Low Flow Ground Water Sample Collection Record

Well ID: PC B7 56-58FF

Client: Location: Project #:

Label on well? Is reference mark visible? Condition of well Weather Notes:		YES NO YES NO NA MAATLY CLOUDY			Is cap locked? Standing water present? Any indication of surface runoff in well? Air Temperature:			_
STATIC WATER Date: 2/3/17 Depth to Water: Length of Well:		R TO PURGING Time: そう 4.9 ft	7 AMPIN	Measure	ed with: mination:	Electronic Tape Pre Steam Cleaned	Chalk & Steel Tape DI Water Other	
WELL PURGING								
Date: 2	[3]17		Begin Time:	9:30	AM/PM AM/PM	Purging Equipment: Decontamination:	Pre Steam Cleaned New Tobing	DI Water Other
CALCULATION f f	t. Length of t depth of t. =length x conver		n well) 0.16	DF 4 4:03	Yield: If low, recovery Actual volume p Actual purge flo	ourged 10.0	gallons _ml/min or galling	
Time -	. Maluma	D#-4-			T (10			
line	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 9:15	7.95	17.55	6.63	699	1167	0.25	8.08	-465
9120	8.75	18.05	6.61	6-161	1503	0,17	8.58	-470
943/5	9.50	16.15	6.70	683	417	0.14	6.05	-468
9:30	10.00	14.8	6.65	677	517	0.12	7.25	- 468
Final:		1						
SAMPLE COLLIDate: Z 3177 Appearance of S SAMPLE BOTTI SAMPLING PER	ample <u>:</u>	Time: 9:30 Lovay	2 250 ml	Actual S	MEGA M	340 MI/min		
Name:	Borrell			Compan	y:	AFcom		

Low Flow Ground Water Sample Collection Record

Well ID: PC 87 33-35FT

			_	Ĺ.
	2	di	в.	۹
- 9	4	÷	/	دا
	7.7	-	æ	

INSPECTION								
Label on well?		YES	\\NO		Is cap locked?		YES NO	
Is reference mai	rk visible?	YES	NO		Standing water	present?	YES NO	
Condition of wel	I	N	M		Any indication of	YES NO.		
Weather CLEAR			Air Temperature	e:	20°P	\		
Notes:					•			_
							_	
		_				_ .		
STATIC WATER	R LEVEL PRIC	OR TO PURGING	3					
Date: 7/3/1		Time: O:	•					
Depth to Water: 38 4-30 6.30		Measure	ed with	Electronic Tabe	Chalk & Steel Tape			
Length of Well:		35 6			mination:	Pre Steam Cleaned	DI Water Other	r
112						Tro ottomir orominos	DI VICIO	
WELL PURGIN	G							
Date: 2/3	רון		Begin Time:	(0:04	AM/PM	Purging Equipment:	DERISTALING DU	LD
			-				1	·
			End Time:	·	AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION	OF 1 CASING	VOLUME					New rubing	
1	ft. Length	of well			Yield:	(HIGH LOI	V	
	ft depth	of water (before	purge start)		If low, recovery	time:		
V .	ft. =length	of water column	ı					
/\	x conve	ersion factor (2" v	well) 0.16		Actual volume p	ourged	gallons	
	Gal. =1 casi	ing volume			Actual purge flo	w rate 360	mi/min et	
Notes							L/min	
-			·					
-			·					
-						·		
Time	Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water (Feet)	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	1909
		<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: /0:(0	1.0	6.33	7.70	342	4555	0.24	4.41	-533
10:15	1.5	6.15	7.89	379	5370	0.14	8.02	-539
10:20	1.95	6.01	7.87	342	3775	0,12	8.41	-538
10:25	2.40	5.9	7.48	347	4051	0.10	8,25	-537
10:30	2,90	5.9	7.85	347	3974	0.08	45.40	-531
	ļ							
Final:	FOTION	3						
Date: 2 3 17		Time: /p:	30 ANI/PM	Mathad	Topica.			
Date. C/3/17		nine. IV	70 Alyi/Pivi	Method	DEBISTALI	TK	_	
Appearance of S	Sample:	CLWBY		Actual S	ample Flow Rate:	360 ml/r	ninor	
CANADI E SOTT	15.0011505	rp	7 95	noc 260 c	ā. 4	Ľ/m	in	
SAMPLE BOTT	LE COLLECT	ED:	2 250 AL H	DPE PECSU	<u> </u>			
SAMPLING PE	RSONNEL	7						
Name: 3	4 Burel			Compan	w.	Acon		
	,, ,, , , , , , , , , , , , , , , , ,			Compan		I VLL DIT		
						· · · · · · · · · · · · · · · · · · ·		

Low Flow Ground Water Sample Collection Record

Well ID: PC B7 108-110FT

INSPECTION								
Label on well?		YES	NO		Is cap locked?		YES NO	
Is reference mark	k visible?	XES	M6-		Standing water	nresent?	YES NO	
Condition of well		N			•	of surface runoff in well?	YES NO	
Weather		$\overline{}$	CLOUNY	-	Air Temperatur		120 110	
Notes:				-	Tomporatar			_
					4-		_	
							_	
STATIC WATER	LEVEL DDIC	P TO BURGING			<u> </u>			
Date: 2/3/17		Time: 16:0		0				
Depth to Water:	<u> </u>	1.15	AIVINEIV	•	al data .			
Length of Well:		1.17		Measured	<	Electronic Tape	Chalk & Steel Tape	
Length of Well.				Decontan	nination:	Pre Steam Cleaned	Ol Water Othe	ī
WELL PURGING	;							
Date: 2 3	m		Begin Time:	16:03	414/704	-	Meda II	
Date. 211	• •		Begin Filme:	10.17	AM/PM	Purging Equipment:	MEGO MUNSON	·
			End Time:		AM/PM_	Decontamination:	Pre Steam Cleaned	DI Water Other
CALCULATION	OF 1 CASING	VOLUME					New Tubing	
ft	. Length	of well			Yield:	HIGH LOW	V	
ft	. <u>- depth</u>	of water (before	purge start)		If low, recovery	time:		
X ft	:. =length	of water column						
	x conve	rsion factor (2" w	/ell) 0.16		Actual volume p	ourged 7%	5 gallons	
	Bal. =1 casi	ng volume		•	Actual purge flo	w rate	5 gallons milimin or gal/am _Limin	
Notes	409	l inighted		Pellura 100-			— Linkin Julyana	
-	707	et trafaction	MAILE D	<u> Pilling 100-</u>	11.0			
-								
_				Spec	·			
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP
7	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
		(Feet) <0.33'	+/- 0.1	us/cn +-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 17:10	77.5	2.8	4.27	5423	65	0.37	6.65	-203
7115	78.4	2.2	8.13	5412	38	0.26	6,11	- 756
17:20	78.95	1,6	8.4	5477	126	0.23	4.40	-783
17:25		1.6	4,07	5447	192	0.21	3,70	-307
17:30	80,0	1.6	8,02	5421	300	0.20	3.66	-729
17:35	80.4	116	7,97	5449	407	0,19	3.75	- 347
	_ "						7,	
				_				
43								
Final:								
SAMPLE COLLE	CTION	47:1			A			200
Date: 2 3 17		Time: 17:5	לי AM/PM	Method	MEGA M	pursion KL		
Appearance of Sa	ample:	LOUDY BLOW	in-	Actual Sa	mple Flow Rate:	320 min	To or	
						L/mir	1	
SAMPLE BOTTL	E COLLECTE	D: <u>X</u> Z	270 ml	40 PE PFC FC	 'Ye-V-4			
SAMPLING PER	SONNEL	-						
	_					AEUN		
Name: 31m	Brreu			Company	··	14.50.1		

Low Flow Ground Water Sample Collection Record

Well ID: PC B8 30-32 FT	Well ID:	PC	BB	30-32FT
-------------------------	----------	----	----	---------

INSPECTION		:								
Label on well?		YES	/NO		Is cap locked?					
Is reference mar	k visible?	YES	NO		Standing water present?					
Condition of well		N	A			f surface runoff in well?	YES NO			
Weather					Air Temperature		36°F			
Notes:	•		-			-		_		
Notes.										
				-			_			
							_			
STATIC WATER	LEVEL PRIO		_							
Date: 1/24/17			30 AM/PM	\supset						
Depth to Water:		14.0		Measured	I with:	Electronic Tape	Chalk & Steel Tape			
Length of Well:				Decontar	nination:	Pre Steam Cleaned	DI Water Other			
WELL BURGIN										
WELL PURGING	3									
Date: 1/24/1-	7		Begin Time:	14.33	AM/PM)	Purging Equipment:	MEGA HONSON XL	+ PERISTALTIC		
							•	1		
			End Time:	15:15	AM/EDD	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other		
CALCULATION	OF 1 CASING	VOLUME					THEW TOURING			
1	t. Length				Yield:	(HIGH) LOW	,			
ft depth of water (before purge start) If low, recovery time:										
					,		_			
<u> </u>		of water column			A street continues of	urged 50	callens			
		rsion factor (2" v	vell) 0.16		Actual volume p		gallons			
<u> </u>	Gal. =1 casir	ng volume			Actual purge flo	w rate	ml/min or gallerin			
Notes							La remi			
-										
-						· ·				
-										
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP		
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)			
		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV		
15.50	50.35	14.2)	6,89	193,4	7.7	0.22	11.13	-490.2		
Start: 15:20	1 1				 	0.18		-510.9		
15:25	50.70)4.4	7.24	193.4	11.78		11,66			
15:30	51.05	14.1	7.55	192.6	96.9	0.13	11.31	- 523,3		
15:35	51.40	14.4	7.76	193.2	482	0.1	11,62	-541.2		
15:40	51.75	14.4	7.92	1928	363	0.09	10,1%	-540,6		
15:45	52.10	14,4	7.95	192-3	349	0, (0	10.16	- 544.2		
15:50	52.45	14.4	7.98	193.1	331	0.08	9.45	-544.4		
Final:										
SAMPLE COLL	ECTION	<u></u>		<u>.</u>	•		·	·		
Date:) 24 17	1	Time: 15	150 AMPM	Method	MEGIS MONE	DON KL				
, ,										
Appearance of S	ample:			Actual Sa	mple Flow Rate:	240 mil/m L/mir	in ør			
SAMPLE BOTTI	E COLLECTE	:D	250 mL H	DPE PFC SCAN	,	511111	•			
SAIVIFLE BUTTI	-E COLLECTE	.u. <u>KZ</u>	- COURT H	WEE ITE SCAN	<u>-</u>					
SAMPLING PER	SONNEL									
				_	_					
Name:				Company	· —					



Low Flow Ground Water Sample Collection Record

Well ID: PC B6 19-21 FT

Cilent:
Location:
Project #:

INSPECTION

Label on well?			NO		Is cap locked?		YE'S NO		
ls refe	rence mark	visible?	YES	NO		Standing water	present?	YES NO	
Condi	tion of well			Δ		_	of surface runoff in well?	YES NO	
Weath	ner		SNOWING			Air Temperatur		36°F	
Notes			Sidomoti	1	•	7tii Temperatui	c .		_
110100	•								
		-							
					110				
	•	LEVEL PRIC	R TO PURGING	G					··
Date:	1 25 17		Time: Z:3	6 AMPI	\triangleright				
Depth	to Water:		134	<u> </u>	Measure	ed with:	Electronic Tape	Chalk & Steel Tape	
Lengt	n of Well:		21		Deconta	mination:	Pre Steam Cleaned	DI Water Other	
MELL	PURGING								
VAELL	PURGING	,							
Date:	1/25	דו		Begin Time:	12:38	AMPM	Purging Equipment:	DERISTALTIC	
				_				•	
				End Time:		AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALC	ULATION (OF 1 CASING	VOLUME					New rubings	
	ft	. Length	of well			Yield:	(AIGH) LOW	1	
	ft	. <u>- depth</u>	of water (before	purge start)	_	If low, recovery	time:		
	ft	. =lenath	of water column	n	-				
		_	ersion factor (2"			Actual volume	nurged	gallons	
	c.	-	ng volume		-	Actual purge fle	- 791	ml/min-or	
		, , ,	ng volume			Actual purge in	DW Tate	L/min	
Notes	_								
	_								
	_								
Time		Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
		(gallons)	Water (Feet)	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
			<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start:	13:05	2	13.6	8.11	220.8	1268	0.35/	10.62	-560
	13:10	2.5	13.6	8.49	220.2	1841	0.15	10.86	-586
	13:15	30	136	9.57	221.2	2080	0.10	10.69	-588
	13:20	3.5	13.6	8.60	221.3	1104	0.09	10.75	- 543
	13:25	40	13.6	8.58	221.7	1030	0.07	10.74	- 597
	13180	4.5	13.6	46.60	221.2	1005	0106	10,45	- 598
	· · · · · · · · · · · · · · · · · · ·								3.0
					-		-		
							_	-	7960
			 	 		 			
Final:						 		-	-
	LE COLLE	CTION			_				
Date:		25/17	Time: 13:	30 AMIPE	Method	DERISTA	LTIC		
	1					`		-	
Appea	arance of S	ample:			_ Actual S	ample Flow Rate:	340 ml/m		
SAME	I E BOTTI	E COLLECT	ED: No	2 250 ml HD	Dr. Den Con	4	Umii	1	
OAWI	LEBOTTE	E COLLECT		C DOME NO	PE PEC SLAN				
SAMP	LING PER	SONNEL					1		
Name	\	L Brize	J.		Compa		AECOM		
, valle		<u> </u>			Compan		11500.		
				y I					

Low Flow Ground Water Sample Collection Record

Well ID: PC 88 24-26FF

INSPECTION								
Label on well?		YES	NO		Is cap locked?		YBS NO	
Is reference mar	k visible?	Y£8,	NO		Standing water	present?	YES NO	
Condition of well	_	NA			Any indication of	of surface runoff in well?	YES NO	
Weather	_	Morrey (Larry		Air Temperatur		31°F	
Notes:	- Pi	prices 7	10 gal 1/2	1/17 CONTINUE	puraina	330gal	_	
							_	
							_	
	-						_	
STATIC WATER	LEVEL PRIOR	R TO PURGING	-					
Date: 1 25 1	7 7	Γime: ⁷	55 AMPM					
Depth to Water:		14.06	1	Measured	with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:	-	26 f		Decontami	nation:	Rre Steam Gleaned	DI Water) Other	
WELL PURGING	3	· · ·						8
ا مل			Basin Time:	4:00	AM/PM	Purging Equipment:	MEGIN HONGON XI	
Date: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1		Begin Time:	d da				
			End Time:	11:43	AMIPM	Decontamination:	Pre Steam Cleaned	DI Water Other
CALCULATION	OF 1 CASING \	/OLUME					Trew Tubility	
1	t. Length of				Yield:	(HIGH)LOW	1.	
f	=	f water (before	purge start)		If low, recovery	time:	_	
	it. =lenath o	of water column						
		sion factor (2" w			Actual volume	purged 330	gallons	
,	Gal. =1 casing				Actual purge flo		mal/path or and the	
		,			, ,		mymin or gallium	
Notes _								
-								
-								
Time	Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
	1	(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: ((:45	330.50	14.4	7.85	267.6	1,9	2.53	10.17	-378.8
il:50	331.00	14.4	7.63	267.6	1.4	2.44	10.29	- 367.5
11:55	331.50	14.8	7.45	268.4	2.0	7.51	9.02	-366.8
12:00	331.95	14.8	7.83	268.4	2.1	2.22	7.92	- 376.3
12:05	332.40	14.8	7.61	270.4	2.03	2.70	7.75	- 374.5
	332.00	14.6	7.40	770.4	2,00	7.20	7.61	- 373.4
12:10	37510	17.6	1.,,	7 70.0	2,00	212		7,7,7
				<u> </u>				
	+						1,81	
					-	+		
Final:	 				 			
SAMPLE COLL	ECTION				<u> </u>	-	<u> </u>	<u> </u>
Date: \ 2 5 \	<u>٦</u>	Time: 12	:10 AMPR	Method	DERISTA	LTIC		
Appearance of S	Sample:	CLEAR	-	Actual Car	nple Flow Rate:	340	≯nr	
Appearance of S	oantpie.	COMP		Actual Sal	npie i iow rtate.	L/min		
SAMPLE BOTT	LE COLLECTE	D: <u>k</u> 2	250NL HOPE	PFC Scan	_			
SAMPLING PER	RSONNEL		·			<u> </u>		
Name:	JIM BYZZEL	1		Company		Aecon		
Name:	Jr \1000L	1		Company:		Vices .		
								

