District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party XTO Energy	OGRID 5380
Contact Name Shelby Pennington	Contact Telephone 281-723-9353
Contact email Shelby_Pennington@xtoenergy.com	Incident # *(assigned by OCD)* 1RP-4789
Contact mailing address 6401 Holiday Hill Rd. Building 5 Midland TX 79707	

Location of Release Source

Latitude 32.56761°N Longitude -103.32030°W
(NAD 83 in decimal degrees to 5 decimal places)

Site Name EMSU B Injection Line	Site Type Water Injection
Date Release Discovered 6/9/2017	API# *(if applicable)* 30-025-04266

Unit Letter	Section	Township	Range	County
P	14	20S	36E	Lea

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☒ Produced Water	Volume Released (bbls) 57,848 bbls	Volume Recovered (bbls) 11,689 bbls
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☒ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

A 10 inch cemented steel line experienced corrosion, resulting in an isolated release source on the line.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
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Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? The release was greater than 25 bbls of liquid.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

Immediate verbal notice was given to the OCD by Shannon Walker on June 9, 2017 and June 28, 2017.

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Shelby Pennington Title: Environmental Coordinator

Signature: Shelby Pennington Date: 8/29/2019

email: Shelby_Pennington@xtoenergy.com Telephone: 281-723-9353

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	>100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Shelby Pennington Title: Environmental Coordinator

Signature: Shelby Pennington Date: 8/29/2019

email: Shelby_Pennington@xtoenergy.com Telephone: 281-723-9353

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
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Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- [x] Detailed description of proposed remediation technique
- [x] Scaled sitemap with GPS coordinates showing delineation points
- [x] Estimated volume of material to be remediated
- [x] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [x] Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

- [ ] Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- [ ] Extents of contamination must be fully delineated.
- [ ] Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Shelby Pennington Title: Environmental Coordinator

Signature: Shelby Pennington Date: 8/29/2019

email: Shelby_Pennington@xtoenergy.com Telephone: 281-723-9353

OCD Only

Received by: _____ Date: _____

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

[X] A scaled site and sampling diagram as described in 19.15.29.11 NMAC

[X] Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

[X] Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

[X] Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Shelby Pennington Title: Environmental Coordinator

Signature: Shelby Pennington Date: 8/29/2019

email: Shelby_Pennington@xtoenergy.com Telephone: 281-723-9353

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Bradford Billings Date: 05/12/2020

Printed Name: Bradford Billings Title: E.Spec.A

1RP-4789
REMEDIATION A REPORT
EMSU B Produced Water Release

Lea County, New Mexico

Latitude: N32.567611° (N32° 34' 03.40")
Longitude: W-103.3203° (W103° 19' 13.08")

LAI Project No. 17-0176-02

July 31, 2019

Prepared for:

XTO Energy, Inc.
810 Houston Street
Fort Worth, Texas 76102-6298

Prepared by:

Larson & Associates, Inc.
507 North Marienfeld Street, Suite 205
Midland, Texas 79701

Mark J. Larson, P.G.
Certified Professional Geologist #10490

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Table of Contents

1.0 EXECUTIVE SUMMARY

Larson & Associates, Inc. (LAI) submits this report to the New Mexico Oil Conservation Division (OCD), on behalf of XTO Energy, Inc. (XTO), to document attempted remediation of a produced water release from a 10 inch steel cement-lined pipe (trunk line) associated with the Eunice Monument South (EMSU) B in Unit P (SE/4, SE/4), Section 14, Township 20 South, Range 36 East, in Lea County, New Mexico. The release occurred about 500 feet southeast of EMSU B Well No. 890 (API 30-025-04266). The affected area measured approximately 227,205 square feet or about 5.21 acres. The release was verbally reported to the New Mexico Oil Conservation Division (OCD) on June 9, 2017 and July 27, 2017. The initial C-141 was submitted to OCD District 1 on August 11, and assigned remediation permit number 1RP-4789.

LAI personnel delineated the release between August 28, 2017 and December 4, 2017, which included:

- Performing electromagnetic (EM-31 and EM-34) surveys
- Collecting soil samples from thirty-one (31) shallow borings (SB-1 through SB-31) and a shallow well (MW—03) for laboratory analysis and gauging the thickness of produced water perched on a sandy clay unit (Blackwater Draw formation) between located about 7 and 10 feet below ground surface (bgs); and
- Installing six (6) monitoring wells (MW-01, MW-02 and MW-04 through MW-06) in a sand unit (Ogallala formations) below the sandy clay and above the Triassic-age Dockum Group (Chinle formation) between approximately 37 and 55 feet bgs.

The wells MW-1, MW-2 and MW-4) continue to remain dry. Well MW-5 was dry until produced water was observed in the well about thirty (30) days following well completion and concluding the sandy clay unit was semi permeable. Produced water was observed in well MW-06 about four (4) days following installation concluding that produced water permeated through the sandy clay unit and underlying sand (Ogallala formation) and was migrating southeast along the lower contact with the Dockum Group (red bed). XTO had recovered approximately 11,689 barrels (bbl) of produced water from an excavation at the leak site and low area east of the excavation. LAI personnel calculated the unrecovered volume of produced water at approximately 46,159 barrels (bbl) based on the thickness of produced water gauged in the shallow piezometers. The total release volume was calculated at approximately 57,848 bbl.

Chloride in soil, based on laboratory analysis, was below the OCD delineation limit of 600 milligrams per kilogram (mg/Kg) between ground surface and approximately 10 feet bgs. A composite sample collected from the soil pile (east) resulting from the pipeline repair reported chloride at 1,080 mg/Kg. A Class III archeological survey was performed by Jeffery Panghorn with APAC, a contract archeological firm located in Carlsbad, New Mexico, and reported that no cultural resources had been impacted by the release. The delineation results were submitted to the OCD in a report titled, "*1RP-4789 – Delineation Report EMSU B Produced Water Release, Lea County, New Mexico, December 12, 2017, January 9, 2018",* and included a remediation plan. OCD approved the remediation plan on March 2, 2018.

LAI commenced remediation on March 27, 2018, with excavation of a recovery trench beginning near the source of the release and working east along the axis of produced water observed in the shallow borings. Personnel from APAC were on location during the excavation to inspect soil for cultural resources. None were observed. On March 28, 2018, after excavating approximately 250 linear feet of trench, LAI concluded that the majority of the produced water had permeated the sandy clay unit as soil in the bottom of the trench was damp with only a small amount of produced water present near west end near the point of release. The remainder of the trench was dry. On March 29, 2018, OCD granted approval for abandoning the recovery trench plan and backfilling the trench with excavated soil assuming that chloride was less than 600 mg/Kg in the backfill soil. On April 2, 2018, LAI personnel collected six (6) composite soil samples (Composite 1 through Composite 6) from the excavated soil and analyzed the samples for chloride. The laboratory reported chloride concentrations between 5.76 mg/Kg (Composite 2) and 79.6 mg/Kg (Composite 3). Backfilling the recovery trench and excavation where the pipeline was repaired was completed on April 5, 2018. Approximately 16 cubic yards of soil from the east pile, with chloride at 1,080 mg/Kg, was disposed at Lea Land Landfill located between Hobbs and Carlsbad, New Mexico.

Between April 3, 2018 and April 17, 2018, Scarborough Drilling, Inc. (SDI), under supervision from LAI, installed seven (7) recovery wells (RW-1 through RW-7) and three (3) monitoring wells (MW-7, MW-8 and MW-9). The monitoring wells on the west side of the lease road to determine north and south limits of produced water in the lower sand unit. Well MW-7 has remained dry and confirmed the produced water did not extend north of recovery well RW-4. Well MW-8 contained about 1.15 feet of produced water on April 13, 2018, and increased to about 3.44 and 15.93 feet on April 16, 2018 and June 6, 2018, respectively. Monitoring well MW-9 remained dry until June 6, 2018, when the well contained about 1.15 feet of produced water. The monitoring wells confirmed the horizontal limit of produced water was between about 50 to 75 feet south of MW-8.

Recovery wells RW-1, RW-2 and RW-3, installed parallel to the recovery trench, contained about 1.19, 1.07 and 1.81 feet of produced water, respectively, and confirmed that the produced water had permeated through the sandy clay unit into the underlying sand unit (Ogallala formation) and migrated southeast along the lower contact with the Triassic-age Dockum Group (red bed). The thickness of produced water in recovery wells RW-4 and RW-5 was 2.88 and 4.09 feet, respectively, on May 24, 2018. The produced water thickness in RW-5 has remained essentially the same whereas the levels in wells RW-4, RW-6 and RW-7 had recovered to about 14.15, 12.2 and 14.54 feet, respectively, on June 6, 2018.

On April 19, 2018, LAI personnel developed the wells by pumping with an electric submersible pump. The well yields ranged from approximately fifteen (15) gallons (RW-2) and twenty-five (25) gallons (RW-5, RW-6 and RW-7). Wells RW-1, RW-2, RW-3 and RW-5 did not recover to the pre-development levels

and wells RW-4, RW-6 and RW-7. After approximately 90 days the recovery wells failed to recover to the pre-development level.

Between June 22 and 28, 2018, LAI performed in-situ hydraulic conductivity (slug) tests in well MW-5, MW-6, MW-7 and MW-8 to calculate a range and average horizontal hydraulic conductivity (K) for the lower sand unit for feasibility of recovering the produced water. Hydraulic conductivity was calculated using the Bouwer and Rice (1976) method and calculated an overall average horizontal hydraulic conductivity value of approximately $5.4E^{-03}$ cm/sec or about 15.31 ft/day.

On June 29, 2018 and July 2, 2018, LAI personnel conducted pumping tests in recovery wells RW-6 and RW-7, respectively. The average pumping rate over the term of the tests which were about 52 minutes (RW-06) and 25 minutes (RW-7) before the wells pumped off was approximately 0.07 gpm. The overall average hydraulic conductivity calculated with Aqtesolv® software and Theis equation (1935) equation was calculated at approximately 1.90E-6 cm/sec or approximately 0.0053 ft/day. Approximately 15 gallons of water was produced during the pumping tests.

XTO concludes that it is not feasible to recover the volume of produced water from the release based on the average recovery well pumping capacity equal to approximately 0.07 gpm, average recovery well pump off time equal to approximately 38 minutes and average recovery period greater than 90 days. XTO has demonstrated that no groundwater resources are present in the area above the Triassic-age Dockum Group (red bed) and that it is technically infeasible to recover the produced water based on the hydraulic properties of the sand unit. XTO respectfully requests no further action for 1RP-4789.

2.0 INTRODUCTION

Larson & Associates, Inc. (LAI) submits this report to the New Mexico Oil Conservation Division (OCD), on behalf of XTO Energy, Inc. (XTO), to document attempted remediation of a produced water release from a ten (10) inch cement-lined steel line associated with the Eunice Monument South Unit (EMSU) B (Site) in Lea County, New Mexico. The release occurred in Unit P (SE/4, SE/4), Section 14, Township 20 South and Range 36 East in Lea County, New Mexico. The Site is located approximately 500 feet southeast of EMSU B Well No. 890 (API 30-025-04266). The surface owner is the Jimmie Cooper estate. The mineral owner is the U.S. Bureau of Land Management (BLM). The geodetic position is North 32° 34' 03.40" (32.567611°) and West 103° 19' 13.08" (-103.3203°). Figure 1 presents a location and topographic map.

2.1 Background

On June 9 and July 27, 2017, XTO verbally reported the release to OCD District 1 in Hobbs, New Mexico. The release was caused by internal corrosion in the bottom of the 10 inch cement-lined steel line. The release was discovered by the lease operator on June 9, 2017. XTO personnel shut-in the wells, isolated the line and replaced the line segment. Vacuum trucks were dispatched to recover water that had accumulated on the surface and in the excavation where the line was replaced. A total of 11,689 barrels (bbl) of produced water were recovered from the excavation and low lying area located east of the excavation. XTO estimated the affected area at 227,205 square feet (405 feet by 561 feet) or about 5.21 acres. On August 10, 2017, LAI personnel used a Trimble sub-meter hand held global position system (GPS) receiver to map the area of distressed vegetation and calculated the affected area at about 121,628 square feet or approximately 2.79 acres. On August 11, 2017, XTO submitted the initial C-141 and stated LAI would perform an initial evaluation and electromagnetic (EM) terrain conductivity surveys to assess the release and update the estimated loss volume. OCD assigned the release remediation permit number 1RP-4789. Figure 2 presents an aerial map showing the estimated affected area. Appendix A presents the initial C-141.

Between August 28, 2017 and December 4, 2017, personnel from Larson & Associates, Inc. (LAI) delineated the release by performing electromagnetic (EM-31 and EM-34) surveys, collecting soil samples from thirty-one (31) shallow borings (SB-1 through SB-31) for laboratory analysis, completing the shallow borings as temporary piezometers for gauging produced water thickness on a sandy clay unit between located about 7 and 10 feet below ground surface (bgs) and installing six (6) monitoring wells (MW-1 through MW-6) in the sand unit (Ogallala formations) below the sandy clay. The monitoring wells, except MW-3, were drilled to the top of the Triassic-age Dockum Group (Chinle formation) between approximately 37 and 55 feet bgs. Wells MW-1, MW-2 and MW-4 remain dry. Well MW-5 was dry until produced water was observed in the well about thirty (30) days following well completion and concluding the sandy clay unit was semi-permeable. Produced water was observed in well MW-6, located about 300 feet southeast and hydraulically down gradient of MW-5, about four (4) days following installation; concluding that produced water permeated through the sandy clay units and underlying sand (Ogallala formation) and migrating southeast along the lower contact with the Dockum (Chinle formation or red bed).

Based on the produced water thickness in the shallow piezometers, LAI calculated the unrecovered volume of produced water at approximately 46,159 barrels (bbl). The total release volume was calculated at approximately 57,848 bbl when coupled with the volume of water (11,689 bbl) recovered from the excavation after repairing the pipe and from a low lying area east of the excavation.

Chloride was below the OCD delineation limit of 600 mg/Kg in soil samples collected between ground surface and approximately 10 feet bgs from twenty-two (22) borings (SB-1 through SB-22) except sample MW-1, 10 to 11 feet (909 mg/Kg) and a composite sample (1,080 mg/Kg) from the east soil pile resulting from the pipeline repair. The results of the delineation were submitted to the OCD in a report titled, "*1RP-4789 – Delineation Report EMSU B Produced Water Release, Lea County, New Mexico, December 12, 2017, January 9, 2018",* and included a remediation plan. OCD approved the remediation plan on March 2, 2018. Appendix B presents OCD correspondence.

2.2 Physical Setting

The physical setting is as follows:

- Elevation is approximately 3,765 feet above mean sea level (amsl);
- Topography slopes gently toward the east;
- The nearest surface water feature is a seasonal playa located about 1,200 feet southwest of the Site;
- There is no direct connection with the Site to the seasonal playa;
- The soils are designated "Kermit soils and dune land, 0 to 12 percent slopes" and "Kermit-Palomas fine sands, 0 to 12 percent slopes". The soils originated from calcareous sandy eolian deposits derived from reworking the underlying Pliocene-age Blackwater Draw and Ogallala formation formations, in descending order;
- The soils consist of a surface layer of fine sand about 8 inches thick underlain by fine sand to about 60 inches or about 5 feet and developed over cemented material (caliche);
- The description matches the soil observed at the Site;
- The upper geological unit is the Tertiary-age Blackwater Draw and Ogallala formations, in descending order, comprised of very fine to medium-grained quartz sand and gravel, with minor amount of silt and clay with indistinct to massive crossbeds;
- The Ogallala formation is underlain by clay, silty clay, shale and sandstone of the Chinle formation (Triassic) and is about 300 feet thick;
- The Chinle formation occurs at depths between about 75 and 100 feet below ground surface (bgs);
- The nearest water well is located about 2,000 feet northeast (hydraulically up gradient) in Unit I (NE/4, SE/4), Section 14, Township 20 South, Range 36 East;
- The well is inactive and had a reported depth to groundwater of approximately 30 feet bgs in 1981;
- The well was observed during a reconnaissance visit on September 6, 2017;

- Groundwater was not observed in monitoring wells drilled to the Triassic-age Dockum Group (shale) between encounter between approximately 33 feet bgs (MW-1) and 52 feet bgs (MW-5);
- The regional slope of the Chinle formation (red bed) is to the southeast.

2.3 Remediation Levels

Remediation levels from Table 1 (19.15.29.12 NMAC) are as follows:

- Benzene 10 mg/Kg
- BTEX 50 mg/Kg
- TPH 2,500 mg/Kg
- Chloride 1,0000 mg/Kg

Further, 19.15.29.13S(1) NMAC (Restoration, Reclamation and Re-Vegetation) requires the reclamation must contain a minimum of four (4) feet of non-waste containing uncontaminated, earthen material with chloride concentrations less than 600 mg/Kg as analyzed by EPA Method 300.0, or other test methods approved by the division. The soil cover must include a top layer, which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

2.4 Archeological Survey

On December 20, 2017, BLM (Shelly Tucker) requested a drawing showing the location for the spill area due to the amount of cultural resources (archeology) in the area requested an archeological survey by a BLM accepted archeologist. Jeffery Panghorn with APAC, a contract archeological firm located in Carlsbad, New Mexico, was contracted by LAI to perform the Class III archeological survey and concluded that no known cultural resources were affected by the release. BLM requested that APAC be present to inspect soil during the recovery trench installation to identify cultural resources. Appendix C presents BLM correspondence.

3.0 RELEASE REMEDIATION

3.1 Recovery Trench

On March 27 and 28, 2018, SDR Enterprises, LLC (SDR), under supervision from LAI, began excavating the recovery trench beginning approximately 30 feet east of the source (trunk line leak) and progressing east to approximately 150 feet east of the source. The trench was approximately 4 feet in width and excavated about 1 foot into the sandy clay unit beginning at about 9 feet bgs on the west end and deepening to about 12 feet bgs at approximately 250 feet east. At BLM's request, a representative with APAC was on site to monitor soils during excavation of the recovery trench.

On March 28, 2019, a small amount of water was observed in the bottom of the trench near the west end, closest to the release, and the sandy clay wet but not saturated concluding that the produced

permeated through the sandy clay and into the sand (Ogallala formation). On March 29, 2019, LAI notified OCD (Bradford Billings) via email of the observations from the recovery trench. OCD agreed that no further excavation was necessary but requested the trench to remain open and secured over the weekend (March 31st and April 1st) for observation and approved backfilling with the excavated soil assuming chloride was less than 600 mg/Kg. On April 2, 2018, LAI personnel collected seven (7) composite soil samples (west and ends and Composite 2 through Composite 6) from the excavated soil piled on the south side of the trench. The samples were analyzed by Permian Basin Environmental Lab (PBEL), in Midland, Texas, and reported chloride between 5.76 mg/Kg (Composite 2) and 79.6 mg/Kg (Composite 3). Table 1 presents the soil sample analytical data summary. Appendix D presents the laboratory report.

APAC was onsite to inspect soil excavated from the recovery trench on March 28 – 29, 2018 and a follow up inspection on June 9, 2019. APAC concluded that no cultural resources were impacted by the release and remediation. Appendix E presents the APAC report.

On April 4 and 5, 2018, the trench was backfilled to surface with the excavated soil. On April 6, 2018, approximately 16 cubic yards or 31,140 tons of contaminated soil from the east pile with chloride above 600 mg/Kg (1,080 mg/Kg) was disposed at Lea Land Landfill located between Hobbs and Carlsbad, New Mexico. Appendix F presents the waste manifest (No. 122492). Appendix G presents photographs.

3.2 Recovery Wells and Monitoring Wells

Between April 3 and 17, 2018, Scarborough Drilling, Inc. (SDI), under supervision from LAI, installed three (3) monitoring wells (MW-07, MW-08 and MW-09) and seven (7) recovery wells (RW-1 through RW-7) to assess and recover produced water. The monitoring wells were advanced between about 6 and 10 feet into the to the top of the Dockum Group (red bed) contacted at about 44 feet bgs. The monitoring wells were completed with threaded 2 inch schedule 40 PVC casing and about 20 feet of 0.010 inch factory slotted screen. Sand was placed around the screen to about 2 feet above the screen. The remainder of the borehole annulus above the sand was filled with bentonite chips to ground surface.

The monitoring wells were installed along the west side of the lease road to determine the lateral (north and south) limits of produced water above the red bed. Well MW-07 was installed about 50 feet north of recovery well RW-4 and remained dry, thus confirming the produced water did not extend north of recovery well RW-4. Well MW-08 was installed about 25 feet south of recovery well RW-7 and contained about 1.15 feet of produced water on April 13, 2018, and increasing to about 3.44 and 15.93 feet on April 16, 2018 and June 6, 2018, respectively. Monitoring well MW-09 was installed about 85 feet south of well MW-08 and remained dry until June 6, 2018, when the well contained about 1.15 feet of produced water. The monitoring wells confirm the lateral (north to south) boundary of produced water is about 300 feet.

The monitoring wells were advanced between about 6 and 10 feet into the Dockum Group (red bed) contacted between about 38 and 44 feet bgs. The monitoring wells were completed with threaded 2 inch schedule 40 PVC casing and about 20 feet of 0.010 inch factory slotted screen. Sand was placed around the screen to about 2 feet above the screen. The remainder of the borehole annulus above the sand was filled with bentonite chips to ground surface.

Three (3) recovery wells (RW-1, RW-2 and RW-3) were installed parallel (west to east) to the recovery trench. Recovery wells RW-4 through RW-7 were installed along the west side of the lease road and perpendicular to recovery wells RW-1, RW-2 and RW-3. The recovery wells were advanced between about 6 and 11 feet into the Dockum Group (red bed) contacted between at about 38 and 44 feet bgs. The recovery wells were completed with standard 5 inch water well casing with glued joints and approximately 20 feet of 0.20 inch factory slotted screen. Gravel was placed around the screen to about 2 feet above the screen. The remainder of the borehole annulus above the sand was filled with bentonite chips to ground surface. Table 2 presents well completion and gauging summary. Appendix H presents the lithologic logs and well completion diagrams.

3.3 Depth to Water Measurements and Well Purging

Wells MW-01, MW-02, MW-04 and MW-07 remain dry and confirm the up gradient and cross gradient extents of produced water above the Dockum Group (red bed). The water level in wells MW-05 and MW-06 remained consistent between approximately 40.17 and 40.72 feet bgs (MW-05) and 42.59 and 42.96 feet bgs (MW-06). The average water column thickness in wells MW-05 and MW-06 was approximately 13.72 and 9.56 feet, respectively, between March 29, 2018 and December 19, 2018.

On April 19, 2018, the recovery wells (RW-1 through RW-7) were purged with an electric submersible pump until dry to remove fine grained sediment disturbed during drilling. Prior to development depth to groundwater in the recovery wells ranged from 40.72 feet from top of casing (TOC) in well RW-6 to 44.50 feet TOC in well RW-3. The water column thickness ranged from approximately 8.2 feet (8.36 gallons) in RW-2 to 15.45 feet (15.79 gallons) in RW-7. The volume of water removed from the recovery wells ranged from approximately 15 gallons (RW-2) to 25 gallons (RW-5 and RW-7). The wells were gauged for recovery over a period of approximately 90 days and had not recovered to the pre-development levels. The wells were gauged for recovery over about 24 hours and 90 days. The 24 hour rate of recovery ranged from approximately 0.00 feet per hour (RW-4) to 0.084 feet per hour (RW-7). The average rate of recovery over 24 hours was 0.032 feet per hour. The percent recovery over about 90 days ranged from approximately 4.33 percent (RW-7) to 30.81 percent (RW-6). The water levels in wells RW-1, RW-2 and RW-3 continue to increase in depth concluding that the produced water is migrating southeast along the contact with the Dockum Group (red bed) under gravity conditions. Table 3 presents the post- well development recovery summary.

3.4 Pumping Test and Slug Tests

Between June 22 and June 28, 2018, LAI personnel performed in-situ hydraulic conductivity (slug) tests in wells MW-05, MW-06, MW-07 and MW-08. The slug tests were performed by lowering (falling head) and raising (rising head) a sand filled slug into the water column to induce horizontal flow in the well while recording head changes with an In-Situ Troll 700® pressure transducer and laptop computer. The slug test data were evaluated with Aqtesolv® software and Bouwer and Rice (1976) test solution for unconfined aquifers. Falling head test results were fair from MW-05, MW-07 (Test 2) and MW-08 (Test 1) while rising head test results were fair from well MW-07 (Test 2). Poor slug test results may be attributed to slow recharge of the sand unit and/or termination of the leak source. The average horizontal hydraulic conductivity (falling head and rising head) ranged from $2.0E^{-03}$ to $1.68E^{-02}$ centimeters per second (cm/sec) or 5.67 to 47.62 feet per day (ft/day). The overall average horizontal hydraulic conductivity was approximately $5.4E^{-03}$ cm/sec or about 15.31 ft/day. Table 4 presents the horizontal hydraulic conductivity (slug test) data summary. Appendix I presents the slug test data analysis.

On June 29, 2018, LAI personnel conducted a pumping test in RW-6 with an initial pumping rate of approximately 120 milliliters per second (mL/sec) or about 1.90 gallons per minute (gpm) for about 45 minutes, decreasing to about 70 mL/sec or about 1.11 gpm for about for 50 minutes, decreasing to about 32 mL/sec or about 0.51 gpm for approximately 2 minutes and decreasing to approximately 8mL/sec or about 1.20 gpm for about 2 minutes until the well pumped off at 52 minutes into the test. Approximately 10 gallons of water was produced during the pumping test. The pumping test data were evaluated with Aqtesolve software and Theis equation (1935) equation. The hydraulic conductivity for RW-6 was calculated at 1.54E-6 cm/sec or approximately 0.0042 ft/day. The hydraulic conductivity for RW-7 was calculated at 3.93E-6 cm/sec or approximately 0.0064 ft/day. The overall average horizontal hydraulic conductivity was calculated at approximately 1.90E-6 cm/sec or approximately 0.0053 ft/day. Appendix I presents the pumping test data analysis.

On July 2, 2018, LAI personnel conducted a pumping test in RW-7 with an initial pumping rate of approximately 2.5 mL/sec or about 0.39 gpm for about 5 minutes, increasing to about 4 mL/sec or about 0.63 gpm for about 20 minutes until the well pumped off at 25 minutes into the test. Approximately 5 gallons of water was produced during the pumping test.

4.0 CONCLUSION

It is not feasible to recover the volume of produced water from the release based on the average recovery well pumping capacity equal to approximately 0.07 gpm, average recovery well pump off time equal to approximately 38 minutes and average recovery period greater than 90 days. XTO has demonstrated that no groundwater resources are present in the area above the Triassic-age Dockum

Group (red bed) and that it is technically infeasible to recover the produced water based on the hydraulic properties of the sand unit. XTO respectfully requests no further action for 1RP-4789.

Tables

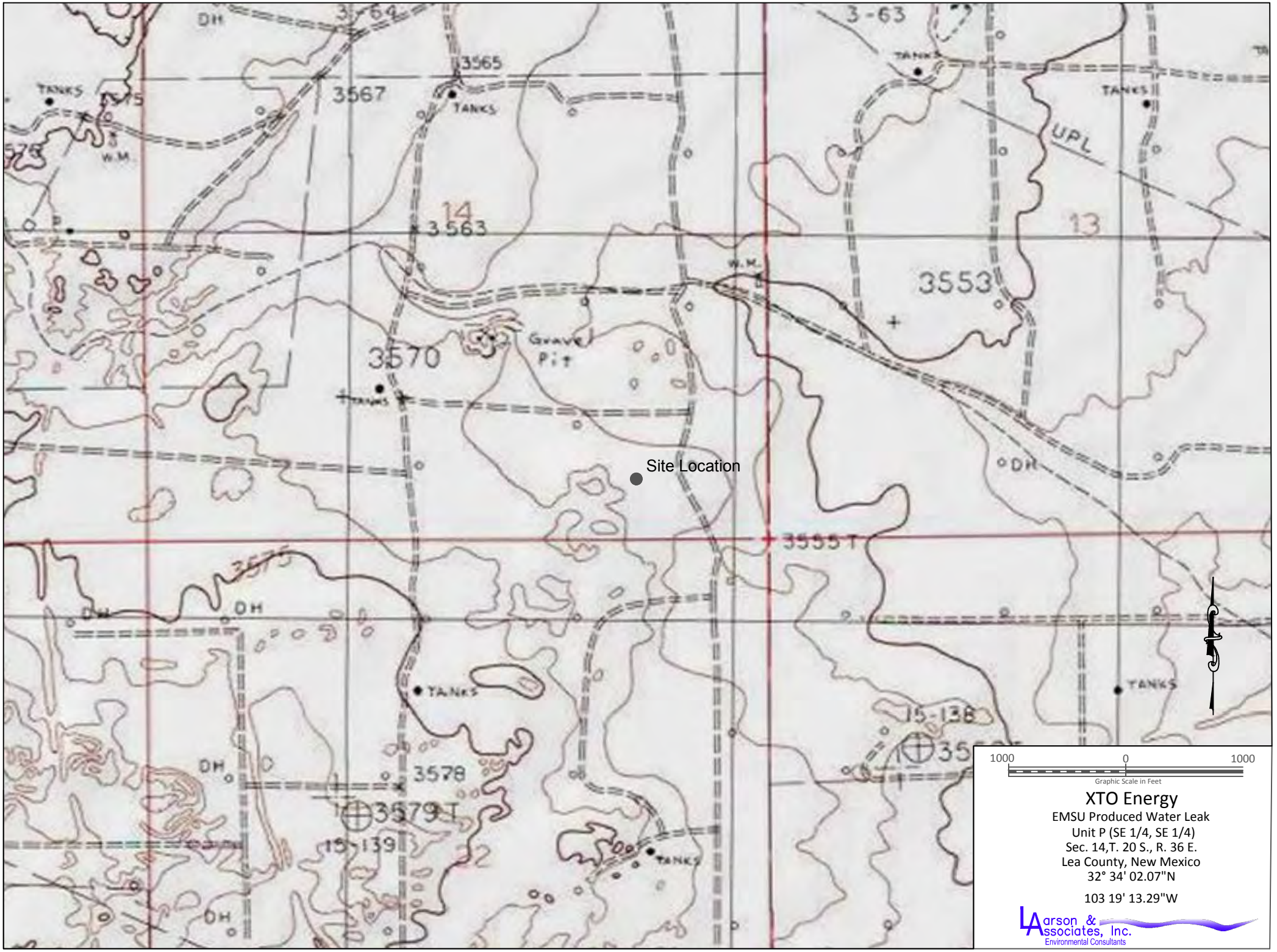

Figure 1 - Topographic Map

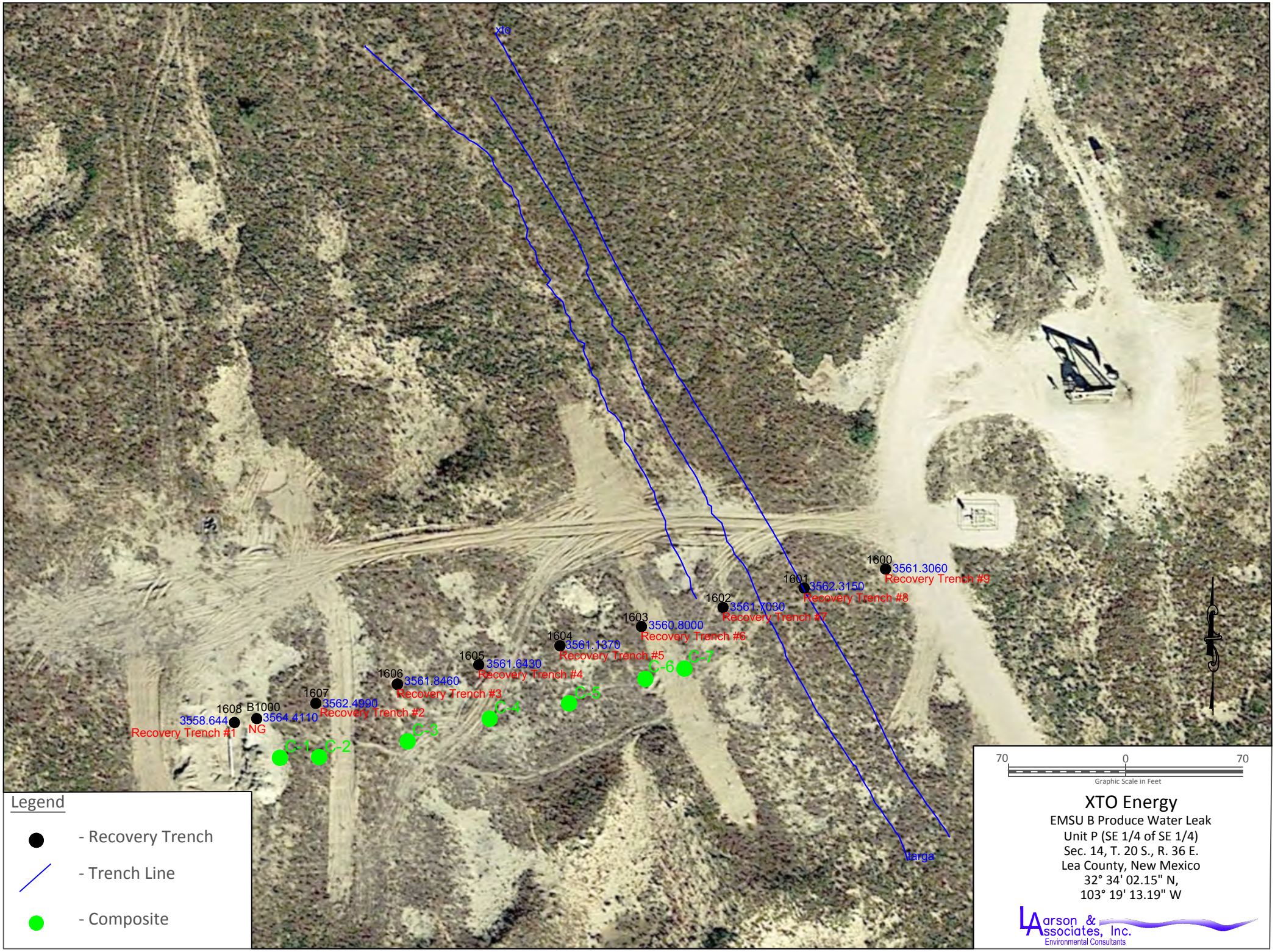

Figure 2- Aerial Map Showing Recovery Trenchs

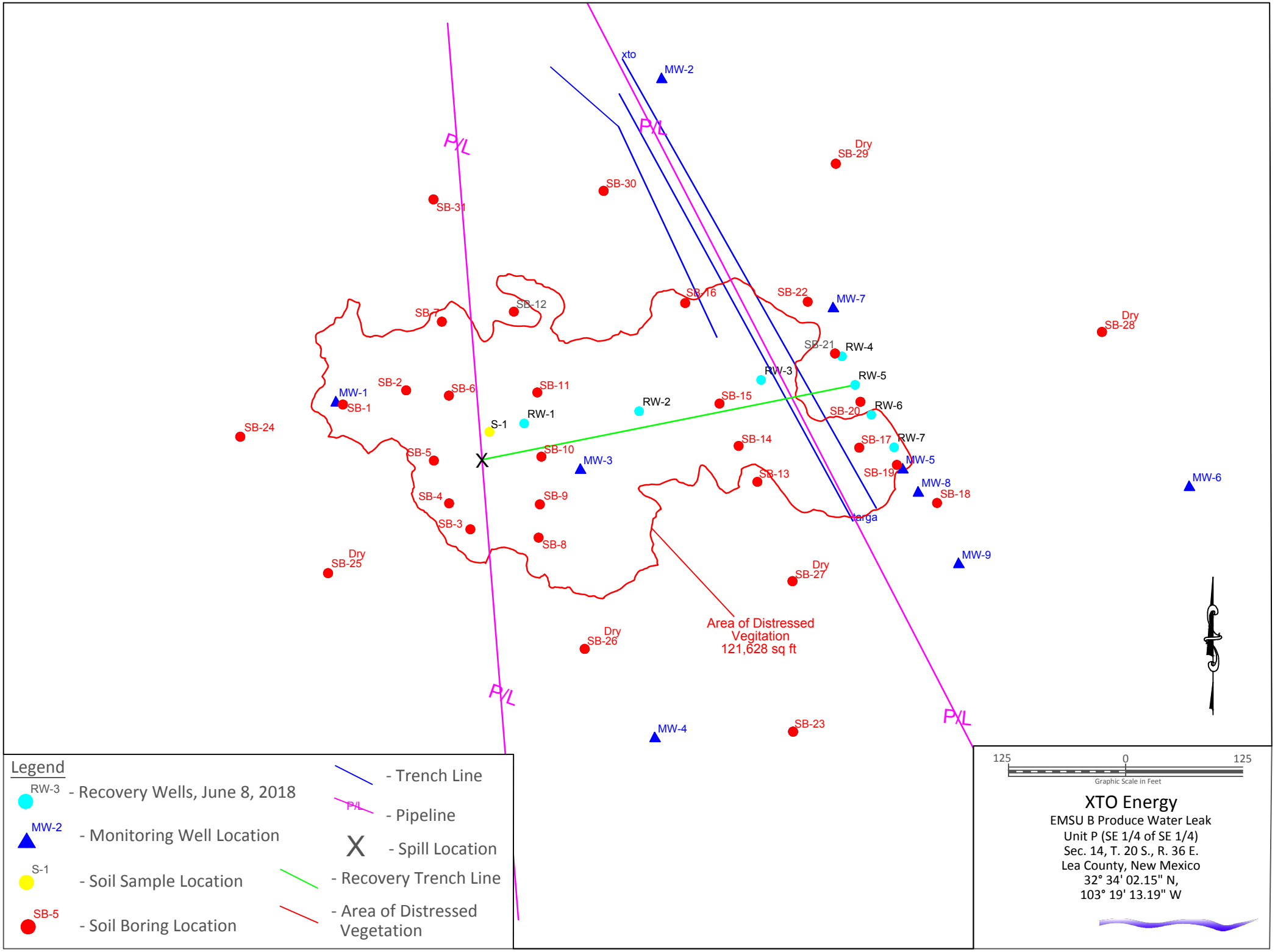

Figure 3 - Site Map

Figures

Table 1
1RP-4789
Excavation and Soil Sample Analytical Data Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Sample	Collection Date	Depth (Feet)	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C10 (mg/Kg)	>C10 - C28 (mg/Kg)	>C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
RRAL:				**10**	**50**				**5,000**	***600**
Excavation (Pipe Repair) Soil Samples										
S-1 N	1/5/2018	2	In-Situ	<0.00104	<0.00728	<26.0	<26.0	<26.0	<26.0	2.22
S-1 S	1/5/2018	1	In-Situ	<0.00105	<0.00737	<26.3	<26.3	<26.3	<26.3	8.72
S-2 N	1/5/2018	1/2/1900	In-Situ							
S-2 S	1/5/2018	2	In-Situ	<0.00103	<0.00721	<25.8	<25.8	<25.8	<25.8	1.78
S-3 N	1/5/2018	4	In-Situ	<0.00123	<0.00863	<30.9	<30.9	<30.9	<30.9	4.48
S-3 S										
Excavation (Soil Pile) Composite Samples										
West	10/18/2017	--	Excavated	<0.00103	<0.00721	<25.8	<25.8	<25.8	<25.8	11.7
East	10/18/2017	--	Excavated	<0.0206	<0.1442	<25.8	30.0	<25.8	**30.0**	**1080**
E. Pile	4/6/2018	--	In-Situ	--	--	--	--	--	--	15.0
Trench (Soil Pile) Composite Samples										
West End	04/02/2018	--	Excavated	--	--	--	--	--	--	14.7
Composite 2	04/02/2018	--	Excavated	--	--	--	--	--	--	5.76
Composite 3	04/02/2018	--	Excavated	--	--	--	--	--	--	79.6
Composite 4	04/02/2018	--	Excavated	--	--	--	--	--	--	18.6
Composite 5	04/02/2018	--	Excavated	--	--	--	--	--	--	40.3
Composite 6	04/02/2018	--	Excavated	--	--	--	--	--	--	21.7
East End	04/02/2018	--	Excavated	--	--	--	--	--	--	17.8

Notes: Laboratory analysis performed by Permian Basin Environmental Lab, Midland, Texas, by SW-846 Methods 8021B (BTEX), 8015M (TPH) and Method 300 (chloride).