Low Flow Ground Water Sample Collection Record

Well ID: PC BG 141-143FT

INSPECTION					8			
Label on well?		YES \	MO		is cap locked?		YES NO	
ls reference mar	k visible?	YES	NO		Standing water	r present?	YES NO	
Condition of well			_	Any indication of surface runoff in well?				
Weather		SNOW	11mb	•	Air Temperatu		YES NO	
Notes:				•				
						D -		
	5							
			_	7/1			_	
STATIC WATER	LEVEL PRIC	OR TO PURGING						
Date: 1/31/17		Time: 1444		Ď		,		
Depth to Water:		12.2	7 313 11	Measured	i with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:				Decontar		Pre Steam Cleaned	Ol Water Other	
						Tro otoam otoanoa	Otrici	4424°
WELL PURGING	3							
Date: \ 31	17		Begin Time:	14:19	AMAPM)	Purging Equipment:	MEGA HONSOON XL	
1 1	•							
			End Time:		AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION	OF 1 CASING	3 VOLUME					THEM TUBING	
f	t. Length	of well			Yield:	HIGH LOV	V	
f	t depth	of water (before p	ourge start)		If low, recovery	/ time:		
f	t. =lengtl	of water column						
	x conv	ersion factor (2" w	ell) 0.16		Actual volume	purged	gallons	
	Gal. =1 cas	ing volume			Actual purge fl	ow rate	ml/min or	
Notes							L/min	
_			•			<u>~.</u>		
T -	-							
-						-		
Time	Volume	Depth to	рН	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	1
		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start:			-					17 10 1111
			-					
			_	ames ex)			
		1		MESEX				
		10	1 136					
		170		9				-
		,	Λ	11467		-		
			1,0	CELLES		*		
						-		
Final:								
SAMPLE COLL	CTION				100			
Date:		Time:	AM/PN	Method	MEGA MO	msoom XI		
Appearance of S	ample:			Actual Sa	mple Flow Rate:	ml/n	nin or	
	-			,		L/mi		
SAMPLE BOTTL	E COLLECT	ED:			_			
SAMPLING PER	SONNEL							
Name:				Company	: <u> </u>			
14		- 10-			MC-1 meS	· · · · ·		

Low Flow Ground Water Sample Collection Record

Well ID: PC 38 116-118 FT

Client:	
Location:	
Project #:	

INSPECTION									
		A							
Label on well?		YES	NO		Is cap locked?		YES NO		
Is reference mar		YES	NO		Standing water		YES NO		
Condition of well		N/A				f surface runoff in well?	YES NO		
Weather		SNOW			Air Temperature		28°F		
Notes:		19:41 Dans	y bank on	F OF WELL T	TROUBLESH	OUT POR RECOVED	4		
							_1		
							-		
STATIC WATER	LEVEL PRIC			100		W			
Date: 31 17			25 AM/FM						
Depth to Water:		13.9-2.65=		Measured	d with:	Electronic Tape	Chalk & Steel Tape		
Length of Well:		1180	4	Decontar	nination:	Pre Steam Cleaned	Of Water Othe	er	
WELL PURGING	3							500	
Date:(31	17		Begin Time:	16:27	AMIEM	Purging Equipment:	MEGA HOUSOON	KL	
			End Time:		AM/PM				
			end rime.		AWIPW	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other	
CALCULATION	OF 1 CASING	VOLUME					OW TODING		
	t. Length				Yield:	HIGH LOW			
f	t. <u>- depth</u>	of water (before	purge start)		If low, recovery	ime:			
f	t. =length	of water column	1						
	x conve	ersion factor (2" v	vell) 0.16		Actual volume p	urged	gallons		
	3al. =1 casi	ng volume			Actual purge flor	w rate	ml/min or		
Notes	UNABLE T	o PRODUCE	WATER WI	TA PERISTALTI	C. PAN WATE	ER THRUSH METER	L/min		
		3338 mg/			A A	BUCKET THE BUCKET			
_	CONDUCTIVE	1. 11	3514		B8 116-168		Si-1 public		
_	Calendaria	17.07(12.		85 116-118		7.5		
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP	
	(gallons)	Water	(SU)	(m2/ cm)	(NTU)	(mg/L)	(°C)	J	
		(Feet) <0.33'	+/- 0.1	15/c∽ +-3%	+-10%	+/- 10%	+/ 50/	./ 40>/	
Start: 16:45			7.91	5123	1741	0.14	+/- 5% \$, 5	+/- 10 mV - 621.2	
							0,2		
									
	··					 			
						 	<u> </u>		
					 				
		-					 		
					 		+		
<u>.</u>							 		
 Final:					 		 		
SAMPLE COLLE	CTION		<u> </u>						
Date:		Time:	AM/PM	Method					
Appearance of Sa	ample:			A					
Ahearance (1) 25	ampie.			Actual Sai	mple Flow Rate:	ml/mir L/min			
SAMPLE BOTTL	E COLLECTE	:D: 14	250 ML 111	DRE PFC SUA	NALR	חוחות			
SAMPLING PER	SONNEL								
Name:				Company:					

Low Flow Ground Water Sample Collection Record

Well ID: PC 346 106-108 FT

Client: Location: Project #:

INSPECTION										
Label on well?		YES	NÓ		Is cap locked?	YES NO				
Is reference mark	visible?	YES	NO		Standing water	present?	YES NO			
Condition of well			NA		-	of surface runoff in well?	YE8 NO.			
Weather		DARRY	Cran		Air Temperature		DARTLY CLOUDY !	DARILY CLORY / 26.F		
Notes:							1 3 31	_		
										
		***	2,		- 1					
STATIC WATER Date: 21117	LEVEL PRIO	Time: 3:4								
Depth to Water:		6.73	· Alvor ivi	Measured	with:	Electronic Tape	Chalk & Steel Tape			
Length of Well:		10%		Decontam		Pre Steam Cleaned	DI Water Othe	r		
				Decontain	matori,	The Steam Cleaned	DI Water Other			
WELL PURGING										
Date: ZII			_Begin Time:	8:48	AM/PM)	Purging Equipment:	MEGA MONSOO	N XC_		
			End Time:		AM/PM	Decontamination:	Pre Steam Cleaned	DI Water Other		
CALCULATION	OF 1 CASING	VOLUME					New Tubing			
A / ff	. Length	of well			Yield:	HIGH LOW	1			
f	- depth	of water (before	purge start)		If low, recovery	time:	_			
X fi	t. =length	of water column	ı				-54			
	x conve	ersion factor (2" v	well) 0.16		Actual volume	purged	gallons			
	Sal. =1 casi	ng volume			Actual purge flo	ow rate	ml/min or			
Notes	Co	LECTED E	B1 - 02011	7-58 P 12,0	5		Umin			
_										
				SPEC						
Time	Volume (gallons)	Depth to Water	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (°C)	ORP		
	(galions)	(Feet)	(30)	U5/ca	(1410)	(mg/L)	(0)			
		<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV		
Start: 0155	38	51.6	8.43	1546.1	6930	0.22	9.05	-503		
11:00	35,4	51.75	6.22	1700	7130	0.16	4.28	-510		
11:05	39.6	51.45	7.46	4204	2740	0.12	9,46	- 532		
11:19	40.4	53.13	7.92	4466	4384	0.08	9.16	-54		
11:15	41.2	54.5	4,01	3092	2664	0.07	9.57	2746		
11:20	42.0	55.65	4,12	2041	5654	0.07	10.08	- 846		
11:25	42.4	566	8.21	1442	6406	0.08	10.12	-541		
11:30	43.6	56.5	4,75	1297	5175	0.09	9,7	-535		
11:35	44,4	59.75	8.14	1763	7007	0.06	8.70	~533		
11:40	45.2	59.80	4.08	2061	7393	0.05	8.27	-535		
Final: 12:10 SAMPLE COLLE	50.0	62.70	4.02	2338	6738	0.05	9,72	- 534		
Date: 2)1)17	,	Time: 12:19	AM/P	Method	Mega 1	Monsoon KL				
Appearance of S	ample: C	LOUDY BRO	mr	Actual Sa	mple Flow Rate:	<u>600</u> min	or n			
SAMPLE BOTTL			2 250 mL	HOPE		Ĺ /m i	n			
		<u></u>	C C J MV							
SAMPLING PER		-0.01				18000				
Name:	Jim Bu	ritt		Company		AEcom	<u>_</u>			

Low Flow Ground Water Sample Collection Record

Well ID: PC B9 39-41ft

Client: Location: Project #:

INSPECTION

Label on well? Is reference mark visible? Condition of well Weather Notes:			Is cap locked? Standing water Any indication o Air Temperature	f surface runoff in well?	YES NO YES NO YES NO	_		
STATIC WATER Date: / 27) 17 Depth to Water: Length of Well:	1	77.9 - 3 4 - 27.9	4 AMAPM	Measured Decontan		Electronic Tape Pre Steam Cleaned	Chalk & Steel Tape	
Date: 1/72 CALCULATION Of the control of the contr	DF 1 CASING	of well	Begin Time: End Time:	16:10 16:45	AMEM Yield: If low, recovery	Purging Equipment: Decontamination: HIGH LOW	Pre Steam Cleaned New Tubing	DI Water Other
Notes	t. =length	of water (before of water column ersion factor (2" w ng volume	35	· · · · · · · · · · · · · · · · · · ·	Actual volume p	ourged 52.5	gallons mkmin or Jahan L/min	
Time	Volume (gallons)	Depth to Water	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (°C)	ORP
Start: 16150	56.25	(Feet) <0.33' } 기,닉닉	+/- 0.1 7.3 %	+-3% 204.3	+-10%	+/- 10% 0.25	+/- 5%	+/- 10 mV -530.9
16:55	5650	19.44	7.58	207.9	2537	0.25	12.12	-5555.5
17:00	56,75	19.44	7.84	206,6	2341	0.16	11.89	-565.9
17:05	56.90	19.44	7.95	205.9	2151	0.12	11.6%	- 569.3
17:10	57.0	1744	4.03	206.1	2220	0.09	11.70	.574.2
17:15	57.15	19.44	4.04	205,4	21'30	0.0%	11.54	-576.6
					7		_	
	1						-	
Final:	CTION							<u> </u>
SAMPLE COLLED Date: 1/22/17 Appearance of Sample BOTTL	ample <u>:</u>	Time: 17:	250ml H	. Actual Sa	WEGA M ample Flow Rate:	340 mm	inor	
SAMPLING PER	SONNEL BAZE	u		Company	r	Aecon		

Low Flow Ground Water Sample Collection Record

Well ID: PC 139 34-36FT

STATIC WATER LEVEL PRIOR TO PURGING One Pi One	INSPECTION						·		
Static Water Prior	1		YES	NO		ls cap locked?		YES NO	
Condition of well Cond		visible?	/ >	~		•	esent?		
Note: Note	i					• .			
STATIC WATER LEVEL PRIOR TO PURGING Code 1/23 17 Time 5-1/9 Gale 1/23 17 Time 5-1/9 Gale Gale 1/23 17 Gale G		-	Over	453		•			
STATIC WATER LEVEL PRIOR TO PURGING Depth to Water 1/3 10 Depth to Water 1/3 10 Depth to Water 1/3 10 Depth to Water 1/3 10 Decontamination: Pris Steam Cleaned Di Water Other	1		OVER	- / (, iii Tomporatoro.			_
	Notes.		-				<u> </u>		
	ŀ								
Depth to Water Longth of W	1 1 1	LEVEL PRIO							
Decontamination: Pre Steam Cleaned Di Water Other	Date: 1 23 117		Time.	(1) 27 101					
WELL PURGING Date 1 2 1 1 7	Depth to Water:			0	Measured v	vith:	Electronic Tape		
Date: 1/2.5 17 Begin Time: 9/25 MOPPM Purging Equipment: MACA Mouts act X L	Length of Well:		36'		Decontamir	ation:	Pre Steam Cleaned	DI Water Other	
Date: 1/2.5 17 Begin Time: 9/25 MOPPM Purging Equipment: MACA Mouts act X L	WELL PURGING		.						
CALCULATION OF 1 CASING VOLUME End Time: 9 125 A50PM Decontamination: Pre Steam Cleaned Di Water Other New Trubing New Trubi	1 1				-1 1-	_		Α. Α.	
CALCULATION OF 1 CASING VOLUME In. Length of water (before purge start) In. depth of water column x conversion factor (2° well) 0.16 Gal. =1 casing volume Volume (gallons) Water (SU) (Feet)	Date: 1/23	17		Begin Time:	4:45	AM/PM_	Purging Equipment:	MERA MONSOON	X L
CALCULATION OF 1 CASING VOLUME In. Length of water (before purge start) In. depth of water column x conversion factor (2° well) 0.16 Gal. =1 casing volume Volume (gallons) Water (SU) (Feet)	' ' '			End Time	9,25	AMPM	Decontamination:	Pre Steam Cleaned	Di Water Other
Time Volume Depth to (SU) (ms/cm) (NTU) (mg/L) (*C) (*				End time.		141		New Tubing	
Time	CALCULATION	OF 1 CASING	VOLUME						
## ## ## ## ## ## ## ## ## ## ## ## ##	ft ft						- IIA	٧	
X conversion factor (2* well) 0.16	ft	. <u>- depth c</u>	of water (before p	ourge start)		If low, recovery tir	ne: P/A	_	
Notes Actual purge flow rate Time Conductivity Turbidity D.O. Temp ORP	ft	. =length	of water column						
Notes Time		x conve	rsion factor (2" w	eli) 0.16		Actual volume pu			
Notes Time	/ \ G	Sal. =1 casir	ng volume			Actual purge flow	rate ~2	Mymirar GAL /www	
Time Volume (gallons) Water (SU) (mS/cm) (NTU) (mg/L) (*C) (Pel) (-				-	L/Min /	
(gallons) Water (SU) (mS/cm) (NTU) (mg/L) (°C)	Notes _		. <u>-</u>					ON	
(gallons) Water (SU) (mS/cm) (NTU) (mg/L) (°C)	-								
(gallons) Water (SU) (mS/cm) (NTU) (mg/L) (°C)	-								
(gallons) Water (SU) (mS/cm) (NTU) (mg/L) (°C)	Timo	Volume	Depth to	пH	Conductivity	Turbidity	I DO	Temp	ORP
Start: 975 \$0 14,92 \$0.05 199.4 90 \$0.16 9.57 -553.0 13,50 40.15 15.92 7.46 191.3 \$61 \$0.16 9.84 -491.5 9135 40.31 15.92 7.91 192.2 49 \$0.16 9.84 -492.0 9145 40.50 16.92 7.43 192.3 \$66 \$0.15 9.90 -495.2 9145 40.75 15.92 50.00 194.6 40 \$0.15 9.90 -495.2 9150 41.00 14.92 3.04 194.7 31 \$0.14 9.80 -499.0 9155 \$1.25 \$1.92 \$0.05 195.4 38 \$0.14 9.81 -494.9 Final: SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AM/PM Method PCF15TALTIC Actual Sample Flow Rate: Z40 Milminor Limin SAMPLE BOTTLE COLLECTED: X2 250L 10.00 Pf. C 56.00 Pf. C 56	inte		· ·			•	1		
Start: 475 \$0 14.92 \$.05 199.4 90 0.16 9.87 -553.0 1.50 40.15 15.92 7.46 191.3 61 0.16 9.89 -491.8 9.35 40.35 18.92 7.91 192.2 49 0.16 9.89 -492.0 9.40 40.50 16.92 7.93 192.3 66 0.15 9.90 -495.2 9.45 40.50 16.92 6.00 194.6 40 0.14 9.79 -492.0 9.50 41.00 14.92 8.04 194.7 31 0.14 9.80 -499.0 9.55 \$1.25 13.92 \$.08 195.4 38 0.14 9.81 -494.9 Final: SAMPLE COLLECTION Date: 1/23/17 Time: 9.55 AM/PM Method PEFISTALTIC Appearance of Sample: Clear Actual Sample Flow Rate: 240 minimor Limin SAMPLE BOTTLE COLLECTED: x2 250L HDRE PFC 561N SAMPLE BOTTLE COLLECTED: x2 250L HDRE PFC 561N SAMPLING PERSONNEL		, ,	(Feet)	, ,	`				
9 40 5 16.92 7.46 191.3 61 0.16 9.89 -491.8 9 36 40.35 16.92 7.91 192.2 49 0.16 9.89 -492.0 9 40 50 16.92 7.93 192.3 66 0.15 9.90 -495.2 9 45 60.75 16.92 6.00 194.66 40 0.16 9.89 -495.2 9 45 60.75 16.92 6.00 194.66 40 0.16 9.89 -495.2 9 50 61.00 16.92 8.04 194.7 31 0.14 9.80 -499.0 9 55 61.25 18.92 6.08 195.4 38 0.14 9.81 -494.9 Final: SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AMPM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 military SAMPLE BOTTLE COLLECTED: x2 250mL HDPE PFC 560N SAMPLE BOTTLE COLLECTED: x2 250mL HDPE PFC 560N		<i>(2</i> -3							
9135 40.36 18.92 7.91 192.2 49 0.16 9.89 -492.0 9180 80.50 16.92 7.93 192.3 66 0.15 9.90 -495.2 9185 80.75 18.92 8.00 194.66 40 0.14 9.79 -492.0 9150 81.00 18.92 8.04 194.7 31 0.14 9.80 -499.0 9150 81.05 18.92 8.08 195.4 38 0.14 9.81 -494.9 9150 81.05 18.92 8.08 195.4 38 0.14 9.81 -494.9 Final: SAMPLE COLLECTION Date: 1/23/17 Time: 9:55 AM/PM Method PCF15TALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: Z40 Milminor Date: 1/23/17 Time: 9:55 AM/PM Actual Sample Flow Rate: Z40 Milminor Date: 1/23/17 Time: 9:55 AM/PM Actual Sample Flow Rate: Z40 Milminor Date: 1/23/17 Time: 9:55 AM/PM Actual Sample Flow Rate: Z40 Milminor SAMPLE BOTTLE COLLECTED: X2 250L ADRE DFC 56.00 SAMPLING PERSONNEL									
189 1892 7.93 192.3 66 0.15 9.90 -495.2									
9:45 %0.75 15.92 %.00 194.68 40 0.14 9.80 -499.6 9:50 61.00 16.92 8.04 194.7 31 0.14 9.80 -499.6 9:55 81.25 18.92 8.08 195.4 38 0.14 9.81 -494.9 Final: SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AM/PM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milminor Limin SAMPLE BOTTLE COLLECTED: x2 250nl HDPE PFC 56.00 SAMPLING PERSONNEL									
9:50 481.00 146.92 8.04 194.7 37 0.14 9.80 -499.0 9:55 81.25 18.92 8.08 195.4 38 0.14 9.81 -494.9 Final: SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AM/PM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: Z40 milminor L/min SAMPLE BOTTLE COLLECTED: x2 25aml Hills PFC 56.00 SAMPLING PERSONNEL									
9:55 41,25 14.92 4.08 195.4 38 0.14 9.81 - 494.9 Final: SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AM/PM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milmin or Limin SAMPLE BOTTLE COLLECTED: x2 25aml HDPE PFC 561N									
Final: SAMPLE COLLECTION Date: 1/23/17 Time: 9:55 AM/PM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milmin or Limin SAMPLE BOTTLE COLLECTED: x2 25ant HDPE PFC 5con SAMPLING PERSONNEL									
SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AMPM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milmin or Limin SAMPLE BOTTLE COLLECTED: X2 250LL HOPE PFC 561N	9:55	\$1,25	18.92	\$.08_	195.4	38	0.14	9.81	- 494.9
SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AMPM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milmin or Limin SAMPLE BOTTLE COLLECTED: X2 250LL HOPE PFC 561N									
SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AMPM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milmin or Limin SAMPLE BOTTLE COLLECTED: X2 250LL HOPE PFC 561N									
SAMPLE COLLECTION Date: 1 23 17 Time: 9:55 AMPM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 milmin or Limin SAMPLE BOTTLE COLLECTED: X2 250LL HOPE PFC 561N									
Date: 1 23 17 Time: 9:55 AMPM Method PEFISTALTIC Appearance of Sample: CLEAR Actual Sample Flow Rate: 240 Milmin or Limin SAMPLE BOTTLE COLLECTED: X2 250LL HOPE PFC 561N SAMPLING PERSONNEL									
Appearance of Sample: CLEAR Actual Sample Flow Rate: Z40 milmin or Limin SAMPLE BOTTLE COLLECTED: X2 250L HDPE PFC 5612 SAMPLING PERSONNEL			a · 5	ζ.		000	2000		
SAMPLE BOTTLE COLLECTED: X2 250L HOPE PFC 560~	Date: 1 23 17)	7.117.41	2 AM/PN	Method .	PEFISTAL	TIC		
SAMPLE BOTTLE COLLECTED: X2 250L HOPE PFC 560~	Appearance of S.	ample:	CLEAR		Actual Sam	ple Flow Rate:	240 min	nin or	
SAMPLING PERSONNEL					•		∐/m	in	
	SAMPLE BOTTL	E COLLECTE	:D: <u>x2</u>	25 cm HT	IPE PFC SLIN				
	CAMPI NO DES	CONNE							
Name: Jim Brezell Company: YAYCOM							1 0 1		
	Name:)*	- Brezell			Company:		AKCOM		
									