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

--: Sample not analyzed

*: OCD delineation limit

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Sample	Collection Date	Depth (Feet)	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C10 (mg/Kg)	>C10 - C28 (mg/Kg)	>C28 - C35 (mg/Kg)	C6 - C35 (mg/Kg)	Chloride (mg/Kg)
RRAL:				**10**	**50**				**5,000**	***600**

Bold and highlighted denotes analyte concentration exceed OCD limit

Table 2
1RP-4789
Monitoring and Recovery Well Completion and Gauging Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Well Information							Produced Water Data			
Well ID	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Thickness (feet)
Monitoring Well										
MW-1	10/16/2018	35.00	37	2	14.08 - 34.24	3.00	10/20/2017	Dry	Dry	--
							10/23/2017	Dry	Dry	--
							10/25/2017	Dry	Dry	--
							11/27/2017	Dry	Dry	--
							12/4/2017	Dry	Dry	--
							4/9/2018	Dry	Dry	--
							6/14/2018	Dry	Dry	--
							7/2/2018	Dry	Dry	--
							12/18/2019	Dry	Dry	--
MW-2	10/17/2017	38.75	38.75	2	14.00 - 35.24	3.00	10/20/2017	--	--	--
							10/23/2017	Dry	Dry	--
							10/25/2017	Dry	Dry	--
							11/27/2017	Dry	Dry	--
							12/04/2017	Dry	Dry	--
							4/9/2018	Dry	Dry	--
							6/14/2018	Dry	Dry	--
							7/2/2018	Dry	Dry	--
							12/19/2018	Dry	Dry	--
MW-3	10/19/2017	9.59	10	2	1.55 - 6.39	3.00	10/20/2017	7.21	4.21	2.38
							10/23/2017	7.22	4.22	2.37
							10/25/2017	7.31	4.31	2.28
							11/27/2017	7.93	4.93	1.66
							12/4/2017	8.03	5.03	1.56
							4/9/2018	9.17	6.17	0.42
							6/14/2018	9.29	6.29	0.30
							7/2/2018	9.40	6.40	0.19
							12/19/2018	9.49	6.49	0.10
MW-4	10/18/2017	51.00	51	2	27.09 - 46.74	3.00	10/20/2017	Dry	Dry	--
							10/23/2017	Dry	Dry	--
							10/25/2017	Dry	Dry	--
							11/27/2017	Dry	Dry	--
							12/4/2017	Dry	Dry	--
							4/9/2018	Dry	Dry	--
							6/14/2018	Dry	Dry	--
							7/2/2018	Dry	Dry	--

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Well Information							Produced Water Data			
Well ID	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Thickness (feet)
							12/19/2018	Dry	Dry	--
MW-5	10/17/2017	57.00	58	2	35.11 - 54.76	3.00	10/20/2017	Dry	Dry	--
							10/23/2017	Dry	Dry	--
							10/25/2017	Dry	Dry	--
							11/27/2017	43.72	40.72	13.28
							12/4/2017	43.72	40.72	13.28
							3/29/2018	43.35	40.35	13.65
							4/6/2018	43.34	40.34	13.66
							4/9/2018	43.39	40.39	13.61
							6/14/2018	43.22	40.22	13.78
							7/2/2018	43.22	40.22	13.78
							12/19/2018	43.17	40.17	13.83
MW-6	12/4/2017	56.00	55	2	30.37 - 50.12	3.00	12/4/2017	Dry	Dry	--
							12/8/2017	49.52	46.52	6.48
							3/29/2018	45.62	42.62	13.38
							4/9/2018	45.60	42.60	13.40
							4/9/2018	45.59	42.59	10.41
							6/14/2018	45.71	42.71	10.29
							7/2/2018	45.77	42.77	10.23
							12/19/2018	45.96	42.96	10.04
										Initial
MW-7	4/3/2018	54.13	51	2	30.20 - 49.85	3.20	4/9/2018	Dry	Dry	--
							4/13/2018	Dry	Dry	--
							6/6/2018	Dry	Dry	--
							6/14/2018	Dry	Dry	--
							7/2/2018	Dry	Dry	--
							12/19/2018	Dry	Dry	--
MW-8	4/3/2018	60.65	57	2	36.72 - 56.37	3.52	4/9/2018	59.50	55.98	1.15
							4/10/2018	59.30	55.78	1.35
							4/13/2018	59.50	55.98	1.15
							4/16/2018	57.21	53.69	3.44
							6/6/2018	44.72	41.20	15.93
							6/14/2018	44.69	41.17	15.96
							7/2/2018	44.65	41.12	16.00
							12/9/2018	44.45	40.93	16.20

Table 2
1RP-4789
Monitoring and Recovery Well Completion and Gauging Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Well Information							Produced Water Data			
Well ID	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Thickness (feet)
MW-9	4/4/2018	52.10	50	2	28.84 - 48.49	2.85	4/9/2018	Dry	Dry	--
							4/13/2018	Dry	Dry	--
							4/10/2018	Dry	Dry	--
							4/16/2018	Dry	Dry	--
							6/6/2018	50.95	48.10	1.12
							6/14/2018	50.88	50.88	1.22
							7/2/2018	50.68	47.83	1.42
							12/19/2018	47.04	44.19	7.91
Recovery Well										
RW-1	4/12/2018	51.38	49	5	26.81 - 45.20	2.58	4/13/2018	32.46	29.88	18.92
							4/16/2018	40.48	37.90	10.90
							4/17/2018	40.81	38.23	10.57
							4/19/2018	41.25	38.67	10.13
								50.77	48.19	0.61
								49.66	47.08	1.72
							4/20/2018	49.23	46.65	2.15
							4/24/2018	49.09	46.51	2.29
							4/26/2018	49.12	46.54	2.26
							4/30/2018	49.23	46.65	2.15
							5/4/2018	49.47	46.89	1.91
							5/11/2018	49.80	47.22	1.58
							5/15/2018	50.01	47.43	1.37
							5/24/2018	50.21	47.63	1.17
							6/6/2018	50.19	47.61	1.19
							6/14/2018	50.22	47.64	1.16
							7/2/2018	50.21	47.63	1.17
							12/19/2018	50.30	47.72	1.08
RW-2	4/16/2018	50.10	50	5	27.97 - 46.36	2.72	4/17/2018	38.48	35.76	11.62
							4/19/2018	41.90	39.18	8.20
								49.33	46.61	0.77
								48.33	45.61	1.77
							4/20/2018	47.95	45.23	2.15
							4/24/2018	47.95	45.23	2.15
							4/26/2018	48.06	45.34	2.04
							4/30/2018	48.27	45.55	1.83
							5/4/2018	48.52	45.8	1.58
							5/11/2018	48.87	46.15	1.23

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Lea County, New Mexico

Well Information							Produced Water Data			
Well ID	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Thickness (feet)
							5/15/2018	48.98	47.26	1.12
							5/24/2018	49.03	46.31	1.07
							6/6/2018	49.03	46.31	1.07
							6/14/2018	48.98	47.26	1.12
							7/2/2018	49.04	46.32	1.06
							12/19/2018	49.12	46.40	0.98
RW-3	4/16/2018	54.70	51	5	31.09 - 49.48	4.20	4/19/2018	44.50	40.30	10.20
								53.99	49.79	0.71
								53.44	49.24	1.26
							4/20/2018	53.09	48.89	1.61
							4/24/2018	52.83	48.63	1.87
							4/26/2018	52.78	48.58	1.92
							4/30/2018	52.74	48.54	1.96
							5/4/2018	52.74	48.54	1.96
							5/11/2018	52.74	48.54	1.96
							5/15/2018	52.76	48.56	1.94
							5/24/2018	52.81	48.61	1.89
							6/6/2018	52.89	48.69	1.81
							6/14/2018	52.92	48.72	1.78
							7/2/2018	53.01	48.81	1.69
							12/19/2018	53.67	49.47	1.03
RW-4	4/10/2018	56.40	54	5	33.54 - 51.93	3.45	4/12/2018	42.22	38.77	14.18
							4/13/2018	43.19	39.74	13.21
							4/16/2018	44.09	40.64	12.31
							4/17/2018	44.23	40.78	12.17
							4/19/2018	44.46	41.01	11.94
								55.72	52.27	2.34
								54.06	50.61	2.34
							4/20/2018	54.51	51.06	1.89
							4/24/2018	53.97	50.52	2.43
							4/26/2018	53.92	50.47	2.48
							4/30/2018	53.80	50.35	2.60
							5/4/2018	53.75	50.30	2.65
							5/11/2018	53.64	50.19	2.76
							5/15/2018	53.59	50.14	2.81
							5/24/2018	53.52	50.07	2.88
							6/6/2018	53.40	49.95	3.00

Table 2
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Lea County, New Mexico

Well Information							Produced Water Data			
Well ID	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Thickness (feet)
							6/14/2018	53.33	49.88	3.07
							7/2/2018	53.21	49.76	3.19
							12/19/2018	50.77	47.32	5.63
RW-5	4/11/2018	58.70	56	5	36.09 - 534.48	3.20	4/12/2018	35.27	32.07	23.43
							4/13/2018	40.89	37.69	17.81
							4/16/2018	43.21	40.01	15.49
							4/17/2018	43.43	40.23	15.27
							4/19/2018	43.75	40.55	14.95
								57.31	54.11	1.39
								56.01	52.81	2.69
							4/20/2018	55.73	52.53	2.97
							4/24/2018	55.44	52.24	3.26
							4/26/2018	55.36	52.16	3.34
							4/30/2018	55.21	52.01	3.49
							5/4/2018	55.09	51.89	3.61
							5/11/2018	54.93	51.73	3.77
							5/15/2018	54.83	51.63	3.87
							5/24/2018	54.61	51.41	4.09
							6/6/2018	54.23	51.03	4.47
							6/14/2018	53.97	50.77	4.73
							7/2/2018	53.40	50.20	5.30
							12/19/2018	44.31	41.11	14.39
RW-6	4/17/2018	54.45	53	5	32.74 - 51.13	2.30	4/19/2018	40.72	38.42	13.73
								53.40	51.10	1.05
								52.37	51.07	2.08
							4/20/2018	51.56	49.26	2.89
							4/24/2018	49.77	47.47	4.68
							4/26/2018	49.17	46.87	5.28
							4/30/2018	47.69	45.39	6.76
							5/4/2018	46.00	43.70	8.45
							5/11/2018	43.03	40.73	1.42
							5/15/2018	42.41	40.11	12.04
							5/24/2018	42.32	40.02	12.13
							6/6/2018	42.25	39.95	12.20
							6/14/2018	42.22	39.92	12.23
							7/2/2018	50.22	47.92	4.23
							7/3/2018	49.60	47.30	4.85

Table 2
1RP-4789
Monitoring and Recovery Well Completion and Gauging Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Well Information							Produced Water Data			
Well ID	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Thickness (feet)
							7/5/2018	48.36	46.06	6.09
							7/9/2018	45.95	43.65	8.50
							12/19/2018	41.87	39.57	12.58
RW-7	4/11/2018	57.18	55	5	34.85 - 53.24	2.92	4/13/2018	35.72	32.80	21.46
							4/16/2018	40.97	38.05	16.21
							4/17/2018	41.30	38.38	15.88
							4/19/2018	41.73	38.81	15.45
								56.75	53.83	0.43
								54.97	52.05	2.21
							4/20/2018	53.38	50.46	3.80
							4/24/2018	50.89	47.97	6.29
							4/26/2018	50.20	47.28	6.98
							4/30/2018	48.94	46.02	8.24
							5/4/2018	47.88	44.96	9.30
							5/11/2018	46.02	43.10	11.16
							5/15/2018	44.86	41.94	12.32
							5/24/2018	43.48	40.56	13.70
							6/6/2018	42.64	39.72	14.54
							6/14/2018	42.60	39.68	14.58
							7/2/2018	56.25	53.33	0.93
							7/3/2018	54.55	51.63	2.63
							7/5/2018	52.97	50.05	4.21
							7/9/2018	51.06	48.14	6.12
							12/19/2018	42.31	39.90	14.87

Notes: wells drilled and completed by Scarborough Drilling, Inc., Lamesa, Texas, using schedule 40 threaded PVC casing and screen.
bgs - feet below ground surface

Table 3
Post Well Development Recovery Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Recovery Well	Date Gauged	Well Depth (feet TOC)	Depth to Water (feet TOC)	Water Column Thickness (feet)	Percent Recovered (%)
RW-1	4/13/2018	51.38	32.46	18.92	
	4/16/2018		40.48	10.90	--
	4/17/2018		40.81	10.57	--
	4/19/2018		41.25	10.13	--
			50.77	0.61	3.22
			49.66	1.72	9.09
	4/20/2018		49.23	2.15	11.36
	4/24/2018		49.09	2.29	12.10
	4/26/2018		49.12	2.26	11.94
	4/30/2018		49.23	2.15	11.36
	5/4/2018		49.47	1.91	10.09
	5/11/2018		49.80	1.58	8.35
	5/15/2018		50.01	1.37	7.24
	5/24/2018		50.21	1.17	6.18
	6/6/2018		50.19	1.19	6.29
	6/14/2018		50.22	1.16	6.13
	7/2/2018		50.21	1.17	6.18
	12/19/2018		50.30	1.08	5.71
RW-2	4/17/2018	50.10	38.48	11.62	
	4/19/2018		41.90	8.20	--
			49.33	0.77	6.62
			48.33	1.77	15.23
	4/20/2018		47.95	2.15	18.50
	4/24/2018		47.95	2.15	18.50
	4/26/2018		48.06	2.04	17.55
	4/30/2018		48.27	1.83	15.75
	5/4/2018		48.52	1.58	13.6
	5/11/2018		48.87	1.23	10.58
	5/15/2018		48.98	1.12	9.64
	5/24/2018		49.03	1.07	9.21
	6/6/2018		49.03	1.07	9.21
	6/14/2018		48.98	1.12	9.63
	7/2/2018		49.04	1.06	9.12
	12/19/2018		49.12	0.98	8.43
RW-3	4/19/2018	54.70	44.50	10.20	
			53.99	0.71	6.96
			53.44	1.26	12.35
	4/20/2018		53.09	1.61	15.78
	4/24/2018		52.83	1.87	18.33
	4/26/2018		52.78	1.92	18.82
	4/30/2018		52.74	1.96	19.21
	5/4/2018		52.74	1.96	19.21
	5/11/2018		52.74	1.96	19.21
	5/15/2018		52.76	1.94	19.02
	5/24/2018		52.81	1.89	1.78
	6/6/2018		52.89	1.81	17.74
	6/14/2018		52.92	1.78	17.45
	7/2/2018		53.01	1.69	16.57
	12/19/2018		53.67	1.03	10.1

Table 3
Post Well Development Recovery Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Recovery Well	Date Gauged	Well Depth (feet TOC)	Depth to Water (feet TOC)	Water Column Thickness (feet)	Percent Recovered (%)
RW-4	4/12/2018	56.40	42.22	14.18	
	4/13/2018		43.19	13.21	--
	4/16/2018		44.09	12.31	--
	4/17/2018		44.23	12.17	--
	4/19/2018		44.46	11.94	--
			55.72	2.34	16.50
			54.06	2.34	16.50
	4/20/2018		54.51	1.89	13.33
	4/24/2018		53.97	2.43	17.14
	4/26/2018		53.92	2.48	17.49
	4/30/2018		53.80	2.60	18.33
	5/4/2018		53.75	2.65	18.69
	5/11/2018		53.64	2.76	19.46
	5/15/2018		53.59	2.81	20.03
	5/24/2018		53.52	2.88	20.31
	6/6/2018		53.40	3.00	21.15
	6/14/2018		53.33	3.07	21.65
	7/2/2018		53.21	3.19	22.49
	12/19/2018		50.77	5.63	39.70
RW-5	4/12/2018	58.70	35.27	23.43	
	4/13/2018		40.89	17.81	--
	4/16/2018		43.21	15.49	--
	4/17/2018		43.43	15.27	--
	4/19/2018		43.75	14.95	--
			57.31	1.39	5.93
			56.01	2.69	11.48
	4/20/2018		55.73	2.97	12.67
	4/24/2018		55.44	3.26	13.91
	4/26/2018		55.36	3.34	14.25
	4/30/2018		55.21	3.49	14.89
	5/4/2018		55.09	3.61	15.41
	5/11/2018		54.93	3.77	16.09
	5/15/2018		54.83	3.87	16.52
	5/24/2018		54.61	4.09	17.46
	6/6/2018		54.23	4.47	19.08
	6/14/2018		53.97	4.73	20.19
	7/2/2018		53.40	5.30	22.62
	12/19/2018		44.31	14.39	61.42
RW-6	4/19/2018	54.45	40.72	13.73	
			53.40	1.05	7.65
			52.37	2.08	15.15
	4/20/2018		51.56	2.89	21.05
	4/24/2018		49.77	4.68	34.08
	4/26/2018		49.17	5.28	38.45
	4/30/2018		47.69	6.76	49.23
	5/4/2018		46.00	8.45	61.54
	5/11/2018		43.03	11.42	83.17
	5/15/2018		42.41	12.04	87.69
	5/24/2018		42.32	12.13	88.35

Table 3
Post Well Development Recovery Summary
XTO Energy, Inc., EMSU B Produced Water Release Remediation
Lea County, New Mexico

Recovery Well	Date Gauged	Well Depth (feet TOC)	Depth to Water (feet TOC)	Water Column Thickness (feet)	Percent Recovered (%)
	5/24/2018		42.32	12.13	88.35
	6/6/2018		42.25	12.20	88.86
	6/14/2018		42.22	12.23	89.07
	7/2/2018		50.22	4.23	30.81
	7/3/2018		49.60	4.85	35.32
	7/5/2018		48.36	6.09	44.35
	7/9/2018		45.95	8.50	61.91
	12/19/2018		41.87	12.58	91.62
RW-7	4/13/2018	57.18	35.72	21.46	
	4/16/2018		40.97	16.21	--
	4/17/2018		41.30	15.88	--
	4/19/2018		41.73	15.45	--
			56.75	0.43	2.00
			54.97	2.21	10.30
	4/20/2018		53.38	3.80	17.71
	4/24/2018		50.89	6.29	29.31
	4/26/2018		50.20	6.98	32.52
	4/30/2018		48.94	8.24	38.40
	5/4/2018		47.88	9.30	43.34
	5/11/2018		46.02	11.16	52.00
	5/15/2018		44.86	12.32	57.41
	5/24/2018		43.48	13.70	63.34
	6/6/2018		42.64	14.54	67.75
	6/14/2018		42.60	14.58	67.94
	7/2/2018		56.25	0.93	4.33
	7/3/2018		54.55	2.63	12.25
	7/5/2018		52.97	4.21	19.62
	7/9/2018		51.06	6.12	28.52
	12/19/2018		42.31	14.87	69.29

Note: all measurements in feet below top of casing (TOC)

Table 3
1RP-4789
Summary of In-situ Hydraulic Conductivity (Slug Test) Data Summary
EMSU B Produced Water Release, XTO Energy, Inc.
Lea County, New Mexico

Well	Date	Falling Head K	Data Quality	Rising Head K	Data Quality	Well Average
MW-05	06/22/2018	3.57E-03	Fair	1.06E-07	Poor	
MW-05 Average		3.57E-03		1.06E-07		1.80E-03
MW-06 Test 1	06/25/2018	6.60E-02	Poor	2.45E-07	Poor	
MW-06 Test 2	06/25/2018	Insufficient Data	Poor	1.51E-04	Poor	
MW-06 Test 3	06/28/2018	1.06E-03	Poor	2.40E-04	Poor	
MW-06 Average		3.35E-02		1.00E-04		1.68E-02
MW-07 Test 1	06/22/2018	Insufficient Data	Poor	Insufficient Data	Poor	
MW-07 Test 2	06/27/2018	2.10E-03	Fair	9.40E-04	Fair	
MW-07 Average		2.10E-03		9.40E-04		1.00E-03
MW-08 Test 1	06/26/2018	3.20E-03	Fair	1.40E-04	Poor	
MW-08 Average		3.20E-03		1.40E-04		2.00E-03
Overall Average						5.40E-03

Notes: data evaluated with Atesolv® software and Bouwer and Rice (1976) method for unconfined aquifers
All results are reported in centimeters per second (cm/sec)

Appendix A

Initial C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised April 3, 2017

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO Energy	Contact: Shannon Walker
Address 500 W. Illinois Suite 100 Midland, TX 79701	Telephone No. : 432-661-4649
Facility Name: EMSU B Injection System	Facility Type: Water Injection

Surface Owner: BLM	Mineral Owner BLM	API No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	14	20 S	36 E					

Latitude 32°34'03.40"N **Longitude** 103°19'13.08"W NAD83

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: Not Yet Determined [see comment below]	Volume Recovered: 11,689 bbls [see comment below]
Source of Release: Injection Line	Date and Hour of Occurrence: Unknown	Date and Hour of Discovery: 6/9/2017
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? On Call Line	
By Whom? Shannon Walker	Date and Hour: 6/9/2017 ~ 1800 hrs MST and again on 6/28/2017	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

RECEIVED
By Olivia Yu at 4:08 pm, Aug 11, 2017

Describe Cause of Problem and Remedial Action Taken.* 10" cement lined steel line, corrosion. Shut field in to isolate leak point. XTO provided immediate verbal notification of the release on 6/9/17 and began recovering water with vacuum trucks. Affected area measures ~405' x 561'. XTO provided updated verbal notification on June 28, 2017, that it had increased its estimate of the release volume to 1,655 bbls. Contacted Mark Larson w/ Larson & Associates to perform initial evaluation and EM surveys of the area. XTO and Larson & Associates are working to update the estimated volume of the release. XTO will submit delineation plan for OCD approval.

Describe Area Affected and Cleanup Action Taken.*

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Patricia Donald

Printed Name: Patricia Donald

Title: Regulatory Analyst

E-mail Address: Patricia_Donald@xtoenergy.com

Date: 8/11/2017 Phone: (432) 571-8220

OIL CONSERVATION DIVISION

Approved by Environmental Specialist:

Approval Date: 8/11/2017 Expiration Date:

Conditions of Approval: see attached directive

Attached ☑

* Attach Additional Sheets If Necessary

1RP-4789 fOY1722358348 nOY1722358518

pOY1722358879

Operator/Responsible Party,

The OCD has received the form C-141 you provided on _8/11/2017_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number _1RP-4789__ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District _1_ office in __Hobbs____ on or before _9/11/2017_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

● Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

● Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

● Nominal detection limits for field and laboratory analyses must be provided.

● Composite sampling is not generally allowed.

● Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

●Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

● If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

● Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Appendix B

OCD Correspondence

From:	Yu, Olivia, EMNRD
To:	Billings, Bradford, EMNRD; Mark Larson
Cc:	"David_Askin@xtoenergy.com"; "Scott_Lansdown@xtoenergy.com"; "Nina_Hutton@xtoenergy.com"; "Keith_Underwood@xtoenergy.com"; "Derrick_Meadows@xtoenergy.com"; "Katie_Hooker@xtoenergy.com"; "Katie_Moore@xtoenergy.com"; "Cody_Hays@xtoenergy.com"; "James_Hicks@xtoenergy.com"; "Patricia_Donald@xtoenergy.com"; "Kaufman, Scott"; "Fernando_espino@xtoenergy.com"
Subject:	RE: 1RP-4789 - EMSU B Produced Water Spill
Date:	Friday, March 30, 2018 8:18:05 AM

Good morning All:

In concurrence with Bradford. NMOCD looks forward to an update next week.

Thanks,
Olivia

From: Billings, Bradford, EMNRD
Sent: Thursday, March 29, 2018 11:28 AM
To: Mark Larson <Mark@laenvironmental.com>; Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'David_Askin@xtoenergy.com' <David_Askin@xtoenergy.com>; 'Scott_Lansdown@xtoenergy.com' <Scott_Lansdown@xtoenergy.com>; 'Nina_Hutton@xtoenergy.com' <Nina_Hutton@xtoenergy.com>; 'Keith_Underwood@xtoenergy.com' <Keith_Underwood@xtoenergy.com>; 'Derrick_Meadows@xtoenergy.com' <Derrick_Meadows@xtoenergy.com>; 'Katie_Hooker@xtoenergy.com' <Katie_Hooker@xtoenergy.com>; 'Katie_Moore@xtoenergy.com' <Katie_Moore@xtoenergy.com>; 'Cody_Hays@xtoenergy.com' <Cody_Hays@xtoenergy.com>; 'James_Hicks@xtoenergy.com' <James_Hicks@xtoenergy.com>; 'Patricia_Donald@xtoenergy.com' <Patricia_Donald@xtoenergy.com>; 'Kaufman, Scott' <Scott_Kaufman@xtoenergy.com>; 'Fernando_espino@xtoenergy.com' <Fernando_espino@xtoenergy.com>
Subject: RE: 1RP-4789 - EMSU B Produced Water Spill

Hello,

Well, darn. On the whole I agree, but please don't put contaminated soil back into trench please. If clean, likely okay. But let's talk first about what you find over the weekend after securing the safety aspect of the trench for the weekend. As Olivia is in the field today, for now I will speak for both of us.

Brad

From: Mark Larson <Mark@laenvironmental.com>
Sent: Thursday, March 29, 2018 9:29 AM
To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'David_Askin@xtoenergy.com' <David_Askin@xtoenergy.com>; 'Scott_Lansdown@xtoenergy.com' <Scott_Lansdown@xtoenergy.com>; 'Nina_Hutton@xtoenergy.com' <Nina_Hutton@xtoenergy.com>;

'Keith_Underwood@xtoenergy.com' <Keith_Underwood@xtoenergy.com>; 'Derrick_Meadows@xtoenergy.com' <Derrick_Meadows@xtoenergy.com>; 'Katie_Hooker@xtoenergy.com' <Katie_Hooker@xtoenergy.com>; 'Katie_Moore@xtoenergy.com' <Katie_Moore@xtoenergy.com>; 'Cody_Hays@xtoenergy.com' <Cody_Hays@xtoenergy.com>; 'James_Hicks@xtoenergy.com' <James_Hicks@xtoenergy.com>; 'Patricia_Donald@xtoenergy.com' <Patricia_Donald@xtoenergy.com>; 'Kaufman, Scott' <Scott_Kaufman@xtoenergy.com>; 'Fernando_espino@xtoenergy.com' <Fernando_espino@xtoenergy.com>
Subject: Re: 1RP-4789 - EMSU B Produced Water Spill

Bradford,
It appears that the majority of the produced water has permeated through the sandy clay unit and into the underlying sand. This is confirmed by only has a small amount of water near the west end of the recovery trench. We excavated approximately 250 linear feet of trench on March 27 – 28, 2018, and although the sandy clay unit is very wet it appears that the produced water has permeated through the clay. At this juncture it does not appear that the trench is going to yield the volume of water that it was proposed to yield therefore in my opinion it does not make senesce, both financially and scientifically, to continue trenching especially when it will be necessary to excavate beneath several pipelines (i.e., XTO, Targa and Holly Energy) which will increase the cost and potential for damaging a pipeline. The fluid levels in the shallow monitoring wells confirms this finding. With your concurrence I propose to secure the open trench and observe for water over the weekend. We will proceed with installing the recovery wells. If no water is present in the trench, other than the small amount near the west end of the trench, we will backfill the trench, as well as the excavation around the trunk line, on Monday, April 1, 2018. Please contact Nina Hutton with XTO at (817) 885-2274or email Nina_Hutton@xtoenergy.com or me if you have questions.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Hydrogeologist
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

www.LAEnvironmental.com

"Serving the Permian Basin Since 2000"

From:	Billings, Bradford, EMNRD
To:	Mark Larson; Yu, Olivia, EMNRD
Cc:	"Hutton, Nina"; "Askin, David"; "Lansdown, Scott"; "Keith_Underwood@xtoenergy.com"; "Meadows, Derrick"; "Patricia_Donald@xtoenergy.com"
Subject:	XTO - EMSU B Produced Water Release 1RP-4789
Date:	Friday, March 02, 2018 10:13:00 AM

March 2, 2018

Nina Hutton (XTO)
Mark Larson (Larson Environmental)

RE: Approval for Corrective Action/Remedial Action Plan pertaining to the Produced Water Release with OCD Identifier of 1RP-4789

Hello,

Upon review of delineation submittals, remedial action plan/corrective action plan (CAP), meetings and additional documents and technical drawings for proposed remediation efforts on/for the site referenced above, the following:

For ease of internal tracking, the New Mexico Oil Conservation Division (OCD) requests that a compiled folder/document including and incorporating the subsequent information and technical drawings submitted after the initial submittal for CAP in January 2018 be submitted to the OCD. It is likely the various separate documents will also be stored on OCD e-files, but a unified document would be most helpful. OCD thanks you for this in advance.

OCD approves the plan as identified above. Please proceed with your efforts. Thank you for identifying the BLM compliance and adjusting to their requests.

Please keep this electronic communication for your files, as NO official paper copy will follow.

If there are any questions or needs, please do not hesitate to contact the OCD.

Please allow sufficient opportunity for OCD staff to attend your field work efforts. 48 hours at minimum, not counting weekend time is a minimum, but we would appreciate as much time as you can legitimately estimate.

Sincerely,

Bradford Billings
EMNRD/OCD-Santa Fe

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

Appendix C

BLM Correspondence

From: Tucker, Shelly
To: Yu, Olivia, EMNRD
Cc: Donald, Patricia; Mark Larson
Subject: Re: C-141 XTO-EMSU B Injection System
Date: Wednesday, December 20, 2017 12:52:10 PM
Attachments: image001.png

Just FYI - there is a lot of arch in that area... if someone can get me a copy of the flow path so I can make sure none of the sites were impacted.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Shelly J Tucker

Environmental Protection Specialist
O&G Spill/Release Coordinator

Bureau of Land Management
620 E. Greene St
Carlsbad, NM 88220

575.234.5905 - Direct
575.361.0084 - Cellular
575.234.6235 - Emergency Spill Number

stucker@blm.gov

On Wed, Dec 20, 2017 at 11:32 AM, Tucker, Shelly <stucker@blm.gov> wrote:

> Ok...this is FEE/federal... so we are good. (federal minerals - I am still involved but no harm done here.)
>
> If you have any questions or concerns, please do not hesitate to contact me.
>
> Sincerely,
>
> *Shelly J Tucker*
>
> Environmental Protection Specialist
> O&G Spill/Release Coordinator
>
> Bureau of Land Management
> 620 E. Greene St
> Carlsbad, NM 88220
>
> 575.234.5905 - Direct
> 575.361.0084 - Cellular
> 575.234.6235 - Emergency Spill Number
>
> stucker@blm.gov
>
>

On Wed, Dec 20, 2017 at 7:10 AM, Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us> wrote:

> Good morning Shelly:
>
> I apologize for neglecting to include you in the email communications. I will forward you the documents now. They are also uploaded online.
>
> Release volume was estimated to be over 1600 bbls.
>
> Mr. Larson: Please remember to include BLM in submittal of all documents.
>
> Thanks,
>
> Olivia
>
> **From:** Tucker, Shelly [mailto:stucker@blm.gov]
> **Sent:** Tuesday, December 19, 2017 7:21 PM
> **To:** Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
> **Cc:** Donald, Patricia <Patricia_Donald@xtoenergy.com>
> **Subject:** Re: C-141 XTO-EMSU B Injection System
>
> This one slipped through the cracks this summer while I was out of pocket...what is the current status? Also...was the release over 11K bbls or was that a typo.
>
> If you have any questions or concerns, please do not hesitate to contact me.
>
> Sincerely,
>
> *Shelly J Tucker*
>
> Environmental Protection Specialist
>
> O&G Spill/Release Coordinator
>
> Bureau of Land Management
>
> 620 E. Greene St
>
> Carlsbad, NM 88220
>
> 575.234.5905 - Direct
>
> 575.361.0084 - Cellular
>
> 575.234.6235 - Emergency Spill Number

stucker@blm.gov

The **BLM acceptance/approval does not** relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that may pose a threat to groundwater, surface water, human health or the environment or if the location fails to reclaim properly. In such an event that the location does not revegetate, or future issues with contaminants are encountered, the operator will be asked to address the issues until the contaminant issues are fully mitigated and the location is successfully reclaimed. In addition, BLM approval does not relieve the operator of responsibility for compliance with any other federal, state or local laws/regulations.

On Fri, Aug 11, 2017 at 4:31 PM, Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us> wrote:

> Dear Ms. Donald:
>
> The 1RP for this incident is
>
> | | | | | | | | |
> |---|---|---|---|---|---|---|---|
> | **4789** | 8/11/2017 | A | XTO | EMSU B injection | | 20S-36E-14P | 6/9/2017 |
>
> Please note that a release characterization/delineation workplan as detailed in the attachment must be approved by NMOCD BEFORE any remediation work.
>
> Thanks,
>
> Olivia Yu
>
> Environmental Specialist
>
> NMOCD, District I
>
> Olivia.yu@state.nm.us
>
> 575-393-6161 x113
>
> OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.
>
> ---
>
> **From:** Donald, Patricia [mailto:Patricia_Donald@xtoenergy.com]

Sent: Friday, August 11, 2017 3:27 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Subject: C-141 XTO-EMSU B Injection System

Good Afternoon Olivia,

Please see C-141 attached for our EMSU B Injection system.

Please let me know if you need any other information.

Can you please let me know when you have assigned a remediation ID number?

Thank you,

Patricia Donald

Regulatory Analyst

An **ExxonMobil** Subsidiary

500 W. Illinois Ave

Midland, TX 79701

Phone: 432.571.8220

Fax: 817-900-7311

Patricia_Donald@xtoenergy.com

Appendix C

Laboratory Report

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: EMSU B Produced Water Spill

Project Number: 17-0176-02

Location:

Lab Order Number: 8D06023

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 04/11/18

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU B Produced Water Spill
Project Number: 17-0176-02
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E.Pile	8D06023-01	Soil	04/06/18 10:30	04-06-2018 14:45

Larson & Associates, Inc.	Project: EMSU B Produced Water Spill	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0176-02	
Midland TX, 79710	Project Manager: Mark Larson	

E.Pile

8D06023-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**15.0**	1.00	mg/kg dry	1	P8D1008	04/10/18	04/11/18	EPA 300.0	
% Moisture	ND	0.1	%	1	P8D1003	04/10/18	04/10/18	ASTM D2216	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D1003 - * DEFAULT PREP *** **										
Blank (P8D1003-BLK1)				Prepared & Analyzed: 04/10/18						
% Moisture	ND	0.1	%							
Duplicate (P8D1003-DUP1)		**Source: 8D06010-02**		Prepared & Analyzed: 04/10/18						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P8D1003-DUP2)		**Source: 8D06014-01**		Prepared & Analyzed: 04/10/18						
% Moisture	19.0	0.1	%		23.0			19.0	20	
Duplicate (P8D1003-DUP3)		**Source: 8D06021-02**		Prepared & Analyzed: 04/10/18						
% Moisture	4.0	0.1	%		4.0			0.00	20	
Duplicate (P8D1003-DUP4)		**Source: 8D09001-02**		Prepared & Analyzed: 04/10/18						
% Moisture	7.0	0.1	%		7.0			0.00	20	
Batch P8D1008 - * DEFAULT PREP *** **										
Blank (P8D1008-BLK1)				Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8D1008-BS1)				Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	405	1.00	mg/kg wet	400		101	80-120			
LCS Dup (P8D1008-BSD1)				Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	409	1.00	mg/kg wet	400		102	80-120	0.948	20	
Duplicate (P8D1008-DUP1)		**Source: 8D10002-21**		Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	ND	1.01	mg/kg dry		ND				20	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU B Produced Water Spill
Project Number: 17-0176-02
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D1008 - * DEFAULT PREP *** **										
Duplicate (P8D1008-DUP2)		**Source: 8D09004-01**		Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	4640	28.1	mg/kg dry		4660			0.308	20	
Matrix Spike (P8D1008-MS1)		**Source: 8D10002-21**		Prepared: 04/10/18 Analyzed: 04/11/18						
Chloride	ND	1.01	mg/kg dry	1010	ND		80-120			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU B Produced Water Spill
Project Number: 17-0176-02
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:  Date: 4/11/2018

Brent Barron, Laboratory Director/Technical Director

PBEL

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-6-18 PAGE 1 OF

PO #: LAB WORK ORDER #: 8D0602B

PROJECT LOCATION OR NAME: EMSU B Produced water

LAI PROJECT #: 17-0176-02 COLLECTOR: AG

Page 7 of 7

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
E. Pit		4-6-18	10:30	S	1					X		
TOTAL												

RELINQUISHED BY:(Signature) DATE/TIME 4-6-18 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) 1445 DATE/TIME 4/6/18 RECEIVED BY: (Signature) OR

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: THERM #:
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED 7.84

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: EMSU B Produced Water

Project Number: 17-0176-02

Location:

Lab Order Number: 8D02015

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 04/03/18

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU B Produced Water
Project Number: 17-0176-02
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Composite 2	8D02015-01	Soil	04/02/18 08:49	04-02-2018 13:00
Composite 3	8D02015-02	Soil	04/02/18 08:52	04-02-2018 13:00
Composite 4	8D02015-03	Soil	04/02/18 08:54	04-02-2018 13:00
Composite 5	8D02015-04	Soil	04/02/18 08:56	04-02-2018 13:00
Composite 6	8D02015-05	Soil	04/02/18 08:58	04-02-2018 13:00
Composite West	8D02015-06	Soil	04/02/18 09:00	04-02-2018 13:00
Composite East	8D02015-07	Soil	04/02/18 09:08	04-02-2018 13:00

Composite 2

8D02015-01 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**5.76**	1.02	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU B Produced Water	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0176-02	
Midland TX, 79710	Project Manager: Mark Larson	

Composite 3

8D02015-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**79.6**	1.04	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU B Produced Water	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0176-02	
Midland TX, 79710	Project Manager: Mark Larson	

Composite 4

8D02015-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**18.6**	1.03	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU B Produced Water	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0176-02	
Midland TX, 79710	Project Manager: Mark Larson	

Composite 5

8D02015-04 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**40.3**	1.02	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU B Produced Water	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0176-02	
Midland TX, 79710	Project Manager: Mark Larson	

Composite 6

8D02015-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**21.7**	1.02	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU B Produced Water
Project Number: 17-0176-02
Project Manager: Mark Larson

Fax: (432) 687-0456

Composite West

8D02015-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**14.7**	1.02	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

Larson & Associates, Inc.	Project: EMSU B Produced Water	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 17-0176-02	
Midland TX, 79710	Project Manager: Mark Larson	

Composite East

8D02015-07 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**17.8**	1.03	mg/kg dry	1	P8D0209	04/02/18	04/03/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8D0303	04/03/18	04/03/18	ASTM D2216	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8D0209 - * DEFAULT PREP *** **										
Blank (P8D0209-BLK1)				Prepared: 04/02/18 Analyzed: 04/03/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8D0209-BS1)				Prepared: 04/02/18 Analyzed: 04/03/18						
Chloride	390	1.00	mg/kg wet	400		97.5	80-120			
LCS Dup (P8D0209-BSD1)				Prepared: 04/02/18 Analyzed: 04/03/18						
Chloride	391	1.00	mg/kg wet	400		97.7	80-120	0.172	20	
Duplicate (P8D0209-DUP1)		**Source: 8D02013-01**		Prepared: 04/02/18 Analyzed: 04/03/18						
Chloride	4650	29.1	mg/kg dry		4630			0.551	20	
Duplicate (P8D0209-DUP2)		**Source: 8C29004-20**		Prepared: 04/02/18 Analyzed: 04/03/18						
Chloride	ND	1.10	mg/kg dry		ND				20	
Matrix Spike (P8D0209-MS1)		**Source: 8D02013-01**		Prepared: 04/02/18 Analyzed: 04/03/18						
Chloride	6720	29.1	mg/kg dry	2330	4630	90.0	80-120			
Batch P8D0303 - % Solids										
Blank (P8D0303-BLK1)				Prepared & Analyzed: 04/03/18						
% Moisture	ND	0.1	%							
Duplicate (P8D0303-DUP1)		**Source: 8D02012-04**		Prepared & Analyzed: 04/03/18						
% Moisture	10.0	0.1	%		9.0			10.5	20	
Duplicate (P8D0303-DUP2)		**Source: 8D02015-07**		Prepared & Analyzed: 04/03/18						
% Moisture	4.0	0.1	%		3.0			28.6	20	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: EMSU B Produced Water
Project Number: 17-0176-02
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 4/3/2018

Brent Barron, Laboratory Director/Technical Director

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 4-2-18 PAGE 1 OF

PO #: LAB WORK ORDER #: 8D0201S

PROJECT LOCATION OR NAME: Elmsu B Produced water

LAI PROJECT #: 17-0176-02 COLLECTOR: Ashton

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES	FIELD NOTES
Composite 2	01	4-2-18	8:49	S	1					X		
3	02		8:52									
4	03		8:54									
5	04		8:56									
6	05		8:58									
composite ~~Soil~~ WWW	06		9:00									
composite Cost	07		9:08									

ANALYSES: BTEX ☐ MTBE ☐ TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☐ DIESEL - MOD 8015 ☐ VOC 8260 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ 8082 PCBS ☐ TCLP - METALS (RCRA) ☐ TCLP VOC ☐ TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ TOTAL METALS (RCRA) ☐ OTHER LIST ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ RCI ☐ TOX ☐ FLASHPOINT ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ pH ☐ HEXAVALENT CHROMIUM ☐ EXPLOSIVES ☐ PECHLORATE ☐ CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ M300

TOTAL

RELINQUISHED BY:(Signature) DATE/TIME 4-2-18 1300 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

TURN AROUND TIME
NORMAL ☐
1 DAY ☒
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 4.0 4.4 corrected THERM #:
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

Appendix E

APAC Report

APAC Project #: 18-02-22

NMCRIS #: 143679

Title: The Monitoring of Cleanup Operations near LA 83796 and Site Update in Lea County, New Mexico for Larson and Associates LLC.

Description of undertaking:

On March 26th through March 29th 2018, Allen Rorex with APAC monitored the clean-up operations near LA 83796. These cleanup operations are located in section 14 in T 20 S R 36 E; Lea County, New Mexico. The monitoring was conducted at the request of Mark J. Larson with Larson and Associates LLC. The monitoring and site update was conducted to meet or exceed the Bureau of Land Management Carlsbad Field Office (BLM-CFO) current professional standards for monitoring. During the course of the monitoring no new discoveries were made. The single site (LA 83796) was not impacted by cleanup efforts.

On June 8th and 9th 2019, Jeffrey Pangburn, Tim Church and Greg White with APAC updated LA 83796. A series of loose transects were conducted across the site in order to determine the extent of the site based on the distribution of artifacts. During field work it was determined that the site is located within the dunes and blowouts. Based off current infield observations the site measures 149m x 132m (19,668 sq. m). With the current boundary the clean-up operations would not impact LA 83796. No features or surface staining was observed during the course of this update. Three shovel test pits were excavated near exposed artifacts in order to determine if subsurface artifacts/staining was present. All thee shovel tests were negative for subsurface cultural materials.

Based on the information and taking into account previous documentation we recommend that the site boundary be reduced to cover the only large dune complex and swale (see map) where the majority of artifacts have been observed. The two consistent observations between all three site visits is a lack of features, and the absence of subsurface materials. As such we also recommend the site as not eligible to the NRHP due to the lack of features and lack of subsurface cultural materials.

Dates of Investigation: 02/15/18 - 06/09/19
(1st date is the date of the earliest prefield) (2nd date is the last day of field work)

Permit #s:
BLM: 270-2920-19-F, State: NM-19-261-S (M if monitoring report) (T if for testing)

Land Ownership: BLM and Private

Findings:
Prefield investigations of the proposed project area consist of the review of web sites and project files located at the BLM-CFO, the Archaeological Records Management Section (ARMS) and the General Land Office (GLO). The ARMS and GLO searches were conducted on February 15th, 2019. A review of the GLO files found serial patent 939411 associated with this proposed right-of-way. Serial patent 939411 is for the sale of land to one Henry S. Record under the Act of Congress of May 20th, 1862, "To Secure Homesteads to Actual Settlers on the Public Domain." No artifacts were documented that could be connected to this serial patent. At the request of Bruce Boeke LA 83796 was updated.

USGS 7.5' Series Quadrangles: MONUMENT SOUTH, NM (Prov. Ed. 1985) 32103-E3

Nearest Town: Jal, New Mexico

Other Description:(e.g. well pad footages, mile markers etc.) Surface Location

Crew Size: 4

Fieldwork dates: 2/15/18 - 6/9/19

Additional Narrative:
The site was updated by one field person walking with a series of parallel transects spaced at 15-meter intervals covering the proposed survey area. This survey was designed to meet, but not limited to, the requirements detailed in the BLM Manual Supplement H-8100-1 New Mexico, Oklahoma and Texas, Procedures for Performing Cultural Resource Fieldwork on Public Lands in the area of New Mexico BLM Responsibilities 2002. The authority for these standards comes in part from Section 106 of the National Historic Preservation Act of 1966, the Antiquities Act of 1906 and the Historic Sites Act of 1935, along with all additional federal and state laws for preserving and protecting cultural resources.

Environment:

Topography: Rolling plains with isolated coppice dune formations.

Vegetation: Mesquite, Shinnery Oak, Yucca, Sand Sage, Broom Snakeweed.

NRCS: Peyote-Maljamar-Kermit association: Gently undulating and rolling, deep, sandy soils.

Aspect: 360 degrees

Elevation: 3570'

Lithic Resources: Some cherts, in gravels, very sparse.

Water Sources: (Potential) various unnamed drainages bisecting the project area.
(Permanent) The Pecos River, 55 miles west of the proposed project area.

Cultural Resources (Section 21 of NIAF): The updated site boundary for LA 83796 is located 825' southwest of the spill area and was not impacted by cleanup operations.

Recommendations Management summary:
A cultural monitor was present at the project area and the monitoring was conducted to meet or exceed current professional standards set by the BLM-CFO.

NMCRIS No.: 143679

NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

1. NMCRIS Activity No.:	2a. Lead Agency:	2b. Other Agency(ies):	3. Lead Agency Report No.:
143679	US Bureau of Land Management Carlsbad Field Office		

4. Title of Report:

The Monitoring of Cleanup Operations near LA 83796 and Site Update in Lea County, New Mexico for Larson and Associates LLC.

Author(s)

Pangburn, J & R Church

5. Type of Report

- [ ] Negative
- [x] Positive

6. Investigation Type

- [ ] Research Design
- [ ] Archaeological Survey/Inventory
- [ ] Architectural Survey/Inventory
- [ ] Test Excavation
- [ ] Excavation
- [ ] Collections/Non-Field Study
- [ ] Compliance Decision Based on Previous Inventory
- [ ] Overview/Lit Review
- [x] Monitoring
- [ ] Ethnographic Study
- [x] Site/Property Specific Visit
- [ ] Historic Structures Report
- [ ] Other

7. Description of Undertaking (what does the project entail?):

On March 26th through March 29th 2018, Allen Rorex with APAC monitored the clean-up operations near LA 83796. These cleanup operations are located in section 14 in T 20 S R 36 E; Lea County, New Mexico. The monitoring was conducted at the request of Mark J. Larson with Larson and Associates LLC. The monitoring and site update was conducted to meet or exceed the Bureau of Land Management Carlsbad Field Office (BLM-CFO) current professional standards for monitoring. During the course of the monitoring no new discoveries were made. The single site (LA 83796) was not impacted by cleanup efforts.

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Based on the information and taking into account previous documentation we recommend that the site boundary be reduced to cover the only large dune complex and swale where the majority of artifacts have been observed. The two consistent observations between all three site visits is a lack of features, and the absence of subsurface materials. As such we also recommend the site as not eligible to the NRHP due to the lack of features and lack of subsurface cultural materials.

[ ] Continuation

8. Dates of Investigation: 15-Feb-18 26-Mar-18 **9. Report Date:** 5-Jul-19

10. Performing Agency/Consultant: APAC PO Box 1982 Carlsbad, NM 88221-1982 Office 575-200-7099 Jeff 575-200-5099

Principal Investigator: David V. Hill PhD

Field Supervisor: Jeffrey Pangburn

Field Personnel Names: Allen Rorex, Tim Church, and Greg White

Historian / Other:

11. Performing Agency/Consultant Report No.:

APAC 18-02-22M

12. Applicable Cultural Resource Permit No(s):

BLM: 270-2920-17-F, State: NM-18-261-S

13. Client/Customer (project proponent):

Larson & Associates, Inc.

Contact: Mark Larson

Address: 507 N Marienfeld St. Suite 205 Midland Texas 79701 **Phone:** 432-687-0901

14. Client/Customer Project No.:

15. Land Ownership Status (must be indicated on project map):

Land Owner (By Agency)	Acres Surveyed	Acres in APE
US Bureau of Land Management Carlsbad Field Office	0.00	0.00
NM State Land Office	0.00	0.00
Private	0.00	0.00
TOTALS		

16. Records Search(es):

Date(s) of HPD/ARMS File Review: 2/15/2018	Name of Reviewer(s): Kathi Pangburn	
Date(s) of Other Agency File Review: 2/15/2018	Name of Reviewer(s): Kathi Pangburn	Agency: BLM-CFO
Date(s) of Other Agency File Review: 2/15/2018	Name of Reviewer(s): Kathi Pangburn	Agency: GLO

Prefield investigations of the proposed project area consist of the review of web sites and project files located at the BLM-CFO, the Archaeological Records Management Section (ARMS) and the General Land Office (GLO). The ARMS and GLO searches were conducted on June 8th, 2019. A review of the GLO files found serial patent 939411 associated with this proposed right-of-way. Serial patent 939411 is for the sale of land to one Henry S. Record under the Act of Congress of May 20th, 1862, “To Secure Homesteads to Actual Settlers on the Public Domain.” No artifacts were documented that could be connected to this serial patent. At the request of Bruce Boeke LA 83796 was updated.

17. Survey Data:

a. Source Graphics **[ ] NAD 27** **[X] NAD 83** **Note: NAD 83 is the NMCRIS standard.**

☑ **USGS 7.5' (1:24,000) topo map** ☐ **Other topo map,** **Scale:**

☑ **GPS Unit** **Accuracy** ☐ **<1.0m** ☑ **1-10m** ☐ **10-100m** ☐ **>100m** ☐ **Aerial Photo(s)**

Other Source Graphic(s):

b. USGS 7.5' Topographic Map Name **USGS Quad Code**

MONUMENT SOUTH, NM (Prov. Ed. 1985)	32103-E3

c. County(ies): Lea

d. Nearest City or Town: Jal

e. Legal Description:

Township (N/S)	Range (E/W)	Section
20 S	36 E	14 SE¼ SE¼

Projected legal description? **[ ] Yes** **[ ] No** **[X] Unplatted**

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.):

[ ] Continuation

18. Survey Field Methods:

Intensity: ☑ 100% coverage ☐ <100% coverage

Configuration: ☐ block survey units ☐ linear survey units (l x w):

☐ other survey units (specify):

Scope: ☑ non-selective (all sites/properties recorded) ☐ selective/thematic (selected sites/properties recorded)

Coverage Method: ☑ systematic pedestrian coverage

☐ other method (describe):

Survey Interval (m): 0 **Crew Size:** 4 **Fieldwork Dates:** 26-Mar-18 9-Jun-19

Survey Person Hours: 0 **Recording Person Hours:** 4 **Total Hours:** 4

Additional Narrative:

The site was updated by one field person walking with a series of parallel transects spaced at 15 meter intervals covering the proposed survey area. This survey was designed to meet, but not limited to, the requirements detailed in the BLM Manual Supplement H-8100-1 New Mexico, Oklahoma and Texas, Procedures for Performing Cultural Resource Fieldwork on Public Lands in the area of New Mexico BLM Responsibilities 2002. The authority for these standards comes in part from Section 106 of the National Historic Preservation Act of 1966, the Antiquities Act of 1906 and the Historic Sites Act of 1935, along with all additional federal and state laws for preserving and protecting cultural resources.

[ ] Continuation

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.):

Topography: Rolling plains with isolated coppice dune formations.

Vegetation: Mesquite, Shinnery Oak, Yucca, Sand Sage, Broom Snakeweed.

NRCS: Peyote-Maljamar-Kermit association: Gently undulating and rolling, deep, sandy soils.

Aspect: 360 degrees

Elevation: 3570’

Lithic Resources: Some cherts, in gravels, very sparse.

Water Sources: (Potential) various unnamed drainages bisecting the project area.

[ ] Continuation

20.a. Percent Ground Visibility: 85% **b. Condition of Survey Area (grazed, bladed, undistributed, etc.):**

[ ] Continuation

21. CULTURAL RESOURCE FINDINGS ☐ **Yes, see next report section** ☐ **No, discuss why:**

The updated site boundary for LA 83796 is located 825’ southwest of the spill area and was not impacted by cleanup operations.

[ ] Continuation

22. Attachments (check all appropriate boxes):

[X] USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn (required)

[X] Copy of NMCRIS Map Check (required)

[ ] LA Site Forms - new sites (with sketch map & topographic map) if applicable

[X] LA Site Forms (update) - previously recorded & un-relocated sites (first 2 pages minimum)

[ ] Historic Cultural Property Inventory Forms, if applicable

[ ] List and Description of Isolates, if applicable

[ ] List and Description of Collections, if applicable

23. Other Attachments:

[X] Photographs and Log **[X] Other Attachments (Describe):**

Location Map

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.

Principal Investigator **Printed Name:** **David V. Hill PhD**

Qualified Supervisor: **Printed Name: Jeffrey Pangburn**

Signature:  **Date:** 25-Jul-19 **Title:** Qualified Supervisor

25. Reviewing Agency	**26. SHPO**
Reviewer's Name/Date:	**Reviewer's Name/Date:**
Accepted [ ] **Rejected [ ]**	**HPD Log #:**
	Date sent to ARMS:

CULTURAL RESOURCE FINDINGS

[fill in appropriate section(s)]

SURVEY RESULTS:

Archaeological Sites discovered and registered: 0

Archaeological Sites discovered and NOT registered: 0

Previously recorded archaeological sites revisited (site update form required): 1

Previously recorded archaeological sites not relocated (site update form required): 0

TOTAL ARCHAEOLOGICAL SITES (visited & recorded): 1

Total isolates recorded: 0 ☐ **Non-selective isolate recording?**

HCPI properties discovered and registered: 0

HCPI properties discovered and NOT registered: 0

Previously recorded HCPI properties revisited: 0

Previously recorded HCPI properties not relocated: 0

TOTAL HCPI PROPERTIES (visited & recorded, including acequias): 0

MANAGEMENT SUMMARY:

A cultural monitor was present at the project area and the monitoring was conducted to meet or exceed current professional standards set by the BLM-CFO.

[ ] Continuation

IF REPORT IS NEGATIVE, YOU ARE DONE AT THIS POINT.

SURVEY LA/HCPI NUMBER LOG

Sites/Properties Discovered:

LA/HCPI No.	**Field/Agency No.**	**Eligible? (Y/N/U, applicable criteria)**

Previously recorded revisited sites/HCPI properties:

LA/HCPI No.	**Field/Agency No.**	**Eligible? (Y/N/U, applicable criteria)**
83796	APAC 18-02-22M	Not Eligible

MONITORING LA NUMBER LOG (site form required)

Sites Discovered (site form required):

LA No. **Field/Agency No.**

Previously recorded sites (site update form required):

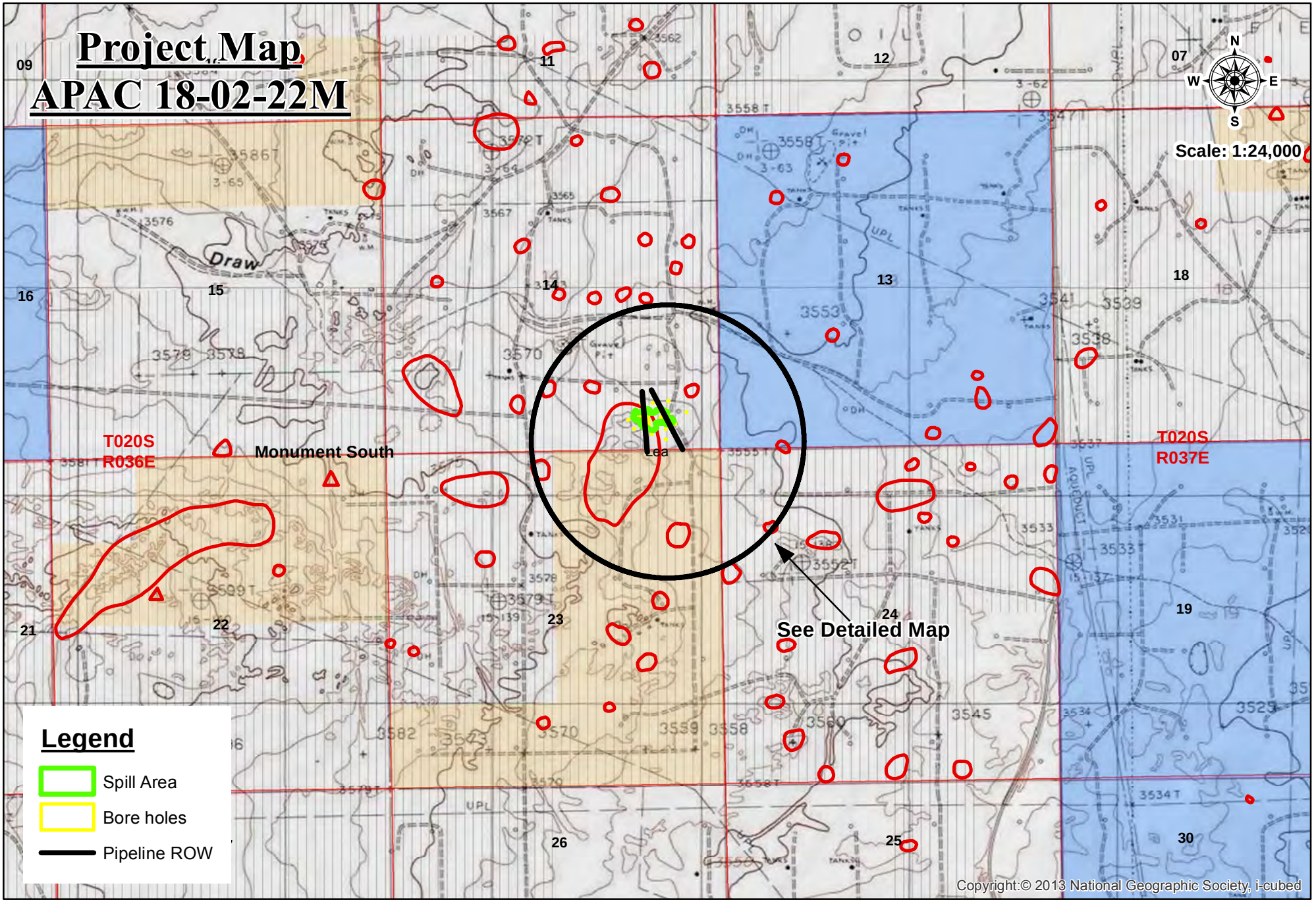
LA No. **Field/Agency No.**

Areas outside known nearby site boundaries monitored? **[ ] Yes** **[ ] No, Explain why:**

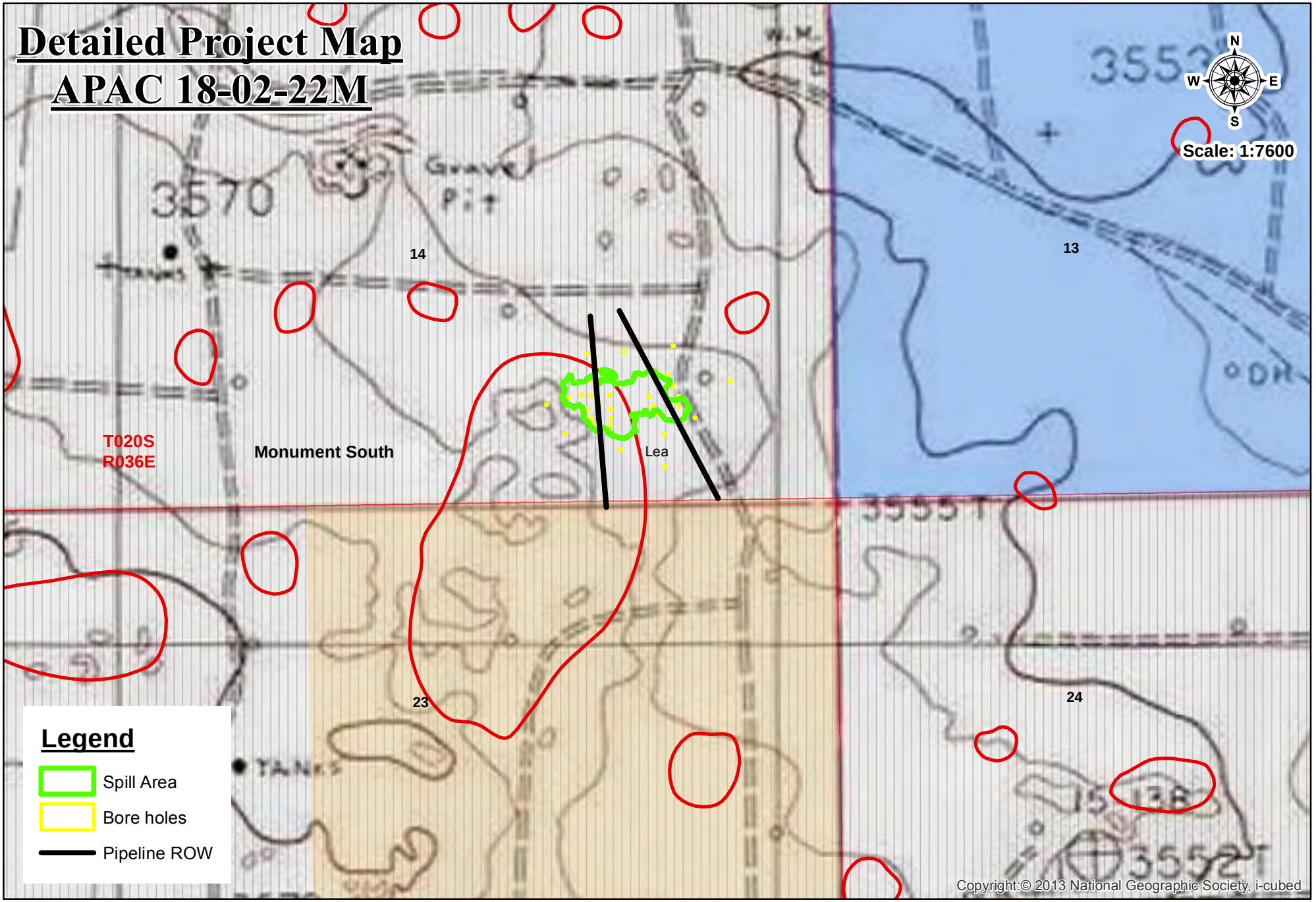
TESTING & EXCAVATION LA NUMBER LOG (site form required)

Tested LA number(s)

Excavated LA number(s)



A location map of a spill impacting LA 83796 for Larson & Associates, Inc. Located in section 14 in T 20 S R 36 E;
Lea County, New Mexico. Map Reference;USGS 7.5' Series Quadrangles: MONUMENT SOUTH, NM (Prov. Ed. 1985) □32103-E3



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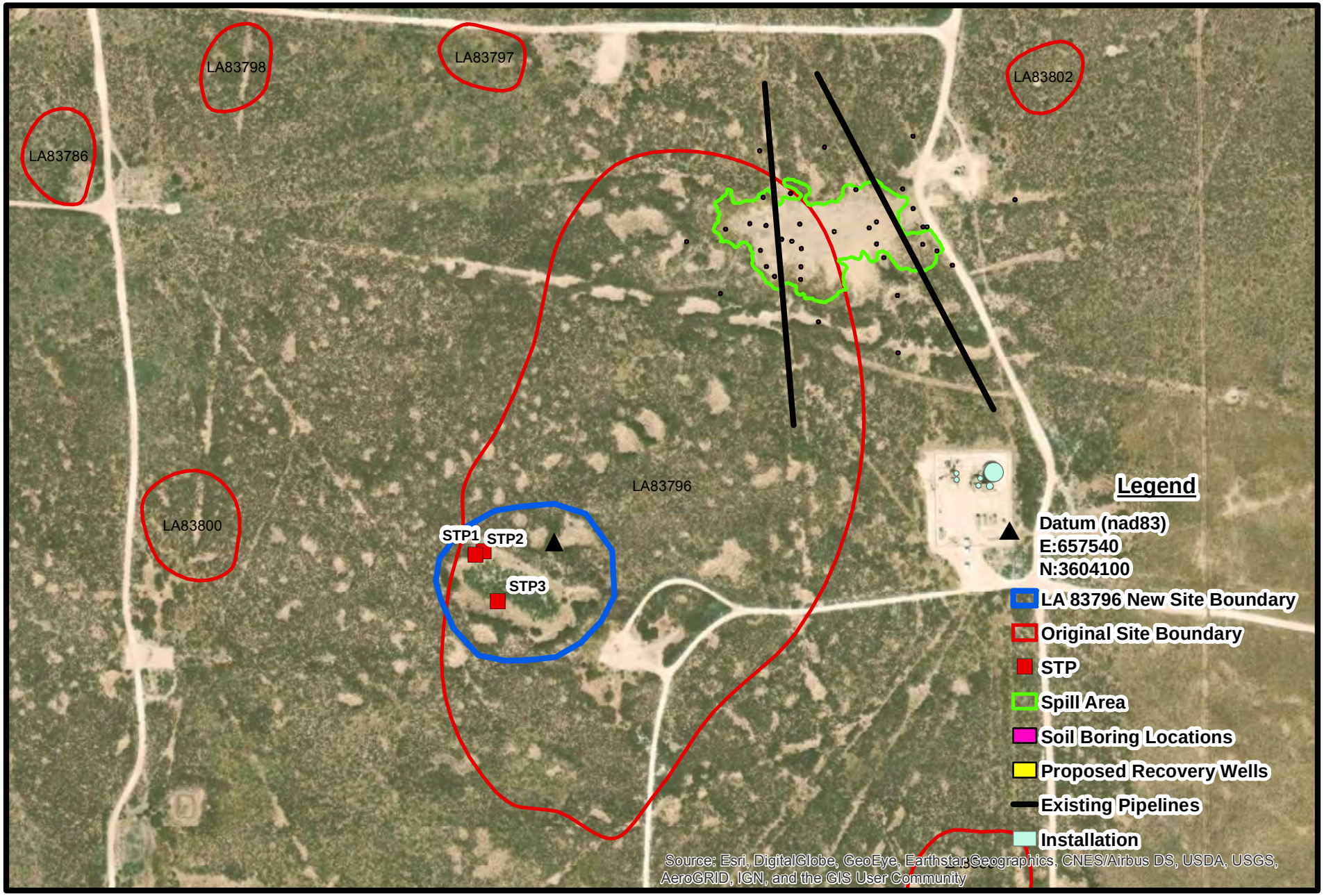
LA:83796

APAC 18-02-22



1 inch = 114 meters

0 30 60 120 180 240
Meters

Appendix F

Waste Manifest

LEA LAND DISPOSAL SITE NEW MEXICO

MILE MARKER #64 US HWY 62/180 • 30 MILES EAST OF CARLSBAD, NM • PHONE (575) 887-4048

LEA LAND, LLC

1300 WEST MAIN STREET • OKLAHOMA CITY, OK 73106 • PHONE (405) 236-4257

SDR

NON-HAZARDOUS WASTE MANIFEST NO 122492 | 1. PAGE__OF__ | 2. TRAILER NO. 011

GENERATOR

3. COMPANY NAME	4. ADDRESS	5. PICK-UP DATE
E.O.G. Resources	8509 Champion Dr.	4/6/2018
PHONE NO. (432) 686-3706	CITY Midland STATE TX ZIP 79706	6. TNRCC I.D. NO.

7. NAME OR DESCRIPTION OF WASTE SHIPPED:	8. CONTAINERS No.	Type	9. TOTAL QUANTITY	10. UNIT Wt/Vol.	11. TEXAS WASTE ID #
a. Non-Regulated, Non Hazardous Waste	1	CM		Y	
b.					
c.					
d. WT 31,140					

12. COMMENTS OR SPECIAL INSTRUCTIONS:	13. WASTE PROFILE NO.
EMSU B TANK BATTERY	

14. IN CASE OF EMERGENCY OR SPILL, CONTACT

NAME	PHONE NO	24-HOUR EMERGENCY NO.
JOE ONTIVEROS	575-887-4048	

GENERATOR

15. **GENERATOR'S CERTIFICATION:** I Hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, including applicable state regulations, and are the same materials previously approved by LEA LAND, LLC

PRINTED/TYPED NAME	SIGNATURE	DATE

TRANSPORTERS

16. TRANSPORTER (1)	17. TRANSPORTER (2)
NAME: SDR ENTERPRISE, LLC	NAME:
TEXAS I.D. NO.	TEXAS I.D. NO.
IN CASE OF EMERGENCY CONTACT: SHANNON RUSK	IN CASE OF EMERGENCY CONTACT:
EMERGENCY PHONE: (575) 441-7330	EMERGENCY PHONE:
18. **TRANSPORTER (1):** Acknowledgment of receipt of material	19. **TRANSPORTER (2):** Acknowledgment of receipt of material
PRINTED/TYPED NAME	PRINTED/TYPED NAME
SIGNATURE DATE 4/6/2018	SIGNATURE DATE

DISPOSAL FACILITY

Lea Land, LLC	ADDRESS: Mile Marker 64, U.S. Hwy 62/180, 30 Miles East of Carlsbad, NM	PHONE: 575-887-4048

PERMIT NO.	20. COMMENTS
WM-01-035 - New Mexico	

21. **DISPOSAL FACILITY'S CERTIFICATION:** I Hereby certify that the above described wastes were delivered to this facility, that the facility is authorized and permitted to receive such wastes.