Low Flow Ground Water Sample Collection Record

Well ID: PC B9 25 30F1 27-29FT

INSPECTION			_								
Label on well?		YES	NO		Is cap locked?		YES NO				
ls reference mar	k visible?	YES	> NO		Standing water	present?	YES NO				
Condition of well		NA		_	Any indication o	f surface runoff in well?	YES NO				
Weather		Over	-CMST	_	Air Temperature	e:	37°F	37°F			
Notes:				-							
							_				
							_				
							_				
STATIC WATER	R I EVEL PRIO	R TO PURGING				. <u></u> .		· · · · · · · · · · · · · · · · · · ·			
Date: 1 23 17		Time: 10:2	_	1				Z2.85			
Depth to Water:		19.24		: Measured v	with:	Electronic Tape	Chalk & Steel Tape	- 3.70			
Length of Well:		30		Decontamir		Pre Steam Cleaned	DI Water Other	19.15			
Lengur or wen.				Decontainii	nation.	(DI Water				
WELL PURGING	G										
Date: 1/23/	17		Begin Time:	10:30/10:53	<u> А</u> МДРМ	Purging Equipment:	MEGA MENSOUN XL +	PENHTALTIC			
Date	1						•				
			End Time:	13:23	AM/PM >	Decontamination:	Pre Steam Cleaned New Tubing)	DI Water Other			
CALCULATION	OF 1 CASING	VOLUME					CTGW TUDING)				
	ft. Length				Yield:	HIGH LOW					
1	_	of water (before	purge start)	_	If low, recovery		_				
V ,		of water column		•			_				
 		ersion factor (2" w			Actual volume p	ourged 400	gallons				
/\ ,	-	ng volume	1011/ 0.10	-	Actual purge flo	w rate	7 mi/min or -AL				
	Gai i Casii	ng volume			Actual purge no	Wildle	7 myrain or gallywy				
Notes _			PENNED ?		TED SCREEN	10 ATTEMPT TO					
_	PUTENIN SCE	ZEEN IF PLUC		1	`	MASH DOWN WHILE					
-	DRILLING TH	115 SECTION.	NEED TO PU	RGE HOGELS. CONT	med praging	AT 10153					
	I Values	Do-sth to		0	T. ablate.	D.O.	Tomp	ORP			
Time	Volume (gallons)	Depth to Water	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	(mg/L)	Temp (°C)	J OKF			
	(gallollo)	(Feet)	' '								
	1	<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV			
Start: 13:25	400	19.15	8.29)97.7	35	3,26	10.04	-84.9			
13:30	400.5	19.15	4.72	194.2	1)	3.07	10.02	-79.4			
13:35	403.75	19.15	8.22	194.0	12	2.49	9,96	-78,5			
13:40	404.0	19.15	8.23	194.4	13	2,43	10.02	-44.6			
13:45	401.5	19:15	8.22	196.6	12	3.07	9.93	- 84.2			
	<u> </u>										
Final:											
SAMPLE COLL		17.4	ir o								
Date: 1231-	1	Time: 1310	S AMPN	Method	PERISTAL						
Appearance of S	Sample:	CLEAR		Actual Sam	ple Flow Rate:	310 440 M	⊋ðr				
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				-		L/min					
SAMPLE BOTT	LE COLLECTE	ED: <u>κ</u>	2 250nl H	IDPE PFC Servi	~						
SAMPLING PE	BEONNE										
						۸					
Name:)	in Brzzei	L		Company:		Accom					

Low Flow Ground Water Sample Collection Record

Well ID: PC B9 19-21 Fr

INSPECTION								
Label on well?		YES	No		Is cap locked?			
Is reference ma	ark visible?	YES	NO		Standing water pr	resent?	YES NO	
Condition of we	ell	NA	_			surface runoff in well?	YES NO	
Weather		OVERC	RSF	•	Air Temperature:		37°f	
Notes:				•	, , , , , , , , , , , , , , , , , , , ,			_
						_	-	
1							_	
1							_	
CTATIO WATE	DIEVEL DDIO	D TO DUDONI						
امداد		Time: 나						
						The state of the s	Challe 9 Charl Tana	
Depth to Wate		19.6		Measured v		Electronic Tape	Chalk & Steel Tape	
Length of Well	:	21 5	<u> </u>	Decontamir	nation:	Pre Steam Cleaned	Ol Water Other	r
WELL PURGI	NG			· · · · · · · · · · · · · · · · · · ·				
1	حلما			11/100			D	
Date:l/2	23/17		Begin Time:	14:30	AM/PM)	Purging Equipment:	PERISTALTIC	
			End Time:		AM/PM	Decontamination:	Pre Steam Cleaned	DI Water Other
CALCULATIO	N OF 1 CASING	VOLUME					New Tubing	
CALCULATIO	ft. Length				Yield:	(FIGH LOW		
	-	of water (before	numo etart\		If low, recovery tin			
<u> </u>				•	ii low, recovery ti		_	
 	-	of water column						
		ersion factor (2" v	vell) 0.16		Actual volume pu		_gallons	
	_Gal. =1 casi	ng volume			Actual purge flow	rate <u>240</u>	_m/min or L/min	
Notes								
1								
1								
Time	Volume	Depth to Water	pH (SU)	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/L)	Temp (°C)	ORP
1	(gallons)	(Feet)	(30)	(mo/cm)	(1410)	(IIIg/L)		
		<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 14:45	0.95	18.5	8.51	212.8	735	0.40	10.61	-530,1
14:50	125	18.5	8.70	21214	341	0,37	10.83	-539.1
14:55	1.55	18.5	4.62	213.1	164	0.32	10.85	-5402
	_							
15:0	1.65	15.5	16.60	212.9	35	0,35	10.84	- 538.4
15:05	1.65	15.5	46.60 45.5%	212.9	33			-530.2
	1.85	15.5	-			0,35	10.84	
15105	1.85	15.5	5.58	212.5	33	0,35 0,34	18.81	-530.2
15105	1.85	15.5	5.58	212.5	33	0,35 0,34	18.81	-530.2
15105	1.85	15.5	5.58	212.5	33	0,35 0,34	18.81	-530.2
15105	1.85	15.5	5.58	212.5	33	0,35 0,34	18.81	-530.2
ド105 15:10	2.45	15.5	5.58	212.5	33	0,35 0,34	18.81	-530.2
ドランクランドリウンドリウンドリウンドリウンドリウンドリウンドリウンドリウンドリウンドリウ	1.85 2.45 2.45	16.5 18.5	4.57 4.57	212.5 2 12.4	33 31	0,35 6,34 0,33	18.81	-530.2
ド105 15:10	1.85 2.45 2.45	16.5 16.5 18.5	7.5% 7.57	212.5 2 12.4	33	0,35 6,34 0,33	18.81	-530.2
ドラ 105 ルラ 110 Final: SAMPLE COL	1.85 2.15 2.45	16.5 16.5 18.5	4.57 4.57	212.5 2 12.4 Method	33 31	0,35 6,34 0,33	18.61 18.61 08.01	-530.2
ドルランドの ドランドの Final: SAMPLE COL Date: リフン	1.85 2.15 2.45	16.5 18.5 18.5 Time: 15:	5.5€ 5.57 AMFM	21고.5 2)z.니 Method	33 31 PERSTALE	0.35 6.34 0.33	18.61 18.61 08.01	-530.2
Final: SAMPLE COL Date: \(\int Z^2 \)	1.85 2.15 2.45	16.5 18.5 18.5 Time: 15:	5.5€ 5.57 AMFM	212.5 2 12.4 Method	33 31 PERSTALE	0,35 6,34 0.33	18.61 18.61 08.01	-530.2
Final: SAMPLE COL Date: 1 2 3 Appearance of	LECTION DIT	16.5 18.5 18.5 Time: 15:	5.5€ 5.57 AMFM	21고.5 2)z.니 Method	33 31 PERSTALE	0,35 6,34 0.33	18.61 18.61 08.01	-530.2
Final: SAMPLE COL Date: \(\int Z^2 \)	LECTION DIT Sample: TLE COLLECTE	14.5 14.5 18.5 Time: 15:	5.5€ 5.57 AMFM	21고.5 2)z.니 Method	33 31 PERSTALE	0,35 6,34 0.33	18.61 18.61 08.01	-530.2
Final: SAMPLE COL Date: 1 2 3 Appearance of	LECTION DIT	14.5 14.5 18.5 Time: 15:	5.5€ 5.57 AMFM	21고.5 2)z.니 Method	33 31 PERSTALE	0,35 6,34 0.33	18.61 18.61 08.01	-530.2

Low Flow Ground Water Sample Collection Record

Well ID: PC BII 10 15

INSPECTION		-						
Label on well?		YES	NO		Is cap locked?		YES NO	
ls reference mar	k visible?	YES	NO		Standing wate	A Part of the Control	YES NO	
Condition of well	1					of surface runoff in well?	YES NO	
Weather					Air Temperatu			
Notes:								
							_	
								
							_	
Date: 1/12/17	R LEVEL PRIC	OR TO PURGING						
1		Time: 15:35	AM/PM		***			
Depth to Water:		15		Measured		Electronic Tape	Chalk & Steel Tape	
Length of Well:				Decontam	iination:	Pre Steam Cleaned	DI Water Ot	her
WELL PURGING	G			,			Wonsoon XL	
Date: 1/12	17		Begin Time:	16:00	AMPM	Purging Equipment:	PPI CONTE	Der 10
	5		End Time:	16:35	AMPMIL 45	Decontamination:	Pre Steam Cleaned	DI Water Other
CALCULATION	OF 1 CASING	VOLUME		Pan -			New Tubing	
1.00	ft. Length				Yield:	HIGH LOW		
	•	of water (before	ourge start)		If low, recover			
		of water column						
·	•	ersion factor (2" w	(III) 0 16		Actual volume	nurged .	gallons	
Ι ,		ng volume	City 0.10		Actual purge fl		gailoris ml/mjn-or	
	- 1 Casi	ng volume			Actual pulge II	OW Fale	L/min	
Notes _								
-								
Time	Volume	Depth to	рН	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 16 35	7	-0.55	7.30	601.4	316	1.24	9.3	-462,1
(6 4)	 		7.26	599.9	199	1.02	9.29	-439.6
			7.25	599.4	155		9.03	-418.1
16.45			1.65	533.9	155	3.91	1,05	= 418.1
	-	 						
	+						1	
	 						-	
	 							
	 						 	
Et-al.				 .				
Final: SAMPLE COLL	ECTION .				77			
Date: 1/12 1		Time: 16:4	AM/PM	Method	11 PERIS	TALTIC (B)		
111	1	^	· VIANLIA	WELLIOU		(3) 350		
Appearance of S	Sample:	LOUDY		Actual Sar	mple Flow Rate:	ml/min	br	
SAMPLE BOTTI	E COLLECTE	ED: <u> </u>	2 PFC			□min		
SAMPLING PER					-			
SAMPLING PER	_				,	1000		
Name: ,),	n Brizel	<u>L</u>		Company:		(F. Com		

Low Flow Ground Water Sample Collection Record

Well ID: PC B11 20-25 FT

INSPECTION Label on well? Is reference mark visible? Condition of well Weather Notes:				Is cap locked? Standing water p Any indication of Air Temperature:	surface runoff in well?	YES NO YES NO 31° F		
Date: I		Time: 14 9	4 1000	Measured Decontarr	(Electronic Tape Pre Steam Cleaned	Chalk & Steel Tape Other Other	
Date: \\ \ \ \ \ \ \ \ \ \ \ \ \	7	VOLUME	_Begin Time: End Time:	14:50 15:10	AM/PM AM/PM	Purging Equipment: Decontamination:	Pre Steam Cleaned	N Water Other
ft ft ft South	depth : =length x conve	of well of water (before of water column rsion factor (2" v	1		Yield: If low, recovery ti Actual volume pu Actual purge flow	urged [0	 _gallons _ml/min or _Umin	
Time	Volume (gallons)	Depth to Water (Feet) <0.33'	pH (SU) +/- 0.1	Conductivity (mS/cm) +-3%	Turbidity (NTU) +-10%	D.O. (mg/L) +/- 10%	Temp (°C) +/- 5%	ORP +/- 10 mV
Start: 1546		9	7.23	611.5	1158	0.66	5.27	-510
15:18		9	7.21	611.3	1301	0.43	4.46	-529
15:20		9	7,21	611.8	1241	0.33	8.55	-534
Final.						 		
Final: SAMPLE COLLE Date:	ample:	Time: 15:20	AMPM 2 HOPE		アにより下Aし mple Flow Rate:	360 ml/min	n or	
Name:	n Buzzell			Company	:	Arcom		

Low Flow Ground Water Sample Collection Record

Well ID: PC BIZ 7.5-10FF

Client: MDEA Location: PC 312 Project #: 60514524

INSPECTION

Label on well?		YES	NO		is cap locked?		YEŞ NÓ	
Is reference mar	k visible?	YES	NO		Standing water	present?	YES NO	
Condition of well			la		•	of surface runoff in well?	YES NO	
Weather		CLOUDY			Air Temperatur		34°F	
Notes:			· · ·		7 til 1 diriporator			-
							_	
				.,,		,·	_	
STATIC WATER	LEVEL PRIC	0						
Date: 1/4/17		Time: 9:43	AM/PM					
Depth to Water:		4.53		Measure		Electronic Tape	Chalk & Steel Tape	
Length of Well:		ie vo		Decontai	mination:	Pre Steam Cleaned	Other Other	
WELL PURGING	3							
حاساه				0			PERISTALTIC	
Date: 1/16/17	Date: 11(6)(1) Begin Time:		Begin Time: _	9:46	AM/PM	Purging Equipment:	byselv poprany X	<u> </u>
			End Time:	9155	AM/PM	Decontamination:	Pre Steam Cleaned	DI Water Other
CALCULATION	OE 1 CASING	NOLLIME				3	New Tubing	
					Yield:	HIGH LOW		
	ft. Length of well ft depth of water (before purge start)		nurgo stort)		If low, recovery			
					ii low, recovery	ume:		
f	•	of water column						
	`-	ersion factor (2" v	vell) 0.16		Actual volume		gallons	
-		ng volume			Actual purge flo	ow rateUZ	ml/min-or L/min	
Notes _	Cal	LECTED D	up I				On the contract of the contrac	
_			<u> </u>					
_								
Time	Volume (gallons)	Depth to Water	pH (SU)	Conductivity	Turbidity	D.O.	Temp	ORP
Tr.	(gallons)	(Feet)	(80)	(mS/cm)	(NTU)	(mg/L)	(°C)	
9:55		<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start:		4,53	6.91	513,4	577	0.65	5.61	-583.6
10:00		4.53	6.92	511.1	265	0.47	5.56	-518.4
10:05		4.53	6.92	508.6	176	6.44	5.71	- 495.0
					7. 1			
- 1								
					11			
5 1								
	No.						. 8	
Final:								
Date: 1/1%/17	ECTION	-1	A A 4 (77) 4		DERISTA	LTI		
Date: 1110111		Time:	AM/PM	Method	1			
Appearance of S	Sample:	<u>.</u>		Actual Sa	ample Flow Rate:		g or	
			7			L∕min		
SAMPLE BOTTI	LE COLLECT	ED:	KZ HDPE	PFC SEAN	_			
SAMPLING PER	RSONNEL							
Name:	in Brie	l i		0	.ii	AECOM		
Name:	in Profe	ч	-	Compan	y	IV-	<u> </u>	
				·				

Low Flow Ground Water Sample Collection Record

Well ID:	PC	BIZ	17.5 - 20 FT	
		1/16	1113 0011	

Client:	
Location:	
Project #:	

INSPECTION

PRIOR TO PURGIN	A CAST		Standing water p Any indication of Air Temperature	f surface runoff in well?	YES NO	-
PRIOR TO PURGIN	GAST				=	-
PRIOR TO PURGIN	IG		Air Temperature	:		-
					_ _	
					_	
					_	
Time:	A \$ 4 / D \$ 4					
	AM/PM					
		Measure	d with:	Electronic Tape	Chalk & Steel Tape	
· · · · · · · · · · · · · · · · · · ·		Decontar	mination:	Pre Steam Cleaned	DI Water Other	
		· · · · · · · · · · · · · · · · · · ·				
	Begin Time:	12:03	AMPM	Purging Equipment:	MEGA MONSOUND	×L_
	End Time:	16.53	AM/M	Decontamination:	Pre Steam Cleaned	DI Water Other
ASING VOLUME				•	New Tubing	
ength of well			Yield:	HIGH LOW		
ft depth of water (before purge start)			If low, recovery t	ime:	_	
ength of water colum	n			400		
	well) 0.16			uigeu	gallons	
1 casing volume			Actual purge flow			
			<u>.</u>	/=,15ga1/wa	. Динип	
	<u></u>	·	·			
me Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP
ons) Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
	6.97	5706	28.45	0.62		-3981
	619	573.2	14.0	0.4	8.76	-425,8
					<u> </u>	
					-	
	-				 	
			 		<u> </u>	
			-			
	-				 -	
Time: 17	,00 _{AM/PM}	Method	DERISTA	LTIC		
N. (48)				17.40	2.	
Com	250×L	Actual Se	ample Flow Rate.	L/min	DOF	
LECTED:	x2 HDPE	PFC School	_			
L				A	-	
reil		Company	<u></u>	ARUM		
	ength of well depth of water (before length of water column conversion factor (2") 1 casing volume Time:	End Time: ASING VOLUME ength of well depth of water (before purge start) length of water column conversion factor (2" well) 0.16 1 casing volume Time: 17.00 AM/PM CLEAR ECTED: X2 NDPE	End Time: 15.53 ASING VOLUME ength of well depth of water (before purge start) length of water column conversion factor (2" well) 0.16 1 casing volume Time: 17.00 AM/PM Time: 17.00 AM/PM Actual Salace LECTED: x2 NDPE PFC Scalace ASING VOLUME PH Conductivity (mS/cm) (mS/cm) (mS/cm) (mS/cm) (mS/cm) AMPM Method Actual Salace LECTED: x2 NDPE PFC Scalace ASING VOLUME Physical Salace AMPM Actual Salace ACTUAL Sala	End Time: Sang Volume Sang Volume Yield: If low, recovery to depth of water (before purge start) If low, recovery to depth of water column Conversion factor (2" well) 0.16 Actual volume part of the part of t	End Time: Lo.53 AM/PM Decontamination: ASING VOLUME Ength of well Yield: HiGH LOW	End Time: Ib. 55 AMI/FID Decontamination: Pre Steam Cleaned New Tubing