AUTHORIZED SIGNATURE	CELL NO.	DATE	TIME
		4/6/2018	11:15

GENERATOR: COPIES 1 & 6 | DISPOSAL SITE: COPIES 2 & 3 | TRANSPORTERS: COPIES 4 & 5

COPY 4

Appendix G

Photographs

(Pending)

Appendix H

Lithologic Logs and Well Diagrams

Appendix I

Slug Test and Pumping Test Results

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-5 Falling Head 1_2018-06-29_11-22-26-703.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	43				
Used Battery	0				

Log Configuration

Log Name	MW-5 Falling Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/22/2018 2:10:17 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	5.7095 (PSI)

Depth of Pı -0.465325 (ft)
Head Press -0.206573 (PSI)
Temperatu 18.8539 (C)

Log Notes:

Date and Time	Note
6/22/2018 14:10	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/22/2018 14:10	Used Battery: 0% Used Memory: 45% User Name: Larry
6/22/2018 14:11	Manual Start Command
6/22/2018 15:31	Used Battery: 0% Used Memory: 45% User Name: Larry
6/22/2018 15:31	Manual Stop Command

Log Data: 0.098958

Record Count 177

Sensors 1

1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft			
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161			
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)		Time (s)	Displaceme
6/22/2018 14:11	0	-0.202	18.822	-0.455		0	-0.455
6/22/2018 14:11	0.25	0.064	18.84	0.144		0.25	0.144
6/22/2018 14:11	0.853	0.248	18.84	0.559		0.853	0.559
6/22/2018 14:11	1.059	0.198	18.861	0.446		1.059	0.446
6/22/2018 14:11	1.263	-0.043	18.87	-0.097		1.263	-0.097
6/22/2018 14:11	1.467	0.09	18.883	0.203		1.467	0.203
6/22/2018 14:11	1.671	0.094	18.892	0.211		1.671	0.211
6/22/2018 14:11	1.875	0.106	18.896	0.238		1.875	0.238
6/22/2018 14:11	2.079	0.006	18.903	0.014		2.079	0.014
6/22/2018 14:11	2.282	0.081	18.908	0.182		2.282	0.182
6/22/2018 14:11	2.5	0.336	18.909	0.756		2.5	0.756
6/22/2018 14:11	2.75	-0.076	18.91	-0.172		2.75	-0.172
6/22/2018 14:11	3	-0.126	18.908	-0.283		3	-0.283
6/22/2018 14:11	3.25	0.222	18.907	0.5		3.25	0.5
6/22/2018 14:11	3.5	0.173	18.912	0.39		3.5	0.39
6/22/2018 14:11	3.75	-0.052	18.912	-0.116		3.75	-0.116
6/22/2018 14:11	4	-0.01	18.913	-0.023		4	-0.023
6/22/2018 14:11	4.25	0.123	18.915	0.276		4.25	0.276
6/22/2018 14:11	4.906	0.001	18.889	0.003		4.906	0.003
6/22/2018 14:11	5.11	0.061	18.902	0.137		5.11	0.137

6/22/2018 14:11	5.313	0.1	18.909	0.226	5.313	0.226
6/22/2018 14:11	5.521	0.049	18.918	0.11	5.521	0.11
6/22/2018 14:11	5.725	0.067	19.001	0.151	5.725	0.151
6/22/2018 14:11	6.377	0.056	18.975	0.126	6.377	0.126
6/22/2018 14:11	6.581	0.039	18.967	0.088	6.581	0.088
6/22/2018 14:11	6.787	0.041	18.964	0.093	6.787	0.093
6/22/2018 14:11	6.992	0.057	18.962	0.129	6.992	0.129
6/22/2018 14:11	7.637	0.052	18.914	0.117	7.637	0.117
6/22/2018 14:11	7.843	0.047	18.93	0.107	7.843	0.107
6/22/2018 14:11	8.048	0.037	18.934	0.082	8.048	0.082
6/22/2018 14:11	8.46	0.036	18.869	0.082	8.46	0.082
6/22/2018 14:11	9.114	0.025	18.902	0.056	9.114	0.056
6/22/2018 14:11	9.48	0.054	18.902	0.122	9.48	0.122
6/22/2018 14:11	10.202	0.035	18.89	0.08	10.202	0.08
6/22/2018 14:11	10.68	0.064	18.891	0.145	10.68	0.145
6/22/2018 14:11	11.28	0.042	18.89	0.094	11.28	0.094
6/22/2018 14:11	11.94	0.05	18.884	0.112	11.94	0.112
6/22/2018 14:11	12.66	0.05	18.881	0.112	12.66	0.112
6/22/2018 14:11	13.44	0.048	18.879	0.107	13.44	0.107
6/22/2018 14:11	14.22	0.046	18.875	0.104	14.22	0.104
6/22/2018 14:11	15.06	0.048	18.875	0.108	15.06	0.108
6/22/2018 14:11	15.96	0.048	18.87	0.109	15.96	0.109
6/22/2018 14:11	16.92	0.045	18.869	0.101	16.92	0.101
6/22/2018 14:11	17.88	0.047	18.868	0.105	17.88	0.105
6/22/2018 14:11	18.96	0.045	18.865	0.101	18.96	0.101
6/22/2018 14:11	20.1	0.046	18.864	0.104	20.1	0.104
6/22/2018 14:11	21.3	0.046	18.863	0.103	21.3	0.103
6/22/2018 14:11	22.56	0.045	18.863	0.101	22.56	0.101
6/22/2018 14:11	24.039	0.045	18.872	0.102	24.039	0.102
6/22/2018 14:11	25.32	0.044	18.866	0.1	25.32	0.1
6/22/2018 14:11	26.82	0.044	18.862	0.098	26.82	0.098
6/22/2018 14:11	28.499	0.043	18.886	0.098	28.499	0.098
6/22/2018 14:11	30.06	0.041	18.864	0.092	30.06	0.092
6/22/2018 14:11	31.86	0.042	18.861	0.094	31.86	0.094
6/22/2018 14:11	33.747	0.043	18.876	0.097	33.747	0.097
6/22/2018 14:11	35.76	0.042	18.858	0.094	35.76	0.094
6/22/2018 14:11	37.86	0.041	18.856	0.091	37.86	0.091
6/22/2018 14:11	40.08	0.041	18.862	0.093	40.08	0.093
6/22/2018 14:11	42.48	0.036	18.854	0.082	42.48	0.082
6/22/2018 14:12	45	0.039	18.86	0.088	45	0.088
6/22/2018 14:12	47.64	0.037	18.856	0.083	47.64	0.083
6/22/2018 14:12	50.46	0.036	18.856	0.082	50.46	0.082
6/22/2018 14:12	53.509	0.039	18.884	0.087	53.509	0.087
6/22/2018 14:12	56.64	0.035	18.856	0.079	56.64	0.079
6/22/2018 14:12	60	0.035	18.86	0.079	60	0.079
6/22/2018 14:12	63.775	0.036	18.871	0.082	63.775	0.082
6/22/2018 14:12	67.2	0.033	18.855	0.073	67.2	0.073

6/22/2018 14:12	71.4	0.034	18.856	0.077	71.4	0.077
6/22/2018 14:12	75.6	0.034	18.856	0.076	75.6	0.076
6/22/2018 14:12	79.8	0.031	18.86	0.07	79.8	0.07
6/22/2018 14:12	84.6	0.029	18.861	0.066	84.6	0.066
6/22/2018 14:12	90	0.024	18.859	0.053	90	0.053
6/22/2018 14:12	94.8	0.03	18.859	0.069	94.8	0.069
6/22/2018 14:12	100.8	0.029	18.854	0.066	100.8	0.066
6/22/2018 14:13	106.8	0.029	18.853	0.065	106.8	0.065
6/22/2018 14:13	112.8	0.026	18.852	0.058	112.8	0.058
6/22/2018 14:13	119.4	0.026	18.858	0.058	119.4	0.058
6/22/2018 14:13	126.6	0.025	18.853	0.056	126.6	0.056
6/22/2018 14:13	134.4	0.024	18.858	0.055	134.4	0.055
6/22/2018 14:13	142.2	0.019	18.851	0.043	142.2	0.043
6/22/2018 14:13	150.6	0.019	18.852	0.043	150.6	0.043
6/22/2018 14:13	159.6	0.02	18.856	0.045	159.6	0.045
6/22/2018 14:14	169.2	0.021	18.855	0.047	169.2	0.047
6/22/2018 14:14	178.8	0.021	18.863	0.046	178.8	0.046
6/22/2018 14:14	189.6	0.018	18.849	0.041	189.6	0.041
6/22/2018 14:14	201	0.013	18.847	0.03	201	0.03
6/22/2018 14:14	213	0.015	18.84	0.033	213	0.033
6/22/2018 14:15	225.6	0.016	18.843	0.037	225.6	0.037
6/22/2018 14:15	238.88	0.013	18.857	0.029	238.88	0.029
6/22/2018 14:15	253.2	0.011	18.837	0.025	253.2	0.025
6/22/2018 14:15	268.2	0.012	18.837	0.028	268.2	0.028
6/22/2018 14:15	283.913	0.01	18.855	0.023	283.913	0.023
6/22/2018 14:16	300.6	0.006	18.839	0.013	300.6	0.013
6/22/2018 14:16	318.678	0.007	18.864	0.016	318.678	0.016
6/22/2018 14:16	337.2	0.004	18.837	0.01	337.2	0.01
6/22/2018 14:17	357.6	0.003	18.833	0.008	357.6	0.008
6/22/2018 14:17	378.705	0.003	18.862	0.007	378.705	0.007
6/22/2018 14:17	400.8	0	18.837	0	400.8	0
6/22/2018 14:18	424.8	-0.004	18.84	-0.009	424.8	-0.009
6/22/2018 14:18	450	-0.006	18.836	-0.012	450	-0.012
6/22/2018 14:19	476.4	-0.007	18.835	-0.016	476.4	-0.016
6/22/2018 14:19	504.6	-0.006	18.839	-0.014	504.6	-0.014
6/22/2018 14:20	534.6	-0.012	18.839	-0.027	534.6	-0.027
6/22/2018 14:20	566.4	-0.011	18.833	-0.025	566.4	-0.025
6/22/2018 14:21	600	-0.015	18.839	-0.035	600	-0.035
6/22/2018 14:21	636	-0.017	18.835	-0.039	636	-0.039
6/22/2018 14:22	672	-0.018	18.833	-0.04	672	-0.04
6/22/2018 14:23	714.112	-0.02	18.85	-0.045	714.112	-0.045
6/22/2018 14:23	756	-0.026	18.836	-0.058	756	-0.058
6/22/2018 14:24	798	-0.026	18.832	-0.058	798	-0.058
6/22/2018 14:25	846	-0.029	18.836	-0.065	846	-0.065
6/22/2018 14:26	900	-0.033	18.839	-0.074	900	-0.074
6/22/2018 14:27	948	-0.037	18.833	-0.082	948	-0.082
6/22/2018 14:28	1008	-0.038	18.832	-0.086	1008	-0.086

6/22/2018 14:29	1068	-0.043	18.834	-0.098	1068	-0.098
6/22/2018 14:30	1128	-0.046	18.833	-0.103	1128	-0.103
6/22/2018 14:31	1188	-0.05	18.834	-0.113	1188	-0.113
6/22/2018 14:32	1248	-0.053	18.835	-0.12	1248	-0.12
6/22/2018 14:33	1308	-0.057	18.835	-0.128	1308	-0.128
6/22/2018 14:34	1368	-0.06	18.834	-0.135	1368	-0.135
6/22/2018 14:35	1428	-0.063	18.834	-0.143	1428	-0.143
6/22/2018 14:36	1488	-0.065	18.834	-0.148	1488	-0.148
6/22/2018 14:37	1548	-0.068	18.834	-0.154	1548	-0.154
6/22/2018 14:38	1608	-0.074	18.834	-0.166	1608	-0.166
6/22/2018 14:39	1668	-0.073	18.836	-0.166	1668	-0.166
6/22/2018 14:40	1728	-0.077	18.836	-0.174	1728	-0.174
6/22/2018 14:41	1788	-0.081	18.837	-0.182	1788	-0.182
6/22/2018 14:42	1848	-0.082	18.836	-0.185	1848	-0.185
6/22/2018 14:43	1908	-0.085	18.837	-0.191	1908	-0.191
6/22/2018 14:44	1968	-0.09	18.836	-0.202	1968	-0.202
6/22/2018 14:45	2028	-0.091	18.836	-0.205	2028	-0.205
6/22/2018 14:46	2088	-0.094	18.835	-0.212	2088	-0.212
6/22/2018 14:47	2148	-0.095	18.835	-0.213	2148	-0.213
6/22/2018 14:48	2208	-0.098	18.836	-0.221	2208	-0.221
6/22/2018 14:49	2268	-0.101	18.833	-0.227	2268	-0.227
6/22/2018 14:50	2328	-0.104	18.838	-0.235	2328	-0.235
6/22/2018 14:51	2388	-0.103	18.837	-0.233	2388	-0.233
6/22/2018 14:52	2448	-0.107	18.839	-0.24	2448	-0.24
6/22/2018 14:53	2508	-0.109	18.861	-0.246	2508	-0.246
6/22/2018 14:54	2568	-0.113	18.838	-0.254	2568	-0.254
6/22/2018 14:55	2628	-0.114	18.837	-0.256	2628	-0.256
6/22/2018 14:56	2688	-0.116	18.835	-0.26	2688	-0.26
6/22/2018 14:57	2748	-0.118	18.837	-0.267	2748	-0.267
6/22/2018 14:58	2808	-0.122	18.838	-0.275	2808	-0.275
6/22/2018 14:59	2868	-0.122	18.838	-0.274	2868	-0.274
6/22/2018 15:00	2928	-0.127	18.837	-0.287	2928	-0.287
6/22/2018 15:01	2988	-0.127	18.837	-0.286	2988	-0.286
6/22/2018 15:02	3048	-0.127	18.838	-0.286	3048	-0.286
6/22/2018 15:03	3108	-0.13	18.839	-0.293	3108	-0.293
6/22/2018 15:04	3168	-0.133	18.837	-0.3	3168	-0.3
6/22/2018 15:05	3228	-0.134	18.836	-0.303	3228	-0.303
6/22/2018 15:06	3288	-0.135	18.838	-0.304	3288	-0.304
6/22/2018 15:07	3348	-0.139	18.838	-0.313	3348	-0.313
6/22/2018 15:08	3408	-0.142	18.837	-0.319	3408	-0.319
6/22/2018 15:09	3468	-0.141	18.838	-0.318	3468	-0.318
6/22/2018 15:10	3528	-0.146	18.837	-0.329	3528	-0.329
6/22/2018 15:11	3588	-0.147	18.836	-0.332	3588	-0.332
6/22/2018 15:12	3648	-0.147	18.837	-0.332	3648	-0.332
6/22/2018 15:13	3708	-0.149	18.837	-0.336	3708	-0.336
6/22/2018 15:14	3768	-0.15	18.838	-0.339	3768	-0.339
6/22/2018 15:15	3828	-0.155	18.838	-0.348	3828	-0.348

6/22/2018 15:16	3888	-0.155	18.839	-0.35	3888	-0.35
6/22/2018 15:17	3948	-0.157	18.838	-0.354	3948	-0.354
6/22/2018 15:18	4008	-0.156	18.838	-0.352	4008	-0.352
6/22/2018 15:19	4068	-0.159	18.835	-0.358	4068	-0.358
6/22/2018 15:20	4128	-0.159	18.836	-0.358	4128	-0.358
6/22/2018 15:21	4188	-0.161	18.835	-0.363	4188	-0.363
6/22/2018 15:22	4248	-0.164	18.836	-0.369	4248	-0.369
6/22/2018 15:23	4308	-0.165	18.837	-0.371	4308	-0.371
6/22/2018 15:24	4368	-0.153	18.837	-0.346	4368	-0.346
6/22/2018 15:25	4428	-0.169	18.837	-0.38	4428	-0.38
6/22/2018 15:26	4488	-0.171	18.838	-0.385	4488	-0.385
6/22/2018 15:27	4548	-0.176	18.837	-0.396	4548	-0.396
6/22/2018 15:28	4608	-0.173	18.835	-0.39	4608	-0.39
6/22/2018 15:29	4668	-0.175	18.836	-0.394	4668	-0.394
6/22/2018 15:30	4728	-0.18	18.837	-0.405	4728	-0.405
6/22/2018 15:31	4788	-0.177	18.835	-0.398	4788	-0.398

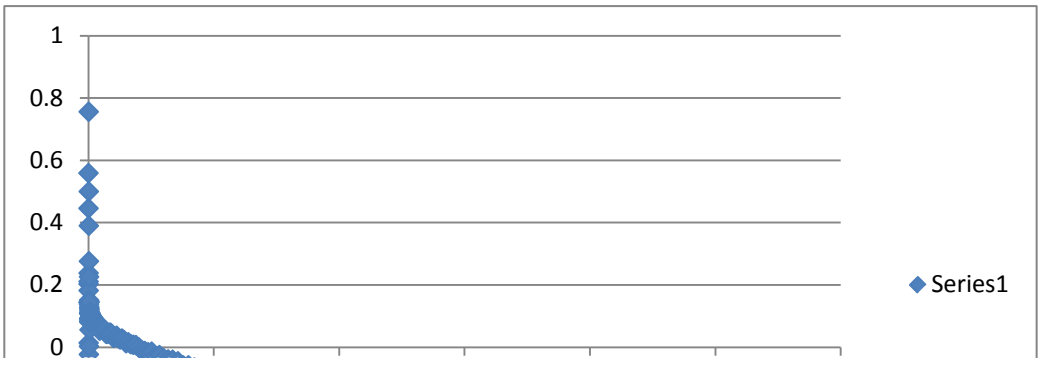
S_s	Specific Storage
h	Well screen length
S	Storativity - assume 0.2 (Lohman 1972)
r_c	Well casing radius
r_s	Well screen radius

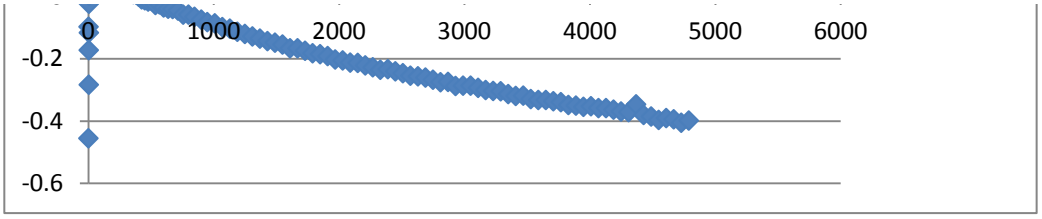
A_o (ft)	0.644
γ (s^-1)	-0.68785026
ω (s^-1)	7.051588651
r_c (ft)	0.083333333
r_s (ft)	0.208333333
S	0.2
T_i (ft^2/s)	0.049161144
T_f (ft^2/s)	0.049162161
difference	1.01642E-06

ɛnt (ft)

	Time (s)	Displacement (ft)	W(t) approximation
point of interest	0	0.644	0.644
point of interest	0.25	-0.284	-0.10352812
point of interest	0.5	-0.395	-0.423298476
point of interest	0.75	0.388	0.209496764
point of interest	1	0.278	0.232754462
point of interest	1.25	-0.228	-0.223363697
point of interest	1.5	-0.135	-0.093203745
point of interest	1.75	0.164	0.188327328
point of interest	2.406	-0.109	-0.037851692
point of interest	2.61	0.025	0.096543019

point of interest	2.813	0.114	0.051304138
point of interest	3.021	-0.002	-0.062262322
point of interest	3.225	0.039	-0.051252902
point of interest	3.877	0.014	-0.026556685
point of interest	4.081	-0.024	-0.034064067
point of interest	4.287	-0.019	0.012674856
point of interest	4.492	0.017	0.028324811
point of interest	5.137	0.005	0.001796967
point of interest	5.343	-0.005	0.016317893
point of interest	5.548	-0.03	0.002086018
point of interest	5.96	-0.03	-0.004000346
point of interest	6.614	-0.056	-0.006024831
point of interest	6.98	0.01	0.00265508
point of interest	7.702	-0.032	-0.001991804
point of interest	8.18	0.033	0.000982388
point of interest	8.78	-0.018	0.000931125
point of interest			


1
0.8
0.6
0.4
0.2
0
Series1


0
1000
2000
3000
4000
5000
6000
-0.2
-0.4
-0.6

Transmissivity Equation

$T = r_c*(\omega^2+\gamma^2)/(8*\gamma)*\ln(0.79*r_s*(S/T)*\sqrt{\omega^2+\gamma^2})$

Function Equation

$W(t) = A_0 * e^{(\gamma*t)}*\cos(\omega*t)$

K_r	0.003568	ft/s

difference	square of difference
0	0
0.180472	0.03257
-0.0283	0.000801
-0.1785	0.031863
-0.04525	0.002047
0.004636	2.15E-05
0.041796	0.001747
0.024327	0.000592
0.071148	0.005062
0.071543	0.005118

-0.0627	0.003931
-0.06026	0.003632
-0.09025	0.008146
-0.04056	0.001645
-0.01006	0.000101
0.031675	0.001003
0.011325	0.000128
-0.0032	1.03E-05
0.021318	0.000454
0.032086	0.00103
0.026	0.000676
0.049975	0.002498
-0.00734	5.39E-05
0.030008	0.0009
-0.03202	0.001025
0.018931	0.000358
sum:	0.105413

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-5 Rising Head 1_2018-06-29_11-22-50-109.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	42				
Used Battery	0				

Log Configuration

Log Name	MW-5 Rising Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/22/2018 12:48:44 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	5.7095 (PSI)

Depth of Pı -0.009796 (ft)
Head Press -0.00434875 (PSI)
Temperatu 18.8539 (C)

Log Notes:

Date and Time	Note
6/22/2018 12:48	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/22/2018 12:48	Used Battery: 0% Used Memory: 43% User Name: Larry
6/22/2018 12:49	Manual Start Command
6/22/2018 14:08	Used Battery: 0% Used Memory: 43% User Name: Larry
6/22/2018 14:08	Manual Stop Command

Log Data:

Record Count	176
Sensors	1
	1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft	
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161	
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Seconds
6/22/2018 12:49	0	-0.455	18.824	-1.025	0
6/22/2018 12:49	0.25	-0.694	18.844	-1.563	0.25
6/22/2018 12:50	0.851	-0.672	18.842	-1.513	0.851
6/22/2018 12:50	1.055	-0.617	18.864	-1.39	1.055
6/22/2018 12:50	1.26	-0.513	18.874	-1.157	1.26
6/22/2018 12:50	1.463	-0.623	18.883	-1.403	1.463
6/22/2018 12:50	1.666	-0.574	18.891	-1.294	1.666
6/22/2018 12:50	1.87	-0.509	18.894	-1.146	1.87
6/22/2018 12:50	2.074	-0.582	18.903	-1.311	2.074
6/22/2018 12:50	2.277	-0.538	18.906	-1.212	2.277
6/22/2018 12:50	2.5	-0.492	18.91	-1.109	2.5
6/22/2018 12:50	2.75	-0.538	18.91	-1.213	2.75
6/22/2018 12:50	3	-0.475	18.91	-1.071	3
6/22/2018 12:50	3.25	-0.494	18.911	-1.113	3.25
6/22/2018 12:50	3.5	-0.477	18.913	-1.075	3.5
6/22/2018 12:50	3.75	-0.455	18.914	-1.025	3.75
6/22/2018 12:50	4	-0.471	18.915	-1.06	4
6/22/2018 12:50	4.25	-0.434	18.915	-0.978	4.25
6/22/2018 12:50	4.906	-0.417	18.892	-0.939	4.906
6/22/2018 12:50	5.113	-0.423	18.899	-0.953	5.113

6/22/2018 12:50	5.317	-0.418	18.913	-0.941	5.317
6/22/2018 12:50	5.523	-0.399	18.921	-0.898	5.523
6/22/2018 12:50	5.727	-0.386	19	-0.87	5.727
6/22/2018 12:50	6.375	-0.388	18.978	-0.874	6.375
6/22/2018 12:50	6.58	-0.382	18.969	-0.861	6.58
6/22/2018 12:50	6.786	-0.373	18.964	-0.841	6.786
6/22/2018 12:50	6.992	-0.373	18.963	-0.839	6.992
6/22/2018 12:50	7.638	-0.366	18.919	-0.824	7.638
6/22/2018 12:50	7.843	-0.362	18.932	-0.814	7.843
6/22/2018 12:50	8.049	-0.362	18.94	-0.816	8.049
6/22/2018 12:50	8.46	-0.355	18.92	-0.801	8.46
6/22/2018 12:50	9	-0.349	18.907	-0.786	9
6/22/2018 12:50	9.48	-0.346	18.903	-0.78	9.48
6/22/2018 12:50	10.08	-0.342	18.899	-0.77	10.08
6/22/2018 12:50	10.68	-0.337	18.893	-0.759	10.68
6/22/2018 12:50	11.728	-0.34	18.878	-0.765	11.728
6/22/2018 12:50	11.94	-0.336	18.893	-0.758	11.94
6/22/2018 12:50	12.862	-0.336	18.877	-0.757	12.862
6/22/2018 12:50	13.44	-0.331	18.884	-0.746	13.44
6/22/2018 12:50	14.22	-0.328	18.878	-0.739	14.22
6/22/2018 12:50	15.06	-0.327	18.876	-0.736	15.06
6/22/2018 12:50	15.96	-0.324	18.873	-0.73	15.96
6/22/2018 12:50	16.92	-0.322	18.87	-0.724	16.92
6/22/2018 12:50	17.88	-0.321	18.871	-0.723	17.88
6/22/2018 12:50	18.96	-0.317	18.868	-0.714	18.96
6/22/2018 12:50	20.1	-0.313	18.866	-0.706	20.1
6/22/2018 12:50	21.3	-0.315	18.866	-0.709	21.3
6/22/2018 12:50	22.56	-0.314	18.863	-0.708	22.56
6/22/2018 12:50	23.88	-0.311	18.864	-0.701	23.88
6/22/2018 12:50	25.32	-0.309	18.863	-0.695	25.32
6/22/2018 12:50	26.82	-0.308	18.86	-0.693	26.82
6/22/2018 12:50	28.38	-0.305	18.858	-0.688	28.38
6/22/2018 12:50	30.06	-0.309	18.857	-0.695	30.06
6/22/2018 12:50	31.86	-0.303	18.859	-0.683	31.86
6/22/2018 12:50	33.72	-0.304	18.862	-0.686	33.72
6/22/2018 12:50	35.76	-0.302	18.875	-0.68	35.76
6/22/2018 12:50	37.86	-0.3	18.86	-0.677	37.86
6/22/2018 12:50	40.08	-0.298	18.858	-0.672	40.08
6/22/2018 12:50	42.48	-0.298	18.861	-0.672	42.48
6/22/2018 12:50	45	-0.301	18.857	-0.678	45
6/22/2018 12:50	47.64	-0.293	18.859	-0.661	47.64
6/22/2018 12:50	50.485	-0.298	18.886	-0.67	50.485
6/22/2018 12:50	53.46	-0.292	18.859	-0.658	53.46
6/22/2018 12:50	56.64	-0.292	18.865	-0.659	56.64
6/22/2018 12:50	60	-0.289	18.854	-0.651	60
6/22/2018 12:51	63.6	-0.292	18.858	-0.658	63.6
6/22/2018 12:51	67.2	-0.287	18.863	-0.647	67.2

6/22/2018 12:51	71.4	-0.29	18.866	-0.654	71.4
6/22/2018 12:51	75.741	-0.286	18.873	-0.645	75.741
6/22/2018 12:51	79.8	-0.286	18.855	-0.644	79.8
6/22/2018 12:51	84.6	-0.285	18.856	-0.641	84.6
6/22/2018 12:51	90	-0.288	18.852	-0.649	90
6/22/2018 12:51	94.8	-0.283	18.857	-0.637	94.8
6/22/2018 12:51	100.8	-0.288	18.854	-0.65	100.8
6/22/2018 12:51	106.8	-0.281	18.862	-0.632	106.8
6/22/2018 12:51	112.8	-0.282	18.855	-0.635	112.8
6/22/2018 12:51	119.4	-0.279	18.854	-0.629	119.4
6/22/2018 12:52	126.6	-0.278	18.857	-0.627	126.6
6/22/2018 12:52	134.4	-0.276	18.851	-0.622	134.4
6/22/2018 12:52	142.2	-0.277	18.852	-0.624	142.2
6/22/2018 12:52	150.751	-0.275	18.868	-0.62	150.751
6/22/2018 12:52	159.6	-0.277	18.849	-0.624	159.6
6/22/2018 12:52	169.2	-0.276	18.85	-0.621	169.2
6/22/2018 12:52	178.8	-0.273	18.847	-0.614	178.8
6/22/2018 12:53	189.6	-0.273	18.846	-0.615	189.6
6/22/2018 12:53	201.016	-0.27	18.855	-0.608	201.016
6/22/2018 12:53	213	-0.272	18.843	-0.613	213
6/22/2018 12:53	225.763	-0.267	18.855	-0.601	225.763
6/22/2018 12:53	238.8	-0.27	18.842	-0.607	238.8
6/22/2018 12:54	253.2	-0.268	18.838	-0.603	253.2
6/22/2018 12:54	268.2	-0.268	18.836	-0.603	268.2
6/22/2018 12:54	283.799	-0.265	18.836	-0.597	283.799
6/22/2018 12:55	300.773	-0.265	18.85	-0.598	300.773
6/22/2018 12:55	318.6	-0.266	18.834	-0.599	318.6
6/22/2018 12:55	337.2	-0.262	18.837	-0.591	337.2
6/22/2018 12:55	357.6	-0.26	18.833	-0.586	357.6
6/22/2018 12:56	378.6	-0.26	18.833	-0.586	378.6
6/22/2018 12:56	400.799	-0.258	18.845	-0.58	400.799
6/22/2018 12:57	424.799	-0.255	18.83	-0.575	424.799
6/22/2018 12:57	450	-0.254	18.828	-0.571	450
6/22/2018 12:57	476.4	-0.252	18.838	-0.568	476.4
6/22/2018 12:58	504.6	-0.253	18.829	-0.57	504.6
6/22/2018 12:58	534.6	-0.253	18.83	-0.569	534.6
6/22/2018 12:59	566.4	-0.25	18.839	-0.563	566.4
6/22/2018 12:59	599.999	-0.25	18.828	-0.564	599.999
6/22/2018 13:00	636.094	-0.246	18.841	-0.555	636.094
6/22/2018 13:01	671.999	-0.245	18.837	-0.552	671.999
6/22/2018 13:01	713.999	-0.247	18.832	-0.556	713.999
6/22/2018 13:02	756.09	-0.243	18.842	-0.548	756.09
6/22/2018 13:03	797.999	-0.241	18.83	-0.543	797.999
6/22/2018 13:04	846.106	-0.24	18.841	-0.54	846.106
6/22/2018 13:04	899.999	-0.239	18.829	-0.537	899.999
6/22/2018 13:05	947.999	-0.237	18.831	-0.535	947.999
6/22/2018 13:06	1007.999	-0.237	18.832	-0.534	1007.999

6/22/2018 13:07	1067.999	-0.234	18.834	-0.527	1067.999
6/22/2018 13:08	1127.999	-0.231	18.834	-0.521	1127.999
6/22/2018 13:09	1187.999	-0.232	18.834	-0.522	1187.999
6/22/2018 13:10	1247.999	-0.232	18.831	-0.522	1247.999
6/22/2018 13:11	1307.999	-0.229	18.833	-0.517	1307.999
6/22/2018 13:12	1367.999	-0.228	18.833	-0.514	1367.999
6/22/2018 13:13	1427.999	-0.223	18.834	-0.502	1427.999
6/22/2018 13:14	1487.999	-0.224	18.836	-0.504	1487.999
6/22/2018 13:15	1547.999	-0.221	18.832	-0.498	1547.999
6/22/2018 13:16	1607.999	-0.22	18.834	-0.495	1607.999
6/22/2018 13:17	1667.999	-0.221	18.833	-0.498	1667.999
6/22/2018 13:18	1727.999	-0.221	18.833	-0.497	1727.999
6/22/2018 13:19	1787.999	-0.22	18.834	-0.495	1787.999
6/22/2018 13:20	1847.999	-0.221	18.836	-0.498	1847.999
6/22/2018 13:21	1907.999	-0.22	18.834	-0.496	1907.999
6/22/2018 13:22	1967.999	-0.219	18.835	-0.494	1967.999
6/22/2018 13:23	2027.999	-0.217	18.834	-0.488	2027.999
6/22/2018 13:24	2087.999	-0.218	18.834	-0.491	2087.999
6/22/2018 13:25	2147.999	-0.221	18.836	-0.497	2147.999
6/22/2018 13:26	2207.999	-0.214	18.838	-0.483	2207.999
6/22/2018 13:27	2267.999	-0.215	18.838	-0.483	2267.999
6/22/2018 13:28	2327.999	-0.213	18.837	-0.479	2327.999
6/22/2018 13:29	2387.999	-0.213	18.838	-0.48	2387.999
6/22/2018 13:30	2447.999	-0.209	18.838	-0.472	2447.999
6/22/2018 13:31	2507.999	-0.211	18.839	-0.474	2507.999
6/22/2018 13:32	2567.999	-0.212	18.839	-0.477	2567.999
6/22/2018 13:33	2627.999	-0.21	18.839	-0.474	2627.999
6/22/2018 13:34	2687.999	-0.21	18.835	-0.474	2687.999
6/22/2018 13:35	2747.999	-0.207	18.839	-0.466	2747.999
6/22/2018 13:36	2807.999	-0.207	18.838	-0.467	2807.999
6/22/2018 13:37	2867.999	-0.207	18.839	-0.466	2867.999
6/22/2018 13:38	2927.999	-0.208	18.839	-0.469	2927.999
6/22/2018 13:39	2987.999	-0.207	18.84	-0.466	2987.999
6/22/2018 13:40	3047.999	-0.205	18.839	-0.462	3047.999
6/22/2018 13:41	3107.999	-0.204	18.839	-0.461	3107.999
6/22/2018 13:42	3167.999	-0.204	18.839	-0.46	3167.999
6/22/2018 13:43	3227.999	-0.203	18.838	-0.458	3227.999
6/22/2018 13:44	3287.999	-0.203	18.84	-0.457	3287.999
6/22/2018 13:45	3347.999	-0.202	18.838	-0.455	3347.999
6/22/2018 13:46	3407.999	-0.203	18.839	-0.456	3407.999
6/22/2018 13:47	3467.999	-0.204	18.838	-0.459	3467.999
6/22/2018 13:48	3527.999	-0.202	18.837	-0.454	3527.999
6/22/2018 13:49	3587.999	-0.202	18.841	-0.454	3587.999
6/22/2018 13:50	3647.999	-0.202	18.841	-0.456	3647.999
6/22/2018 13:51	3707.999	-0.203	18.842	-0.458	3707.999
6/22/2018 13:52	3767.999	-0.207	18.84	-0.467	3767.999
6/22/2018 13:53	3827.999	-0.2	18.841	-0.449	3827.999

6/22/2018 13:54	3887.999	-0.201	18.838	-0.452	3887.999
6/22/2018 13:55	3947.999	-0.204	18.841	-0.46	3947.999
6/22/2018 13:56	4007.999	-0.202	18.84	-0.454	4007.999
6/22/2018 13:57	4067.999	-0.205	18.841	-0.463	4067.999
6/22/2018 13:58	4127.999	-0.201	18.841	-0.454	4127.999
6/22/2018 13:59	4187.999	-0.209	18.843	-0.471	4187.999
6/22/2018 14:00	4247.999	-0.204	18.841	-0.46	4247.999
6/22/2018 14:01	4307.999	-0.201	18.838	-0.452	4307.999
6/22/2018 14:02	4367.999	-0.2	18.84	-0.451	4367.999
6/22/2018 14:03	4427.999	-0.202	18.842	-0.455	4427.999
6/22/2018 14:04	4487.999	-0.201	18.84	-0.452	4487.999
6/22/2018 14:05	4547.999	-0.201	18.842	-0.452	4547.999
6/22/2018 14:06	4607.999	-0.197	18.841	-0.444	4607.999
6/22/2018 14:07	4667.999	-0.201	18.842	-0.452	4667.999
6/22/2018 14:08	4727.999	-0.198	18.853	-0.446	4727.999

Terms

H_0 (ft)	0	
L (ft)	11.55	
n_e	0.00005	can range from 9*10^-7 to 6*10^-
r_c (ft)	0.0833	
r_w (ft)	0.2083	
R_e (ft)	13.1	variable - change to see effect

Equation

$\ln(H_0/H)=2*k_r*L*t/(R_{ce}^2*\ln(R_e/r_{we})$

$r_{ce} = \sqrt{((1-n_e)*r_c^2+n_e*r_w^2)}$

$r_{we} = r_w$

$K_r = \ln(H_0/H)*\ln(R_e/r_{we})*r_{ce}^2/(2*L*t)$

r_we	0.2083
r_ce	0.0833109
K_r	1.061E-07

Depth (ft)
-1.025
-1.563
-1.513
-1.39
-1.157
-1.403
-1.294
-1.146
-1.311
-1.212
-1.109
-1.213
-1.071
-1.113
-1.075
-1.025
-1.06
-0.978
-0.939
-0.953

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-6 Falling Head 1_2018-06-29_11-21-40-390.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	46				
Used Battery	18140				

Log Configuration

Log Name	MW-6 Falling Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/25/2018 12:59:52 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	2.65557 (PSI)

Depth of Pı 0.0103975 (ft)
Head Press 0.00461578 (PSI)
Temperatu 19.2043 (C)

Log Notes:

Date and Time	Note
6/25/2018 12:59	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/25/2018 12:59	Used Battery: 18140% Used Memory: 48% User Name: Larry
6/25/2018 13:00	Manual Start Command
6/25/2018 13:13	Used Battery: 0% Used Memory: 48% User Name: Larry
6/25/2018 13:13	Manual Stop Command

Log Data:

Record Count	108		
Sensors	1		
	1	106161	Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft		
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161		
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Depth
6/25/2018 13:00	0	0.007	19.165	0.017	0	0.017
6/25/2018 13:00	0.25	0.013	19.188	0.03	0.25	0.03
6/25/2018 13:00	0.851	0.641	19.185	1.444	0.851	1.444
6/25/2018 13:00	1.055	0.997	19.205	2.247	1.055	2.247
6/25/2018 13:00	1.259	0.669	19.219	1.507	1.259	1.507
6/25/2018 13:00	1.463	0.762	19.231	1.716	1.463	1.716
6/25/2018 13:00	1.667	0.464	19.236	1.046	1.667	1.046
6/25/2018 13:00	1.87	0.519	19.245	1.169	1.87	1.169
6/25/2018 13:00	2.076	-0.134	19.248	-0.302	2.076	-0.302
6/25/2018 13:00	2.279	0.074	19.253	0.167	2.279	0.167
6/25/2018 13:00	2.5	0.527	19.255	1.186	2.5	1.186
6/25/2018 13:00	2.75	0.265	19.257	0.598	2.75	0.598
6/25/2018 13:00	3	0.221	19.255	0.498	3	0.498
6/25/2018 13:00	3.25	0.333	19.255	0.749	3.25	0.749
6/25/2018 13:00	3.5	0.224	19.256	0.504	3.5	0.504
6/25/2018 13:00	3.75	0.272	19.26	0.613	3.75	0.613
6/25/2018 13:00	4	0.277	19.257	0.624	4	0.624
6/25/2018 13:00	4.25	0.251	19.261	0.566	4.25	0.566
6/25/2018 13:00	4.907	0.261	19.234	0.589	4.907	0.589
6/25/2018 13:00	5.11	0.267	19.25	0.602	5.11	0.602

6/25/2018 13:00	5.315	0.263	19.256	0.593	5.315	0.593
6/25/2018 13:00	5.523	0.266	19.263	0.599	5.523	0.599
6/25/2018 13:00	5.727	0.268	19.342	0.603	5.727	0.603
6/25/2018 13:00	6.374	0.267	19.323	0.602	6.374	0.602
6/25/2018 13:00	6.578	0.268	19.314	0.605	6.578	0.605
6/25/2018 13:00	6.784	0.272	19.311	0.613	6.784	0.613
6/25/2018 13:00	6.989	0.267	19.306	0.602	6.989	0.602
6/25/2018 13:00	7.638	0.267	19.263	0.601	7.638	0.601
6/25/2018 13:00	7.843	0.267	19.275	0.601	7.843	0.601
6/25/2018 13:00	8.048	0.269	19.283	0.605	8.048	0.605
6/25/2018 13:00	8.46	0.257	19.216	0.579	8.46	0.579
6/25/2018 13:00	9.116	0.268	19.246	0.604	9.116	0.604
6/25/2018 13:00	9.48	0.269	19.25	0.605	9.48	0.605
6/25/2018 13:00	10.349	0.268	19.231	0.604	10.349	0.604
6/25/2018 13:00	10.68	0.265	19.24	0.597	10.68	0.597
6/25/2018 13:00	11.317	0.267	19.231	0.602	11.317	0.602
6/25/2018 13:00	11.94	0.267	19.229	0.601	11.94	0.601
6/25/2018 13:00	12.66	0.267	19.227	0.601	12.66	0.601
6/25/2018 13:00	13.44	0.267	19.222	0.603	13.44	0.603
6/25/2018 13:00	14.22	0.269	19.222	0.605	14.22	0.605
6/25/2018 13:00	15.06	0.267	19.218	0.602	15.06	0.602
6/25/2018 13:00	15.96	0.268	19.216	0.603	15.96	0.603
6/25/2018 13:00	16.92	0.267	19.214	0.601	16.92	0.601
6/25/2018 13:00	17.88	0.268	19.212	0.603	17.88	0.603
6/25/2018 13:00	18.96	0.267	19.212	0.602	18.96	0.602
6/25/2018 13:00	20.1	0.268	19.207	0.603	20.1	0.603
6/25/2018 13:00	21.3	0.265	19.207	0.597	21.3	0.597
6/25/2018 13:00	22.685	0.266	19.234	0.6	22.685	0.6
6/25/2018 13:00	23.88	0.266	19.213	0.6	23.88	0.6
6/25/2018 13:00	25.32	0.266	19.206	0.599	25.32	0.599
6/25/2018 13:00	26.82	0.265	19.214	0.598	26.82	0.598
6/25/2018 13:01	28.38	0.265	19.207	0.598	28.38	0.598
6/25/2018 13:01	30.06	0.267	19.202	0.6	30.06	0.6
6/25/2018 13:01	31.86	0.265	19.21	0.597	31.86	0.597
6/25/2018 13:01	33.72	0.264	19.203	0.596	33.72	0.596
6/25/2018 13:01	35.76	0.266	19.199	0.599	35.76	0.599
6/25/2018 13:01	37.86	0.264	19.205	0.595	37.86	0.595
6/25/2018 13:01	40.08	0.264	19.2	0.594	40.08	0.594
6/25/2018 13:01	42.48	0.265	19.203	0.596	42.48	0.596
6/25/2018 13:01	45	0.263	19.197	0.592	45	0.592
6/25/2018 13:01	47.64	0.264	19.201	0.595	47.64	0.595
6/25/2018 13:01	50.46	0.264	19.198	0.595	50.46	0.595
6/25/2018 13:01	53.46	0.265	19.198	0.597	53.46	0.597
6/25/2018 13:01	56.705	0.263	19.209	0.593	56.705	0.593
6/25/2018 13:01	60	0.261	19.197	0.588	60	0.588
6/25/2018 13:01	63.6	0.263	19.197	0.592	63.6	0.592
6/25/2018 13:01	67.2	0.263	19.201	0.593	67.2	0.593

6/25/2018 13:01	71.436	0.263	19.209	0.592	71.436	0.592
6/25/2018 13:01	75.6	0.262	19.195	0.591	75.6	0.591
6/25/2018 13:01	79.8	0.261	19.191	0.588	79.8	0.588
6/25/2018 13:01	84.6	0.263	19.188	0.592	84.6	0.592
6/25/2018 13:02	90	0.26	19.187	0.585	90	0.585
6/25/2018 13:02	94.8	0.26	19.186	0.586	94.8	0.586
6/25/2018 13:02	100.8	0.26	19.187	0.585	100.8	0.585
6/25/2018 13:02	106.8	0.259	19.193	0.583	106.8	0.583
6/25/2018 13:02	112.8	0.258	19.187	0.582	112.8	0.582
6/25/2018 13:02	119.399	0.259	19.183	0.584	119.399	0.584
6/25/2018 13:02	126.709	0.258	19.193	0.581	126.709	0.581
6/25/2018 13:02	134.399	0.256	19.177	0.576	134.399	0.576
6/25/2018 13:02	142.2	0.257	19.181	0.579	142.2	0.579
6/25/2018 13:03	150.6	0.256	19.175	0.577	150.6	0.577
6/25/2018 13:03	159.6	0.257	19.172	0.578	159.6	0.578
6/25/2018 13:03	169.2	0.255	19.17	0.574	169.2	0.574
6/25/2018 13:03	178.8	0.256	19.168	0.576	178.8	0.576
6/25/2018 13:03	189.599	0.254	19.167	0.571	189.599	0.571
6/25/2018 13:03	201	0.216	19.162	0.487		
6/25/2018 13:04	213	0.109	19.162	0.246		
6/25/2018 13:04	225.599	0.054	19.159	0.122		
6/25/2018 13:04	238.8	0.02	19.158	0.044		
6/25/2018 13:04	253.2	-0.005	19.156	-0.012		
6/25/2018 13:05	268.2	-0.025	19.155	-0.056		
6/25/2018 13:05	283.799	-0.031	19.151	-0.069		
6/25/2018 13:05	300.599	-0.041	19.149	-0.093		
6/25/2018 13:05	318.599	-0.047	19.148	-0.105		
6/25/2018 13:06	337.2	-0.048	19.149	-0.108		
6/25/2018 13:06	357.599	-0.051	19.147	-0.115		
6/25/2018 13:06	378.599	-0.053	19.142	-0.12		
6/25/2018 13:07	400.799	-0.053	19.137	-0.12		
6/25/2018 13:07	424.799	-0.054	19.136	-0.123		
6/25/2018 13:08	450	-0.052	19.135	-0.117		
6/25/2018 13:08	476.472	-0.054	19.151	-0.121		
6/25/2018 13:08	504.599	-0.056	19.132	-0.125		
6/25/2018 13:09	534.599	-0.053	19.13	-0.119		
6/25/2018 13:09	566.473	-0.053	19.145	-0.12		
6/25/2018 13:10	599.999	-0.054	19.129	-0.121		
6/25/2018 13:11	635.999	-0.053	19.123	-0.119		
6/25/2018 13:11	671.999	-0.054	19.135	-0.121		
6/25/2018 13:12	713.999	-0.054	19.124	-0.121		

S_s	Specific Storage
h	Well screen length
S	Storativity - assume 0.2
r_c	Well casing radius
r_s	Well screen radius

Transmissivity Equation

T = r_c*(ω^2+γ^2)/(8*γ)*ln(0.79*

Function Equation

W(t) = A_0 * e^(γ*t)*cos(ω*t)

A_o (ft)	1.65
γ (s^-1)	-1.16650862
ω (s^-1)	13.89974643

r_c (ft)	0.083333
r_s (ft)	0.208333
S	0.2

T_i (ft^2/s)	0.6785
T_f (ft^2/s)	0.678502
difference	2.79E-06

Time	Displaceme	W(t) approximation	Difference	Square of difference
0	1.65	1.65	0	0
0.408	1.119	0.839034349	0.279966	0.078381
0.612	0.449	-0.490733944	0.939734	0.8831
0.815	0.572	0.208273125	0.363727	0.132297
1.021	-0.899	-0.027303145	-0.8717	0.759855
1.224	-0.43	-0.103823985	-0.32618	0.106391
1.445	0.589	0.100600187	0.4884	0.238534
1.695	0.001	-0.000428268	0.001428	2.04E-06
1.945	-0.099	-0.055538227	-0.04346	0.001889
2.195	0.152	0.078650616	0.073349	0.00538
2.445	-0.093	-0.08004809	-0.01295	0.000168
2.695	0.016	0.069122566	-0.05312	0.002822
2.945	0.027	-0.052917472	0.079917	0.006387
3.195	-0.031	0.036135629	-0.06714	0.004507
3.852	-0.008	-0.018284126	0.010284	0.000106
4.055	0.005	0.014311886	-0.00931	8.67E-05

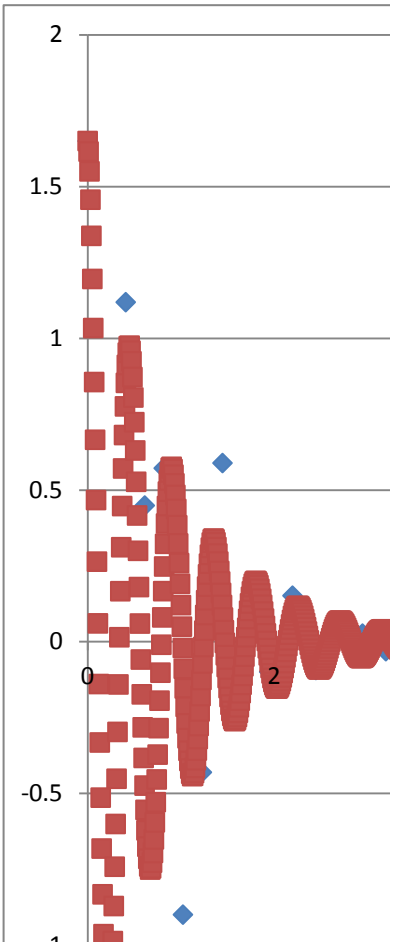
4.26	-0.004	-0.010182472	0.006182	3.82E-05
4.468	0.002	0.006715444	-0.00472	2.22E-05
4.672	0.006	-0.003626456	0.009626	9.27E-05
5.319	0.005	0.000350395	0.00465	2.16E-05
5.523	0.008	0.000523791	0.007476	5.59E-05
5.729	0.016	-0.000952128	0.016952	0.000287
5.934	0.005	0.001133602	0.003866	1.49E-05
6.583	0.004	-0.000703929	0.004704	2.21E-05
6.788	0.004	0.000597431	0.003403	1.16E-05
6.993	0.008	-0.000464531	0.008465	7.16E-05
7.405	-0.018	-0.000214988	-0.01779	0.000316
8.061	0.007	6.75224E-05	0.006932	4.81E-05
8.425	0.008	-5.7621E-05	0.008058	6.49E-05
9.294	0.007	-2.99991E-05	0.00703	4.94E-05
9.625	0	-5.7984E-06	5.8E-06	3.36E-11
			Sum	2.221023

2 (Lohman 1972)

r_s*(S/T)*sqrt(ω^2+γ^2))

K_r 0.066325 ft/s

Time	
0	1.65
0.01	1.615135
0.02	1.550064
0.03	1.456732
0.04	1.337583
0.05	1.1955
0.06	1.03374
0.07	0.855863
0.08	0.665654
0.09	0.467051
0.1	0.264061
0.11	0.060682
0.12	-0.13917
0.13	-0.33175
0.14	-0.51351
0.15	-0.68122
0.16	-0.83199



0.17	-0.9633
0.18	-1.07309
0.19	-1.15975
0.2	-1.22214
0.21	-1.25963
0.22	-1.27206
0.23	-1.25979
0.24	-1.22361
0.25	-1.16478
0.26	-1.08493
0.27	-0.9861
0.28	-0.87061
0.29	-0.74107
0.3	-0.60029
0.31	-0.45123
0.32	-0.29694
0.33	-0.14051
0.34	0.015009
0.35	0.166655
0.36	0.311605
0.37	0.447229
0.38	0.571139
0.39	0.681225
0.4	0.775694
0.41	0.85309
0.42	0.912323
0.43	0.952673
0.44	0.973801
0.45	0.975745
0.46	0.95891
0.47	0.924052
0.48	0.872256
0.49	0.804907
0.5	0.723657
0.51	0.630386
0.52	0.527163
0.53	0.416199
0.54	0.299802
0.55	0.180334
0.56	0.060158
0.57	-0.0584
0.58	-0.17311
0.59	-0.28184
0.6	-0.38266
0.61	-0.4738
0.62	-0.55375
0.63	-0.62122

0.64	-0.67521
0.65	-0.71499
0.66	-0.74012
0.67	-0.75046
0.68	-0.74616
0.69	-0.72763
0.7	-0.69555
0.71	-0.65086
0.72	-0.59471
0.73	-0.52843
0.74	-0.45353
0.75	-0.37166
0.76	-0.28453
0.77	-0.19395
0.78	-0.10174
0.79	-0.0097
0.8	0.080405
0.81	0.166888
0.82	0.248172
0.83	0.322817
0.84	0.389543
0.85	0.44725
0.86	0.49504
0.87	0.532223
0.88	0.55833
0.89	0.573115
0.9	0.576555
0.91	0.568846
0.92	0.550392
0.93	0.521797
0.94	0.483843
0.95	0.437474
0.96	0.383775
0.97	0.323946
0.98	0.259277
0.99	0.191121
1	0.120867
1.01	0.049912
1.02	-0.02036
1.03	-0.08863
1.04	-0.15362
1.05	-0.21416
1.06	-0.26919
1.07	-0.31779
1.08	-0.35916
1.09	-0.39269
1.1	-0.4179

1.11	-0.4345
1.12	-0.44238
1.13	-0.44159
1.14	-0.43233
1.15	-0.41499
1.16	-0.39008
1.17	-0.35825
1.18	-0.32028
1.19	-0.27704
1.2	-0.22947
1.21	-0.1786
1.22	-0.12547
1.23	-0.07115
1.24	-0.01673
1.25	0.036769
1.26	0.088324
1.27	0.136994
1.28	0.181911
1.29	0.2223
1.3	0.257489
1.31	0.286923
1.32	0.31017
1.33	0.326925
1.34	0.337017
1.35	0.340405
1.36	0.337179
1.37	0.327554
1.38	0.311862
1.39	0.290544
1.4	0.264139
1.41	0.233272
1.42	0.198637
1.43	0.160988
1.44	0.121115
1.45	0.079837
1.46	0.037978
1.47	-0.00365
1.48	-0.04424
1.49	-0.08305
1.5	-0.11937
1.51	-0.15255
1.52	-0.18205
1.53	-0.20737
1.54	-0.22812
1.55	-0.24402
1.56	-0.25486
1.57	-0.26056

1.58	-0.26113
1.59	-0.25667
1.6	-0.24738
1.61	-0.23356
1.62	-0.21557
1.63	-0.19386
1.64	-0.16893
1.65	-0.14133
1.66	-0.11165
1.67	-0.08051
1.68	-0.04855
1.69	-0.01639
1.7	0.015347
1.71	0.046054
1.72	0.075168
1.73	0.102168
1.74	0.126584
1.75	0.148006
1.76	0.166092
1.77	0.180573
1.78	0.191252
1.79	0.198014
1.8	0.200817
1.81	0.1997
1.82	0.194775
1.83	0.186223
1.84	0.174293
1.85	0.159292
1.86	0.141579
1.87	0.121555
1.88	0.09966
1.89	0.076356
1.9	0.052123
1.91	0.027448
1.92	0.002816
1.93	-0.0213
1.94	-0.04446
1.95	-0.06622
1.96	-0.08622
1.97	-0.10409
1.98	-0.11956
1.99	-0.13237
2	-0.14235
2.01	-0.14936
2.02	-0.15334
2.03	-0.15429
2.04	-0.15226

2.05	-0.14734
2.06	-0.13971
2.07	-0.12958
2.08	-0.11719
2.09	-0.10284
2.1	-0.08684
2.11	-0.06954
2.12	-0.05131
2.13	-0.03251
2.14	-0.01353
2.15	0.005282
2.16	0.023557
2.17	0.040957
2.18	0.05717
2.19	0.071911
2.2	0.084932
2.21	0.096021
2.22	0.105012
2.23	0.111779
2.24	0.116243
2.25	0.118373
2.26	0.118181
2.27	0.115724
2.28	0.111102
2.29	0.104454
2.3	0.095953
2.31	0.085806
2.32	0.074246
2.33	0.061526
2.34	0.047919
2.35	0.033705
2.36	0.019172
2.37	0.004606
2.38	-0.00971
2.39	-0.02351
2.4	-0.03655
2.41	-0.04858
2.42	-0.0594
2.43	-0.06883
2.44	-0.07672
2.45	-0.08295
2.46	-0.08745
2.47	-0.09017
2.48	-0.09109
2.49	-0.09024
2.5	-0.08768
2.51	-0.0835

2.52	-0.07781
2.53	-0.07075
2.54	-0.0625
2.55	-0.05324
2.56	-0.04317
2.57	-0.03251
2.58	-0.02146
2.59	-0.01026
2.6	0.000876
2.61	0.011743
2.62	0.022133
2.63	0.031858
2.64	0.040748
2.65	0.04865
2.66	0.055436
2.67	0.061001
2.68	0.065267
2.69	0.068181
2.7	0.069719
2.71	0.069883
2.72	0.068701
2.73	0.066227
2.74	0.062539
2.75	0.057735
2.76	0.051934
2.77	0.045269
2.78	0.037889
2.79	0.029951
2.8	0.021621
2.81	0.013069
2.82	0.004462
2.83	-0.00403
2.84	-0.01225
2.85	-0.02005
2.86	-0.02728
2.87	-0.03382
2.88	-0.03956
2.89	-0.04441
2.9	-0.04829
2.91	-0.05116
2.92	-0.05298
2.93	-0.05374
2.94	-0.05345
2.95	-0.05214
2.96	-0.04986
2.97	-0.04667
2.98	-0.04267

2.99	-0.03793
3	-0.03258
3.01	-0.02672
3.02	-0.02049
3.03	-0.01401
3.04	-0.0074
3.05	-0.00081
3.06	0.005644
3.07	0.011842
3.08	0.017671
3.09	0.023026
3.1	0.027815
3.11	0.031959
3.12	0.035395
3.13	0.038072
3.14	0.039956
3.15	0.041029
3.16	0.04129
3.17	0.040752
3.18	0.039444
3.19	0.037409
3.2	0.034702
3.21	0.031392
3.22	0.027555
3.23	0.023278
3.24	0.018653
3.25	0.013776
3.26	0.008746
3.27	0.003665
3.28	-0.00137
3.29	-0.00626
3.3	-0.01092
3.31	-0.01526
3.32	-0.01921
3.33	-0.0227
3.34	-0.02567
3.35	-0.02808
3.36	-0.0299
3.37	-0.0311
3.38	-0.03167
3.39	-0.03163
3.4	-0.03098
3.41	-0.02974
3.42	-0.02797
3.43	-0.0257
3.44	-0.02299
3.45	-0.0199

3.46	-0.0165
3.47	-0.01286
3.48	-0.00905
3.49	-0.00517
3.5	-0.00127
3.51	0.002565
3.52	0.00626
3.53	0.00975
3.54	0.012972
3.55	0.01587
3.56	0.018397
3.57	0.020513
3.58	0.022185
3.59	0.023394
3.6	0.024125
3.61	0.024376
3.62	0.024154
3.63	0.023473
3.64	0.022356
3.65	0.020837
3.66	0.018952
3.67	0.016747
3.68	0.014271
3.69	0.011578
3.7	0.008725
3.71	0.005771
3.72	0.002774
3.73	-0.00021
3.74	-0.00312
3.75	-0.0059
3.76	-0.0085
3.77	-0.01088
3.78	-0.013
3.79	-0.01482
3.8	-0.01631
3.81	-0.01746
3.82	-0.01824
3.83	-0.01865
3.84	-0.0187
3.85	-0.01839
3.86	-0.01773
3.87	-0.01675
3.88	-0.01546
3.89	-0.01391
3.9	-0.01213
3.91	-0.01016
3.92	-0.00803

3.93	-0.00581
3.94	-0.00352
3.95	-0.00121
3.96	0.001059
3.97	0.003259
3.98	0.005347
3.99	0.007283
4	0.009035
4.01	0.010573
4.02	0.011873
4.03	0.012915
4.04	0.013684
4.05	0.014174
4.06	0.014379
4.07	0.014304
4.08	0.013957
4.09	0.013349
4.1	0.012499
4.11	0.011428
4.12	0.010163
4.13	0.008732
4.14	0.007166
4.15	0.005499
4.16	0.003764
4.17	0.001997
4.18	0.000233
4.19	-0.00149
4.2	-0.00315
4.21	-0.00472
4.22	-0.00615
4.23	-0.00743
4.24	-0.00854
4.25	-0.00946
4.26	-0.01018
4.27	-0.01069
4.28	-0.01098
4.29	-0.01105
4.3	-0.01091
4.31	-0.01056
4.32	-0.01002
4.33	-0.00929
4.34	-0.00841
4.35	-0.00738
4.36	-0.00624
4.37	-0.005
4.38	-0.0037
4.39	-0.00235

4.4	-0.00099
4.41	0.000354
4.42	0.001664
4.43	0.002911
4.44	0.004074
4.45	0.005132
4.46	0.006066
4.47	0.006863
4.48	0.00751
4.49	0.007997
4.5	0.00832
4.51	0.008475
4.52	0.008465
4.53	0.008292
4.54	0.007963
4.55	0.00749
4.56	0.006883
4.57	0.006159
4.58	0.005332
4.59	0.004423
4.6	0.003449
4.61	0.002432
4.62	0.001392
4.63	0.000348
4.64	-0.00068
4.65	-0.00167
4.66	-0.0026
4.67	-0.00346
4.68	-0.00424
4.69	-0.00492
4.7	-0.00548
4.71	-0.00593
4.72	-0.00626
4.73	-0.00645
4.74	-0.00652
4.75	-0.00646
4.76	-0.00628
4.77	-0.00599
4.78	-0.00558
4.79	-0.00508
4.8	-0.00449
4.81	-0.00383
4.82	-0.00311
4.83	-0.00234
4.84	-0.00155
4.85	-0.00075
4.86	4.85E-05

4.87	0.000827
4.88	0.001572
4.89	0.002269
4.9	0.002907
4.91	0.003474
4.92	0.003962
4.93	0.004362
4.94	0.004669
4.95	0.00488
4.96	0.004991
4.97	0.005005
4.98	0.004922
4.99	0.004747
5	0.004484
5.01	0.004141
5.02	0.003727
5.03	0.003251
5.04	0.002723
5.05	0.002155
5.06	0.001559
5.07	0.000947
5.08	0.000331
5.09	-0.00028
5.1	-0.00087
5.11	-0.00143
5.12	-0.00194
5.13	-0.00241
5.14	-0.00283
5.15	-0.00317
5.16	-0.00345
5.17	-0.00366
5.18	-0.00379
5.19	-0.00385
5.2	-0.00383
5.21	-0.00374
5.22	-0.00357
5.23	-0.00335
5.24	-0.00306
5.25	-0.00272
5.26	-0.00234
5.27	-0.00192
5.28	-0.00148
5.29	-0.00101
5.3	-0.00054
5.31	-6.7E-05
5.32	0.000396
5.33	0.00084

5.34	0.001258
5.35	0.001642
5.36	0.001986
5.37	0.002284
5.38	0.002531
5.39	0.002723
5.4	0.002859
5.41	0.002937
5.42	0.002957
5.43	0.002919
5.44	0.002827
5.45	0.002682
5.46	0.002489
5.47	0.002253
5.48	0.001978
5.49	0.001673
5.5	0.001342
5.51	0.000993
5.52	0.000633
5.53	0.000269
5.54	-9.2E-05
5.55	-0.00044
5.56	-0.00078
5.57	-0.00109
5.58	-0.00137
5.59	-0.00162
5.6	-0.00183
5.61	-0.00201
5.62	-0.00214
5.63	-0.00223
5.64	-0.00227
5.65	-0.00227
5.66	-0.00222
5.67	-0.00213
5.68	-0.00201
5.69	-0.00184
5.7	-0.00165
5.71	-0.00143
5.72	-0.00119
5.73	-0.00093
5.74	-0.00065
5.75	-0.00037
5.76	-9.6E-05
5.77	0.000179
5.78	0.000444
5.79	0.000694
5.8	0.000925

5.81	0.001133
5.82	0.001314
5.83	0.001466
5.84	0.001587
5.85	0.001674
5.86	0.001727
5.87	0.001746
5.88	0.00173
5.89	0.001682
5.9	0.001603
5.91	0.001494
5.92	0.00136
5.93	0.001202
5.94	0.001025
5.95	0.000833
5.96	0.000629
5.97	0.000417
5.98	0.000202
5.99	-1.1E-05
6	-0.00022
6.01	-0.00042
6.02	-0.00061
6.03	-0.00078
6.04	-0.00093
6.05	-0.00106
6.06	-0.00117
6.07	-0.00125
6.08	-0.00131
6.09	-0.00134
6.1	-0.00134
6.11	-0.00132
6.12	-0.00127
6.13	-0.0012
6.14	-0.00111
6.15	-0.001
6.16	-0.00087
6.17	-0.00073
6.18	-0.00058
6.19	-0.00042
6.2	-0.00025
6.21	-9E-05
6.22	7.29E-05
6.23	0.000231
6.24	0.00038
6.25	0.000519
6.26	0.000645
6.27	0.000755

6.28	0.000849
6.29	0.000924
6.3	0.000979
6.31	0.001015
6.32	0.00103
6.33	0.001025
6.34	0.001
6.35	0.000957
6.36	0.000896
6.37	0.00082
6.38	0.00073
6.39	0.000627
6.4	0.000515
6.41	0.000396
6.42	0.000272
6.43	0.000145
6.44	1.89E-05
6.45	-0.0001
6.46	-0.00022
6.47	-0.00034
6.48	-0.00044
6.49	-0.00053
6.5	-0.00061
6.51	-0.00068
6.52	-0.00073
6.53	-0.00076
6.54	-0.00079
6.55	-0.00079
6.56	-0.00078
6.57	-0.00076
6.58	-0.00072
6.59	-0.00067
6.6	-0.0006
6.61	-0.00053
6.62	-0.00045
6.63	-0.00036
6.64	-0.00027
6.65	-0.00017
6.66	-7.3E-05
6.67	2.37E-05
6.68	0.000117
6.69	0.000207
6.7	0.00029
6.71	0.000366
6.72	0.000433
6.73	0.000491
6.74	0.000537

6.75	0.000572
6.76	0.000595
6.77	0.000607
6.78	0.000606
6.79	0.000594
6.8	0.000571
6.81	0.000537
6.82	0.000494
6.83	0.000442
6.84	0.000383
6.85	0.000318
6.86	0.000248
6.87	0.000175
6.88	0.000101
6.89	2.63E-05
6.9	-4.7E-05
6.91	-0.00012
6.92	-0.00019
6.93	-0.00025
6.94	-0.0003
6.95	-0.00035
6.96	-0.00039
6.97	-0.00042
6.98	-0.00045
6.99	-0.00046
7	-0.00047
7.01	-0.00046
7.02	-0.00045
7.03	-0.00043
7.04	-0.0004
7.05	-0.00036
7.06	-0.00032
7.07	-0.00027
7.08	-0.00022
7.09	-0.00017
7.1	-0.00011
7.11	-5.5E-05
7.12	2.46E-06
7.13	5.82E-05
7.14	0.000112
7.15	0.000162
7.16	0.000207
7.17	0.000248
7.18	0.000283
7.19	0.000312
7.2	0.000334
7.21	0.000349

7.22	0.000357
7.23	0.000358
7.24	0.000353
7.25	0.00034
7.26	0.000321
7.27	0.000297
7.28	0.000267
7.29	0.000233
7.3	0.000196
7.31	0.000155
7.32	0.000112
7.33	6.86E-05
7.34	2.45E-05
7.35	-1.9E-05
7.36	-6.1E-05
7.37	-0.0001
7.38	-0.00014
7.39	-0.00017
7.4	-0.0002
7.41	-0.00023
7.42	-0.00025
7.43	-0.00026
7.44	-0.00027
7.45	-0.00028
7.46	-0.00027
7.47	-0.00027
7.48	-0.00026
7.49	-0.00024
7.5	-0.00022
7.51	-0.0002
7.52	-0.00017
7.53	-0.00014
7.54	-0.00011
7.55	-7.3E-05
7.56	-3.9E-05
7.57	-5.4E-06
7.58	2.78E-05
7.59	5.96E-05
7.6	8.96E-05
7.61	0.000117
7.62	0.000142
7.63	0.000163
7.64	0.000181
7.65	0.000195
7.66	0.000205
7.67	0.00021
7.68	0.000212

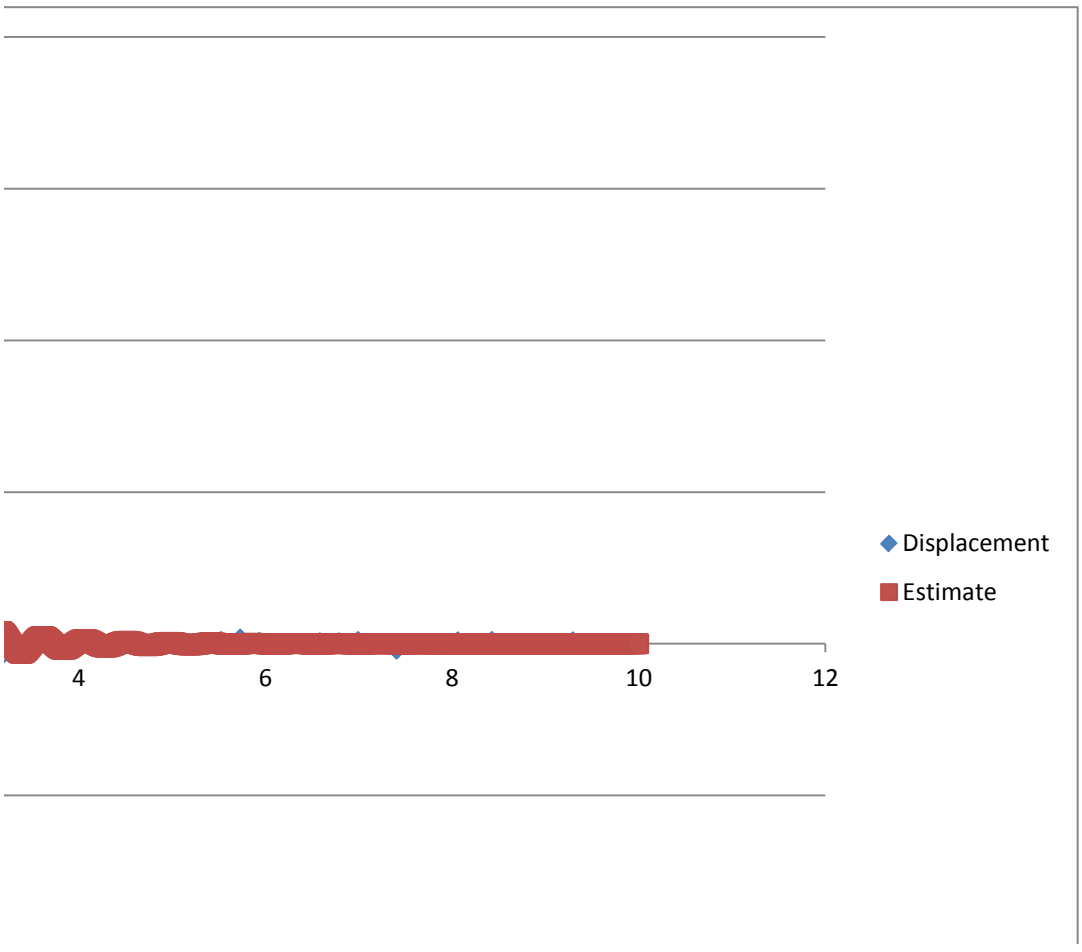
7.69	0.000209
7.7	0.000203
7.71	0.000192
7.72	0.000179
7.73	0.000162
7.74	0.000142
7.75	0.00012
7.76	9.65E-05
7.77	7.16E-05
7.78	4.58E-05
7.79	1.97E-05
7.8	-6.1E-06
7.81	-3.1E-05
7.82	-5.5E-05
7.83	-7.7E-05
7.84	-9.8E-05
7.85	-0.00012
7.86	-0.00013
7.87	-0.00014
7.88	-0.00015
7.89	-0.00016
7.9	-0.00016
7.91	-0.00016
7.92	-0.00016
7.93	-0.00015
7.94	-0.00014
7.95	-0.00013
7.96	-0.00012
7.97	-0.0001
7.98	-8.5E-05
7.99	-6.7E-05
8	-4.7E-05
8.01	-2.7E-05
8.02	-7.2E-06
8.03	1.25E-05
8.04	3.14E-05
8.05	4.94E-05
8.06	6.6E-05
8.07	8.09E-05
8.08	9.39E-05
8.09	0.000105
8.1	0.000113
8.11	0.00012
8.12	0.000124
8.13	0.000125
8.14	0.000124
8.15	0.000121

8.16	0.000115
8.17	0.000107
8.18	9.76E-05
8.19	8.63E-05
8.2	7.37E-05
8.21	5.99E-05
8.22	4.53E-05
8.23	3.01E-05
8.24	1.48E-05
8.25	-5.2E-07
8.26	-1.5E-05
8.27	-3E-05
8.28	-4.3E-05
8.29	-5.5E-05
8.3	-6.6E-05
8.31	-7.6E-05
8.32	-8.3E-05
8.33	-8.9E-05
8.34	-9.3E-05
8.35	-9.6E-05
8.36	-9.6E-05
8.37	-9.4E-05
8.38	-9.1E-05
8.39	-8.6E-05
8.4	-8E-05
8.41	-7.2E-05
8.42	-6.3E-05
8.43	-5.2E-05
8.44	-4.2E-05
8.45	-3E-05
8.46	-1.8E-05
8.47	-6.7E-06
8.48	5.01E-06
8.49	1.63E-05
8.5	2.7E-05
8.51	3.7E-05
8.52	4.6E-05
8.53	5.4E-05
8.54	6.07E-05
8.55	6.61E-05
8.56	7.01E-05
8.57	7.26E-05
8.58	7.37E-05
8.59	7.34E-05
8.6	7.17E-05
8.61	6.86E-05
8.62	6.43E-05

8.63	5.88E-05
8.64	5.24E-05
8.65	4.51E-05
8.66	3.7E-05
8.67	2.85E-05
8.68	1.96E-05
8.69	1.06E-05
8.7	1.52E-06
8.71	-7.4E-06
8.72	-1.6E-05
8.73	-2.4E-05
8.74	-3.1E-05
8.75	-3.8E-05
8.76	-4.4E-05
8.77	-4.8E-05
8.78	-5.2E-05
8.79	-5.5E-05
8.8	-5.6E-05
8.81	-5.7E-05
8.82	-5.6E-05
8.83	-5.4E-05
8.84	-5.1E-05
8.85	-4.8E-05
8.86	-4.3E-05
8.87	-3.8E-05
8.88	-3.2E-05
8.89	-2.6E-05
8.9	-1.9E-05
8.91	-1.2E-05
8.92	-5.3E-06
8.93	1.57E-06
8.94	8.3E-06
8.95	1.47E-05
8.96	2.07E-05
8.97	2.61E-05
8.98	3.09E-05
8.99	3.51E-05
9	3.84E-05
9.01	4.09E-05
9.02	4.26E-05
9.03	4.34E-05
9.04	4.34E-05
9.05	4.26E-05
9.06	4.09E-05
9.07	3.85E-05
9.08	3.54E-05
9.09	3.17E-05

9.1	2.75E-05
9.11	2.29E-05
9.12	1.79E-05
9.13	1.27E-05
9.14	7.33E-06
9.15	1.98E-06
9.16	-3.3E-06
9.17	-8.4E-06
9.18	-1.3E-05
9.19	-1.8E-05
9.2	-2.2E-05
9.21	-2.5E-05
9.22	-2.8E-05
9.23	-3E-05
9.24	-3.2E-05
9.25	-3.3E-05
9.26	-3.3E-05
9.27	-3.3E-05
9.28	-3.2E-05
9.29	-3.1E-05
9.3	-2.9E-05
9.31	-2.6E-05
9.32	-2.3E-05
9.33	-2E-05
9.34	-1.6E-05
9.35	-1.2E-05
9.36	-8.1E-06
9.37	-4E-06
9.38	1.03E-07
9.39	4.1E-06
9.4	7.93E-06
9.41	1.15E-05
9.42	1.48E-05
9.43	1.77E-05
9.44	2.02E-05
9.45	2.23E-05
9.46	2.39E-05
9.47	2.5E-05
9.48	2.56E-05
9.49	2.57E-05
9.5	2.53E-05
9.51	2.44E-05
9.52	2.3E-05
9.53	2.13E-05
9.54	1.92E-05
9.55	1.68E-05
9.56	1.41E-05