Low Flow Ground Water Sample Collection Record

Well ID: PC B13 8-10fr

Client:
Location:
Project #

INSPECTION								
Label on well?		YES	NO		Is cap locked?		YES NO	
Is reference ma	rk visible?	YES	NO		Standing water	present?	YES NO	
Condition of we	I	1/4	1			f surface runoff in well?	YES NO	
Weather		OVERC	A 5 F		Air Temperature		35°F	`
Notes:								_
						7	_	j.
		-						
						100		3
STATIC WATER	R LEVEL PRIC	R TO PURGING	,		-0.			14
Date: 1/20/1		Time: 11:45			F17			3.
Depth to Water:		5.901		Measured	with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:		10.00		Decontami		Pre Steam Cleaned	DI Water Othe	•
				Decontain	madon.	The oteam oleaned	Di vvatei Otile	
WELL PURGIN	G					300		
Date:	20/17		Begin Time:	11:47	<u>ам</u> и	Purging Equipment:	PERISTALTIC	DUMP
	•		_	12:30			ı	· · · ·
			End Time: _	10.10	AM/PM)	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION		VOLUME						
7	ft. Length				Yield:	HIGH LOW		
	ft depth	of water (before	purge start)		If low, recovery	time:	_	
X	ft. =length	of water column						
	x conve	ersion factor (2" w	vell) 0.16		Actual volume p	ourged	gallons	
	Gal. =1 casi	ng volume			Actual purge flo	w rate	mi/min or	
Notes							Umin	
	· · ·					·		
Time	Volume (gallons)	Depth to Water	pH	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	(Feet)	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
	-	<0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: 12110	4.5	5.9	6.05	453	409	0.52	9.52	-485
12:15	2.0	5.9	6.54	451	163	0.32	8.97	-499
12:20	7.5	5.9	6.80	453	44.4	0.25	8.73	- 485
12:25	3.0	5.9	6,91	451	36.5	0.21	4.37	-499
12:30	3.5	5.9	6.95	457.9	29	0.19	8,33	- 503
-,-	ļ							
						· ·		
				7 -1		-		_
					1 22 1			
<u> </u>	 				.0	31.		
Final: SAMPLĘ COLL	ECTION			- 3/5			3	
Date: 1 2017		Time: 12:3	AM/PM	Method	PEHSTAL	ric :		
			,		9	William III	A 120	
Appearance of	sample:	CLEAR	<u> </u>	Actual San	nple Flow Rate:	420 ml/mi		
SAMPLE BOTT	LE COLLECTE	ED: ×9	250 ML HDP	E PFC SCAN	J 9 2	Limin	No. of the last	9. 5. 14
			- FILME AVI	7 110 704		113		
SAMPLING PE	_							
Name:	m Bried			Company:		AECOM	H. 11	
			26 - 2		2.14	The state of the s		

Low Flow Ground Water Sample Collection Record

Well ID: PC B13 14-20 FT

INSPECTION		7						
Label on well? YES NO			Is cap locked?		YES			
Is reference mark visible?		Standing water present?		YES NO				
Condition of well		N			Any indication of	surface runoff in well?	YES NO	
Weather		OVER CAST	F0664		Air Temperature:		37°F	-
Notes:			1				_	
							_	
							_	
							-	
STATIC WATER	LEVEL PRIO	R TO PURGING						·
Date: 1/21/17		Time: 11:40		ı				
Depth to Water:		,		Measured	with:	Electronic Tape	Chalk & Steel Tape	
Length of Well:	•	20		Decontami	nation:	Pre Steam Cleaned	DI Water Other	
WELL PURGING				.				
المال			Pagin Time:	11:43	AM/PM_	Purging Equipment:	MEGA Monsuon	EL + PERISTALTIC
Date:			Begin Time:					
1			End Time:	15:05	AM/PM>	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other
CALCULATION (OF 1 CASING	VOLUME						
ft	t. Length	of well			Yield:	HIGH LOW		
ft	t depth	of water (before)	purge start)		If low, recovery ti	me:	_	
n	t. =length	of water column						
	x conve	rsion factor (2" w	rell) 0.16		Actual volume pu	irged 325	_gallons	
	Gal. =1 casir	ng volume			Actual purge flow	rate 1.60	_mi/min-or gal/own	
Notes	Don Di	:n 1750:	Hous Daw	V HOLE WHILE	P. Caning	CETTING	L/min J	
Notes _	Casinoli.	D1065 326	- 14 BC 50	IRE RECORDING	PARAMETERS	1		
-	BATTERY	DIED REPLA			EXO HAND H	ELD UNIT		
-	DAINERY	DIED THE PLIS	<u> </u>	0.10 11-				
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.O.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
JB 15:12		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start:	325	6.45	7.06	593.2	10	2.29	9.4	-190.8
15:15	325.25	6.45	NA	N/A	N/A	N/A	AļA	N/A
15:45	326	6.85	7.11	584.6	75	1.69	9.41	-224.2
15:26	326.4	6.85	7.13	582.4	39	1.59	9.49	- 238 2
15:25	326.75	6.45	7.14	584.1	27	1.54	9.52	-236.9
15:30	327.15	6.45	7.15	544.3	20	1.49	9.49	- 243,7
15:35	327.50	6.45	7.15	590.1	18	1.45	9.49	-252.3
15:40	327.9	6.85	7.15	591.3	19	1.51	9.45	-251.6
Final:			<u> </u>				<u> </u>	
SAMPLE COLL	ECTION	Time: 15:4	HO AMEN	A A a A b a c d	DERISENLE	v DV-D		
Date: 1 211	l		AMIEN		DERISENLY			
Appearance of S	ample <u>:</u>	CLEAR		Actual Sar	nple Flow Rate:		or	
			2001	HOPE PIC	Com	L/min		
SAMPLE BOTTL		:U: <u>KZ</u>	250 LL	HALE LAC				
SAMPLING PER	_					1/1		
Name:	in Bre	<i>f</i> il		Company:		AFCOM		

Low Flow Ground Water Sample Collection Record

Well ID:	PC	BIH	19-21FT	

INSPECTION								
Label on well? YES NO			Is cap locked?					
Is reference mark visible? YES NO			Standing water present?					
Condition of wel	Condition of well NA				of surface runoff in well?	YES NO		
Weather		OVERC	NST	-	Air Temperatu		35°F	,
Notes:			-	-				
							_	
							_ _	
							_	
STATIC WATER	RIEVEL PRIC	R TO PURGING			<u> </u>			
Date: 1/19/17		Time: 11:34		4				
Depth to Water:	2		B45	<u>.</u> Measured	1 with	Electronic Tape	Chalk & Steel Tape	
Length of Well:		21	1)417	Decontamination: Pre Steam Cleaned		DI Water Othe		
				Becontain	illiadori.		Di vvatei Otile	
WELL PURGIN	G							
Date: 1/19	N N		Begin Time:	10:36	AM/PM	Purging Equipment:	70C001 2	
	1						PERISTALTIC	
			End Time:	11:55	AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	Di Water Other
CALCULATION	OF 1 CASING	VOLUME				(New Tubing	
	ft. Length	of well			Yield:	HIGH LOW		
	ft depth	of water (before	purge start)	_	If low, recovery	/ time:	44	
<u> </u>	ft. =length	of water column						
/\	x conve	ersion factor (2" w	vell) 0.16	_	Actual volume	purged 2	gallons	
	Gal. =1 casi	ng volume			Actual purge fl	ow rate ろん	ml/min or	
Notes	(,	olleiged f	81 - 011917	T.B.			L/min	
Trotes		T dalper	11-011717	- 012		·		
-				···				
-								
Time	Volume	Depth to	pН	Conductivity	Turbidity	D.Ö.	Temp	ORP
	(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)	
		(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV
Start: :40	0.5	16.8	7.07	649.1	6145	0.44	11.72	-585
11:46	1.25	16.8	7.65	656.5	3063	0.63	11,62	-459.6
11:50	1.60	16.6	7.76	645,0	1501	1.26	11.50	-402
11:55	2,00	16.8	7.76	639	1144	1.53	11.48	- 380
	1							
		0.						
Final:			1					
SAMPLE COLL	ECTION	man inco	~ ~					
Date: 19 17		Time: 11:59		Method	- DERIGITAL			
Appearance of S	Sample: (Loudy + BR	unin	Actual Sa	mple Flow Rate:	360ml/mi	n or	
	_	' . 7	11200 2	200		L/min		
SAMPLE BOTT	LE COLLECTE	ED: X-6	- HUPE 25	ionl Pfc sca	7			
SAMPLING PEI	RSONNEL						-	
Name:	m Buzze	LL		0		Accom		
Name:	0.202		,	Company		11,000		
		· · · · · · · · · · · · · · · · · · ·	**					· · · · · · · · · · · · · · · · · · ·

Low Flow Ground Water Sample Collection Record

Well ID: PC BILL 28-30FT

Client: Location: Project #:

INSPECTION Label on well?

Label on well? Is reference mark visible? Condition of well Weather VES NO VES NO VES NO VES NO VES NO VES NO VES NO VES NO VES NO VES NO VES NO VES NO NO NO NO NO NO NO NO NO N			YES	NO		Is cap locked?	YES NO			
			1 2000 000			Standing water present?		YES NO		
		_	Any indication of surface runoff in well?		YES NO					
		OVER	CAST	_	Air Temperature: 35°F			<u> </u>		
Notes	:							_		
								_		
					-			_		
STAT	C WATER	LEVEL PRIC	R TO PURGING	3			AC N	-		
	1/19/16		Time: 15:3		Л			#25		
	to Water:	1	16.8		≝ Measured	d with:	Electronic Tage	Chalk & Steel Tape		
	n of Well:	ž.	30		Decontan		Pre Steam Cleaned	DI Water Other		
							, to otoam otoamou	Di Water Carlo		
WELL	PURGIN	3						242		
Date:	NIA	1/17		Begin Time:	13:35	AM/PIÑ	Purging Equipment:	MEEN MONSOUN KL	PERISTALTIC	
Date.	- 1	111		_	00.				/	
				End Time:		AM/PM	Decontamination:	Pre Steam Cleaned New Tubing	DI Water Other	
CALC	ULATION	OF 1 CASING	VOLUME					Trew rubing		
	f	t. Length	of well			Yield:	(HIGH LOW			
	\	t. <u>- depth</u>	of water (before	purge start)	_	If low, recovery t	ime:	_		
	\/ f	t. =length	of water column	ı						
	À	x conve	ersion factor (2"	well) 0.16		Actual volume p	urged 150	gallons		
	/	Gal. =1 casi	ng volume		_	Actual purge flow	v rate 4.145	ml/min or		
Notes		NASH	(> 1 = 0	La Lore Transit	76		D-10/1-C	Umin		
Notes	-					of water		_		
	-	150	britishs BEFO	pe Gulli	Bul RECORDING	mensure ma	WFS			
	_			<u> </u>			-			
Time		Volume	Depth to	pH	Conductivity	Turbidity	D.O.	Temp	ORP	
		(gallons)	Water	(SU)	(mS/cm)	(NTU)	(mg/L)	(°C)		
			(Feet) <0.33'	+/- 0.1	+-3%	+-10%	+/- 10%	+/- 5%	+/- 10 mV	
Start.	15:40	150.1	16.40	8.02	402.2	27.7	11.0%	9.96	-30.3	
Otart.	15:45	150.25	16.80	7.98	418,1	55.7	10.54	10.05	-31.0	
	15:50	150.50	16.50	7.98	419.1	20.2	10.21	10,26	- 31.8	
	15:55	151.0	16.80	8.01	419.9	21.14	10.01	10.01	- 34.4	
	16:00	151.5	16.50	3.03	419.6	20.82	9.86	10.19	-37.2	
	1010-	171. 3	10,00	1 3	117.0	20.52	1,00	10.11	- 5-11-2	
						 		-		
				1		1	-	_		
									1	
Final:	,									
SAME	LE COLL	ECTION					" "			
Date:	1/19/1	7	Time: lb	AMPI	Method	DERISTAL	ric			
Anner	/ arance of S	ample:	CLEAR		Actual Sa	mple Flow Rate:	316 mi/mi			
hhg	nance un c	ampic.	V		_					
SAMF	LE BOTTI	LE COLLECTI	ED: «/	2 250ml Hi	OPE PFC 36	~				
0.45	1110	2001:::::								
SAMP		RSONNEL					Λ			
Name		Jin Brr	ELL		Company	r	Accom			

Appendix D

Field Activity Log	
Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 1//0//7
Location B 10	_ Day SO MO TO WO THO FO SO
Contractor CASCADE	Weather/Temp_#EAUY SNOW ZO'S
Equipment Onsite:	Tank
Equipment Onsite: MINI SONIC KID STEER	
Personnel Onsite: MIKE WOLF - A DAN DRIVER >	
Work Performed (suppriary of services performed in	O CLEAR SNOW FROM 2-TRACK AND PRILLING
	ED RIG TO BIO
NEED TO GET WATE	ER FROM DIFFERENT SOURCE OTHER THAN
DSCODA MUN	ICIPAL WATER - POTENTIALUY I MPACTED
	ALLESS ON FOOTS LAKE BUT COULD NOT
	High ENOUGH.
USE AU GRES V	MUMBE WATER. FILL 250 GAL TOTE IN THE
MORNING.	
HIGH WIND / BLOW!	NG SNOW ADVISORY. LEASE SITE ~ 11:30
COMPLETE PAPERW	ORK, PREP FOR NEXT DAY.
	BRATE YSI METER. WOULD NOT CALIBRATE.
14AD YSZ SHIPPE	D FROM GEOTEH FOR TOMORROW DELIVERY.
•	
12	

Signed:

Sheet of

Field Activity Log		
Project Name Wurtsmith AFB - State	Project No. <u>60518528</u>	
ClientMDEQ	Date /// // 7	<u> </u>
Location	Day SO MO TO WX THO FO SC	
Contractor CASCASE	Weather/Temp Cloub 7 20's - 30's	
Equipment Onsite: MINI SONIC SUP	VERY ICY CONDITIONS	.,
skid steek		
Personnel Onsite: MIKE WOLF - A ECO DAW DRILLER > CA. 2 HELPERS	SCA DE	
Work Performed (summary of services performed, inc PURCHASED YAK	cluding field work): TRAKS ON WA! TO SITE	F DUF TO ICE.
		DISUSS WORK ACTVITIES
l .	BIO AND COLLECTED	
l .	ING AND PREMED RIG FO	
1	5:00 PAPERWORK AN	
	FROM GEOTECH	
772	2,60,20,	
		···
		The same
		Type .
		· · · · · · · · · · · · · · · · · · ·
		1111
	Signed:	Mh Will
		Sheetof
		Field Activity Log

	AECOM
Field Activity Log	79
Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date
Location OSCODA, MI	Day SO MO TO WO THE FO SO
Contractor CASCADE DRILLINING	Weather/Temp OVERCASE Z5°F
Equipment Onsite:	
Yer English S. C. O. L.	Seed to Community of the Name
Personnel Onsite:	2006; x2 peristaltic pumps; whiter Tape; YSI pro Dis (AECOM)
I'm Rimer Mixe White Apren 1 150	LE, DAN O'MARA, JON ADELSPERGER; DALE CORS
Work Performed (summary of services performed, inclu	uding field work):
8:05 - ARRIVE AT DEPARTMENT	OF PUBLIC WORKS (DPW)
8:15 - HELD TAILGATE SAFETY W	reeing with Cascade Deilling and Dale
8:25 - Dan (Deller) offisite	TO PICK UP EQUIPMENT FROM HARDWARE STORE
	ARMY TO BRING EQUIPMENT AND SUPPLIES TO SITE PC BIL
	FROM LOCKING INTO BUCKET ATTARRUMENT, CASCADE DRILL CREW
	NI BLOW TORCH AND PROPRIE THINK. TO DE-ECE EQUIPMENT.
	ONSITE BEGIN DE-ICING EQUIPMENT MIKE WELF OFFSITE (RETURN TO B
1015 - PERFORM ERVIPMENT IN ST	
11:05 - Bagin Dewing PC B	
12:05 - BERNE FOR LUNCA	
	SITE, CASCADE DRILLES STUPPED AT HARD WARE STORE
Λ	I SITE PREPARE FOR VAS CAMPLING
1	-15' BGS; RECLURED WATER TO BE DUMPED DOWNHOLE TO SET
The state of the s	
14130 - Bregin Pamping with the	SOUTH BEFORE SNEWDLE COLLECTION
1 4.4	PUMPING ISSUE, TOO HIGH OF A DOUSTBELLY OF CONTAMINATION OR
	IN BEING PUMPED DAIN HOLLE TO CLIENT HEAVED SANDS TO SET
	MADE TO DULL OUT MOVE 20 FT AND DELL NEW HOLE
	E FEOM PEBIL 10-15' WITH PERISTALTIC PUMP
17:02 - OFFSITE	

Signed:

Field Activity Log

Zini DPW

E:-1-		4114	6.1	
Field	1 AC	UVII	ע ע	oq

ct No60518528
1/13/17
SO MO TO WO THO FE SO
ner/Temp PARTLY CLOUDY 13°F

Equipment Onsite:
Yes Gra (Georges) 3 Morross Duras Chem Saul haren Leves Tone
Personnel Onsite:
Un Breeze - Accom; Dan O'MARA, ARLEN LITTLE; Jun ADELSPERGER - CASCAGE; DALE CRS 1 - DLZ Work Performed (summary of services performed, including field work):
5:00 - ARRIVE BY DRW - CASCADE DRILLING ON SITE
8:10 - ARLEN LITTLE ARRIVED WITH WATER (MUNICIPLE) FROM AN GRES, ME
8:20 - DALE CORSI APRIVED, HELD TAILGATE SAFETY MEGTING
830 - BEGIN PREPARATIONS TO FINISH DRILLING PC BIL
9:25 - ZESUME DELLING ATTEND IT R 311
9:45 - SETTING UP DRALE STRING FOR DUSHINGERD SCREEN FUR WAS SHIPPING
9:50 - RUGH AHEAD POINT ENCLUMIED MARD SPUT AS 221H BAG, DREPAGE FOR SAMPLING
*PC 617 21FT
10:35 - UNAGLE TO SUSTAINE FLOW HITH PERISTALTIC PUMP, FLOWER TO USE DEOF SCREEN AND EXPOSE
only 211 of XRIEN FOR SAMPLE CHECKINGS.
11:05 - DROP POINT SCREEN CAKED WITH FROZEN SEDIMENT, DRILL CREW ATTEMPTED TO
BLOW TORCH AND WASH OUT SCREEN; CLEANING WAS UNSUCCESSFUL AND THE
QUEENLL CONDITION OF THE SCREEN WAS NOT SATISFACTORY FOR USE
11:45 - CONTINUE DELLING AHEAD TO 35 FT BGS, TILL ENCOUNTERED AT
25 FT BGS. NO VAS SAMPLE COLLECTED; SIET CASING AND WILL SAMPLE
FRAST THINGS MONTRAY 1/16
12:35 - TO WELL BOOING AT 35 ft BGS; BREAK DOWN EQUIPMENT
13:00 - DEPART SITE; ARRIVE AT FAILLY FARE TO BUY PACKING TAPE AND
GARBAGE BAYS FOIL SAMPLE COULER. BEEAK FOR LUNCH.
16:00 - APRIVE AT FED EX Ship CENTER NEAR MBS INTERRINTOWAL AIRPORT
AND SUIPPED SAMPLES OVERNIGHT TO VISTA LABRATURIES.
- 2 COCS, LOFZ CONTHINS DELL WATER 7 DAY PUSH SAMPLE; 20FZ HAS
PCB10 14-19 Fr, PCB10 22 Fr, PCB11 10-15 Gt, + FBI-011317-58
19:00 - ARRIVE IN GRAND PAPID'S

Signed:

Sheet _____of___

Field Activity Log

Project Name Wurtsmith AFB - State	Project No. 60518528
Client	Date 1/16/17
Location PC BII - OSCODA, ME	Day SO MIX TO WO THO FO SO
Contractor CASCADE DALLING	Weather/Temp Mostrly Clarry / 21°F
· ·	,

Equipment Onsite:
2014 SILVERADO, YUMA 2, X2 PERISTALTIC PUMPS, YSI EXO(GEOTECH), TURBIDITY RACH Personnel Onsite:
JIM BYZZELL - AECOM; DAN O'MARA, ARLEN LITTLE, JON ADELS PERGER - CASCADE
work Penormed (summary of services penormed, including field work).
5:00 - CALIBRATE YSE EXO
5:30 - PICK UP TUBING AND MASKERFLEX FROM GARAGE
6:00 - BEGIN TRAVEL TO PC BIL - DSCOON, ME
9:45 - APRIVE AT AMERICIAN LOGGE AND SUITES; PECIEVED TEXT FROM DAN O'MARA WITH
NOTIFICATION THAT THEY MERE HELD UP AND WOULD NOT BE ARRIVING UNTIL 11:30-12:00
12:10 - CASCADE DRULING ARRIVED AT DPW
12:30 - TAILGATE SAFETY MEETING
13:05 - WHILE PREPARING ERVIPIENT MATERIALS DRILLERS DISCURRED THAT THEY BIZOUGHT THE INCORPECT
Key For The RIG.
13:30 - FOUND CORRECT KEY ON A SET OF KEYS BARROWED FROM A BPW EMPLOYEE.
Dan an John Offsite to MAKE Copy of Key.
14:10 - DAN AND SON BACK EMB SITE
14:25 - BEGIN SETTING SCREEN FOR VAS SPAMPLING 20-25'365
15.20 - VAS BALECTED PC BIL 20-25 ft * DAN BOING TO THEEF DICK UP 10 ft CORE BARREL
15:25 - PIG DOWN AND MOVE TO PEB12 NEED TO CONFIRM WITH DORIN SOUND WHETHER OR
16:00 - STATILIZE LEVEL PIG ON SITE PC B12 NOT WE WANT TO HAVE THEM ORDER A 2th screen
16:10 - Begin Drilling B12
16:85 - White Table 28H
16:50 - WELL PREPARED FOR WATER SOI-PLING, SHUT DOWN PLG CLEAN SITE
17:00 - Offsite

Signed:

Sheet _____of____Field Activity Log

	AECOM
Field Activity Log	
Project Name Wurtsmith AFB - State	Project No. 60518528
Client MDEQ	Date
LocationB12	Day SO MO TO WNS. THO FO SO
ContractorCascade	Weather/Temp Clouby 34°F
Equipment Onsite:	
ZOH SIWERN TO; YSI - EXO (GEOTECH); Personnel Onsite:	x2 peasining pump;
Work Performed (summary of services performed, incl	DAN O'MORA; JON ADELS PERGER - CASCADE; uding field work):
7:00 - BEGIN CALIBRATING YSI EXO	
7:30 - Emp CAUBRATION COMPLETE	
\$155 - APPLIED ON SITE AT STALL	IMG AREA IN DPW PARKING LOF.
\$110 - TAILGATE SAFETY MEET	NA DALE CORSI ARRIVED
\$5.15 - DALE OFFSITE TO CI	LECK IN MTH BAY WEST
8:52 - INSTALLING 30" SCREEN	FOR VAS SAMPLE PCBIZ
- UNSIZEN POINT AND BURN	OFF FEFLON THEENS TOPE BORING
GLIECT SUML DRILL WATER	ALL CONTRACTOR OF THE PROPERTY
	Buy Bushink For 30" Screen. OF STANDING WATER FROM SWOW MELT
09:20 - Dan Back on Site.	
09:23 - SCREEN CRT	
09:50 - PALE AND BUB DE	LANEY ONSITE
10:05 - COLLECT VAS PC BIZ	·
10:15 - REPORE SCREEN CONFINUE	
10:75 - INSTALL CASING TO 20	,
11:70 - PREPPING ROPING FOR VI	
hills And the state of the stat	GALS OF WATER TO CLEAN HOLE DO TO SWABBING EFFECT CAUSING
	CARTS OF MALES LA CITETAM HOTE DO 10 200 USBUM ELLECT CANJUND
THE HOLE OF COLLAPSE -	
- Lust Bit Down Noise	
11:50 - SET SCREEN BEGIN P	
12:03 - BEGIN PURPING Zuagas	
17:00 - Calecred VAS PCB	
DUID - DEFLITE	Pro Nerry.

Signed:

Sheet ____of____1

Field Activity Log

Project Name Wurtsmith AFB - State	Project No. 60518528
Client MDEQ	Date
Location WORTSMITH AC BIZ	Day SO MO TO WO THAT FO SO
Contractor CASCANE	Weather/Temp Oracos T

Equipment Onsite:
2014 SILVERADO, X2 PERISTALTIL PUMPS, YSE EXO (GENTECH)
Personnel Onsite:
JIM BUZZELL - AECOM', DON O'MARA, ALDEN LIFFLE, JON ADELS PERGER - CASCADE; DALE CORSI - BLZ Work Performed (summary of services performed, including field work):
- 1:00 - ATTEMPTED YSE CALIBRATION RESULTED IN EPROR, CALLED GEOTECH.
6:00 - ONSITE HOLD TAILGATE SAFETY MEETING
6:10 - DRIVE WITH DALE TO SEE SITE FOR BILL AND BS-9
9:00 - Dain to 30 FT B65;
- TAGGED TILL AT 28 FF BGS AND REFILE VED DAIL SHOE.
9:31 - FILL HOLE AND BEGIN MINING EQUIPMENT TO NEXT BORING LOCATION PCB14
9:40 - REPLACED BATTERIES IN YSI EXO SONDE AND DERFORMED HARD REVER PARMETERS
HAVE BEEN PELOVERED.
10:20 - YST EXO CAUBRATED
10:30 - BEGIN DRILLING PCB14
11:35 - BEGIN DU-PING FOR PC BILL 19-21 FT
11:45 - CASCADE AND DALE OFFSITE FOR LUNCIA
11:55 - COLLECT SAMPLE PC BIH 19-21FT AND FBI - 011917-30
17:12 - Cascade Back on Sire
12:17 - DALE CORN BACK CHISTE - HULINGLY THAT MIKE JUMY WILL BE OBLE TO ACT
SKNED AGREEMENT UNTIL MONDAY 1/23/17, AFTER BILL CONTINUE WITH B9
12:21 - REMOVE SCREEN AND CLEM OUT 21-30 FT PATHOLE
HUR - POLECTED VAL
17:75 - BEGIN PURGING BORE HOLE 150 GAI (75 GALS PUMPED WASHING DOWN)
16:00 - Cuerted Samples AFTER PARAMETERS STABILIZED VAS- PC B14 24-30FT
16:05 - Penove sirker from Hore
16:30 - TOP OF TILL/CLAY AT 33 FT BGS, EOB AT 40 FT BGS
17:00 - RIGGED DOWN, PETURN EQUIPMENT TO STAGING AREA.

Signed:

Sheet _____of___ Field Activity Log

Field Activity Log Project Name Wurtsmith AFB - State Project No. 60518528 1/20/17 MDEQ Location B13 - OSCODA, MI Day SO MO TO WO THO FE SO Contractor CASCADE DALLING Weather/Temp OchCAST 35°F Equipment Onsite: YSI EXO (GEOREU); XZ PERISTALTIC PUNGS; TURBIDITY HULL ; SILVERIADO 2014 Job Brief - AECOM; DOW O MARA, ALDEN LITTLE, + JOH ADELS PERECR - CASCH DE Work Performed (summary of services performed, including field work): 9:00-RECEAVED ACCESS ABREEMENT VIA EMAIL 9:30 -FRANK CURREY SIGNED ACESS AGREEMENT 10:10 -RIG NOT STARTING DUE TO DRAINED BATTERIES, JUMPER CABLES BAD - CASCADE OFFSOTE CASCADE BACK ON SITE WITH NEW JUMPEL CABLES HOLD TAILGATE SAFETY MEETING 10:45 -SUCCESSFULY STARFOUR RIG, MOBILIZE TO BIB 10:53 -11:25 BEGIN Delicing PC BIZ 11:47 - BEGIN PURGING BORE HOLE COLLECT HAS FROM PC BIZ 45-LOFT PERMOLE SCREEN FROM HOLE, ARE DECONTAININATE, BREEKE FOR CONCU 12:37 -13:05 - Ju Brack ONSITE 18:25 - CASCADE ONSINE 13:30 -RE-FUEL RIG PERPORE TO CONTINUE DELLING Continua Driving PC B13 13:40 -10-20 FT 14:38 RIG EXISTRIFTING PRESSURE ISSUES, BATTERY Dieo MHILE TROUBLES 140 UTING PRESSURE ISSURE WHILE CLEANING OUT BASING 15 10 -DSCADE OFFSITE TO BY NEW BATTERIES FOR PULL

Signed:			7
		40	

Sheet

Field Activity Log	
Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 1/21/17
Location B13 - OSCODA, MI	Day SO MO TO WO THO FO SX
Contractor CASCADE	Weather/Temp Overcast, Fossy -
Equipment Onsite:	<u> </u>
YSI ENO (GENTECH); WATER TAPE; XZ,	PERISTALTIC PUMPS : 2014 SILVERADO
Ju Brzell - AECOM ; Dan O'MARA, A	EDENLITTLE; JON ADELSPERGER - COSCODE
Work Performed (summary of services performed, inclu	ding field work):
45:00 - QUSITE, CASCADE INS	
8:09 - FIRST ENGINE TEST F	AILED, CONTINUE TROUBLESHOOTING
10:15 - Siecessfray STARTED.	Ray, VIBRATION AND FOFATION NOT ENGAGING
10:44 - ROTATION AND VIRRATION ENGAGE	GED, TESTING VOLTAGES WITH VOLTAGER TO OBSERVE MY FLUCTURITIONS
11:30 - Cosing SET AT 20FT	PUMPED 175 GALS TO CLEAR HOLK
11:43 - BEGIN PURGING 325 GALS	,
MEGA MONSUSIN -	5gal 3.5min = 325gat = 5 680 ml/min = .681 L/mm # 3.785 Vigal = 0.18 gal/mm
DERISTALTIC -	(050 m) / min = .68'L/mm # 3.785 //ml = 0.19 gul/am
1.429 gal/ton +	0.18 gal/Nin = 1.60 gal/min
3254	101 - 203.13 was = 3.38 HRS
1.60	121 = 203.13 was = 3.38 HRS 3:22 UNTIL PURLED
1505 -325 WILL H	
	CURDING PARMETERS FOR LOW FLOW STOBILIZATION
15:40 - COUCCT VAS PC BI3	14-2-ET ATTE
233	
15:45 - PULL OUT SCREEN/SAMPLIAN	
15:56 - BEGIN DRIVING 20-30 FF	top of Cusy AT 26ft Das
	auphent he Reiolation to 185-9
17:00 - JON ADELSPERGER PEQUIPE	to on Deference Job, Daw DRIVE Jon to FLINT.
,	

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Field Activity Log

Project Name Wurtsmith AFB - State

ClientM	DEQ	Date 1 22 17	
Location <u>B9</u>	OSCODA, MI	Day SM MO TO WO THO FO SO	
Contractor	CASCADE DRILLING	Weather/Temp FoG / 37°F	
Equipment Onsi	to:		
SILVERAN Personnel Onsit	e: 2014, x2 peakstaltic pumps, 45	I BLO(GESTECH), TURBIDITY HACH	
\ 3	A	. A. 1	
Work Performed	d (summary of services performed, include	+ ARLEN LITTLE - CASCADE	
_	NSITE HOLD TAILGATE SAFETY A		
l	E Dawn AND BEGIN MOVING		
l .	of Exact WELL LOCATIONS .		
, ,		2-28 FT B13-26 FT B14-33	
11:30 - 4			
ı		BA (BOTTOM UP SAMPLING PLANNED)	
l	FFIITE FOR LUNCH	· · · · · · · · · · · · · · · · · · ·	·
l	ACK ON SITE		
12:15 - 130	Community PC B9	OC VAS SAMPLE \$9-41 FT BAS	
15:20 - I	NSTALLIA CASTOLI FOR T	OC VAS SAMPLE \$9-41 FF BAS	
15 53 - 1	INSTALLED SCEEN AND	MOVER CASING UP TO EXPOSE SCREEN AT 99-41 FT BGS	
16104 - 2	2.9-3.4 STUTIC WATER	19.5 FT 365 BEGIN PUMPING 1.5 GAL/AM AT 16:10	
	52.5 GALS PUMPED BEGIN		
	COLLECT YAS PC 159 39	•	
	PIG DOWN AND DECON &		
17:30 -			
	H		
	<u></u>		

Project No. 60518528

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Field Activity Log

Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 1 23 15 15
Location B9 OSCODA, ME	Day SO MM TO WO THO FO SO
Contractor CASCADE	Weather/Temp Oceans 37'F
Equipment Onsite:	

Equipment Onsite:
SILLERADO ZUM, XZ PERISTALTIC PUMPS, TURB. HACH, YST EXO (GESTECH) Personnel Onsite:
Work Performed (summary of services performed, including field work):
79:45 - ONSITE HOLD TAILGARE SAFETY MERTING MAD REVIEW THA 5:15 - PULL CASING UP TO 34-36 BGS FOR VAS
4:45 - Beam pursing 50 gets pr azgallons/minute
9155 - Couleuren VAS PC B9 34-36 FT
10:05 - MOVE SCREEN/ CASWG UP TO 28-30FT INTERVAL
· ·
10730 - BEGIN BURGING 400 gals @ 2.12 galafonin ~ 184 mins = 3:23 Hes BEGIN LOW FLOW NT 13:53
10:43 - PUMPER FORE HOLE DRY: REMOVE PUMP, SHAKE SCREEN TO CLEAN ANY PUSSIBLE PLUGGING. MOVED CAKING
UP HIGHER IN BORR HOLE, MAY HAVE BERN INTERFERENCE WITH SCREEN
10:53 - BEGIN PURGING BORR HOLE @ 2.5 get/AIM - DERREN SET AT 27-29 FT BGS
SCREEN WAS INSIDE CASING PREVIOUSLY.
3400 C 2.59 gilpun = 150 3000 = 2:30 Meg Begin Low From AT 13:25
11:25 - In Brown Offsire for Lunch
11:54 - JunBrizell BACK ON SITE AT B9
12:00 - CASCADE OFFSITE FRELVACH
12:23 - CASCADE ONSITE
13:45 - Coucarei VAS PC 89 27-29 FT
13:56 PULL CASING + SCREET UP TO 14-20FT FOR BALLS TOP OF WATER TABLE SAMPLE
14:30 - BEGIN PURGING PCB9 19-21FT
15:10 - Calleer VAS PCB9 19-21FT
15:35 - SETTING UP AT Breing LOCATION PC BB
16180 - BEGIN DRILLING PC 38
17:20 - Offsire

Signed:

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Field Activity Log

Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 1/24/17
Location B4 Oscaba, MI	Day SO MO TOX WO THO FO SO
Contractor CASCADE	Weather/Temp Raining 36°f
Fauinment Onsite:	