9.57	1.12E-05
9.58	8.11E-06
9.59	4.97E-06
9.6	1.81E-06
9.61	-1.3E-06
9.62	-4.3E-06
9.63	-7.2E-06
9.64	-9.9E-06
9.65	-1.2E-05
9.66	-1.4E-05
9.67	-1.6E-05
9.68	-1.8E-05
9.69	-1.9E-05
9.7	-1.9E-05
9.71	-2E-05
9.72	-2E-05
9.73	-1.9E-05
9.74	-1.8E-05
9.75	-1.7E-05
9.76	-1.6E-05
9.77	-1.4E-05
9.78	-1.2E-05
9.79	-9.9E-06
9.8	-7.7E-06
9.81	-5.3E-06
9.82	-2.9E-06
9.83	-4.3E-07
9.84	1.95E-06
9.85	4.23E-06
9.86	6.38E-06
9.87	8.35E-06
9.88	1.01E-05
9.89	1.17E-05
9.9	1.29E-05
9.91	1.39E-05
9.92	1.46E-05
9.93	1.51E-05
9.94	1.52E-05
9.95	1.5E-05
9.96	1.45E-05
9.97	1.38E-05
9.98	1.28E-05
9.99	1.16E-05
10	1.02E-05


4
6
8
10
12
Displacement
Estimate

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-6 Falling Head 2_2018-06-29_11-21-00-703.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	50				
Used Battery	0				

Log Configuration

Log Name	MW-6 Falling Head 2
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/25/2018 1:40:09 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	2.59756 (PSI)

Depth of Pı -0.529667 (ft)
Head Press -0.235136 (PSI)
Temperatu 19.1085 (C)

Log Notes:

Date and Time	Note
6/25/2018 13:40	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/25/2018 13:40	Used Battery: 0% Used Memory: 51% User Name: Larry
6/25/2018 13:40	Device Taken Offline
6/25/2018 13:40	Sensor SN: 106161 Pressure sensor calibration. Pressure reading set to zero. [Pressure Offs
6/25/2018 13:40	Device Put Online
6/25/2018 13:41	Manual Start Command
6/25/2018 14:20	Used Battery: 0% Used Memory: 51% User Name: Larry
6/25/2018 14:20	Manual Stop Command

Log Data:

Record Count	136
Sensors	1
	1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft			
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161			
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)		Time	Depth
6/25/2018 13:41	0	0.005	19.081	0.012		0	0.012
6/25/2018 13:41	0.25	0.003	19.102	0.006		0.25	0.006
6/25/2018 13:41	0.853	0.003	19.1	0.006		0.853	0.006
6/25/2018 13:41	1.057	0.004	19.12	0.009		1.057	0.009
6/25/2018 13:41	1.262	0.005	19.128	0.012		1.262	0.012
6/25/2018 13:41	1.466	0.002	19.14	0.004		1.466	0.004
6/25/2018 13:41	1.67	0.01	19.148	0.022		1.67	0.022
6/25/2018 13:41	1.874	0.905	19.153	2.039		1.874	2.039
6/25/2018 13:41	2.078	0.341	19.159	0.768		2.078	0.768
6/25/2018 13:41	2.281	0.746	19.162	1.68		2.281	1.68
6/25/2018 13:41	2.5	0.876	19.167	1.974		2.5	1.974
6/25/2018 13:41	2.75	0.57	19.166	1.283		2.75	1.283
6/25/2018 13:41	3	0.682	19.171	1.536		3	1.536
6/25/2018 13:41	3.25	0.325	19.17	0.732		3.25	0.732
6/25/2018 13:41	3.5	-0.174	19.17	-0.391		3.5	-0.391
6/25/2018 13:41	3.75	0.528	19.171	1.188		3.75	1.188
6/25/2018 13:41	4	0.229	19.172	0.516		4	0.516

6/25/2018 13:41	4.25	0.212	19.174	0.478	4.25	0.478
6/25/2018 13:41	4.906	0.254	19.147	0.572	4.906	0.572
6/25/2018 13:41	5.11	0.294	19.161	0.663	5.11	0.663
6/25/2018 13:41	5.314	0.256	19.17	0.576	5.314	0.576
6/25/2018 13:41	5.523	0.262	19.176	0.591	5.523	0.591
6/25/2018 13:41	5.727	0.266	19.254	0.599	5.727	0.599
6/25/2018 13:41	6.375	0.267	19.236	0.601	6.375	0.601
6/25/2018 13:41	6.579	0.276	19.227	0.622	6.579	0.622
6/25/2018 13:41	6.785	0.246	19.224	0.554	6.785	0.554
6/25/2018 13:41	6.989	0.245	19.22	0.551	6.989	0.551
6/25/2018 13:41	7.638	0.262	19.18	0.59	7.638	0.59
6/25/2018 13:41	7.844	0.286	19.187	0.643	7.844	0.643
6/25/2018 13:41	8.049	0.261	19.195	0.589	8.049	0.589
6/25/2018 13:41	8.46	0.268	19.13	0.604	8.46	0.604
6/25/2018 13:41	9.114	0.271	19.162	0.61	9.114	0.61
6/25/2018 13:41	9.48	0.272	19.163	0.613	9.48	0.613
6/25/2018 13:41	10.347	0.27	19.145	0.608	10.347	0.608
6/25/2018 13:41	10.68	0.269	19.154	0.606	10.68	0.606
6/25/2018 13:41	11.499	0.268	19.142	0.603	11.499	0.603
6/25/2018 13:41	11.94	0.271	19.132	0.611	11.94	0.611
6/25/2018 13:41	12.66	0.269	19.138	0.606	12.66	0.606
6/25/2018 13:41	13.44	0.268	19.136	0.605	13.44	0.605
6/25/2018 13:41	14.22	0.272	19.133	0.612	14.22	0.612
6/25/2018 13:41	15.191	0.271	19.142	0.609	15.191	0.609
6/25/2018 13:41	15.96	0.271	19.137	0.61	15.96	0.61
6/25/2018 13:41	17.045	0.271	19.148	0.61	17.045	0.61
6/25/2018 13:41	17.88	0.27	19.137	0.609	17.88	0.609
6/25/2018 13:41	18.96	0.272	19.131	0.613	18.96	0.613
6/25/2018 13:41	20.1	0.268	19.129	0.604	20.1	0.604
6/25/2018 13:41	21.3	0.269	19.13	0.606	21.3	0.606
6/25/2018 13:41	22.56	0.269	19.133	0.606	22.56	0.606
6/25/2018 13:41	23.88	0.269	19.124	0.605	23.88	0.605
6/25/2018 13:41	25.32	0.27	19.122	0.609	25.32	0.609
6/25/2018 13:41	26.82	0.27	19.147	0.608	26.82	0.608
6/25/2018 13:41	28.38	0.27	19.126	0.608	28.38	0.608
6/25/2018 13:41	30.06	0.271	19.12	0.611	30.06	0.611
6/25/2018 13:41	32.035	0.267	19.134	0.602	32.035	0.602
6/25/2018 13:41	33.72	0.27	19.124	0.608	33.72	0.608
6/25/2018 13:41	35.76	0.269	19.12	0.605	35.76	0.605
6/25/2018 13:41	37.86	0.268	19.125	0.605	37.86	0.605
6/25/2018 13:42	40.08	0.269	19.118	0.607	40.08	0.607
6/25/2018 13:42	42.48	0.269	19.13	0.605	42.48	0.605
6/25/2018 13:42	45	0.268	19.118	0.603	45	0.603
6/25/2018 13:42	47.64	0.268	19.127	0.603	47.64	0.603
6/25/2018 13:42	50.46	0.267	19.117	0.602	50.46	0.602
6/25/2018 13:42	53.46	0.268	19.122	0.603	53.46	0.603
6/25/2018 13:42	56.64	0.267	19.116	0.601	56.64	0.601

6/25/2018 13:42	60	0.267	19.118	0.602	60	0.602
6/25/2018 13:42	63.6	0.269	19.121	0.606	63.6	0.606
6/25/2018 13:42	67.295	0.269	19.127	0.607	67.295	0.607
6/25/2018 13:42	71.4	0.265	19.119	0.598	71.4	0.598
6/25/2018 13:42	75.6	0.266	19.117	0.6	75.6	0.6
6/25/2018 13:42	79.8	0.267	19.118	0.602	79.8	0.602
6/25/2018 13:42	84.6	0.265	19.116	0.596	84.6	0.596
6/25/2018 13:42	90	0.265	19.117	0.598	90	0.598
6/25/2018 13:42	94.8	0.265	19.116	0.598	94.8	0.598
6/25/2018 13:43	100.8	0.267	19.116	0.602	100.8	0.602
6/25/2018 13:43	106.8	0.266	19.14	0.6	106.8	0.6
6/25/2018 13:43	112.8	0.264	19.12	0.595	112.8	0.595
6/25/2018 13:43	119.4	0.265	19.111	0.597	119.4	0.597
6/25/2018 13:43	126.6	0.263	19.112	0.593	126.6	0.593
6/25/2018 13:43	134.4	0.264	19.113	0.596	134.4	0.596
6/25/2018 13:43	142.322	0.265	19.122	0.598	142.322	0.598
6/25/2018 13:43	150.6	0.262	19.11	0.59	150.6	0.59
6/25/2018 13:44	159.6	0.263	19.109	0.592	159.6	0.592
6/25/2018 13:44	169.2	0.262	19.109	0.59	169.2	0.59
6/25/2018 13:44	178.8	0.261	19.109	0.589	178.8	0.589
6/25/2018 13:44	189.6	0.26	19.103	0.587	189.6	0.587
6/25/2018 13:44	201	0.261	19.105	0.588	201	0.588
6/25/2018 13:44	213	0.26	19.107	0.585	213	0.585
6/25/2018 13:45	225.6	0.26	19.101	0.586	225.6	0.586
6/25/2018 13:45	238.8	0.26	19.105	0.586	238.8	0.586
6/25/2018 13:45	253.2	0.261	19.106	0.588	253.2	0.588
6/25/2018 13:45	268.2	0.26	19.105	0.585	268.2	0.585
6/25/2018 13:46	283.8	0.259	19.102	0.584	283.8	0.584
6/25/2018 13:46	300.6	0.259	19.097	0.583	300.6	0.583
6/25/2018 13:46	318.6	0.257	19.1	0.579	318.6	0.579
6/25/2018 13:46	337.328	0.258	19.107	0.581	337.328	0.581
6/25/2018 13:47	357.6	0.258	19.105	0.582	357.6	0.582
6/25/2018 13:47	378.6	0.254	19.099	0.572	378.6	0.572
6/25/2018 13:48	400.8	0.256	19.094	0.577	400.8	0.577
6/25/2018 13:48	424.8	0.259	19.098	0.582	424.8	0.582
6/25/2018 13:48	450	0.255	19.094	0.574	450	0.574
6/25/2018 13:49	476.4	0.257	19.094	0.579	476.4	0.579
6/25/2018 13:49	504.6	0.255	19.097	0.575	504.6	0.575
6/25/2018 13:50	534.6	0.255	19.095	0.574	534.6	0.574
6/25/2018 13:50	566.4	0.253	19.097	0.569	566.4	0.569
6/25/2018 13:51	600	0.253	19.095	0.569	600	0.569
6/25/2018 13:51	636	0.252	19.096	0.567	636	0.567
6/25/2018 13:52	672.087	0.252	19.111	0.567	672.087	0.567
6/25/2018 13:53	714	0.249	19.1	0.56	714	0.56
6/25/2018 13:53	756	0.249	19.094	0.561	756	0.561
6/25/2018 13:54	798	0.248	19.104	0.56	798	0.56
6/25/2018 13:55	846	0.248	19.096	0.558	846	0.558

6/25/2018 13:56	900	0.248	19.098	0.559	900	0.559
6/25/2018 13:57	948	0.247	19.104	0.557	948	0.557
6/25/2018 13:58	1008	0.245	19.102	0.552	1008	0.552
6/25/2018 13:59	1068	0.244	19.102	0.55	1068	0.55
6/25/2018 14:00	1128	0.243	19.1	0.548	1128	0.548
6/25/2018 14:01	1188	0.243	19.1	0.547	1188	0.547
6/25/2018 14:02	1248	0.243	19.101	0.548	1248	0.548
6/25/2018 14:03	1308	0.243	19.099	0.547	1308	0.547
6/25/2018 14:04	1368	0.242	19.1	0.545	1368	0.545
6/25/2018 14:05	1428	0.241	19.102	0.543	1428	0.543
6/25/2018 14:06	1488	0.24	19.1	0.54	1488	0.54
6/25/2018 14:07	1548	0.239	19.102	0.539	1548	0.539
6/25/2018 14:08	1608	0.239	19.1	0.539	1608	0.539
6/25/2018 14:09	1668	0.238	19.102	0.535	1668	0.535
6/25/2018 14:10	1728	0.236	19.102	0.533	1728	0.533
6/25/2018 14:11	1788	0.235	19.103	0.53	1788	0.53
6/25/2018 14:12	1848	0.234	19.103	0.528	1848	0.528
6/25/2018 14:13	1908	0.233	19.101	0.526	1908	0.526
6/25/2018 14:14	1968	0.234	19.101	0.527	1968	0.527
6/25/2018 14:15	2028	0.231	19.101	0.521	2028	0.521
6/25/2018 14:16	2088	0.232	19.101	0.523	2088	0.523
6/25/2018 14:17	2148	0.231	19.099	0.521	2148	0.521
6/25/2018 14:18	2208	0.231	19.1	0.52	2208	0.52
6/25/2018 14:19	2268	0.227	19.1	0.512	2268	0.512
6/25/2018 14:20	2328	0.228	19.097	0.515	2328	0.515

et: 2.36135(PSI)] User Name: Larry

A_o (ft)	1.433
γ (s^-1)	-0.60434112
ω (s^-1)	10.01860503
r_c (ft)	0.083333333
r_s (ft)	0.208333333
S	0.2
T_i (ft^2/s)	
T_f (ft^2/s)	
difference	

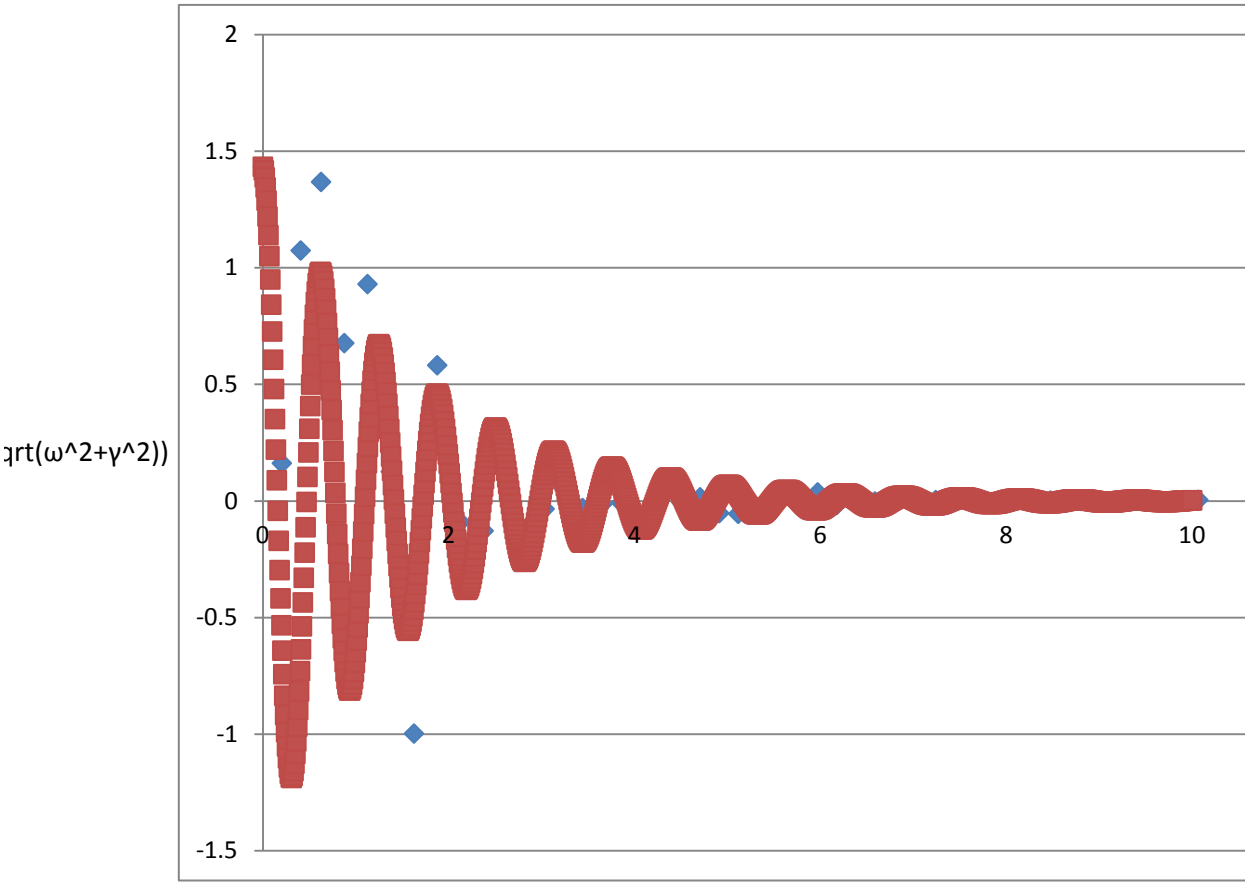
Transmissivity Equation
T = r_c*(ω^2+γ^2)/(8*γ)*ln(0.79*r_s*(S/T)*sc

Function Equation
W(t) = A_0 * e^(γ*t)*cos(ω*t)

Data quality poor - do not use

Time	Displacement	W(t) approximation	difference	squared difference
0	1.433	1.433	0	0
0.204	0.162	-0.577095592	0.739096	0.546262
0.407	1.074	-0.664508875	1.738509	3.022413
0.626	1.368	0.981558206	0.386442	0.149337
0.876	0.677	-0.67265025	1.34965	1.821556
1.126	0.93	0.20427679	0.725723	0.526674
1.376	0.126	0.214843541	-0.08884	0.007893
1.626	-0.997	-0.447998662	-0.549	0.301402
1.876	0.582	0.460488218	0.121512	0.014765
2.126	-0.09	-0.305402439	0.215402	0.046398

2.376	-0.128	0.081782964	-0.20978	0.044009
3.032	-0.034	0.116187317	-0.15019	0.022556
3.236	0.057	0.10880474	-0.0518	0.002684
3.44	-0.03	-0.178432929	0.148433	0.022032
3.649	-0.015	0.065784015	-0.08078	0.006526
3.853	-0.007	0.086513912	-0.09351	0.008745
4.501	-0.005	0.041847411	-0.04685	0.002195
4.705	0.016	-0.083429948	0.09943	0.009886
4.911	-0.052	0.035750941	-0.08775	0.0077
5.115	-0.055	0.036293715	-0.09129	0.008335
5.764	-0.016	0.016000919	-0.032	0.001024
5.97	0.037	-0.038563005	0.075563	0.00571
6.175	-0.017	0.019486674	-0.03649	0.001331
6.586	-0.002	-0.026770312	0.02477	0.000614
7.24	0.004	-0.017338434	0.021338	0.000455
7.606	0.007	0.010035425	-0.00304	9.21E-06
8.473	0.002	-0.008540782	0.010541	0.000111
8.806	0	0.006764654	-0.00676	4.58E-05
9.625	-0.003	-0.002445752	-0.00055	3.07E-07
10.066	0.005	0.003106024	0.001894	3.59E-06
10.786	0	0.000673912	-0.00067	4.54E-07
			Sum	6.580674



Extended T	Extended W(t)
0	1.433
0.01	1.417224
0.02	1.387458
0.03	1.344168
0.04	1.287951
0.05	1.219523
0.06	1.139717
0.07	1.049467
0.08	0.949801
0.09	0.84183

0.1	0.726735
0.11	0.605751
0.12	0.48016
0.13	0.351274
0.14	0.220423
0.15	0.088938
0.16	-0.04186
0.17	-0.17066
0.18	-0.29621
0.19	-0.41729
0.2	-0.53274
0.21	-0.64147
0.22	-0.74248
0.23	-0.83484
0.24	-0.91775
0.25	-0.99047
0.26	-1.05242
0.27	-1.10309
0.28	-1.14211
0.29	-1.16924
0.3	-1.18434
0.31	-1.18742
0.32	-1.17858
0.33	-1.15805
0.34	-1.12618
0.35	-1.08343
0.36	-1.03036
0.37	-0.96761
0.38	-0.89594
0.39	-0.81616
0.4	-0.72918
0.41	-0.63594
0.42	-0.53747
0.43	-0.4348
0.44	-0.32901
0.45	-0.2212
0.46	-0.11248
0.47	-0.00393
0.48	0.103348
0.49	0.208305
0.5	0.309917
0.51	0.407207
0.52	0.499255
0.53	0.585202
0.54	0.664261
0.55	0.735725
0.56	0.798969

0.57	0.853461
0.58	0.898759
0.59	0.93452
0.6	0.960503
0.61	0.976564
0.62	0.982662
0.63	0.978855
0.64	0.965301
0.65	0.942251
0.66	0.910052
0.67	0.869135
0.68	0.820014
0.69	0.76328
0.7	0.69959
0.71	0.629666
0.72	0.554283
0.73	0.47426
0.74	0.390454
0.75	0.303748
0.76	0.215044
0.77	0.125255
0.78	0.035292
0.79	-0.05394
0.8	-0.14157
0.81	-0.22672
0.82	-0.30859
0.83	-0.38638
0.84	-0.45937
0.85	-0.52689
0.86	-0.58833
0.87	-0.64314
0.88	-0.69086
0.89	-0.73109
0.9	-0.76353
0.91	-0.78794
0.92	-0.80417
0.93	-0.81216
0.94	-0.81193
0.95	-0.80358
0.96	-0.78729
0.97	-0.76332
0.98	-0.732
0.99	-0.69374
1	-0.64899
1.01	-0.59829
1.02	-0.54221
1.03	-0.48137

1.04	-0.41646
1.05	-0.34816
1.06	-0.27719
1.07	-0.20431
1.08	-0.13025
1.09	-0.05578
1.1	0.018346
1.11	0.091403
1.12	0.162667
1.13	0.231448
1.14	0.297087
1.15	0.358965
1.16	0.416509
1.17	0.469194
1.18	0.516552
1.19	0.558173
1.2	0.593709
1.21	0.622879
1.22	0.645467
1.23	0.661325
1.24	0.670377
1.25	0.672612
1.26	0.668092
1.27	0.656942
1.28	0.639353
1.29	0.61558
1.3	0.585933
1.31	0.55078
1.32	0.510539
1.33	0.465673
1.34	0.416688
1.35	0.364123
1.36	0.308546
1.37	0.25055
1.38	0.190743
1.39	0.129747
1.4	0.068186
1.41	0.006683
1.42	-0.05415
1.43	-0.11371
1.44	-0.17141
1.45	-0.22671
1.46	-0.27908
1.47	-0.32802
1.48	-0.3731
1.49	-0.4139
1.5	-0.45006

1.51	-0.4813
1.52	-0.50734
1.53	-0.52799
1.54	-0.54311
1.55	-0.55262
1.56	-0.55648
1.57	-0.55473
1.58	-0.54745
1.59	-0.53478
1.6	-0.51692
1.61	-0.49409
1.62	-0.4666
1.63	-0.43477
1.64	-0.39897
1.65	-0.35961
1.66	-0.31713
1.67	-0.27198
1.68	-0.22465
1.69	-0.17565
1.7	-0.12548
1.71	-0.07465
1.72	-0.02369
1.73	0.026899
1.74	0.076609
1.75	0.124956
1.76	0.171471
1.77	0.215712
1.78	0.257263
1.79	0.295741
1.8	0.330798
1.81	0.362125
1.82	0.389452
1.83	0.412554
1.84	0.431251
1.85	0.44541
1.86	0.454942
1.87	0.459807
1.88	0.460014
1.89	0.455617
1.9	0.446713
1.91	0.433448
1.92	0.416005
1.93	0.39461
1.94	0.369524
1.95	0.341043
1.96	0.309491
1.97	0.275222

1.98	0.238612
1.99	0.200054
2	0.159957
2.01	0.118742
2.02	0.076835
2.03	0.034662
2.04	-0.00735
2.05	-0.04879
2.06	-0.08923
2.07	-0.12831
2.08	-0.16562
2.09	-0.20083
2.1	-0.23361
2.11	-0.26366
2.12	-0.29071
2.13	-0.31453
2.14	-0.33491
2.15	-0.3517
2.16	-0.36477
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2.2	-0.3787
2.21	-0.37265
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2.23	-0.34974
2.24	-0.33318
2.25	-0.31349
2.26	-0.2909
2.27	-0.26567
2.28	-0.23809
2.29	-0.20845
2.3	-0.17709
2.31	-0.14433
2.32	-0.11052
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2.34	-0.04116
2.35	-0.00631
2.36	0.028182
2.37	0.061977
2.38	0.094747
2.39	0.126175
2.4	0.155963
2.41	0.183833
2.42	0.209529
2.43	0.23282
2.44	0.253502

2.45	0.271399
2.46	0.286366
2.47	0.298287
2.48	0.307082
2.49	0.312698
2.5	0.315119
2.51	0.314358
2.52	0.310461
2.53	0.303504
2.54	0.293595
2.55	0.280867
2.56	0.265483
2.57	0.247627
2.58	0.227508
2.59	0.205355
2.6	0.181413
2.61	0.155944
2.62	0.129221
2.63	0.101526
2.64	0.073148
2.65	0.044379
2.66	0.015512
2.67	-0.01316
2.68	-0.04136
2.69	-0.06881
2.7	-0.09524
2.71	-0.1204
2.72	-0.14405
2.73	-0.16597
2.74	-0.18598
2.75	-0.20388
2.76	-0.21952
2.77	-0.23279
2.78	-0.24356
2.79	-0.25177
2.8	-0.25736
2.81	-0.26031
2.82	-0.26062
2.83	-0.25831
2.84	-0.25345
2.85	-0.24612
2.86	-0.23641
2.87	-0.22445
2.88	-0.21039
2.89	-0.19439
2.9	-0.17664
2.91	-0.15734

2.92	-0.13669
2.93	-0.11492
2.94	-0.09227
2.95	-0.06897
2.96	-0.04525
2.97	-0.02137
2.98	0.00244
2.99	0.025939
3	0.048896
3.01	0.071088
3.02	0.092302
3.03	0.112338
3.04	0.131009
3.05	0.148146
3.06	0.163594
3.07	0.17722
3.08	0.188909
3.09	0.198567
3.1	0.206123
3.11	0.211526
3.12	0.214748
3.13	0.215783
3.14	0.214646
3.15	0.211376
3.16	0.20603
3.17	0.198687
3.18	0.189444
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3.21	0.151553
3.22	0.136022
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3.25	0.083116
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3.27	0.044482
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3.29	0.005006
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3.31	-0.03373
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3.43	-0.17693
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3.47	-0.17224
3.48	-0.16674
3.49	-0.15965
3.5	-0.15104
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3.61	0.006281
3.62	0.022277
3.63	0.037858
3.64	0.052873
3.65	0.067179
3.66	0.08064
3.67	0.093134
3.68	0.104545
3.69	0.114773
3.7	0.12373
3.71	0.131342
3.72	0.137548
3.73	0.142304
3.74	0.145578
3.75	0.147357
3.76	0.14764
3.77	0.146443
3.78	0.143795
3.79	0.13974
3.8	0.134336
3.81	0.127652
3.82	0.119772
3.83	0.110788
3.84	0.100804
3.85	0.089931

3.86	0.078289
3.87	0.066004
3.88	0.053206
3.89	0.040029
3.9	0.026611
3.91	0.013087
3.92	-0.00041
3.93	-0.01373
3.94	-0.02676
3.95	-0.03936
3.96	-0.05142
3.97	-0.06282
3.98	-0.07346
3.99	-0.08323
4	-0.09205
4.01	-0.09985
4.02	-0.10655
4.03	-0.1121
4.04	-0.11647
4.05	-0.11962
4.06	-0.12153
4.07	-0.12221
4.08	-0.12166
4.09	-0.11989
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4.11	-0.11287
4.12	-0.10771
4.13	-0.10154
4.14	-0.09442
4.15	-0.08645
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4.17	-0.06829
4.18	-0.0583
4.19	-0.04785
4.2	-0.03705
4.21	-0.026
4.22	-0.01483
4.23	-0.00365
4.24	0.007441
4.25	0.018321
4.26	0.028887
4.27	0.039036
4.28	0.048674
4.29	0.057708
4.3	0.066057
4.31	0.073644
4.32	0.080404

4.33	0.086278
4.34	0.091218
4.35	0.095186
4.36	0.098154
4.37	0.100105
4.38	0.10103
4.39	0.100934
4.4	0.099829
4.41	0.097739
4.42	0.094695
4.43	0.090741
4.44	0.085927
4.45	0.080311
4.46	0.073958
4.47	0.066943
4.48	0.059341
4.49	0.051238
4.5	0.042719
4.51	0.033875
4.52	0.024798
4.53	0.015582
4.54	0.006322
4.55	-0.00289
4.56	-0.01196
4.57	-0.02081
4.58	-0.02934
4.59	-0.03747
4.6	-0.04513
4.61	-0.05225
4.62	-0.05876
4.63	-0.06461
4.64	-0.06973
4.65	-0.0741
4.66	-0.07767
4.67	-0.08043
4.68	-0.08234
4.69	-0.08341
4.7	-0.08363
4.71	-0.08302
4.72	-0.08158
4.73	-0.07934
4.74	-0.07633
4.75	-0.0726
4.76	-0.06818
4.77	-0.06314
4.78	-0.05752
4.79	-0.0514

4.8	-0.04483
4.81	-0.0379
4.82	-0.03067
4.83	-0.02322
4.84	-0.01563
4.85	-0.00797
4.86	-0.00032
4.87	0.007233
4.88	0.014626
4.89	0.021785
4.9	0.028639
4.91	0.035125
4.92	0.041181
4.93	0.046753
4.94	0.05179
4.95	0.056248
4.96	0.06009
4.97	0.063284
4.98	0.065807
4.99	0.067642
5	0.068777
5.01	0.069211
5.02	0.068947
5.03	0.067997
5.04	0.066378
5.05	0.064114
5.06	0.061235
5.07	0.057779
5.08	0.053786
5.09	0.049303
5.1	0.044381
5.11	0.039074
5.12	0.033439
5.13	0.027538
5.14	0.021432
5.15	0.015185
5.16	0.008861
5.17	0.002525
5.18	-0.00376
5.19	-0.00993
5.2	-0.01593
5.21	-0.0217
5.22	-0.02718
5.23	-0.03232
5.24	-0.03708
5.25	-0.04141
5.26	-0.04528

5.27	-0.04864
5.28	-0.05148
5.29	-0.05377
5.3	-0.05549
5.31	-0.05663
5.32	-0.0572
5.33	-0.05719
5.34	-0.0566
5.35	-0.05546
5.36	-0.05378
5.37	-0.05157
5.38	-0.04888
5.39	-0.04573
5.4	-0.04216
5.41	-0.03821
5.42	-0.03393
5.43	-0.02936
5.44	-0.02455
5.45	-0.01955
5.46	-0.01442
5.47	-0.00921
5.48	-0.00396
5.49	0.00126
5.5	0.006406
5.51	0.011426
5.52	0.016272
5.53	0.020897
5.54	0.025257
5.55	0.029312
5.56	0.033025
5.57	0.036363
5.58	0.039297
5.59	0.041803
5.6	0.04386
5.61	0.045454
5.62	0.046574
5.63	0.047214
5.64	0.047375
5.65	0.047059
5.66	0.046277
5.67	0.045041
5.68	0.043369
5.69	0.041283
5.7	0.038809
5.71	0.035977
5.72	0.032819
5.73	0.029371

5.74	0.02567
5.75	0.021757
5.76	0.017673
5.77	0.013461
5.78	0.009165
5.79	0.004829
5.8	0.000497
5.81	-0.00379
5.82	-0.00798
5.83	-0.01205
5.84	-0.01594
5.85	-0.01963
5.86	-0.02308
5.87	-0.02626
5.88	-0.02914
5.89	-0.03168
5.9	-0.03389
5.91	-0.03572
5.92	-0.03718
5.93	-0.03825
5.94	-0.03892
5.95	-0.03919
5.96	-0.03907
5.97	-0.03856
5.98	-0.03767
5.99	-0.03642
6	-0.03481
6.01	-0.03288
6.02	-0.03064
6.03	-0.02812
6.04	-0.02535
6.05	-0.02236
6.06	-0.01918
6.07	-0.01584
6.08	-0.01239
6.09	-0.00886
6.1	-0.00528
6.11	-0.00169
6.12	0.001873
6.13	0.005374
6.14	0.00878
6.15	0.012057
6.16	0.015174
6.17	0.018102
6.18	0.020814
6.19	0.023285
6.2	0.025493

6.21	0.027419
6.22	0.029048
6.23	0.030367
6.24	0.031366
6.25	0.03204
6.26	0.032384
6.27	0.032401
6.28	0.032093
6.29	0.031468
6.3	0.030536
6.31	0.029309
6.32	0.027804
6.33	0.026038
6.34	0.024034
6.35	0.021813
6.36	0.0194
6.37	0.016823
6.38	0.014108
6.39	0.011284
6.4	0.008382
6.41	0.00543
6.42	0.00246
6.43	-0.0005
6.44	-0.00342
6.45	-0.00627
6.46	-0.00902
6.47	-0.01165
6.48	-0.01413
6.49	-0.01644
6.5	-0.01856
6.51	-0.02046
6.52	-0.02214
6.53	-0.02358
6.54	-0.02476
6.55	-0.02569
6.56	-0.02634
6.57	-0.02672
6.58	-0.02683
6.59	-0.02667
6.6	-0.02625
6.61	-0.02557
6.62	-0.02464
6.63	-0.02347
6.64	-0.02209
6.65	-0.0205
6.66	-0.01872
6.67	-0.01678

6.68	-0.0147
6.69	-0.01249
6.7	-0.01018
6.71	-0.0078
6.72	-0.00537
6.73	-0.00291
6.74	-0.00046
6.75	0.00197
6.76	0.004351
6.77	0.006659
6.78	0.008873
6.79	0.010972
6.8	0.012936
6.81	0.014747
6.82	0.016389
6.83	0.017846
6.84	0.019108
6.85	0.020164
6.86	0.021005
6.87	0.021626
6.88	0.022022
6.89	0.022194
6.9	0.022142
6.91	0.021869
6.92	0.02138
6.93	0.020684
6.94	0.019788
6.95	0.018706
6.96	0.017449
6.97	0.016033
6.98	0.014474
6.99	0.012788
7	0.010995
7.01	0.009113
7.02	0.007163
7.03	0.005165
7.04	0.003138
7.05	0.001105
7.06	-0.00091
7.07	-0.0029
7.08	-0.00483
7.09	-0.0067
7.1	-0.00847
7.11	-0.01014
7.12	-0.01168
7.13	-0.01309
7.14	-0.01435

7.15	-0.01546
7.16	-0.01639
7.17	-0.01715
7.18	-0.01773
7.19	-0.01812
7.2	-0.01833
7.21	-0.01836
7.22	-0.0182
7.23	-0.01785
7.24	-0.01734
7.25	-0.01666
7.26	-0.01581
7.27	-0.01482
7.28	-0.0137
7.29	-0.01245
7.3	-0.01109
7.31	-0.00964
7.32	-0.0081
7.33	-0.00651
7.34	-0.00487
7.35	-0.0032
7.36	-0.00152
7.37	0.000162
7.38	0.001817
7.39	0.003434
7.4	0.004997
7.41	0.006492
7.42	0.007904
7.43	0.00922
7.44	0.010427
7.45	0.011516
7.46	0.012477
7.47	0.013301
7.48	0.013982
7.49	0.014515
7.5	0.014897
7.51	0.015124
7.52	0.015198
7.53	0.015119
7.54	0.01489
7.55	0.014514
7.56	0.013998
7.57	0.013348
7.58	0.012572
7.59	0.011679
7.6	0.010681
7.61	0.009587

7.62	0.008411
7.63	0.007165
7.64	0.005862
7.65	0.004516
7.66	0.003142
7.67	0.001752
7.68	0.000361
7.69	-0.00102
7.7	-0.00237
7.71	-0.00368
7.72	-0.00494
7.73	-0.00613
7.74	-0.00725
7.75	-0.00828
7.76	-0.00922
7.77	-0.01005
7.78	-0.01077
7.79	-0.01138
7.8	-0.01187
7.81	-0.01223
7.82	-0.01246
7.83	-0.01257
7.84	-0.01255
7.85	-0.0124
7.86	-0.01213
7.87	-0.01175
7.88	-0.01125
7.89	-0.01064
7.9	-0.00994
7.91	-0.00914
7.92	-0.00826
7.93	-0.00731
7.94	-0.0063
7.95	-0.00524
7.96	-0.00414
7.97	-0.00301
7.98	-0.00186
7.99	-0.00071
8	0.000435
8.01	0.001562
8.02	0.00266
8.03	0.003718
8.04	0.004726
8.05	0.005674
8.06	0.006554
8.07	0.007359
8.08	0.00808