Equipment Onsite:
SILVERADO 2014, x2 PERISTALTIC PUMPS, TURB. HICH, YST EXO (GESTECH), YUMA 2
Personnel Onsite:
Jun Brown Assert Day Or March Land
Jim Brzell - Aecom , Dan O'maria + Arlen Little - Casciade Work Performed (summary of services performed, including field work):
7:45 - ONSITE HOLD TAILGATE SAFETY MEETING
5:15 - RIG REDURES JUMP START TO START ENGINE
5:30 - RIG STARTED, FULLY FUNCTIONAL E-STOPS PASSEN
8:40 - BEGIN DRILLING 20-30 FT BAS
9:10 - INNER DRILL STRING STUCK INSIDE ONFER DRILL STRING DUE TO HEAVING SIGNOS, LIMABLE TO
CLEAN OUT WITH WATER PSI TOO HIGH SHUT DOWN RIG BLEED PRESSURE TRY AGAIN.
- WHILE ATTEMPTING TO REMOVE OWNTER DS, INNER DS PULLED UP WITH IT MAKING IT IMPOSSIBLE
to REMOVE OUTER DS CONVENTIMALLY,
9:40 - RIG REQUIRES JUMP START. STOP AND DISCUSS PLAN FOURED.
10:54 - RIG STARTED - FORND BLOWN FUSE, REPLACED PART AND SUCCESSFULLY STARTED RIG
12:30 - CASCADE OFFSITE FOR LUNCA, RE-FUEL, AND PE. FILL DRILL WATER TOTE
13:25 - BACK ON SITE, PREPARE TO DRILL TO 80 FT BGS.
14:09 - CLEAN HOLE SET CASING NT 35 FT BGS RIG UP SAMPLING SCREEN FOR SMILPLE
COLLECTION OF TOP OF CLAY. NOT ENOUGH BOIL WATER ON SITE TO DRILL TO BOFF
will Somple FIRST THEN DRILL TOMORRON 1/25/17.
14:33 - BEGIN PURGING PEBS 30-32FT @ 1.2 gel/mm, SINCE DRILL WATER WAS USED
IN SECTION ABOVE SAMPLING POINT - RIPGE >50 gal. THEN BEGIN LOW FLOW UNTIL MAN METER
Statistical - BEGIN LOW FROM AT 15:15
15:50 - POLLET VAS PCB8 30-32FT
16:00 Move CASING AND SCREEN UP FOR NEXT SAMPLE 24-26FT
16.13 - BEGIN BURGING PC BG 24-26FT @ 1.5gd mon
17:00 - Pumper Boains Day Let Perboance creanisher and Continue presents in Meaning
- Pumper 70.5 Gallans Toral

Signed:

Field Activity Log		
Project Name Wurtsmith AFB - State	Project No. 60518528	
Client	Date 1 25/17	
Location 88, OSCODA, MI	Day SO MO TO WE THO FO SO	
Contractor CASCADE DELLING UC	Weather/Temp Grove Herry CLOURY 31°F	
Equipment Onsite:		
SLVERADO 2014, 12 PERISTALTIL PUMPS,	JUL EXO (GETECH), YUAA2	
Jin Brieu - AECOM; DAN O'NARA	+ ARIEN LITTLE - COSCADE	
Work Performed (summary of services performed, inclu		
07:40 - ONSITE HOLD TAILGATE S	!	<u>.</u>
07:45 - RAG REQUIRES JUMP START		
07:53 - RIG STARTED, PREPARE P	utaina Equipment.	****
08:03 - BEGIN PURGING 330 gals	FOR AT FOTAL OF HOUGH PURGED FRO	20-30 FT SECTION
	ns Beam to few at 11:43	
11:43 - BEGIN LOW FLOW	· · ·	
12:10 - COLECTED VAS PC BE	24-26 FT	
12:20 - PULL SCREEN ASSEMBLY UP	TO 19-21 FT FOR WATER TABLE SAMPLE.	
1	8 19-21 FT AND FBZ-012517-JB	
14:52 - DRILLED 35-48		
16:20 - Dences 50-60 ft		
16:30 - OFFSITE		
17:15 - COLLECT AV GRES WATE	er Tower Sample	
17:20 - BEGIN TRIP FROM AU GE	_)	
,		
		· · · · · · · · · · · · · · · · · · ·

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Field Activity Log	a a
Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date
Location 86	_ Day SO MEN TO WO THO FO SO
Contractor (ASCATE	Weather/Temp Sunny / 19°F
Equipment Onsite:	
4 . /25 . 2	
Personnel Onsite:	TRS, YUMA 2, YOI EXO (GENTECH), TURBITOTY HACH
JIN Brace - Accom : DAN O Work Performed (summary of services performed, i	MARA, DON ADELSPERGER, ARLEN LITTLE - CASCADE
6:30 - DEDARY AECOM GARAG	
10:35 - ARRIVE BUSITE AT	
	INTOUR TAILBATE SAFETY AND BEGIN JUMPITARING
Pag	The same this parties of the Court I will all the court in the court i
1	no bok ob beniar General
	Continue Trubleshisting Rig
13:07 - Problem Most Likely	EXISTS WITH THE CONTROL PANEL, TESTING VOLTAGES AND CHECKING FUSES
CONTINUE TROUBLESHOOTING	,
13:17 - RIG Successfully START	_
13:40 - Beam Drumos 60 70	DET DOS INSTALL CASING GO-TOFF DRILL 60-70 FF
13:57 - IDENTIFIED HYDRAULIC	LINE WITH LEAK REPAIRED QUICKLY AND CONFIRMED THAT THE LEAK
7. 1	SING ENGTHURTISM, PIPE OVERTHREADED STUCK - REQUIRES HAMMERING
1 '	TO BREAK CONNECTION
	BRUCH OUT THREADS
	WORN OUT DAN AND ACKEN DRIVE TO TRAILER AT DPW TO RETRIEVE
Republicant,	June 351 Die 1 De 1 De 1 De 1 De 1 De 1 De 1 De
14:39 = Trup our of How wou C	201 6- 3865
1717 - 1107 OUT OF PAGE WORLD	DOWN TIME:
The Office	
	10:50 - 13:17; 2h27m
	14:07 -14:39: 32-
	2n59m
	Signed:
	Sheet of 1
	Field ctivity Log

Field Activity Log	Fie	ld A	Acti	vitv	Log
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Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 1/31/17
Location Oscotos, MT - 34	Day SO MO TKO WO THO FO SO
Contractor CASCADE	Weather/Temp DERCAST 28° F

Equipment Onsite:				
SILVERATO ZOIL, Juna 2, TURBIDITY MACH, x2 PERSTALTE PUMPS, YSE EXO (GEOTECH) Personnel Onsite:				
John Brezel - Accom; Dan O'mara, Jon Adeus PERGER, ALDEN LITTLE - COSCADE; DALE CAPPI - DLZ Work Performed (summary of services performed, including field work):				
7:30 - ONSIFE (Jin Dan Jon Dace)				
7:50 - ARDEN LITTLE ONSITE HOLD TRILGIATE SAFETY MEETING WHILE JUMPING RIG				
8:15 - RIG Jumpes				
9:30 - PREPARE TO TRIP IN HOLE TO DRILL 110-120 AGS TO CONFIRM CLAY				
8:33 - PIPE HANDLER MARFUNCTIONING - TIGHTEN BOLTS				
\$:40 - Pipe Hambler Functioning Property - DAN RECEIVED CALL FOROM CASCADE OFFICE, SOMEONE IS				
Coming up to pick up Tepices				
4.50 - CASCADE OFFSITE TO PREPARE EMPTY TRAILER, DAW WAS CHAWARE THAT THIS PICKUP WAS GOING				
TO BE TAKING PLACE. RECOVERS TWO PROPLE AND BOSCAT				
9:40 - CASCADE BACK ONSITE				
9:55 - DRILLES 110-120				
10:05 - CASING INSTALLED				
10:30 - Dames 120-130				
10:40 - CASIMG ENSTALLED; DALE OFFSITE TO DICK UP MIKE JUDY.				
11:51 - DRIVED 140-150; No DENL WATER USED				
12:25- OFFSITE LUNCH				
13:00 - Sin BACK ONSITE				
17:15 - CASCADE, WALE + MIKE ON SITE				
13:20 - DAENIKE OFFSITE				
13:25 - CASCADE OFFISE TO DPW TO PICK UP ADDITIONAL PACKER FOR BETTER				
SEAL WHEN SAMPLING BOFTOM UP				
13:59 - CASCADE ON SITE BROW TESTING DRILL WATER DOWNTIME:				
WATER QUALITY W/ YSI WHILE CASCADE MUSTRICES 8:40 - 9:40 - 14				
SAMPLING ASSENCE				
14:19 - BEGIN PURGING PC 88 141-143FT				
15: 35 - COLLECTED VAS PC BS 141-143 FT RETER 15 gals progred				
16:17 - SETTING SAMPLING ASSEMBLY AT 116-114				
Sh. A				

Signed:

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Sheet 2 of 2 Field Activity Log

Field Activity Log	
Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 1/31/17
Location OSCODA, MI - BS	Day SO MO TAX WO THO FO SO
Contractor (ASCANE	Weather/Temp SNowing Z8°F
Equipment Onsite:	
SILVERATIO ZIIY, YUMA Z Personnel Onsite:	
	ion; Jon, Dan, ALDEN - CASCADE
Work Performed (summary of services performed, included)	
14:27 - BEGIN PURSING GO	
16:41 - Pump FAILURE, PULL PUMP	(MEGA Agusson XL) OUT OF HOLE TO TROUBLESHOOT
16:45 - RUN WATER FROM CATCH &	SWELLT THROUGH YSE EXO TO CHECK PARAMETERS
Spec Con: 5123 43/cm	
Con: 3534 45/cm 3514	49/cm
TOS: 3336 mg/L	·
17:29- INSTALL NEW PUMP	
17:29- BEGIN PURGING	
	B8 116-118 FT A @ 17:90 Sgal PURGED TOTAL
	B8 16-118FT B @ 18:00 17.5 41 PURGED TOTAL
	· · ·
	& , A FLE TO RE-PRIME AND RESUME PUMPING LONG EMOUSE
FOR SAMPLE COLL	ECTION)
18:07 - OFFSITE	
	\sim 10
	Signed:

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Field Activity Log Project Name Wurtsmith AFB - State Project No. 60518528 MDEQ Date 2 1 17 Location DSC-DA, MI 38 Day SO MO TO WOR THO FO SO Contractor_ CASCADE Weather/Temp CLEAR | 26° F Equipment Onsite: SILVERADO 2014, YUMA 2, XZ PERISTALTICS, YSI EXO, TURBIDITY HACH Jun Breez - Accom ; Dan O'nara, Jon Abels PEAGER, ALDEN LITTLE - CASCADE Work Performed (summary of services performed, including field work): 7:30 - ARRIVED ON SITE, CASCADE Jumpino RIG 7:55 - HELD TAILGATE SAFETY INCETING MAD REVIEW THAS 8:00 - HOW PULL SAMPLING ASSENGLY UP TO 106-104 FT INTERNAL 8:49 - INSTALL MEGA MONSOON XL PREPARE TO PURCHE GOOG! 12:10 - COLECTED VAS PC B8 106-108 FT 12:15 - COLLECTED EB1-020117-JB THROUGH WEGE HONDOON XI PURP FROM TOTE \$2 12:20 - BEGIN PULLING SAMPLING ASSEMBLY AND CASING OUT OF HOLE - NEW ZIG APPLYED IN OSCIDA ALONG WITH PALETT OF HOLE PLUG - PLANMING TO SPORAD SEDIMENTS WHEN THEY HAVE THANKED ON UNDEVELOPED PROPERTY 12:45 - Offsite FOR Lunch 13:05 - ON STE 13:30 - Cascade ansite Begin Removing Casing, Decon pipes and Fill Hole with Hole Plug AS THEY COME UP. 14:40 - FINIGHED PULLING OUT OF HOLE, HOLE FIBLED, BEGIN MOVING TO NEXT LOCATION PC BT 16:21 - ISSUES WITH NEW RIG, GOING TO BEGIN HOLE BY WITH DRIGWAL RIG 16:30 - BEGIN DRILLING PC B7 K:00 - Offsite Daived to 40 FT BGS

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Field Activity Log	
Project Name MDED WJATSKITH	Project No. 60514528
	Date 2/2/17
Location Oscoda, MI B7	Day SO MO TO WO THOSE FO SO
Contractor CASCADE	Weather/Temp CLEAR / 16'F

Equipment Onsite:
SILVERADO 2014, 12 PARISTALTIC DUMPS, YUMA 2, YSI EXO, TURBIDITY HACH
Personnel Onsite:
In Brown: Accom; Dan O'mara, don ADELSPERGER, ALDEN LITTLE - CASCADE
Work Performed (summary of services performed, including field work):
16:00 - ARRIVED UNSITE DEMPSTARFING 216
4:30 - Rig Started
4.45 - HOLD TAILADIR SAFETY MERINA PAD REVIEW TIM
9:06 - BEGIN DRILLING
10:40 - MDER AND DALE ARRIVE ENGITE
11:00 - MDE 2 AND DAZE DEPART
11:20 - OFFESTE FOR LUNCH
12:15 - ONSITE DISCUSS VAS INTERVALS
71-73'865
63-65'845
56-56° 1665
33-35 '665
12:45 - INSPALL SAMPLING ASSENDEY AT 71-73 BGS
13:15 - Mongoon Pump installed
STATE WATER LEVEL 4.66 - 1.60 = 7 #8 FT 265
15:10 - CHECT VAS PCB7 71-73FT AFTER 20 gol PURGED
15:26 - Pick Damping AGEHBLY UP To 63-65 FT
15:42 - 10.33 - 3.6 = 6.73 Fr 3GS DTW
16:40 - COLECT VAS PC BY 63-65 FT + DUPLICATE
16:54 - Pull SAMPLING ASSEMBLY UP TO 56-58'865
17:03 - DIFFICULTIES BREAKING PIPE CONNECTIONS WHILE PULLING UP.
17:61 - SAMPLING ASSEMBLY INSTALLED AT 56-581
17:20 - OFFSIFE

Signed:

Sheet ____of ___ Field Activity Log

Field Activity Log	AECO	// 1
Project Name MDEQ WURTSMITH	(ag in ga	
Client MDEA		
Location OSCODA, WI - 37	Date 2/3/17	
Contractor CASCA DE	Day SO MO TO WO THO FM SO Weather/Temp Monthly Cloudy 115 f	
(6)	Weathernenip Messica Crassed 113 F	 ' 4
Equipment Onsite:		
Personnel Onsite:	STALTIC PUMPS, YUMA 2, YSE EXO	TURBIDITY HACH
Jun Burrell -Accom; Da	W OHARA JOH ADGINGERS ARE	
		S. Mar. Character
7:45 - ONSITE, DAN ANT	Jon Junisating Rig	
D.4C - KE STARTED PERFO	am Rig inspection who How Sof	esy weeting
70:31 - INSTALL MEGA KYLONS	WHY XL SWL . 65-11 - 4.9	FT
7.70 - 10 GI PURGED COL	LECTED DO BY SG-SEFT	
FOLL SAMPLING DISSE	WBLY UP TO 39-35 FT TWEERU	al. To ATTEMPT VAS
10:30 - Courcies VAS pr	- B7 33-35FT	124
10:38 - Pull SAMPLING ASS	EMBLY OF HOLE	•
11:15 - BEGIN TRIPPING IN HO	LE WITH CORE BARREL TO CONTINUE	
Grantin Conservat	VAS US WE ENCOUNTER SAND.	A DIMENO 80- 120
HIST BEEN DEITTING 80-	THE ENCOUNTER SAND.	
11:45 - BACK ON BOTTOM	In Thistone 20	9
7 (Table 1) The Control of the Contr		
11:47 - OFFITE FOR LUNCA	, Don picking up prockage of	MORTS FOR MEN RIG
Fran Horse		
12:40 - BACK ONSITE	The same of the sa	
12:46 - BEGIN DRILLING 80-90	FT 865	<i>b</i> .
13:48 - WHILE PULLING OUT CON	LE BARREL FROM 100-110, 1-40RA	AVLIC HOSE RUDTURED
Whickey DUT ABBORBEN	TTADS IN PLACE AND SHUT DOWN	Rig. Rs
18:95 - REMOVED RUPIULES L	NR	7
14:00 - CASCADE OFFSIRE TO	DICK UD ISEDIDORNAM	11
141:49 - CASCADE BACK ON SITE		N-
	Etopeo in Hyperaucic Hose, Dences Ha	MD NOTICED THE LINE WAL
Missing AND Traced	LATELY CHUED AN ALL STOP. ALGOR BEN	IT PADS WELL DUCK DUT IN
PLACE CATALOG MOST	OF THE LEAKED FUID AS THE LINE WAS	REMOVED /1-2 THRUE CHOME CATHEREN
4:54 - Hypraucic Line REDL	ALED, START FIG AND OBSCEVE FOR	LEAKS AT THE COMMENT
4:87 - ALL CLEAR, RESUL	E OPERATION	MI THE CHANGETIONS
5145 - SAMS CONFIRMED AT	403 FT RGS MED GRAN SANDS 107.5	To 110 3cc. P
	THE COLUMN THE PARTY OF THE PAR	I'V DENIE ISONNIAL IN MAC

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104-110.