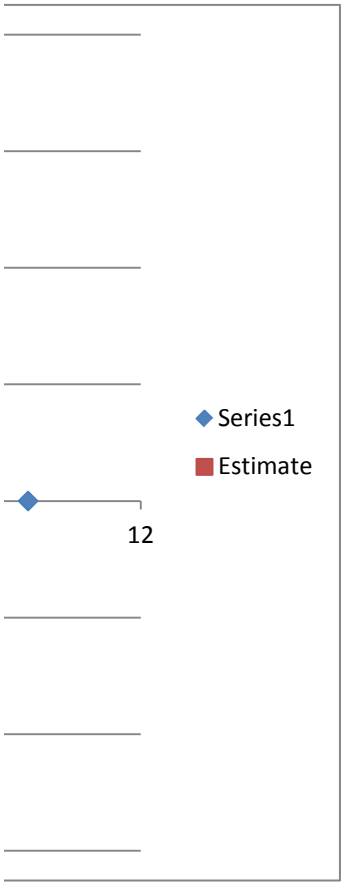
8.09	0.008711
8.1	0.009248
8.11	0.009686
8.12	0.010021
8.13	0.010252
8.14	0.010378
8.15	0.010399
8.16	0.010315
8.17	0.010129
8.18	0.009844
8.19	0.009464
8.2	0.008994
8.21	0.00844
8.22	0.007807
8.23	0.007104
8.24	0.006339
8.25	0.005519
8.26	0.004654
8.27	0.003753
8.28	0.002825
8.29	0.00188
8.3	0.000928
8.31	-2.3E-05
8.32	-0.00096
8.33	-0.00188
8.34	-0.00277
8.35	-0.00362
8.36	-0.00442
8.37	-0.00517
8.38	-0.00586
8.39	-0.00648
8.4	-0.00703
8.41	-0.0075
8.42	-0.00789
8.43	-0.0082
8.44	-0.00842
8.45	-0.00856
8.46	-0.00861
8.47	-0.00857
8.48	-0.00845
8.49	-0.00824
8.5	-0.00795
8.51	-0.00759
8.52	-0.00715
8.53	-0.00665
8.54	-0.00609
8.55	-0.00548

8.56	-0.00481
8.57	-0.00411
8.58	-0.00337
8.59	-0.00261
8.6	-0.00184
8.61	-0.00105
8.62	-0.00026
8.63	0.000519
8.64	0.001286
8.65	0.00203
8.66	0.002745
8.67	0.003424
8.68	0.004061
8.69	0.004649
8.7	0.005184
8.71	0.00566
8.72	0.006074
8.73	0.006423
8.74	0.006703
8.75	0.006912
8.76	0.00705
8.77	0.007116
8.78	0.007109
8.79	0.007032
8.8	0.006885
8.81	0.006671
8.82	0.006393
8.83	0.006054
8.84	0.005659
8.85	0.005212
8.86	0.004718
8.87	0.004183
8.88	0.003612
8.89	0.003013
8.9	0.00239
8.91	0.001751
8.92	0.001102
8.93	0.000449
8.94	-0.0002
8.95	-0.00084
8.96	-0.00146
8.97	-0.00206
8.98	-0.00264
8.99	-0.00318
9	-0.00368
9.01	-0.00414
9.02	-0.00455

9.03	-0.00491
9.04	-0.00522
9.05	-0.00547
9.06	-0.00566
9.07	-0.0058
9.08	-0.00587
9.09	-0.00589
9.1	-0.00585
9.11	-0.00575
9.12	-0.00559
9.13	-0.00538
9.14	-0.00511
9.15	-0.0048
9.16	-0.00445
9.17	-0.00405
9.18	-0.00362
9.19	-0.00316
9.2	-0.00267
9.21	-0.00216
9.22	-0.00164
9.23	-0.0011
9.24	-0.00056
9.25	-2.6E-05
9.26	0.000506
9.27	0.001027
9.28	0.001531
9.29	0.002014
9.3	0.002471
9.31	0.002898
9.32	0.003291
9.33	0.003646
9.34	0.00396
9.35	0.004231
9.36	0.004456
9.37	0.004634
9.38	0.004764
9.39	0.004844
9.4	0.004875
9.41	0.004856
9.42	0.00479
9.43	0.004676
9.44	0.004517
9.45	0.004314
9.46	0.004071
9.47	0.00379
9.48	0.003475
9.49	0.003128

9.5	0.002754
9.51	0.002358
9.52	0.001942
9.53	0.001512
9.54	0.001072
9.55	0.000627
9.56	0.000181
9.57	-0.00026
9.58	-0.0007
9.59	-0.00112
9.6	-0.00153
9.61	-0.00191
9.62	-0.00227
9.63	-0.00261
9.64	-0.00291
9.65	-0.00319
9.66	-0.00342
9.67	-0.00362
9.68	-0.00379
9.69	-0.00391
9.7	-0.00399
9.71	-0.00403
9.72	-0.00403
9.73	-0.00399
9.74	-0.00391
9.75	-0.00379
9.76	-0.00363
9.77	-0.00344
9.78	-0.00322
9.79	-0.00297
9.8	-0.00269
9.81	-0.00239
9.82	-0.00207
9.83	-0.00173
9.84	-0.00138
9.85	-0.00102
9.86	-0.00065
9.87	-0.00028
9.88	8.65E-05
9.89	0.000449
9.9	0.000803
9.91	0.001144
9.92	0.00147
9.93	0.001777
9.94	0.002063
9.95	0.002324
9.96	0.00256

9.97	0.002767
9.98	0.002943
9.99	0.003088
10	0.003201


Series1
Estimate
12

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-6 Rising Head 1_2018-06-29_11-21-19-062.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	48				
Used Battery	0				

Log Configuration

Log Name	MW-6 Rising Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/25/2018 1:13:39 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	2.65557 (PSI)

Depth of Pı -0.130023 (ft)
Head Press -0.0577211 (PSI)
Temperatu 19.1402 (C)

Log Notes:

Date and Time	Note
6/25/2018 13:13	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/25/2018 13:13	Used Battery: 0% Used Memory: 50% User Name: Larry
6/25/2018 13:14	Device Taken Offline
6/25/2018 13:14	Sensor SN: 106161 Pressure sensor calibration. Pressure reading set to zero. [Pressure Offs
6/25/2018 13:14	Device Put Online
6/25/2018 13:15	Manual Start Command
6/25/2018 13:39	Used Battery: 0% Used Memory: 50% User Name: Larry
6/25/2018 13:39	Manual Stop Command

Log Data:

Record Count	120
Sensors	1
	1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft			
	Elapsed Tin	SN#: 1061€	SN#: 1061€	SN#: 106161			
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)		Time	Depth
6/25/2018 13:15	0	-0.577	19.107	-1.301		0	-1.301
6/25/2018 13:15	0.251	-0.784	19.127	-1.767		0.251	-1.767
6/25/2018 13:15	0.85	-0.876	19.128	-1.973		0.85	-1.973
6/25/2018 13:15	1.055	-0.491	19.145	-1.105		1.055	-1.105
6/25/2018 13:15	1.259	-0.658	19.16	-1.481		1.259	-1.481
6/25/2018 13:15	1.462	-0.593	19.172	-1.337		1.462	-1.337
6/25/2018 13:15	1.665	-0.556	19.177	-1.253		1.665	-1.253
6/25/2018 13:15	1.869	-0.59	19.186	-1.33		1.869	-1.33
6/25/2018 13:15	2.073	-0.531	19.191	-1.196		2.073	-1.196
6/25/2018 13:15	2.276	-0.552	19.195	-1.243		2.276	-1.243
6/25/2018 13:15	2.501	-0.517	19.195	-1.166		2.501	-1.166
6/25/2018 13:15	2.751	-0.508	19.193	-1.145		2.751	-1.145
6/25/2018 13:15	3.001	-0.499	19.195	-1.125		3.001	-1.125
6/25/2018 13:15	3.251	-0.483	19.197	-1.087		3.251	-1.087
6/25/2018 13:15	3.501	-0.469	19.197	-1.057		3.501	-1.057
6/25/2018 13:15	3.751	-0.458	19.2	-1.032		3.751	-1.032
6/25/2018 13:15	4.001	-0.447	19.201	-1.007		4.001	-1.007

6/25/2018 13:15	4.251	-0.436	19.202	-0.983	4.251	-0.983
6/25/2018 13:15	4.909	-0.412	19.176	-0.928	4.909	-0.928
6/25/2018 13:15	5.113	-0.405	19.188	-0.913	5.113	-0.913
6/25/2018 13:15	5.317	-0.396	19.197	-0.892	5.317	-0.892
6/25/2018 13:15	5.525	-0.386	19.206	-0.871	5.525	-0.871
6/25/2018 13:15	5.728	-0.371	19.285	-0.835	5.728	-0.835
6/25/2018 13:15	6.374	-0.366	19.265	-0.825	6.374	-0.825
6/25/2018 13:15	6.579	-0.36	19.255	-0.811	6.579	-0.811
6/25/2018 13:15	6.785	-0.354	19.251	-0.797	6.785	-0.797
6/25/2018 13:15	6.991	-0.348	19.249	-0.783	6.991	-0.783
6/25/2018 13:15	7.637	-0.339	19.207	-0.763	7.637	-0.763
6/25/2018 13:15	7.842	-0.334	19.216	-0.752	7.842	-0.752
6/25/2018 13:15	8.048	-0.334	19.222	-0.752	8.048	-0.752
6/25/2018 13:15	8.461	-0.325	19.156	-0.732	8.461	-0.732
6/25/2018 13:15	9.117	-0.322	19.187	-0.725	9.117	-0.725
6/25/2018 13:15	9.481	-0.319	19.189	-0.719	9.481	-0.719
6/25/2018 13:15	10.348	-0.314	19.172	-0.706	10.348	-0.706
6/25/2018 13:15	10.681	-0.312	19.182	-0.703	10.681	-0.703
6/25/2018 13:15	11.408	-0.31	19.172	-0.699	11.408	-0.699
6/25/2018 13:15	11.941	-0.305	19.174	-0.687	11.941	-0.687
6/25/2018 13:15	12.661	-0.303	19.167	-0.683	12.661	-0.683
6/25/2018 13:15	13.441	-0.301	19.167	-0.678	13.441	-0.678
6/25/2018 13:15	14.221	-0.297	19.162	-0.67	14.221	-0.67
6/25/2018 13:15	15.061	-0.296	19.16	-0.668	15.061	-0.668
6/25/2018 13:15	15.961	-0.296	19.158	-0.666	15.961	-0.666
6/25/2018 13:15	16.921	-0.292	19.168	-0.657	16.921	-0.657
6/25/2018 13:15	17.881	-0.289	19.162	-0.651	17.881	-0.651
6/25/2018 13:15	18.961	-0.287	19.156	-0.646	18.961	-0.646
6/25/2018 13:15	20.102	-0.285	19.166	-0.641	20.102	-0.641
6/25/2018 13:15	21.301	-0.284	19.156	-0.641	21.301	-0.641
6/25/2018 13:15	22.561	-0.282	19.154	-0.636	22.561	-0.636
6/25/2018 13:15	23.881	-0.283	19.15	-0.637	23.881	-0.637
6/25/2018 13:15	25.321	-0.279	19.158	-0.629	25.321	-0.629
6/25/2018 13:15	26.821	-0.281	19.152	-0.632	26.821	-0.632
6/25/2018 13:15	28.381	-0.278	19.148	-0.625	28.381	-0.625
6/25/2018 13:15	30.1	-0.276	19.159	-0.623	30.1	-0.623
6/25/2018 13:15	31.861	-0.276	19.148	-0.621	31.861	-0.621
6/25/2018 13:15	33.721	-0.275	19.145	-0.619	33.721	-0.619
6/25/2018 13:15	35.761	-0.273	19.15	-0.615	35.761	-0.615
6/25/2018 13:15	37.861	-0.273	19.146	-0.615	37.861	-0.615
6/25/2018 13:15	40.099	-0.273	19.158	-0.614	40.099	-0.614
6/25/2018 13:15	42.481	-0.272	19.145	-0.612	42.481	-0.612
6/25/2018 13:16	45.105	-0.27	19.154	-0.609	45.105	-0.609
6/25/2018 13:16	47.641	-0.268	19.144	-0.603	47.641	-0.603
6/25/2018 13:16	50.461	-0.268	19.15	-0.604	50.461	-0.604
6/25/2018 13:16	53.461	-0.269	19.145	-0.606	53.461	-0.606
6/25/2018 13:16	56.641	-0.266	19.145	-0.6	56.641	-0.6

6/25/2018 13:16	60.112	-0.266	19.151	-0.6	60.112	-0.6
6/25/2018 13:16	63.601	-0.266	19.142	-0.598	63.601	-0.598
6/25/2018 13:16	67.2	-0.265	19.142	-0.597	67.2	-0.597
6/25/2018 13:16	71.401	-0.266	19.144	-0.6	71.401	-0.6
6/25/2018 13:16	75.601	-0.264	19.149	-0.594	75.601	-0.594
6/25/2018 13:16	79.866	-0.262	19.158	-0.591	79.866	-0.591
6/25/2018 13:16	84.624	-0.262	19.167	-0.591	84.624	-0.591
6/25/2018 13:16	90.122	-0.262	19.148	-0.591	90.122	-0.591
6/25/2018 13:16	94.872	-0.261	19.154	-0.589	94.872	-0.589
6/25/2018 13:16	100.801	-0.26	19.14	-0.586	100.801	-0.586
6/25/2018 13:17	106.801	-0.26	19.137	-0.586	106.801	-0.586
6/25/2018 13:17	112.801	-0.259	19.163	-0.584	112.801	-0.584
6/25/2018 13:17	119.4	-0.259	19.133	-0.584	119.4	-0.584
6/25/2018 13:17	126.601	-0.259	19.135	-0.583	126.601	-0.583
6/25/2018 13:17	134.4	-0.255	19.129	-0.575	134.4	-0.575
6/25/2018 13:17	142.2	-0.258	19.131	-0.581	142.2	-0.581
6/25/2018 13:17	150.601	-0.259	19.132	-0.582	150.601	-0.582
6/25/2018 13:17	159.648	-0.255	19.156	-0.574	159.648	-0.574
6/25/2018 13:18	169.2	-0.257	19.122	-0.579	169.2	-0.579
6/25/2018 13:18	178.801	-0.256	19.122	-0.577	178.801	-0.577
6/25/2018 13:18	189.644	-0.253	19.15	-0.57	189.644	-0.57
6/25/2018 13:18	201	-0.255	19.123	-0.575	201	-0.575
6/25/2018 13:18	213	-0.255	19.117	-0.575	213	-0.575
6/25/2018 13:19	225.6	-0.255	19.122	-0.574	225.6	-0.574
6/25/2018 13:19	238.801	-0.253	19.116	-0.57	238.801	-0.57
6/25/2018 13:19	253.2	-0.254	19.111	-0.573	253.2	-0.573
6/25/2018 13:19	268.2	-0.255	19.111	-0.575	268.2	-0.575
6/25/2018 13:20	283.8	-0.253	19.112	-0.571	283.8	-0.571
6/25/2018 13:20	300.6	-0.253	19.115	-0.569	300.6	-0.569
6/25/2018 13:20	318.6	-0.254	19.109	-0.571	318.6	-0.571
6/25/2018 13:20	337.2	-0.253	19.107	-0.57	337.2	-0.57
6/25/2018 13:21	357.6	-0.252	19.107	-0.568	357.6	-0.568
6/25/2018 13:21	378.6	-0.254	19.105	-0.573	378.6	-0.573
6/25/2018 13:21	400.8	-0.252	19.112	-0.567	400.8	-0.567
6/25/2018 13:22	424.928	-0.251	19.12	-0.566	424.928	-0.566
6/25/2018 13:22	450.174	-0.252	19.117	-0.568	450.174	-0.568
6/25/2018 13:23	476.4	-0.253	19.111	-0.57	476.4	-0.57
6/25/2018 13:23	504.683	-0.251	19.131	-0.566	504.683	-0.566
6/25/2018 13:24	534.673	-0.251	19.13	-0.566	534.673	-0.566
6/25/2018 13:24	566.4	-0.252	19.105	-0.567	566.4	-0.567
6/25/2018 13:25	600	-0.254	19.117	-0.571	600	-0.571
6/25/2018 13:25	636	-0.252	19.105	-0.567	636	-0.567
6/25/2018 13:26	672	-0.252	19.102	-0.568	672	-0.568
6/25/2018 13:27	714	-0.252	19.097	-0.567	714	-0.567
6/25/2018 13:27	756	-0.253	19.1	-0.569	756	-0.569
6/25/2018 13:28	798	-0.252	19.098	-0.568	798	-0.568
6/25/2018 13:29	846	-0.253	19.098	-0.57	846	-0.57

6/25/2018 13:30	900	-0.25	19.111	-0.564	900	-0.564
6/25/2018 13:31	948	-0.255	19.095	-0.575	948	-0.575
6/25/2018 13:32	1008	-0.253	19.094	-0.569	1008	-0.569
6/25/2018 13:33	1068	-0.253	19.093	-0.57	1068	-0.57
6/25/2018 13:34	1128	-0.251	19.093	-0.566	1128	-0.566
6/25/2018 13:35	1188	-0.252	19.094	-0.568	1188	-0.568
6/25/2018 13:36	1248	-0.254	19.093	-0.571	1248	-0.571
6/25/2018 13:37	1308	-0.256	19.093	-0.577	1308	-0.577
6/25/2018 13:38	1368	-0.254	19.095	-0.572	1368	-0.572

et: 2.59756(PSI)] User Name: Larry

minimum		K_r	2.445E-07	ft/s
-1.973				
Adjusted Ti	Depth			
0	-1.973			
0.205	-1.105			
0.409	-1.481			
0.612	-1.337			
0.815	-1.253			
1.019	-1.33			
1.223	-1.196			
1.426	-1.243			
1.651	-1.166			
1.901	-1.145			
2.151	-1.125			
2.401	-1.087			
2.651	-1.057			
2.901	-1.032			
3.151	-1.007			

3.401	-0.983
4.059	-0.928
4.263	-0.913
4.467	-0.892
4.675	-0.871
4.878	-0.835
5.524	-0.825
5.729	-0.811
5.935	-0.797
6.141	-0.783
6.787	-0.763
6.992	-0.752
7.198	-0.752
7.611	-0.732
8.267	-0.725
8.631	-0.719
9.498	-0.706
9.831	-0.703
10.558	-0.699
11.091	-0.687
11.811	-0.683
12.591	-0.678
13.371	-0.67
14.211	-0.668
15.111	-0.666
16.071	-0.657
17.031	-0.651
18.111	-0.646
19.252	-0.641
20.451	-0.641
21.711	-0.636
23.031	-0.637
24.471	-0.629
25.971	-0.632
27.531	-0.625
29.25	-0.623
31.011	-0.621
32.871	-0.619
34.911	-0.615
37.011	-0.615
39.249	-0.614
41.631	-0.612
44.255	-0.609
46.791	-0.603
49.611	-0.604
52.611	-0.606
55.791	-0.6

59.262	-0.6
62.751	-0.598
66.35	-0.597
70.551	-0.6
74.751	-0.594
79.016	-0.591
83.774	-0.591
89.272	-0.591
94.022	-0.589
99.951	-0.586
105.951	-0.586
111.951	-0.584
118.55	-0.584
125.751	-0.583
133.55	-0.575
141.35	-0.581
149.751	-0.582
158.798	-0.574
168.35	-0.579
177.951	-0.577
188.794	-0.57
200.15	-0.575
212.15	-0.575
224.75	-0.574
237.951	-0.57
252.35	-0.573
267.35	-0.575
282.95	-0.571
299.75	-0.569
317.75	-0.571
336.35	-0.57
356.75	-0.568
377.75	-0.573
399.95	-0.567
424.078	-0.566
449.324	-0.568
475.55	-0.57
503.833	-0.566
533.823	-0.566
565.55	-0.567
599.15	-0.571
635.15	-0.567
671.15	-0.568
713.15	-0.567
755.15	-0.569
797.15	-0.568
845.15	-0.57

899.15	-0.564
947.15	-0.575
1007.15	-0.569
1067.15	-0.57
1127.15	-0.566
1187.15	-0.568
1247.15	-0.571
1307.15	-0.577
1367.15	-0.572

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-6 Rising Head 2_2018-06-29_11-20-43-000.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	51				
Used Battery	0				

Log Configuration

Log Name	MW-6 Rising Head 2
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/25/2018 2:21:23 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	2.36135 (PSI)

Depth of Pı 0.502053 (ft)
Head Press 0.222878 (PSI)
Temperatu 19.1085 (C)

Log Notes:

Date and Time	Note
6/25/2018 14:21	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/25/2018 14:21	Used Battery: 0% Used Memory: 53% User Name: Larry
6/25/2018 14:21	Manual Start Command
6/25/2018 14:59	Used Battery: 0% Used Memory: 53% User Name: Larry
6/25/2018 14:59	Manual Stop Command

Log Data:

Record Count	134		
Sensors	1		
	1	106161	Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft		
	Elapsed Tin	SN#: 1061€	SN#: 1061€	SN#: 106161		
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Depth
6/25/2018 14:21	0	0.23	19.078	0.517	0	0.517
6/25/2018 14:21	0.251	0.231	19.101	0.52	0.251	0.52
6/25/2018 14:21	0.851	0.227	19.1	0.512	0.851	0.512
6/25/2018 14:21	1.055	0.226	19.118	0.508	1.055	0.508
6/25/2018 14:21	1.261	-0.017	19.129	-0.039	1.261	-0.039
6/25/2018 14:21	1.464	-0.252	19.14	-0.568	1.464	-0.568
6/25/2018 14:21	1.669	-0.512	19.146	-1.153	1.669	-1.153
6/25/2018 14:21	1.873	-0.981	19.155	-2.209	1.873	-2.209
6/25/2018 14:21	2.077	-0.165	19.157	-0.371	2.077	-0.371
6/25/2018 14:21	2.282	-0.804	19.164	-1.812	2.282	-1.812
6/25/2018 14:21	2.501	-0.169	19.163	-0.381	2.501	-0.381
6/25/2018 14:21	2.751	-0.36	19.166	-0.81	2.751	-0.81
6/25/2018 14:21	3.001	-0.478	19.166	-1.076	3.001	-1.076
6/25/2018 14:21	3.251	-0.341	19.166	-0.768	3.251	-0.768
6/25/2018 14:21	3.501	-0.307	19.166	-0.691	3.501	-0.691
6/25/2018 14:21	3.751	-0.347	19.17	-0.781	3.751	-0.781
6/25/2018 14:21	4.001	-0.317	19.168	-0.714	4.001	-0.714
6/25/2018 14:21	4.251	-0.286	19.171	-0.644	4.251	-0.644
6/25/2018 14:21	4.907	-0.26	19.145	-0.587	4.907	-0.587
6/25/2018 14:21	5.111	-0.255	19.159	-0.574	5.111	-0.574

6/25/2018 14:21	5.315	-0.243	19.167	-0.547	5.315	-0.547
6/25/2018 14:21	5.522	-0.235	19.175	-0.529	5.522	-0.529
6/25/2018 14:21	5.725	-0.206	19.257	-0.463	5.725	-0.463
6/25/2018 14:22	6.376	-0.201	19.236	-0.453	6.376	-0.453
6/25/2018 14:22	6.58	-0.194	19.224	-0.437	6.58	-0.437
6/25/2018 14:22	6.787	-0.185	19.223	-0.416	6.787	-0.416
6/25/2018 14:22	6.992	-0.175	19.218	-0.394	6.992	-0.394
6/25/2018 14:22	7.636	-0.16	19.173	-0.36	7.636	-0.36
6/25/2018 14:22	7.842	-0.152	19.185	-0.343	7.842	-0.343
6/25/2018 14:22	8.048	-0.146	19.192	-0.329	8.048	-0.329
6/25/2018 14:22	8.461	-0.13	19.125	-0.292	8.461	-0.292
6/25/2018 14:22	9.117	-0.124	19.158	-0.28	9.117	-0.28
6/25/2018 14:22	9.48	-0.119	19.159	-0.267	9.48	-0.267
6/25/2018 14:22	10.349	-0.109	19.14	-0.245	10.349	-0.245
6/25/2018 14:22	10.681	-0.106	19.151	-0.239	10.681	-0.239
6/25/2018 14:22	11.588	-0.097	19.138	-0.218	11.588	-0.218
6/25/2018 14:22	11.94	-0.096	19.143	-0.217	11.94	-0.217
6/25/2018 14:22	12.66	-0.091	19.137	-0.206	12.66	-0.206
6/25/2018 14:22	13.44	-0.086	19.135	-0.195	13.44	-0.195
6/25/2018 14:22	14.22	-0.084	19.133	-0.189	14.22	-0.189
6/25/2018 14:22	15.06	-0.081	19.129	-0.182	15.06	-0.182
6/25/2018 14:22	15.96	-0.077	19.129	-0.174	15.96	-0.174
6/25/2018 14:22	16.92	-0.076	19.126	-0.172	16.92	-0.172
6/25/2018 14:22	17.88	-0.073	19.127	-0.165	17.88	-0.165
6/25/2018 14:22	18.961	-0.072	19.122	-0.163	18.961	-0.163
6/25/2018 14:22	20.101	-0.07	19.121	-0.157	20.101	-0.157
6/25/2018 14:22	21.3	-0.067	19.118	-0.151	21.3	-0.151
6/25/2018 14:22	22.562	-0.064	19.165	-0.145	22.562	-0.145
6/25/2018 14:22	23.88	-0.064	19.127	-0.143	23.88	-0.143
6/25/2018 14:22	25.364	-0.061	19.135	-0.138	25.364	-0.138
6/25/2018 14:22	26.82	-0.061	19.124	-0.137	26.82	-0.137
6/25/2018 14:22	28.38	-0.059	19.118	-0.133	28.38	-0.133
6/25/2018 14:22	30.109	-0.058	19.145	-0.131	30.109	-0.131
6/25/2018 14:22	31.86	-0.057	19.12	-0.129	31.86	-0.129
6/25/2018 14:22	33.72	-0.054	19.116	-0.123	33.72	-0.123
6/25/2018 14:22	35.76	-0.054	19.124	-0.123	35.76	-0.123
6/25/2018 14:22	37.86	-0.053	19.118	-0.119	37.86	-0.119
6/25/2018 14:22	40.117	-0.052	19.144	-0.117	40.117	-0.117
6/25/2018 14:22	42.48	-0.052	19.118	-0.116	42.48	-0.116
6/25/2018 14:22	45.113	-0.049	19.141	-0.111	45.113	-0.111
6/25/2018 14:22	47.64	-0.049	19.114	-0.11	47.64	-0.11
6/25/2018 14:22	50.626	-0.047	19.125	-0.106	50.626	-0.106
6/25/2018 14:22	53.46	-0.048	19.112	-0.108	53.46	-0.108
6/25/2018 14:22	56.64	-0.047	19.117	-0.105	56.64	-0.105
6/25/2018 14:22	60.114	-0.045	19.142	-0.102	60.114	-0.102
6/25/2018 14:22	63.6	-0.045	19.113	-0.102	63.6	-0.102
6/25/2018 14:23	67.2	-0.046	19.115	-0.103	67.2	-0.103

6/25/2018 14:23	71.4	-0.042	19.119	-0.095	71.4	-0.095
6/25/2018 14:23	75.629	-0.042	19.124	-0.094	75.629	-0.094
6/25/2018 14:23	79.8	-0.04	19.109	-0.091	79.8	-0.091
6/25/2018 14:23	84.6	-0.042	19.113	-0.094	84.6	-0.094
6/25/2018 14:23	90.125	-0.04	19.139	-0.09	90.125	-0.09
6/25/2018 14:23	94.8	-0.043	19.109	-0.096	94.8	-0.096
6/25/2018 14:23	100.8	-0.04	19.118	-0.089	100.8	-0.089
6/25/2018 14:23	106.8	-0.04	19.111	-0.09	106.8	-0.09
6/25/2018 14:23	112.8	-0.037	19.109	-0.083	112.8	-0.083
6/25/2018 14:23	119.4	-0.038	19.106	-0.085	119.4	-0.085
6/25/2018 14:24	126.6	-0.038	19.114	-0.085	126.6	-0.085
6/25/2018 14:24	134.4	-0.039	19.105	-0.088	134.4	-0.088
6/25/2018 14:24	142.2	-0.037	19.107	-0.083	142.2	-0.083
6/25/2018 14:24	150.625	-0.036	19.114	-0.082	150.625	-0.082
6/25/2018 14:24	159.6	-0.036	19.103	-0.082	159.6	-0.082
6/25/2018 14:24	169.2	-0.036	19.101	-0.082	169.2	-0.082
6/25/2018 14:24	178.8	-0.036	19.099	-0.08	178.8	-0.08
6/25/2018 14:25	189.6	-0.037	19.098	-0.083	189.6	-0.083
6/25/2018 14:25	201	-0.037	19.104	-0.084	201	-0.084
6/25/2018 14:25	213	-0.035	19.097	-0.078	213	-0.078
6/25/2018 14:25	225.637	-0.035	19.107	-0.079	225.637	-0.079
6/25/2018 14:25	238.8	-0.035	19.093	-0.078	238.8	-0.078
6/25/2018 14:26	253.2	-0.035	19.093	-0.079	253.2	-0.079
6/25/2018 14:26	268.2	-0.036	19.093	-0.081	268.2	-0.081
6/25/2018 14:26	283.8	-0.035	19.092	-0.08	283.8	-0.08
6/25/2018 14:26	300.647	-0.034	19.104	-0.076	300.647	-0.076
6/25/2018 14:27	318.6	-0.035	19.09	-0.08	318.6	-0.08
6/25/2018 14:27	337.2	-0.033	19.092	-0.075	337.2	-0.075
6/25/2018 14:27	357.6	-0.035	19.091	-0.079	357.6	-0.079
6/25/2018 14:28	378.6	-0.034	19.086	-0.077	378.6	-0.077
6/25/2018 14:28	400.8	-0.035	19.099	-0.078	400.8	-0.078
6/25/2018 14:28	424.8	-0.036	19.088	-0.08	424.8	-0.08
6/25/2018 14:29	450	-0.033	19.087	-0.074	450	-0.074
6/25/2018 14:29	476.4	-0.035	19.093	-0.079	476.4	-0.079
6/25/2018 14:30	504.6	-0.036	19.089	-0.08	504.6	-0.08
6/25/2018 14:30	534.6	-0.035	19.087	-0.079	534.6	-0.079
6/25/2018 14:31	566.4	-0.036	19.095	-0.082	566.4	-0.082
6/25/2018 14:31	600	-0.034	19.088	-0.077	600	-0.077
6/25/2018 14:32	636	-0.034	19.097	-0.076	636	-0.076
6/25/2018 14:33	672	-0.036	19.091	-0.081	672	-0.081
6/25/2018 14:33	714	-0.036	19.09	-0.082	714	-0.082
6/25/2018 14:34	756	-0.037	19.096	-0.084	756	-0.084
6/25/2018 14:35	798	-0.038	19.09	-0.085	798	-0.085
6/25/2018 14:36	846	-0.037	19.096	-0.084	846	-0.084
6/25/2018 14:36	900	-0.037	19.089	-0.083	900	-0.083
6/25/2018 14:37	948	-0.038	19.092	-0.085	948	-0.085
6/25/2018 14:38	1008	-0.039	19.093	-0.087	1008	-0.087

6/25/2018 14:39	1068	-0.039	19.093	-0.088		1068	-0.088
6/25/2018 14:40	1128	-0.039	19.094	-0.089		1128	-0.089
6/25/2018 14:41	1188	-0.043	19.095	-0.096		1188	-0.096
6/25/2018 14:42	1248	-0.041	19.098	-0.093		1248	-0.093
6/25/2018 14:43	1308	-0.041	19.099	-0.093		1308	-0.093
6/25/2018 14:44	1368	-0.043	19.099	-0.098		1368	-0.098
6/25/2018 14:45	1428	-0.043	19.098	-0.097		1428	-0.097
6/25/2018 14:46	1488	-0.044	19.099	-0.1		1488	-0.1
6/25/2018 14:47	1548	-0.043	19.099	-0.096		1548	-0.096
6/25/2018 14:48	1608	-0.044	19.099	-0.1		1608	-0.1
6/25/2018 14:49	1668	-0.045	19.098	-0.101		1668	-0.101
6/25/2018 14:50	1728	-0.045	19.098	-0.102		1728	-0.102
6/25/2018 14:51	1788	-0.047	19.097	-0.106		1788	-0.106
6/25/2018 14:52	1848	-0.048	19.101	-0.109		1848	-0.109
6/25/2018 14:53	1908	-0.048	19.097	-0.107		1908	-0.107
6/25/2018 14:54	1968	-0.048	19.098	-0.108		1968	-0.108
6/25/2018 14:55	2028	-0.051	19.099	-0.114		2028	-0.114
6/25/2018 14:56	2088	-0.05	19.098	-0.112		2088	-0.112
6/25/2018 14:57	2148	-0.052	19.099	-0.116		2148	-0.116
6/25/2018 14:58	2208	-0.051	19.098	-0.114		2208	-0.114

K_r	0.000151	ft/s

Adjusted Ti	Adjusted Depth
0	-2.209
0.409	-1.812
0.878	-0.81
1.128	-1.076
1.378	-0.768
1.628	-0.691
1.878	-0.781
2.128	-0.714
2.378	-0.644
3.034	-0.587
3.238	-0.574

3.442	-0.547
3.649	-0.529
3.852	-0.463
4.503	-0.453
4.707	-0.437
4.914	-0.416
5.119	-0.394
5.763	-0.36
5.969	-0.343
6.175	-0.329
6.588	-0.292
7.244	-0.28
7.607	-0.267
8.476	-0.245
8.808	-0.239

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-8 Falling Head 1_2018-06-29_11-20-23-828.wsl
Create Date	########

Device Properties

Device	Level TROLL 700			
Site	EMSU B Slug Testing			
Device Name				
Serial Number	106161			
Firmware Version	2.04			
Hardware Version	1			
Device Address	1			
Device Comm Cfg	19200	8	Even	1 (Modbus-RTU)
Used Memory	53			
Used Battery	18140			

Log Configuration

Log Name	MW-8 Falling Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/26/2018 9:26:40 AM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	2.36135 (PSI)

Depth of Pı 9.48836 (ft)
Head Press 4.21218 (PSI)
Temperatu 28.2962 (C)

Log Notes:

Date and Time	Note
6/26/2018 9:26	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/26/2018 9:26	Used Battery: 18140% Used Memory: 54% User Name: Larry
6/26/2018 9:30	Device Taken Offline
6/26/2018 9:30	Sensor SN: 106161 Pressure sensor calibration. Pressure reading set to zero. [Pressure Offs
6/26/2018 9:30	Device Put Online
6/26/2018 9:31	Manual Start Command
6/26/2018 11:31	Used Battery: 0% Used Memory: 54% User Name: Larry
6/26/2018 11:31	Manual Stop Command

Log Data:

Record Count	217
Sensors	1
	1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft		
	Elapsed Tin	SN#: 1061€	SN#: 1061€	SN#: 106161		
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Depth
6/26/2018 9:31	0	0.023	20.29	0.052	0	0.052
6/26/2018 9:31	0.25	0.023	20.302	0.052	0.25	0.052
6/26/2018 9:31	0.5	0.411	20.284	0.925	0.5	0.925
6/26/2018 9:31	1.138	0.279	20.303	0.628	1.138	0.628
6/26/2018 9:31	1.343	0.37	20.314	0.834	1.343	0.834
6/26/2018 9:31	1.546	0.363	20.32	0.819	1.546	0.819
6/26/2018 9:31	1.75	0.267	20.326	0.602	1.75	0.602
6/26/2018 9:31	2.37	0.542	20.38	1.22	2.37	1.22
6/26/2018 9:31	2.575	0.287	20.366	0.647	2.575	0.647
6/26/2018 9:31	2.779	-0.089	20.364	-0.201	2.779	-0.201
6/26/2018 9:31	2.983	0.184	20.36	0.415	2.983	0.415
6/26/2018 9:31	3.651	0.163	20.31	0.367	3.651	0.367
6/26/2018 9:31	3.855	0.164	20.324	0.37	3.855	0.37
6/26/2018 9:31	4.059	0.171	20.33	0.384	4.059	0.384
6/26/2018 9:31	4.263	0.172	20.332	0.388	4.263	0.388
6/26/2018 9:31	4.466	0.173	20.406	0.389	4.466	0.389
6/26/2018 9:31	5.112	0.172	20.379	0.387	5.112	0.387