Field Activity Log	
Project Name Wurtsmith AFB - State	Project No. 60518528
ClientMDEQ	Date 2/3/17
Location Oscoba, NE - 67	Day S□ M□ T□ W□ TH□ FØ S□
Contractor CASCADE	Weather/Temp Worky Crawy /154
Equipment Onsite:	
Personnel Onsite:	•
Ju Bossell; Dan O'Mara, Jon ADI	tesperser, Arien Little - Chscape
Work Performed (summary of services performed, inclu	
15:28 - Second Hypospule Line	OBSERVED MISTING OUT OF BIN HOLE CRACK COMMERCED TO THE
pipe Hampier. Sur Don	N RG AND REPLACE LINE WITH SPARE FRA SECOND RIG.
FEW DROPLETS OF OIL REMAINED ON	TOP OF ICE, QUICKLY CLEAMED WITH ABSURBENT NADS
15:47 - CONTINUE RIH WITH SAMP	,
16:00 - Pump INGTALLED in HOLE	. I
17:35 - Couser 1/AS PC B7	1
11 11 - Cutch The be by	0-5- (10
3	
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Sheet ______of____

Field Activity Log	
Project Name ANDES WURTSWITH	Project No. 60518528
Client MDEQ	Date 214117
Location DXCODA, ME - B7	Day SO MO TO WO THO FO SIN
Contractor CASCADE	Weather/Temp PARTY CLOUN 26°F
Fautisment Oppito:	
Equipment Onsite:	
SILVERADO ZOTY, XZ PERS	MALTIC PUMPS, YUMA 2, TURBIDITY HALH, YET PRO DOS GEDTECH
order of the control	· · · · · · · · · · · · · · · · · · ·
Jun Surell - Ascom; DAN	O'MARA, Jon ADELSPERGER, ARLEW LITTLE - CASCADE
·	
	PARKING LOT DRIVE TO HARRISVILLE B FIND ALTERNATIVE
Source of DALL	
F. E. S. S. S. S. S. S. S. S. S. S. S. S. S.	SHILLE WELL #2 ALLOWS N MILL CREEK PORD
LAT: 44.66891	
Long: -83.30279	
- UNABLE TO CONTACT	City of HARRISVILLE OFFICES TO GRANT ACCESS TO WELL
	TO AU GRES TO FILL TOTES FROM WATER TOMER
0	-I PREMARE YSI END FOR DELIVERY (UPS) SHIPPING
Mmoay 2/6/17.	
10:00 - In BUZIEU ONSITE	
A	on Site AND BEAIN Jump STARTING PIG BATTERIES.
4 Value Value	ACCESS TO BLE AMO PRED SITE WITH BORGAT WHILE
Wairing For Rig to	
	CT RIG, REVIEW THAG AND HOLD TAILGARE SAFETY HEETING
7,221-13,	2 - X - X - X - X - X - X - X - X - X -
13:10 - BEGIN PLU WITH DRILL	
Mize - Bream Baruna 110-1	THOMAN I I THOU T
13:59 - CORPLE STUCK IN CIRE	BARRER AT 124'BU, PLOHED SAMOY CLAY OUT OF
CATCHINA SEDMENTS	No RECOVERY RETWEEN 124-180 FT
15:30 - HOLE BY DRILLED FO	150ft, NO ZONES OF FURTHER INTEREST PELOW 108-110
l -	DUL CASING AND FILL HOLE WITH HOLE PLUG WHILE PULLING
ar ar	
CONTRACTOR OF THE PROPERTY OF	BEGIN CLEANING SITE AND MUNE TO BL
	PHENT TO B6; DAN AND DON STRYING ON SIFE TO HORK ON
RIG. JIM + ARLEN	OFF SITE

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Field Activity Log	
Project Name MDEQ WURTSMITH	Project No. 60516528
Client MDEQ	Date 2/5/13
Location OSCODA, Mr - PCB6	Day SM MO TO WO THO FO SO
Contractor CASCA DE	Weather/Temp Over 27°F
Equipment Onsite:	
Personnel Onsite	PRO DOS, TEBIDITY HACH, . 2 PERSHALTIC PUMPS
Jan Brezer - Accom; Jon An	ELSPENGER, DAN D'MORD, ALDEN LITTLE - CASCADE
volk Performed (summary of services performed, inclu-	aing field work):
	PC BG, CASCADE (Jun + Dan) on SITE JUMPING RIG. USING
"New" Rig	
6:00 - ADDEN ONSITE WITH	
8:15 - RIG STARTED, CONTINUE	SETTING UP SITE PCB6
8:46 - REVIEW THAS DISCUSS	pun AND HOLD TAILBATE SAFETY MEETING
9155 · R.G Inspection	
9:11 - BEGIN DRILLING PCBG	
10.2	up welling Equip from staging prep
9:48 - DAN BACK ON SITE	
	WORK ON CASING CONNECTOR AFTER SAFTEY DISCUSSION
10:10 - WELDING COMPLETE	
10: 30 Resume Dailing offerer	
11:75 - CASCADE OFFSITE FOR LU	
12:00 - DIN OFFSISE FOR LUNCH	
12:30 - CASENDE MAS JAN BACK ON	SITE
12:35 - RIA WITH SAMPLING ASSEM	
	75 yellmin + Obama - REDUCE FLOW AND RECIPO PARAMETERS AT HOUS
15:15 - Coveres VAS PC BO	
15:20 - PUL pump our of Hore	
1	our of Hore and Decon Drin pipe
15:55 - HOLE FULLS : BEGIN PLONANG	
	BRUSH CLEARING BEFORE THE RIG AND ITS COMPANENTS HAL ALL FIT, JON
	FOR DRILL POPE AND WATER TOTES.
17:10 - RIG SET UP AT B5.	- OFFSITE
·	

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Project Name MDED WRTSMITH Project No. 60514528	
Client MOEQ Date 2/6/17	
Location MSCOSA, MI - BS Day SD MD TO WO THO FO SO	
Contractor CASCADE Weather/Temp OFRCAST 21°F	
Equipment Onsite:	
SILVERADO 2014, 12 PERISTALTIL PLANS, TURBIDITY HACH, YUMAZ, YSI PRO DOS (GESTECH)	
Personnel Onsite:	
Jun Brzzell - AECOM; DOW O'HARA, JON ADELSPERGER; HRIEN LITTLE - CISEADE	7
Work Performed (summary of services performed, including field work):	
7:30 - LEFT YSL EXO AT FRONT DESK OF AMERICIAN FOR UPS DELIVERY	1
7:45 - Bering on Sire, Dan AND DON ONSITE Jump STARTING WARRING UP 12:65	-
7:55 - ARLEN LITTLE ON SITE WITH XZ TOTES WATER FROM AUGRES	
8:05 - PAG INSPECTION, REVIEW THAS HOLD TAILGHTE SAFETY MEETING	
8:56 - BEGIN DRILLING PC BS	
942 - Danied to 30ft; ENCOUNTERED 10 YES/2 SANDS BRAVEL AT 24.5 TO 27 FT BGS	
UNGERLAIN BY SANDY CLAY / TILL FROM 27-30 FT	
11:05 - Cource VAS PCBS 25-27FT	
11:15 - PULL SAMPLING ASSEMBLY OUT OF HOLE	
11125 - OFFSIFE FOR LUNCH	
12:00 - Jon Barek ONSITE	
12.42 - Cascade Back on site	-
12:50 - START RIG AND BEGIN DRILLING 30-150FT	
14:40 - RIG DAMM, ISSUE WITH MAST	
17:00 - OFFSITE	
	5
	-
	3)
Signed:	

Field Activity Log

Field Activity Log	
Project Name MDER WULTSMITH	Project No. 605 14 524
Client MDEQ	Date 2/7/17
Location Oscada, MI - BS	Day S□ M□ TKL W□ TH□ F□ S□
Contractor CASCADE	Weather/Temp Raining 34°F
Equipment Onsite:	
Personnel Onsite:	TICS, Youa 2, YSE DOS PRO
Jun Bruen-Accom; Dan O'M	ALA , ALDEN LITTLE, JOHN ALDESPERGER - CASCADE uding field work):
work Performed (summary or services performed, inc	uaing neid work):
111:00 - PART PECGINED, CASCADI	
12:15 - CASCADE OFFSITE TO BUY	
13:20 - CASCADE BACK ON GITE,	CONTINUE REPORTES
15:25 - BEGIN PULLING DRILL PIPE	OUT OF LAKE TO TEST FUNCTIONALITY OF RIG AFTER INSTILLING NEW
Components	
15,41 - Regions Drugg	
15:43 - DRILLED TO 80 FT BAS	
	FOR 70-40 FF 865 RIG UNEXPECTEDLY & SHUT DOWN AND WILL NOT RESTART
15,56 - Sumpspacering Rig	
1); Move Warer tores Back into position
16:20 - FINISH INSTALLING CASING	
	[0 - 10 FT - 100]
17130 - CASCADE OFFSIFE	
17:40 - 5 m OFFSITE	
The sea	
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	Field Activity Log

Field Activity Log	
Project Name MOEQ WRISMIN	Project No. 60518528
Client MDEO	Date 72/6/17
Location OSCOPA, MI - B5	_ Day SO MO TO WAS THO FO SO
Contractor CASCADE	Weather/Temp Snowing 23°F
Equipment Onsite:	
Personnel Onsite:	pungs, Youn 2. Turning Hack, You prodos
In Barrew - AECON Draw OHAR	La, John Adles perger, Afren Little - Cascade colding field work):
7:45 - Jin ams AREEN ARRIVE	
8:00 - Som AND DAN ARRANG O	of Site, Poelin Sumperporting Rice
8:30 - RIG STARTED, REVIEW	THA , PERFORM RUG ENGINEER MAN HOLD TRICGARE SOFERY MEETING
- Drue Hes. 1388,0	
9:05 - BEGIN RIH WITH C	orfing Assended to part do-100 ft
	PICK UP NEW FIFTING FOR HYDRAULIE HOSE! NO LOPE, FAILING
	BEFORE RELEMONE COULD "HAPPEN.
10:41 - In Anseigenger office	"1
	W SUTE ARTHER LUNCH WITH WEN FITTING AND HOSE
12:25 - BEIN REPARMS HORE	
12:35 - RESUMC DRILLING (16-1	A A A A A A A A A A A A A A A A A A A
	WHILE USING VIBRATION TO STANKE 110-120 CORE OUT OF
CARE BARREL CASCADE	
15.15 - OFFSITE TO PURCH	
	E. REPLACETIFUSE AN ALTEMPT RESTART, Pres
A A M	CHARGE BATTERIES JUD START KINDLEY CAN GENERATOR
	APPLYING PENOUGH POWER, REMOVE TRAILER WITH WATER TOTES AND BEGIN
Suprisary Rich Wie	·
16:54 - RIG STARTED, CONTINUE	E REMOVING 120-130 FROM CORE BORREL THEN WINTERIZE RIG
17: 10 · offsire	
	AUTO CONTRACTOR OF THE PROPERTY OF THE PROPERT
(A) (P) (P)	
2	
	4 42
77	Was al

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Field Activity Log	
Project Name MDEQ WESSMITH	Project No. 605 18528
Client_MDEQ	Date 2 13 17
Location OSCIDA, M B-5	Day SO ME TO WO THO FO SO
Contractor ('sASCADE	Weather/Temp_Clear
Equipment Onsite:	
	- A No. 2
CHEVY 2006, x2 PERISTALTICS, YUMA 2, Personnel Onsite:	TURBIDITY MACH, YSE PRODOS (GEOFECH)
17 1 10 10 1	
Work Performed (summary of services performed, included)	LIFTLE, JON ADLESPEGGE - CASCADE; DALLE CORSI - DIZ ling field work):
5130 - Drue to OFFICE FILL NEW	TRUCK (2006) WITH EQUIPMENT
1	INT FIRED FURNS AND SCAN LOGS
6:30 - DEPART ARCON-GR- ENPA	
,	OSCIBA, HE, DON AND ALDEN ONSITE
_	I'M EXTRA PIPE + BACKFLOW PREVENTER (DILL ONSITE AND OFFSITE)
	The state of the s
1	AT WELL #2 MEET WITH HAPPISHILE DOWN AND BEGIN
I	ES WITH WATER FRA HYDERN'T (WATER TREATED WITH PROSPHOROUS
1	Somple x2 25 ml HDPE AND GIPS
12:45 - Lunch	
_ ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `	AT 35 HOLD TAILGARE SAFETY MEETING AND REVENU THAS
	PIPE AND CORING MISSELBLY (1394 MES)
13:50 - DEMEN 130-140 FT 865	'
4105 - DALE CASI ONSITE	
14:20 - Dame 140- 450 FT BGS	
14:43 - Rich Sout Down WHILE PULL	und out Pipe: Cuceking Control PANEL AND E-STOPS
HI48 - 74 STARTED AND FUNCTIONAL	
14:52 - 140-150 Cape on Surface	
15.05 - DISSASSEMBLE E-STOP CLEAN A	AD RENALL DADES!
15 36 - Jumpsoft RIG WITH BOTICAT	
	REGIN SINSTALLING SAMPLING GLEGEN T, 135-137 EF PAS.
The Prices of Fine As 38	SHOOTING: RIG SOUT DOWN WHILE THYING TO RIDGE TO BREIGH CONNECTION
THE WHITE BUSINESS IN MITH NIMITE	Support or Dassel For Replacement PART OR ALS IN THE MORNING
FNAINE, GUING TO CONTACT	Supporter Dassel for Replacement PART OF ALS IN THE MORNING
17:25 - Jun Offgire	
	Signed:

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Field Activity Log		
Project Name WKO Wessingth	Project No. 60514524	
ClientMDCQ	Date 2 20) 17	
Location Occob, MI - B5	Day SO MOO TO WO THO FO SO	
Contractor CAGADE	Weather/Temp	
Equipment Onsite:		
	4 8	
Personnel Onsite:	, YSE TRODOS (GEOIREIT): NZ ARISTALTICS: YUMA 2: TI	Legionry Ancid
Work Performed (summary of services performed,	; DAN O'MARA, JON ADLESPERGER; ARLEN LITTLE - CA including field work):	scope
10140 - Againers on SITE	ILE BUS STERLING IN LOWER AND DEIVE TO OSCODA, A BIBD - STOP IN BUY CITY ENTERPINE TO ADD MIKE US DE DE	eiver on Remoni end Gulba
1130 - TAILGARE SAFETY MEE	ring	
- Discussion Recen	UT RECOGNISHE ABOUT CRUSHID FINGER WHILE USING he	prome
- Discussion Amec	SOPS ABOUNT PEAR SAMPLING - NO FOUND ON SITE	. OR IN CARS.
- NEW RIGH THAT	REQUIRES DIFFERENT OPERATIONS PLACEDURES, DEFINE	EXCLUSION ZONE
- REVIEW THAY		
	V BRILL PIPE INTO 5 FT SECTIONS	
	TALL HALDER GERTIONS INTO HOLE THEN DULL OUT	AND BREAK DOWN
Daile Stains inte		
12:2.6 - 18. BEGIN FICTING OUT CAS	sing, In in Broken: Bembut precent How policy in	Aug and Name
BACK TO BG FOR ADDITION	the Pack	(NACE MAI) (NACE MAIN)
12:39 - BEGIN PULLING GIN CASI		
1	at or the.	A
12:45 - Offsite FOR LUNCH		
13:15 - Ju + MIKE BACK ON		
1	E - Dunp 2 bacs House pure Down Hollie ALLOW WATE	
	asing, filling that with 3/4" thre Plus (And Burion) Ever	
1415 - RUSS GOLDON ONSITE FA	on Characte - Gropener Technician Expert to	HELD DRILL CREW
FAMILIARIZE THEMBELIES I		
15:10 - DEUDDEN 6" PIPE DOWN	HOLE BEGIN FIRMING - RIH WITH 6" CASING	
15:25 - CONTINUE PULLING 6" P.PE	our of House	
16:06 - 6 CASING OUT OF HE	LE - FILL HOLE WITH COTTINGS BEGIN CLEANIN	4 SITE PC B5
Miss - Offsite		·
39	Signed: All XII	M
	Signed:	////

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Field Activity Log	
Project Name WURTSIN ITTI AFB	Project No
Client_MDEQ	Date_2/21/17
Location OS CODA, MI	Day SO MO TO WO THO FO SO
Contractor CASCADE DRILLING	Weather/Temp R4IN 37°

Equipment Onsite:
2006 CHEVY YSI PRO DOS (GEOTECA) TUMA PERISTAUTIC
Personnel Onsite:
MIKE WOLF (AGEON) DAN O'MARA DON ADIO STERRER, ARLENG LITTE, RUSS CTORDEN (CANCADE)
Work Performed (summary of services performed, including field work):
7:45 ONSITE AT BI WAITING FOR CAICAGE PAPERWORK
8:10 DAN SETTINGUP READ SIGNS. MOBBING EXUIPMENT TO NEW LOCATION
9:30 UNLOADING EQUIPMENT SETTING UP ON HOLE
10:30 KEPLACE CTLYNDER ON LOWER RAW,
11:30-12:15 BEGIN DILILLING AFFTER LUNCH
12',20 STANT DILILLING BI
12:20-17:15 DRILL BI TO 55' CAAY AT 37'
LOTS OF HEAVING SANDS BETWEEN 25-35'
UPIER RAM CELTNOON STARTED LEAKING REPACED,
DROPPED 45.50' LONG BARREL DOWN HOLE-
RETRIEUS IT WITH CLAY STILL IN IT.
17:15 BOB (MDER) STOPPED BY AFTER WE WERE
FINE SHED. I SHOWED HIM THE CLAY
WENENCOUNTERED AT ~37',
Signed: \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\

et _____of___ Field Activity Log

Field Activity Log	
Field Activity Log Project Name	- Long Contraction
Client UNEQ	Date 2/22/17
Location Oscoln, ME - BI	Day SD MD TD WM THD FD SD
Contractor CASCADE	Weather/Temp Folday 141°F
	14584
Equipment Onsite:	
CHEVY ZOOW, CHRYSLER (ENTERDOISE)	, v2 PERISTRICIE, YSE PRO DOS, YUMA 2, TURBIDITY HACH
Work Performed (summary of services performed, included)	Jan O'Mnon, Arch Little, Russ Goedon - Chicage uding field work):
7130- ARRIVEN ONSITE, STA	at Rich and perform Inspection
8 US - HOLD TAMORIE SAFETY	MEETING AND REVIEW THAS.
- Weaking in Roi	I MAKE SURE BARRIERS ARE PROPERTY SET AND WEAR HI VIS
Λ.	ICULARY IN FULLY CONSITIONS
- MAKE SURE NIF	IZILES ARE WORN WHILE HANDLING MAY EQUIPMENT THAT WILL
BE Going Do	
8:20 - Pour Casimb up to	EMPOSE FIRST VAS POINT 34-36FT AND BEGIN RIH WITH
SAMPLING ASSEMBLY	(No WATER TRECTED WHILE DALLING 35 - 40 ft)
9:00 - PumpED WELL Day wird	Monsoun LET WELL RECHARGE
1FT NA 25"	DIAMETER 1.252 17-1861 = 4.91 10 58.9 11 16.383 1/13 = 3.59 11
58.9 m3 x	16.383 "You" = 965 ml Jam RECHARGE RATE
9155 - Couccies VAS PCB	134-36FT; *MIKE WOLF OFFSITE
	AND SAMPLER TO MENT INFERNAL 26-28FT
` ·	ED US TO HOVE TRUCKS TO UNBLOCK ALLESS RUAD
	GEN SET AT 26-28 FT. AT 2 gal June 4-33 BRAW DUNN SAM
	15 FT Zone WHICH INCLUDES 26-28 get DURGING 100 get THEN
MONITOR PARAMETERS,	
11:40 - PARAMETERS NOT STABILIZING	7. CONTINUE DELING AT 2 gall for AND HOWTOR PARAMETERS.
11:42 - Cascane Offsire for Lune	
12:00 - CASCADE BACK DUSITE	
12:20 - Cource VAS PC BI	7114 67
	FSITE FOR LUNCH
1	IL CASING BACK DOWN TO 55 FT 1365
17:15 - DANE 55- CLEAN OUT	MILE
13:40 - BEGIN DRILLING	
	T SAND SEAM FROM 77.5 - 80 FT BGS (40 GA) WATER INJECTED)
15:25 - SET GOEGH GO VAS AT	74-90Ft R()

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Sheet _____of__Z__ Field Activity Log

Field Activity Log	
Project Name MDEQ WURTSMITH	Project No. 605 18 528
ClientMX-Q	Date 2 22 17
Location OSCODA, MC BI	Day SO MO TO WM THO FO SO
Contractor CASCADE	
Contractor NEWLY	Weather/Temp Overcast 47°F
Equipment Onsite:	
SILVERADO 2001, XZ PERISTACTICS, Personnel Onsite:	YUMA 2, YSI PR. DDS (GEOFECH), TURBIDITY HACH
In Parzen - Accom ; Don O MAR	ARLEN LITTLE, RUSS GORDAN - CASCADE
15:55 - BEGIN PURGING 80 gal	AT 1.75 gal/min
17:20 - COLLECT VAS PC BI	78-80FT AND PC BI 78-80FT TA (FOR TEST AMERICA)
17:35 - REMOVE SCREEN FROM	
	(1)
17:45 - OFFSITE	
•	
20 20	20
	Signed: Melch
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	Field Activity Log



Field Activity Log	
Project Name MOSO WYLLSTATH	Project No. 60518528
Client When	Date Z 23 17
Location Oscoba, ME - B)	Day SO MO TO WO THOS FO SO
ContractorCASCADE	Weather/Temp_CLEAR 50°F
Equipment Onsite:	
SILVERADO 2006, YUNA 2, YSIF	no DOS (GENTECH), x2 PERISTANTIC PUMPS, TURBIDITY HACH
reisonilei Orisite.	
Work Performed (summary of services performed, inclu	ELEN LITTLE, Russ GORDON - CASCADE
Work Performed (summary of services performed, inclu	iding field work):
7:30 - In Brezzell ansite	CASCADE ON SITE
7:45 - REVIEW THAS AND HOL	D TAILGHTE SAFELY WEETING
- Working in ROW MA	KE SHEE ARL BURRIERS ARE STILL VISIBLE TO TRAFFIC AND UNDAMAGED
- HORE NEWLAY WORK	ON PAILFORD TRACICS, REMOVEMEN LARGE PILE OF DEBRIS FROM SIDE
of Tracks.	,
	WATCH PINCH POINTS WHILE HANDLING PIPE OF BREAKING
Connections	and course have been being being being of Westing
8:19 - ON BOTTON, DRILL OUT 5	Luff
8:29 - DRILLED 85-95 FT 865	· · · · · · · · · · · · · · · · · · ·
9:10 - DRILLED 95-105 FT BGS	
	VED ON SURFACE OF RIG BY ENGINE, NO RELEASE ONTO GROUND.
9:47 - RIG STARTED BACK UP CONTIN	
11:50 - OFFER CASADE OFFERTE FIR L	
12:05 - Jan DEFEITE FOR LUNCH	
12:35 - Jan BASINE	
12:40 - CASCADE ONSITE REFUEL	750 3100
13:00 - RIH TO CONTINUE DRILLING	135-145
15:30 - DRILLED 145-150, CORE	Supped our of BARREL WHILE DULING UP TO SUPPRICE.
15:50 - BACK ON BOTTOM TO PLETETEVE	CARGE + FT , RECERVED GATE GIMBINATION FOR GOLF GARSE FROM JIM MILLS
16:20 - BEGIN PULLING 6" CASING 1	IND FILLING HOLE WITH BARDID HELE PLUG
Λ) HOLE FILLED, BEGIN MOUNG EQUIPMENT TO BZ
14:30 - SET UP AT BZ	
18:37 - OFFSITE	
8 N - 46 - 46 - 47 - 47 - 47 - 47 - 47 - 47	- 12

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Field	Activity	Log
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Project Name MDER WATSMITH	Project No. 60518528
Client MDEQ	Date 2/24/17
Location OSCODA, ME - BZ	Day SO MO TO WO THO FA SO
ContractorCASCADE	Weather/Temp PAINING 33°F

Equipment Onsite:
SILVERADO 2006, X2 PERISTALTICS, YUMA 2, YSE OFFO DOS (GEOTGEN), TURBINAY HACH
Jum Breeze - Accom; JAN D'MARA + ALDEN LITTLE - CASCADE Work Performed (summary of services performed, including field work):
Work Performed (summary of services performed, including field work):
7:30 - ONSITE, CALLES JAM MILLS TO INFORM ALM OF OUR MERIVAL. LOCKED GASE
FOR VERIZON TOWER SECURITY PURPOSES
7:35 - FINISH MOBILIZING EQUIPMENT IS WATER TOTES AND SETTING UP DRILL PIPE
PACK INFRONT OF RIG.
7:50 - REVIEW THAS AND HOLD TAILGARE SAFETY MEETING
- HERRING IN COLD SLIPPERY CONDITIONS IN THE RAIN ON UNEVER TERRAIN, WATERIA
YOUR SEED
- PENTEN LIGHTING THUNDER PROTOCOZ (LIGHTING STRIKES 20 MICES EAST OF TANAS)
THUNDERSTORM POSSIBLE ALL DAY
8:04 - LIGHTING OBJERUES, ALL STOP 30 mins
8:10 - LIGHTMG / THUNDER OBSERVED
6.12 - LIGHTING THUMBER OBSERVED
4:14 - LIGHTMG/FILLMORER OBSCENED
16:28. LIGHTING THUNDER OPLEAVED
4:32 - LIGHTING THUMBER OFFERVED
9102 - 30mms Since Last OBSERVED LIGHTING STRIKE; HENRY ROIN FEDERATION
0.30 - Sustained Augu whole AND HEAVY ROW/SWOW MIK
9:45 - LIGHT RAIN, BEGIN PREPPIRA TO DRILL
10:00 - PERFORM RIG INSPECTION
10:05 - BEGIN DRILLING
10157 - LIGHTNING THUNDER OBSERVED
11:04 - LIGHTINING ITHUNGER OBSERVED
11,0% - LIGHTNING THYMER CHEENED
11:26 - OFFSITE FOR LUNCH
12:00 - Jim OWSITE
12:09 - CASCADE RETBEN TO DOW TO DEEPARE BUBCAT FOR PCKUP, REQUIRES TRAKER ATTACHMENT THAT
WEEDS TO BE FOUND PURCHASED.

Signed:

Sheet ______of__Z Field Activity Log

Field Activity Log	
Project Name MIDER WOLFSMITH	Project No. 60518528
ClientMDea	Date Z / 24 17
Location Oscoba, MC - B2	Day SO MO TO WO THO FA SO
Contractor CASCAGE	Weather/Temp LIGHT RAIN OVEREAST 36F
	<u> </u>
Equipment Onsite:	
SILVERADO 2006, YUMA 2, x2 PER	15TALTICS, YSI PRO DDS (GEOTECH), TURBIDITY HACH
Jun Bries - Ascon ; Dan OMARA Work Performed (summary of services performed, included)	+ ARIEN LETTLE - CASCADE
	ding field work):
13:55 - CASCADE ONSITE	
14:05 - BEGIN DRILLIMY 20-	30 FT
15:15 - OFFSITE	
17:30 - Ship Samples TO V	NITA LABORATORAL VIA FEDEX OVERNIGHT FOR LOAM DELIVERY
19:30 - ARFIVE IN GROUD PADIO	
1	
to the	
7.4	
11 11 11	
*** J. T. T. T. T. T. T. T. T. T. T. T. T. T.	
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Sheet ______of______ Field Activity Log

Field Activity Log
Project Name MDEQ (1) URTSMITH Project No. 60518528
Client MDEQ Date 2/27/17
Location Oscoba MI - BZ Day SD MM TO WO THO FO SD
Contractor CASCADE Weather/Temp SUNMY 30°F
Equipment Onsite:
Surgery 2001 x2 servery ser June 2 The Row The Conserved Training Stand
SILVERADO 2006, XZ PERISTALTICS, YUMAZ, USI PO DDS (GENTECH), TURNINITY HACH Personnel Onsite:
August Acons
JIM Bratu - Acom; Work Performed (summary of services performed, including field work):
5:45 - APRIVED AT AECOM TO DOOP OFF TEST AMERICA SAMPLE AND PERFORM VEHICLE INSPECTION
6:00 - DEPART GRAND RAPIDS, ENTENDE TO OSCION, MI
9:45 - APRIVED ONSITE AT PC BZ IN OSCODA, MI. CASCADE IN HARRISVILLE FILLING
TOTES WITH DEILL WATER.
10:15 - CASCADE OUSITE
10:00 - Consuct TAILGAGE SAFETY MEETING, REVIEW THAS AND RIG INPECTION
- WATCH FOOTING, UNEVEN GOWND APOUND WORK AREA
- Inspect integrity of Prastic That Beneath Rig
- Inspect PRE and USE PRECAUTION WHILE HUMBRING PIPE.
10.52 - Beain Daying PC BZ
12:40 - CASCADE OFFSITE FOR LUNCU
12:46 Sim Offsire For Lungs
13:31 - ONSITE PREPARE TO DELL 45-50FT BOS (RE-FURL RIG)
13:50 - ON BOTTON, BEGIN DRILLING 45-50 FT BGS; JOHN C. AND DORIN B. ONSITE
14:32 - DELLE PIPE SUPPED OUT OF PIPE HAMDLERS - BROW FISHING; DALE C. ONSITE
14:40 - SAMPLANG ASSEMBLY SET AT 33-35FT DOWN HILE; JOHN C. AND DORN B. OFFSITE
15140 - Dece Consecred VAS PC B2 33-35FT
15:56 - DECON SCREEN PULL CASING UP FOR NEXT THTERVAL
17:20 - COLLECTED VAS PC BZ 20-22FT
18:15 - CHECKED VAS PC BZ 3-10FT
18:22- SAMPLING ASSEMBLY OUT OF HOLE - DECON
18:30 - OFFSITE (CASING STILL IN HOLE AT BZ)
TOTAL CONTRACTOR OF THE STATE O

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Sheet ____of___ Field Activity Log

Field Activity Log	
Project Name MDEQ WETSWITH	Project No. 63578528
Client	Date 2 28 17
Location Oscoba, MI - BZ B3	Day SO MO TO WO THO FO SO
ContractorCASCINDE	Weather/Temp_OVERCAST / 31°F
Equipment Onsite:	
SILVERADO 2006, X2 PERISTALTICS,	Yump 2, Turgiony Anch, YSI Pro DDS
Work Performed (summary of services performed, included)	
	ling field work):
7:25 - Jun AND DAN ONSITE	
7:40 - ARLEN ON SLATE	
7:45 - REVIEW THA, HOLD TALLGARE	SAFETY MEETING, AND PERFORM RIG INSPECTION
- WATCH FOOTING WHILE MG	BILIZING TO NICKY LOCATION
- PLAN POUTE	
- Washing in Corp WET	CONDITIONS
· ·	WES WHILE HAMPLING SAMPLING EQUIPMENT
5.36 - Casing out of Hose, Ho	LE BACKFILLED WITH SEDIMENTS. CLEAN SITE AND MOVE RIG TO
B 3 .	
6:54 - RIG ONSITE AT BB,	BEGIN SETTIME UP EQUIPMENT FOR DEILLING
9:29 - REPARCE BREAK OUT JAWS	
4:41 - BEGIN DELLING B3	250 gol WATER INJECTED BETWEEN 20-30ff Pas
11:30 - CASCADE OFFSIRE: LUNCH	
11:45 - Jun Offsite Lunch	
1210 - In BACK ON SITE	
12-25 - CASICADE ON SITE	
12:40 - PULL CASING FIP FOR	VAS PC B3 28-30 FT
· · · · · · · · · · · · · · · · · · ·	LAGE FROM HOTEL; BEGAN PURGING PC. B3 20-22 FT AT 15:01
15.35 - Jun ONSITE	
16:00 - HEAVY RAIN BEGINS; STO	FORECASTED BY 7:00
16:20 - COLLECTED VAS PC BS	20-2255
16:29 - PULL CASING AND SCREEN	
^	FIELD, UNABLE TO PULL OUT INTH BOSCOT
17:25 - COLLECTED VAS PCB3	7-9FT
17:45 - AFTEMPTING TO PULL T	
	E TO REMOVE CASCADE TRUCK FROM SITE.
	Nha M
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Field Activity Log

Field Activity Log	
Project Name MDEQ WATSMITH	Project No. 60519528 60519528
ClientMDEQ	Date 3/1/17
Location Oscada, ME - 83	Day SO MO TO WX THO FO SO
Contractor_ CA SCADE	Weather/Temp PAIN SNOW 40-20 F
Equipment O-site.	
Equipment Onsite:	
SILVERADO 2006, KZ DERISTALTIO	CS, TURBIDITY MACH, YSI DRO DDS (GROTECH), VULLA 2
1	
Work Performed (summary of services performed, inclu	MARA ARIEN LITTLE POSSABE
7:30 - CASCADE ONSITE TO ASSESS	CONDITIONS AROUND TRUCK. BEGIN CLEANING SIFE
ORGANIZING EQUIPMENT AND	
9:30 - DAN OFFSITE TO PICK U	ID DIZER FROM SAGINAN
	5 TO CLEAN SEDIMENT PILES AND
	EQUIPMENT OFF OF SOFT GROUND.
16:30 - Day Aggres 21 6	Description of Suri Grands.
D 11	WITH DOZER IN HEAVY SNOW; HOLD SAFETY DISCUSSION AND
	DONE AND HOW IN ORDER TO DISCODE THE CASCADE TRUCK AND
	E WHILE MINIMIZING DANAGE TO GROWNDS
17:00 - DRIVE DOZER BACK TO	B3 WHERE CASCADE TRUCK IS STUCK.
17134 - SUCCESSFULLY RECOVERED	CASCADE'S TRUCK
	5 LEFT BY DOZER AND DR TRUCK.
15:00 - DRIVE RIG TO GOBF	Course Entrance For REFUELING,
CLEAN MUD OF TRACK	3 BF DOZER, BOBCAT, AND TRUCK
18:30 - OFFSITE.	your hour hard
	man of h
	Signed:

	AECOM
Field Activity Log	
Project Name MIDER WILTSMITH	
Client MDEQ	Date 3 2 17
Location Oscott, MI - B3	Day SO MO TO WO THIO FO SO
Contractor CASCADE	Weather/Temp Mostry Croudy # 13°F
Equipment Onsite:	
687	
DILVERAND 2001, XZ PERISTRITY	Pumps, YSI PRO DOS, YUMA 2, TURBIDITY HACK
Work Performed (summary of services performed, included)	MA + ALLEN LITTLE -CASCADE
7:30 - ONLINE TO ASSESS CONDI	
	THAS + I bLA TAILBARE SAFETY MEETING
	•
- WORKING IN COLD < 2	•
· Sups TRIPS AND FIGUES	· · · · · · · · · · · · · · · · · · ·
- TAKE BREAKS IN HEAT	
	es to Reduce Possibility of GETTIMS STUCK
8.15 - CASCAGE OFFSITE N. HA	prisville to fick up water (ARLEW ONSITE TO SET UP BOUIL
AT B3.)	
8:20 - BORCAT BATTERY DIED	
8:45 - CHARGING BATTERY WITH DOCE	2
9:10 - BATTERY CHARGED BEGIN &	
11:01 - DAN ADDIVED ONGITE WIT	H WATER
12:00 - SITE SET UP, PREPARED TO	
12:45 - CASCADE ON SITE.	
13:00 - BEGIN DRILLING B3	
131.10 - FROZEN WATER LINES	
13:30 - CASING INSTRUCTS TO YOFT SIGH	Behin CLEANING HOLE DESLING
14:40 - UNFREEZING WUTER TRANSFER	
14:50 - CONTINUE DRIVERS	
15:45 - Sample 70-80 piper Deoptpen	DOWN HOLE, BEAIN FISHING.
15:58 - CORE SUCCESSFULLY RESPREYED	
16:05 - REPLACE BOTTON BREOK OUT	TRETA
(6:43 - BEGIN FUNDAMEN IN HOLE	
17:20 - BREAD FRAING	
17:30 - ON SURFACE WITH 80-90	FT 165 Coef

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18:35 - DEFSITE

Project Name MDEQ WATSMITH	Project No. 60518526	
Client MDEQ	Date 3/3/17	
Location Oscola, Mr - B3		
Contractor CASCANE	Weather/Temp 6 FAR 18°F	
Equipment Onsite:		
SILVERADO 2006, XZ PENISTAI	LTICS, YUMA 2, YSI PEO DDS, TURBIDITY HACH	
Jun Brosell - AECOM : Dan O'MARA Work Performed (summary of services performed, inc	+ ARLEN LITTLE - CASCADE	
	AN M HARRISVILLE FILLING TOTES WITH DRILL WINTER	
7:56 - DAN MARIVED ON SITE;		
4:30 - CARRY TOTES BACK TO		
8:35 - HOLD TRILGIPTE SAFETY A	MERTING, REVIEW THAS, RIG INSPECTION &	
- WORKING W COUN' CO	MITIONS YOF : TAKE BREAKS IN HEATER TRUCK CAB, WARM HANDS	
AND BES		
- GROWN IS UNEVER A	MD FROZEN, WATCH STEP, WEAR YAK TRAK	
	DOPS FOR PEAS SAMPLINGS	
9:20 - BEGIN TRIPPING INTO HOL		
9:28 - ON BOTTOM BEGON DEN	Lav6 100-110	
	, Unfreezing Wared Pervan Lines .	
11215 - CoscADE OFFSITE	TERRING OUT UF HUE WITH 100-110 CHE	
The second secon		
11:55 - Jim OFFSITE		
2:20 - Jun ON SITE		
12:36 - CASCADE ON SITE		
12:52 - BEGIN TRIPPING W HOL	Æ	
14:17 - Deaple Core BARREL 7	DOWN HOLE BEGIN FISHING (PUSHED WEARS BUTTON ON CONTRAL PRIVEL AND	
	ws Deallyma 25 FT of Pape)	
	- Pipe 125 FT PIPE PECOVERED, UNABLE TO RETRIEVE KET 4"DIP + 10 FT CIRE	
BARNEL		
5:37 - OVERDRILL WITH 6" DIDE	AND ATTERMENT TO DESCRIPT OF REMAINING LIN IN HOLE.	
16:05 - Behin Pulinh our 6" Pipe And Arregorpt To prese up Remaining 4in in Hole.		
	11	
16:54 - Top of 4" PIPE AT SWAFACE; LEAVE BOTTOM JAMS CLOSED AROUND 6 PIPE, PULL 4" UP, BREAK COMMECTION		
WITH TOP JAMS CHINECT CARLE WENCH TO PYPE IN HER LINEA BOCK DAWN, BREAK OF SFT SECTION OF 4' PAPE WITH		
18130- OFFSITE		
7. 01177		
	Signed:	

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