6/26/2018 9:31	5.317	0.171	20.367	0.386	5.317	0.386
6/26/2018 9:31	5.521	0.172	20.362	0.388	5.521	0.388
6/26/2018 9:31	5.725	0.174	20.357	0.392	5.725	0.392
6/26/2018 9:31	6.39	0.186	20.308	0.418	6.39	0.418
6/26/2018 9:31	6.595	0.167	20.319	0.376	6.595	0.376
6/26/2018 9:31	6.799	0.171	20.32	0.386	6.799	0.386
6/26/2018 9:31	7.004	0.171	20.323	0.386	7.004	0.386
6/26/2018 9:31	7.208	0.173	20.325	0.39	7.208	0.39
6/26/2018 9:31	7.413	0.173	20.326	0.389	7.413	0.389
6/26/2018 9:31	7.619	0.173	20.328	0.391	7.619	0.391
6/26/2018 9:31	7.824	0.174	20.326	0.391	7.824	0.391
6/26/2018 9:31	8.029	0.174	20.326	0.392	8.029	0.392
6/26/2018 9:31	8.234	0.174	20.328	0.392	8.234	0.392
6/26/2018 9:31	8.46	0.174	20.321	0.391	8.46	0.391
6/26/2018 9:31	9	0.174	20.289	0.392	9	0.392
6/26/2018 9:31	9.48	0.176	20.273	0.397	9.48	0.397
6/26/2018 9:31	10.498	0.171	20.24	0.386	10.498	0.386
6/26/2018 9:31	10.703	0.17	20.254	0.382	10.703	0.382
6/26/2018 9:31	11.28	0.19	20.242	0.427	11.28	0.427
6/26/2018 9:31	11.941	0.172	20.305	0.387	11.941	0.387
6/26/2018 9:31	12.66	0.174	20.253	0.392	12.66	0.392
6/26/2018 9:31	13.44	0.174	20.225	0.393	13.44	0.393
6/26/2018 9:31	14.22	0.175	20.211	0.393	14.22	0.393
6/26/2018 9:31	15.06	0.174	20.197	0.393	15.06	0.393
6/26/2018 9:31	15.96	0.174	20.185	0.392	15.96	0.392
6/26/2018 9:31	16.92	0.175	20.171	0.394	16.92	0.394
6/26/2018 9:31	17.88	0.176	20.174	0.397	17.88	0.397
6/26/2018 9:31	18.96	0.175	20.155	0.393	18.96	0.393
6/26/2018 9:31	20.233	0.173	20.157	0.391	20.233	0.391
6/26/2018 9:31	21.3	0.176	20.138	0.397	21.3	0.397
6/26/2018 9:31	22.56	0.175	20.122	0.394	22.56	0.394
6/26/2018 9:31	23.88	0.176	20.108	0.397	23.88	0.397
6/26/2018 9:31	25.482	0.177	20.105	0.4	25.482	0.4
6/26/2018 9:31	26.82	0.178	20.086	0.4	26.82	0.4
6/26/2018 9:31	28.38	0.178	20.067	0.4	28.38	0.4
6/26/2018 9:31	30.216	0.179	20.07	0.403	30.216	0.403
6/26/2018 9:31	31.86	0.178	20.045	0.401	31.86	0.401
6/26/2018 9:31	33.72	0.18	20.027	0.404	33.72	0.404
6/26/2018 9:31	35.76	0.179	20.02	0.402	35.76	0.402
6/26/2018 9:31	37.86	0.179	19.997	0.404	37.86	0.404
6/26/2018 9:31	40.231	0.179	19.996	0.404	40.231	0.404
6/26/2018 9:31	42.48	0.181	19.965	0.407	42.48	0.407
6/26/2018 9:31	45	0.18	19.97	0.405	45	0.405
6/26/2018 9:31	47.64	0.182	19.93	0.41	47.64	0.41
6/26/2018 9:31	50.486	0.182	19.92	0.411	50.486	0.411
6/26/2018 9:32	53.46	0.183	19.89	0.412	53.46	0.412
6/26/2018 9:32	56.64	0.183	19.871	0.412	56.64	0.412

6/26/2018 9:32	60	0.185	19.877	0.416	60	0.416
6/26/2018 9:32	63.6	0.185	19.828	0.417	63.6	0.417
6/26/2018 9:32	67.2	0.185	19.806	0.416	67.2	0.416
6/26/2018 9:32	71.4	0.186	19.787	0.418	71.4	0.418
6/26/2018 9:32	75.6	0.187	19.768	0.422	75.6	0.422
6/26/2018 9:32	79.8	0.185	19.731	0.417	79.8	0.417
6/26/2018 9:32	84.6	0.191	19.704	0.43	84.6	0.43
6/26/2018 9:32	90.002	0.191	19.695	0.43	90.002	0.43
6/26/2018 9:32	94.8	0.192	19.642	0.433	94.8	0.433
6/26/2018 9:32	100.8	0.193	19.618	0.435	100.8	0.435
6/26/2018 9:32	106.8	0.192	19.581	0.433	106.8	0.433
6/26/2018 9:32	112.8	0.195	19.549	0.44	112.8	0.44
6/26/2018 9:33	119.4	0.197	19.513	0.444	119.4	0.444
6/26/2018 9:33	126.6	0.198	19.482	0.447	126.6	0.447
6/26/2018 9:33	134.4	0.198	19.444	0.445	134.4	0.445
6/26/2018 9:33	142.2	0.199	19.412	0.449	142.2	0.449
6/26/2018 9:33	150.6	0.199	19.385	0.448	150.6	0.448
6/26/2018 9:33	159.6	0.201	19.34	0.453	159.6	0.453
6/26/2018 9:33	169.2	0.204	19.307	0.459	169.2	0.459
6/26/2018 9:34	178.8	0.205	19.271	0.462	178.8	0.462
6/26/2018 9:34	189.6	0.206	19.238	0.464	189.6	0.464
6/26/2018 9:34	201	0.206	19.211	0.464	201	0.464
6/26/2018 9:34	213	0.207	19.171	0.467	213	0.467
6/26/2018 9:34	225.6	0.221	19.15	0.498	225.6	0.498
6/26/2018 9:35	238.8	0.212	19.106	0.477	238.8	0.477
6/26/2018 9:35	253.2	0.212	19.077	0.478	253.2	0.478
6/26/2018 9:35	268.2	0.214	19.046	0.481	268.2	0.481
6/26/2018 9:35	283.8	0.215	19.015	0.483	283.8	0.483
6/26/2018 9:36	300.6	0.215	19	0.485	300.6	0.485
6/26/2018 9:36	318.6	0.216	18.964	0.487	318.6	0.487
6/26/2018 9:36	337.2	0.216	18.941	0.486	337.2	0.486
6/26/2018 9:37	357.6	0.214	18.92	0.483	357.6	0.483
6/26/2018 9:37	378.6	0.218	18.9	0.491	378.6	0.491
6/26/2018 9:37	400.8	0.217	18.885	0.488	400.8	0.488
6/26/2018 9:38	424.8	0.22	18.859	0.497	424.8	0.497
6/26/2018 9:38	450.019	0.221	18.872	0.497	450.019	0.497
6/26/2018 9:39	476.4	0.219	18.835	0.493	476.4	0.493
6/26/2018 9:39	504.6	0.219	18.815	0.493	504.6	0.493
6/26/2018 9:40	534.6	0.217	18.803	0.49	534.6	0.49
6/26/2018 9:40	566.4	0.219	18.798	0.493	566.4	0.493
6/26/2018 9:41	600.061	0.217	18.812	0.488	600.061	0.488
6/26/2018 9:41	636	0.218	18.779	0.49	636	0.49
6/26/2018 9:42	672	0.214	18.767	0.483	672	0.483
6/26/2018 9:43	714	0.216	18.758	0.486	714	0.486
6/26/2018 9:43	756	0.216	18.756	0.487	756	0.487
6/26/2018 9:44	798	0.213	18.746	0.48	798	0.48
6/26/2018 9:45	846	0.212	18.747	0.479	846	0.479

6/26/2018 9:46	900.04	0.213	18.763	0.479	900.04	0.479
6/26/2018 9:46	948	0.21	18.731	0.473	948	0.473
6/26/2018 9:47	1008	0.21	18.728	0.472	1008	0.472
6/26/2018 9:48	1068	0.207	18.724	0.467	1068	0.467
6/26/2018 9:49	1128	0.206	18.722	0.464	1128	0.464
6/26/2018 9:50	1188	0.205	18.719	0.462	1188	0.462
6/26/2018 9:51	1248	0.213	18.719	0.481	1248	0.481
6/26/2018 9:52	1308	0.201	18.714	0.453	1308	0.453
6/26/2018 9:53	1368	0.199	18.715	0.449	1368	0.449
6/26/2018 9:54	1428	0.198	18.713	0.447	1428	0.447
6/26/2018 9:55	1488	0.195	18.712	0.44	1488	0.44
6/26/2018 9:56	1548	0.194	18.711	0.436	1548	0.436
6/26/2018 9:57	1608	0.194	18.709	0.436	1608	0.436
6/26/2018 9:58	1668	0.191	18.709	0.431	1668	0.431
6/26/2018 9:59	1728	0.191	18.71	0.43	1728	0.43
6/26/2018 10:00	1788	0.188	18.708	0.424	1788	0.424
6/26/2018 10:01	1848	0.187	18.706	0.42	1848	0.42
6/26/2018 10:02	1908	0.184	18.709	0.414	1908	0.414
6/26/2018 10:03	1968	0.182	18.706	0.41	1968	0.41
6/26/2018 10:04	2028	0.182	18.706	0.411	2028	0.411
6/26/2018 10:05	2088	0.18	18.704	0.406	2088	0.406
6/26/2018 10:06	2148	0.178	18.702	0.4	2148	0.4
6/26/2018 10:07	2208	0.176	18.703	0.396	2208	0.396
6/26/2018 10:08	2268	0.173	18.701	0.39	2268	0.39
6/26/2018 10:09	2328	0.175	18.701	0.393	2328	0.393
6/26/2018 10:10	2388	0.173	18.7	0.39	2388	0.39
6/26/2018 10:11	2448	0.173	18.7	0.389	2448	0.389
6/26/2018 10:12	2508	0.171	18.7	0.385	2508	0.385
6/26/2018 10:13	2568	0.168	18.698	0.378	2568	0.378
6/26/2018 10:14	2628	0.166	18.697	0.375	2628	0.375
6/26/2018 10:15	2688	0.167	18.699	0.375	2688	0.375
6/26/2018 10:16	2748	0.164	18.695	0.369	2748	0.369
6/26/2018 10:17	2808	0.163	18.697	0.367	2808	0.367
6/26/2018 10:18	2868	0.161	18.698	0.363	2868	0.363
6/26/2018 10:19	2928	0.158	18.698	0.357	2928	0.357
6/26/2018 10:20	2988	0.157	18.695	0.354	2988	0.354
6/26/2018 10:21	3048	0.156	18.695	0.351	3048	0.351
6/26/2018 10:22	3108	0.154	18.697	0.346	3108	0.346
6/26/2018 10:23	3168	0.152	18.694	0.343	3168	0.343
6/26/2018 10:24	3228	0.15	18.694	0.337	3228	0.337
6/26/2018 10:25	3288	0.149	18.69	0.336	3288	0.336
6/26/2018 10:26	3348	0.148	18.693	0.334	3348	0.334
6/26/2018 10:27	3408	0.144	18.695	0.324	3408	0.324
6/26/2018 10:28	3468	0.14	18.695	0.316	3468	0.316
6/26/2018 10:29	3528	0.141	18.694	0.317	3528	0.317
6/26/2018 10:30	3588	0.139	18.692	0.313	3588	0.313
6/26/2018 10:31	3648	0.137	18.691	0.308	3648	0.308

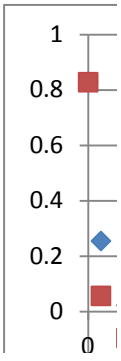
6/26/2018 10:32	3708	0.136	18.692	0.307	3708	0.307
6/26/2018 10:33	3768	0.136	18.692	0.307	3768	0.307
6/26/2018 10:34	3828	0.133	18.69	0.3	3828	0.3
6/26/2018 10:35	3888	0.131	18.691	0.295	3888	0.295
6/26/2018 10:36	3948	0.129	18.691	0.292	3948	0.292
6/26/2018 10:37	4008	0.129	18.69	0.29	4008	0.29
6/26/2018 10:38	4068	0.125	18.692	0.282	4068	0.282
6/26/2018 10:39	4128	0.122	18.689	0.275	4128	0.275
6/26/2018 10:40	4188	0.123	18.691	0.277	4188	0.277
6/26/2018 10:41	4248	0.121	18.687	0.273	4248	0.273
6/26/2018 10:42	4308	0.119	18.688	0.268	4308	0.268
6/26/2018 10:43	4368	0.119	18.688	0.268	4368	0.268
6/26/2018 10:44	4428	0.119	18.715	0.269	4428	0.269
6/26/2018 10:45	4488	0.116	18.686	0.26	4488	0.26
6/26/2018 10:46	4548	0.116	18.686	0.26	4548	0.26
6/26/2018 10:47	4608	0.111	18.687	0.249	4608	0.249
6/26/2018 10:48	4668	0.111	18.687	0.249	4668	0.249
6/26/2018 10:49	4728	0.108	18.686	0.243	4728	0.243
6/26/2018 10:50	4788	0.107	18.686	0.241	4788	0.241
6/26/2018 10:51	4848	0.106	18.685	0.239	4848	0.239
6/26/2018 10:52	4908	0.103	18.686	0.231	4908	0.231
6/26/2018 10:53	4968	0.1	18.683	0.225	4968	0.225
6/26/2018 10:54	5028	0.099	18.684	0.222	5028	0.222
6/26/2018 10:55	5088	0.098	18.687	0.22	5088	0.22
6/26/2018 10:56	5148	0.096	18.685	0.216	5148	0.216
6/26/2018 10:57	5208	0.093	18.685	0.21	5208	0.21
6/26/2018 10:58	5268	0.091	18.686	0.205	5268	0.205
6/26/2018 10:59	5328	0.088	18.687	0.198	5328	0.198
6/26/2018 11:00	5388	0.087	18.686	0.196	5388	0.196
6/26/2018 11:01	5448	0.085	18.684	0.19	5448	0.19
6/26/2018 11:02	5508	0.082	18.683	0.186	5508	0.186
6/26/2018 11:03	5568	0.082	18.685	0.184	5568	0.184
6/26/2018 11:04	5628	0.08	18.683	0.18	5628	0.18
6/26/2018 11:05	5688	0.078	18.686	0.175	5688	0.175
6/26/2018 11:06	5748	0.075	18.683	0.169	5748	0.169
6/26/2018 11:07	5808	0.075	18.684	0.169	5808	0.169
6/26/2018 11:08	5868	0.074	18.685	0.167	5868	0.167
6/26/2018 11:09	5928	0.072	18.686	0.162	5928	0.162
6/26/2018 11:10	5988	0.069	18.686	0.155	5988	0.155
6/26/2018 11:11	6048	0.069	18.685	0.154	6048	0.154
6/26/2018 11:12	6108	0.067	18.683	0.15	6108	0.15
6/26/2018 11:13	6168	0.063	18.681	0.141	6168	0.141
6/26/2018 11:14	6228	0.062	18.683	0.139	6228	0.139
6/26/2018 11:15	6288	0.06	18.68	0.134	6288	0.134
6/26/2018 11:16	6348	0.059	18.683	0.132	6348	0.132
6/26/2018 11:17	6408	0.059	18.682	0.132	6408	0.132
6/26/2018 11:18	6468	0.056	18.683	0.125	6468	0.125

6/26/2018 11:19	6528	0.053	18.682	0.12	6528	0.12
6/26/2018 11:20	6588	0.052	18.678	0.117	6588	0.117
6/26/2018 11:21	6648	0.048	18.682	0.108	6648	0.108
6/26/2018 11:22	6708	0.048	18.681	0.109	6708	0.109
6/26/2018 11:23	6768	0.046	18.68	0.104	6768	0.104
6/26/2018 11:24	6828	0.045	18.684	0.101	6828	0.101
6/26/2018 11:25	6888	0.044	18.682	0.1	6888	0.1
6/26/2018 11:26	6948	0.041	18.684	0.092	6948	0.092
6/26/2018 11:27	7008	0.039	18.683	0.088	7008	0.088
6/26/2018 11:28	7068	0.039	18.684	0.088	7068	0.088
6/26/2018 11:29	7128	0.036	18.683	0.081	7128	0.081
6/26/2018 11:30	7188	0.035	18.681	0.078	7188	0.078

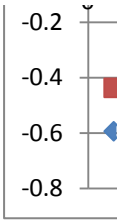
et: 6.57688(PSI)] User Name: Larry

A_o (ft)	0.828	Transmissivity Equation	
γ (s^-1)	-1.51987941	T = r_c*(ω^2+γ^2)/(8*γ)*ln(0.79*r_s*(S/T)*sc	
ω (s^-1)	7.20373788		
		Function Equation	
r_c (ft)	0.083333333	W(t) = A_0 * e^(γ*t)*cos(ω*t)	
r_s (ft)	0.208333333		
S	0.2		
T_i (ft^2/s)	0.051062170	K_r	0.003191 ft/s
T_f (ft^2/s)	0.051062453		
difference	2.82823E-07		

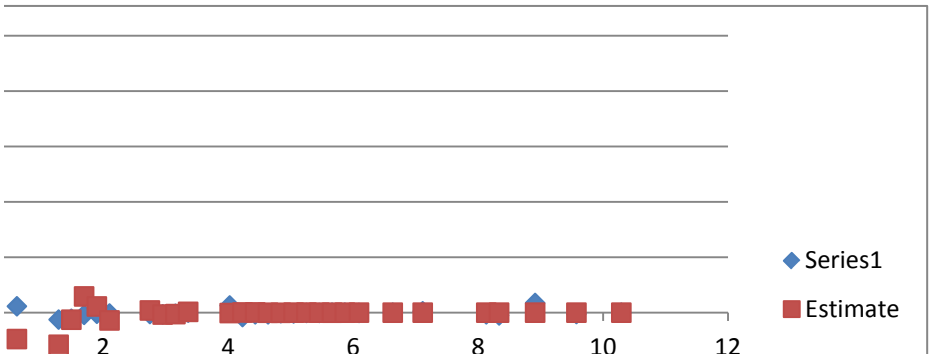
Adjusted Time	Adjusted Depth	W(t) appro	difference	square of difference
0	0.828	0.828	0	0
0.205	0.255	0.05693	0.19807	0.039232
0.409	-0.593	-0.43624	-0.15676	0.024573
0.613	0.023	-0.09529	0.118289	0.013992
1.281	-0.025	-0.11588	0.09088	0.008259
1.485	-0.022	-0.02545	0.003446	1.19E-05
1.689	-0.008	0.058558	-0.06656	0.00443
1.893	-0.004	0.022368	-0.02637	0.000695
2.096	-0.003	-0.02808	0.025084	0.000629
2.742	-0.005	0.007942	-0.01294	0.000167

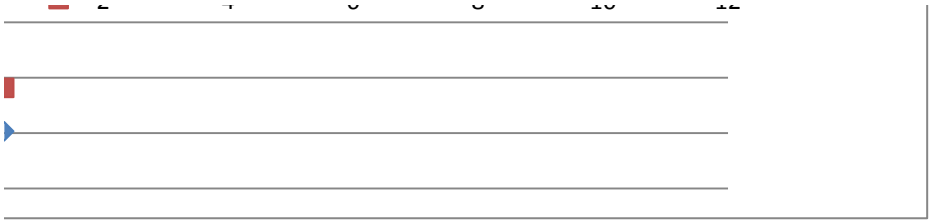


2.947	-0.006	-0.0068	0.000797	6.35E-07
3.151	-0.004	-0.00523	0.001234	1.52E-06
3.355	0	0.00288	-0.00288	8.3E-06
4.02	0.026	-0.00142	0.027424	0.000752
4.225	-0.016	0.00075	-0.01675	0.000281
4.429	-0.006	0.000872	-0.00687	4.72E-05
4.634	-0.006	-0.00028	-0.00572	3.27E-05
4.838	-0.002	-0.00051	-0.00149	2.23E-06
5.043	-0.003	7.72E-05	-0.00308	9.47E-06
5.249	-0.001	0.000282	-0.00128	1.64E-06
5.454	-0.001	-4E-06	-0.001	9.92E-07
5.659	0	-0.00015	0.000152	2.31E-08
5.864	0	-1.9E-05	1.87E-05	3.51E-10
6.09	-0.001	7.86E-05	-0.00108	1.16E-06
6.63	0	-2.8E-05	2.8E-05	7.83E-10
7.11	0.005	9.72E-06	0.00499	2.49E-05
8.128	-0.006	-1.5E-06	-0.006	3.6E-05
8.333	-0.01	-2.5E-06	-0.01	1E-04
8.91	0.035	2.35E-07	0.035	0.001225
9.571	-0.005	3.93E-07	-0.005	2.5E-05
10.29	0	3.94E-08	-3.9E-08	1.55E-15
			sum	0.09454



ɟrt(ω^2+γ^2))





Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	MW-8 Rising Head 1_2018-06-29_11-20-02-031.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	54				
Used Battery	0				

Log Configuration

Log Name	MW-8 Rising Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/26/2018 11:32:47 AM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	6.60725 (PSI)

Depth of Pı -0.00164556 (ft)
Head Press -0.000730515 (PSI)
Temperatu 18.6966 (C)

Log Notes:

Date and Time	Note
6/26/2018 11:32	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/26/2018 11:32	Used Battery: 0% Used Memory: 56% User Name: Larry
6/26/2018 11:33	Manual Start Command
6/26/2018 13:36	Used Battery: 0% Used Memory: 56% User Name: Larry
6/26/2018 13:36	Manual Stop Command

Log Data:

Record Count	220
Sensors	1
	1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft		
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161		
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Depth
6/26/2018 11:33	0	0	18.666	0.001	0	0.001
6/26/2018 11:33	0.25	0.002	18.688	0.004	0.25	0.004
6/26/2018 11:33	0.851	-0.783	18.687	-1.764	0.851	-1.764
6/26/2018 11:33	1.055	-0.955	18.707	-2.151	1.055	-2.151
6/26/2018 11:33	1.259	-0.677	18.716	-1.524	1.259	-1.524
6/26/2018 11:33	1.463	-0.518	18.729	-1.167	1.463	-1.167
6/26/2018 11:33	1.666	-0.306	18.735	-0.689	1.666	-0.689
6/26/2018 11:33	1.87	-0.123	18.739	-0.277	1.87	-0.277
6/26/2018 11:33	2.075	-0.126	18.746	-0.284	2.075	-0.284
6/26/2018 11:33	2.279	-0.146	18.749	-0.33	2.279	-0.33
6/26/2018 11:33	2.5	-0.143	18.752	-0.321	2.5	-0.321
6/26/2018 11:33	2.75	-0.139	18.753	-0.312	2.75	-0.312
6/26/2018 11:33	3	-0.137	18.754	-0.309	3	-0.309
6/26/2018 11:33	3.25	-0.139	18.755	-0.312	3.25	-0.312
6/26/2018 11:33	3.5	-0.136	18.755	-0.307	3.5	-0.307
6/26/2018 11:33	3.75	-0.136	18.757	-0.307	3.75	-0.307
6/26/2018 11:33	4	-0.137	18.758	-0.309	4	-0.309
6/26/2018 11:33	4.25	-0.136	18.759	-0.306	4.25	-0.306
6/26/2018 11:33	4.906	-0.137	18.732	-0.309	4.906	-0.309
6/26/2018 11:33	5.111	-0.136	18.742	-0.306	5.111	-0.306

6/26/2018 11:33	5.316	-0.137	18.756	-0.308	5.316	-0.308
6/26/2018 11:33	5.522	-0.134	18.763	-0.302	5.522	-0.302
6/26/2018 11:33	5.725	-0.133	18.843	-0.3	5.725	-0.3
6/26/2018 11:33	6.376	-0.138	18.823	-0.311	6.376	-0.311
6/26/2018 11:33	6.581	-0.135	18.811	-0.305	6.581	-0.305
6/26/2018 11:33	6.788	-0.131	18.811	-0.295	6.788	-0.295
6/26/2018 11:33	6.993	-0.131	18.804	-0.295	6.993	-0.295
6/26/2018 11:33	7.637	-0.139	18.764	-0.313	7.637	-0.313
6/26/2018 11:33	7.844	-0.134	18.774	-0.303	7.844	-0.303
6/26/2018 11:33	8.05	-0.135	18.781	-0.305	8.05	-0.305
6/26/2018 11:33	8.46	-0.139	18.711	-0.313	8.46	-0.313
6/26/2018 11:33	9.116	-0.135	18.749	-0.304	9.116	-0.304
6/26/2018 11:33	9.48	-0.135	18.747	-0.304	9.48	-0.304
6/26/2018 11:33	10.352	-0.134	18.727	-0.302	10.352	-0.302
6/26/2018 11:33	10.68	-0.137	18.739	-0.309	10.68	-0.309
6/26/2018 11:33	11.739	-0.135	18.72	-0.305	11.739	-0.305
6/26/2018 11:33	11.945	-0.135	18.738	-0.303	11.945	-0.303
6/26/2018 11:33	12.719	-0.136	18.724	-0.307	12.719	-0.307
6/26/2018 11:33	13.44	-0.133	18.721	-0.299	13.44	-0.299
6/26/2018 11:33	14.22	-0.13	18.719	-0.294	14.22	-0.294
6/26/2018 11:33	15.06	-0.133	18.716	-0.3	15.06	-0.3
6/26/2018 11:33	15.96	-0.132	18.716	-0.298	15.96	-0.298
6/26/2018 11:33	16.92	-0.128	18.713	-0.287	16.92	-0.287
6/26/2018 11:33	17.88	-0.132	18.713	-0.296	17.88	-0.296
6/26/2018 11:33	18.96	-0.128	18.71	-0.289	18.96	-0.289
6/26/2018 11:33	20.1	-0.129	18.709	-0.291	20.1	-0.291
6/26/2018 11:33	21.3	-0.131	18.708	-0.295	21.3	-0.295
6/26/2018 11:33	22.56	-0.131	18.706	-0.295	22.56	-0.295
6/26/2018 11:33	23.891	-0.132	18.706	-0.298	23.891	-0.298
6/26/2018 11:33	25.32	-0.132	18.704	-0.297	25.32	-0.297
6/26/2018 11:33	26.82	-0.131	18.704	-0.295	26.82	-0.295
6/26/2018 11:33	28.38	-0.134	18.71	-0.301	28.38	-0.301
6/26/2018 11:33	30.069	-0.13	18.717	-0.293	30.069	-0.293
6/26/2018 11:33	31.86	-0.131	18.705	-0.295	31.86	-0.295
6/26/2018 11:33	33.72	-0.134	18.702	-0.302	33.72	-0.302
6/26/2018 11:33	35.76	-0.132	18.708	-0.297	35.76	-0.297
6/26/2018 11:33	37.86	-0.133	18.703	-0.299	37.86	-0.299
6/26/2018 11:33	40.08	-0.131	18.715	-0.295	40.08	-0.295
6/26/2018 11:34	42.48	-0.133	18.702	-0.299	42.48	-0.299
6/26/2018 11:34	45.059	-0.132	18.712	-0.297	45.059	-0.297
6/26/2018 11:34	47.64	-0.132	18.702	-0.298	47.64	-0.298
6/26/2018 11:34	50.46	-0.132	18.705	-0.298	50.46	-0.298
6/26/2018 11:34	53.46	-0.133	18.7	-0.299	53.46	-0.299
6/26/2018 11:34	56.64	-0.134	18.703	-0.301	56.64	-0.301
6/26/2018 11:34	60.063	-0.135	18.712	-0.304	60.063	-0.304
6/26/2018 11:34	63.6	-0.133	18.703	-0.3	63.6	-0.3
6/26/2018 11:34	67.2	-0.133	18.704	-0.299	67.2	-0.299

6/26/2018 11:34	71.4	-0.133	18.7	-0.299	71.4	-0.299
6/26/2018 11:34	75.6	-0.135	18.706	-0.304	75.6	-0.304
6/26/2018 11:34	79.803	-0.135	18.715	-0.304	79.803	-0.304
6/26/2018 11:34	84.6	-0.134	18.724	-0.302	84.6	-0.302
6/26/2018 11:34	90.075	-0.136	18.713	-0.306	90.075	-0.306
6/26/2018 11:34	94.809	-0.133	18.714	-0.301	94.809	-0.301
6/26/2018 11:34	100.8	-0.135	18.705	-0.304	100.8	-0.304
6/26/2018 11:35	106.8	-0.136	18.7	-0.307	106.8	-0.307
6/26/2018 11:35	112.8	-0.136	18.697	-0.305	112.8	-0.305
6/26/2018 11:35	119.4	-0.135	18.693	-0.303	119.4	-0.303
6/26/2018 11:35	126.6	-0.137	18.696	-0.308	126.6	-0.308
6/26/2018 11:35	134.4	-0.138	18.693	-0.311	134.4	-0.311
6/26/2018 11:35	142.2	-0.137	18.692	-0.309	142.2	-0.309
6/26/2018 11:35	150.6	-0.138	18.697	-0.31	150.6	-0.31
6/26/2018 11:35	159.6	-0.137	18.713	-0.308	159.6	-0.308
6/26/2018 11:36	169.2	-0.139	18.69	-0.312	169.2	-0.312
6/26/2018 11:36	178.8	-0.138	18.691	-0.31	178.8	-0.31
6/26/2018 11:36	189.6	-0.137	18.712	-0.309	189.6	-0.309
6/26/2018 11:36	201	-0.138	18.693	-0.311	201	-0.311
6/26/2018 11:36	213	-0.138	18.685	-0.312	213	-0.312
6/26/2018 11:37	225.6	-0.139	18.69	-0.313	225.6	-0.313
6/26/2018 11:37	238.8	-0.137	18.684	-0.31	238.8	-0.31
6/26/2018 11:37	253.2	-0.138	18.684	-0.312	253.2	-0.312
6/26/2018 11:37	268.2	-0.14	18.681	-0.314	268.2	-0.314
6/26/2018 11:38	283.799	-0.141	18.681	-0.318	283.799	-0.318
6/26/2018 11:38	300.6	-0.142	18.686	-0.319	300.6	-0.319
6/26/2018 11:38	318.6	-0.14	18.679	-0.316	318.6	-0.316
6/26/2018 11:38	337.2	-0.142	18.676	-0.32	337.2	-0.32
6/26/2018 11:39	357.6	-0.144	18.68	-0.325	357.6	-0.325
6/26/2018 11:39	378.663	-0.144	18.674	-0.324	378.663	-0.324
6/26/2018 11:39	400.799	-0.143	18.68	-0.322	400.799	-0.322
6/26/2018 11:40	424.849	-0.143	18.691	-0.322	424.849	-0.322
6/26/2018 11:40	450.141	-0.142	18.687	-0.319	450.141	-0.319
6/26/2018 11:41	476.4	-0.143	18.678	-0.322	476.4	-0.322
6/26/2018 11:41	504.618	-0.145	18.704	-0.326	504.618	-0.326
6/26/2018 11:42	534.625	-0.145	18.7	-0.327	534.625	-0.327
6/26/2018 11:42	566.4	-0.145	18.677	-0.327	566.4	-0.327
6/26/2018 11:43	600.131	-0.147	18.685	-0.331	600.131	-0.331
6/26/2018 11:43	635.999	-0.148	18.676	-0.333	635.999	-0.333
6/26/2018 11:44	671.999	-0.149	18.674	-0.335	671.999	-0.335
6/26/2018 11:45	713.999	-0.149	18.674	-0.335	713.999	-0.335
6/26/2018 11:45	755.999	-0.152	18.677	-0.343	755.999	-0.343
6/26/2018 11:46	797.999	-0.151	18.675	-0.34	797.999	-0.34
6/26/2018 11:47	845.999	-0.154	18.677	-0.348	845.999	-0.348
6/26/2018 11:48	900.16	-0.153	18.684	-0.345	900.16	-0.345
6/26/2018 11:49	947.999	-0.154	18.671	-0.346	947.999	-0.346
6/26/2018 11:50	1007.999	-0.155	18.674	-0.35	1007.999	-0.35

6/26/2018 11:51	1067.999	-0.158	18.674	-0.355	1067.999	-0.355
6/26/2018 11:52	1127.999	-0.146	18.675	-0.33	1127.999	-0.33
6/26/2018 11:53	1187.999	-0.16	18.675	-0.36	1187.999	-0.36
6/26/2018 11:54	1247.999	-0.161	18.674	-0.362	1247.999	-0.362
6/26/2018 11:55	1307.999	-0.162	18.673	-0.364	1307.999	-0.364
6/26/2018 11:56	1367.999	-0.162	18.673	-0.366	1367.999	-0.366
6/26/2018 11:57	1427.999	-0.164	18.675	-0.37	1427.999	-0.37
6/26/2018 11:58	1487.999	-0.165	18.675	-0.372	1487.999	-0.372
6/26/2018 11:59	1547.999	-0.167	18.673	-0.376	1547.999	-0.376
6/26/2018 12:00	1607.999	-0.169	18.675	-0.38	1607.999	-0.38
6/26/2018 12:01	1667.999	-0.169	18.676	-0.38	1667.999	-0.38
6/26/2018 12:02	1727.999	-0.17	18.674	-0.383	1727.999	-0.383
6/26/2018 12:03	1787.999	-0.17	18.674	-0.382	1787.999	-0.382
6/26/2018 12:04	1847.999	-0.171	18.672	-0.385	1847.999	-0.385
6/26/2018 12:05	1907.999	-0.171	18.674	-0.385	1907.999	-0.385
6/26/2018 12:06	1967.999	-0.172	18.674	-0.388	1967.999	-0.388
6/26/2018 12:07	2027.999	-0.174	18.674	-0.393	2027.999	-0.393
6/26/2018 12:08	2087.999	-0.175	18.674	-0.394	2087.999	-0.394
6/26/2018 12:09	2147.999	-0.175	18.675	-0.395	2147.999	-0.395
6/26/2018 12:10	2207.999	-0.177	18.676	-0.398	2207.999	-0.398
6/26/2018 12:11	2267.999	-0.179	18.673	-0.402	2267.999	-0.402
6/26/2018 12:12	2327.999	-0.179	18.675	-0.403	2327.999	-0.403
6/26/2018 12:13	2387.999	-0.179	18.675	-0.404	2387.999	-0.404
6/26/2018 12:14	2447.999	-0.182	18.674	-0.409	2447.999	-0.409
6/26/2018 12:15	2507.999	-0.184	18.674	-0.414	2507.999	-0.414
6/26/2018 12:16	2567.999	-0.182	18.675	-0.409	2567.999	-0.409
6/26/2018 12:17	2627.999	-0.181	18.675	-0.407	2627.999	-0.407
6/26/2018 12:18	2687.999	-0.184	18.675	-0.414	2687.999	-0.414
6/26/2018 12:19	2747.999	-0.184	18.676	-0.414	2747.999	-0.414
6/26/2018 12:20	2807.999	-0.186	18.674	-0.419	2807.999	-0.419
6/26/2018 12:21	2867.999	-0.186	18.676	-0.42	2867.999	-0.42
6/26/2018 12:22	2927.999	-0.188	18.675	-0.423	2927.999	-0.423
6/26/2018 12:23	2987.999	-0.189	18.674	-0.426	2987.999	-0.426
6/26/2018 12:24	3047.999	-0.189	18.673	-0.426	3047.999	-0.426
6/26/2018 12:25	3107.999	-0.19	18.676	-0.428	3107.999	-0.428
6/26/2018 12:26	3167.999	-0.193	18.674	-0.434	3167.999	-0.434
6/26/2018 12:27	3227.999	-0.194	18.674	-0.438	3227.999	-0.438
6/26/2018 12:28	3287.999	-0.194	18.676	-0.437	3287.999	-0.437
6/26/2018 12:29	3347.999	-0.195	18.674	-0.44	3347.999	-0.44
6/26/2018 12:30	3407.999	-0.198	18.672	-0.446	3407.999	-0.446
6/26/2018 12:31	3467.999	-0.199	18.673	-0.448	3467.999	-0.448
6/26/2018 12:32	3528.05	-0.2	18.675	-0.451	3528.05	-0.451
6/26/2018 12:33	3587.999	-0.2	18.675	-0.452	3587.999	-0.452
6/26/2018 12:34	3647.999	-0.201	18.674	-0.453	3647.999	-0.453
6/26/2018 12:35	3707.999	-0.203	18.674	-0.458	3707.999	-0.458
6/26/2018 12:36	3767.999	-0.205	18.672	-0.462	3767.999	-0.462
6/26/2018 12:37	3827.999	-0.205	18.675	-0.462	3827.999	-0.462

6/26/2018 12:38	3887.999	-0.204	18.674	-0.461	3887.999	-0.461
6/26/2018 12:39	3947.999	-0.204	18.674	-0.46	3947.999	-0.46
6/26/2018 12:40	4007.999	-0.207	18.675	-0.467	4007.999	-0.467
6/26/2018 12:41	4067.999	-0.207	18.673	-0.466	4067.999	-0.466
6/26/2018 12:42	4127.999	-0.208	18.674	-0.469	4127.999	-0.469
6/26/2018 12:43	4187.999	-0.209	18.673	-0.471	4187.999	-0.471
6/26/2018 12:44	4247.999	-0.21	18.674	-0.473	4247.999	-0.473
6/26/2018 12:45	4307.999	-0.209	18.674	-0.471	4307.999	-0.471
6/26/2018 12:46	4367.999	-0.213	18.675	-0.479	4367.999	-0.479
6/26/2018 12:47	4427.999	-0.212	18.673	-0.477	4427.999	-0.477
6/26/2018 12:48	4487.999	-0.213	18.675	-0.48	4487.999	-0.48
6/26/2018 12:49	4547.999	-0.215	18.675	-0.484	4547.999	-0.484
6/26/2018 12:50	4607.999	-0.216	18.674	-0.488	4607.999	-0.488
6/26/2018 12:51	4667.999	-0.215	18.675	-0.485	4667.999	-0.485
6/26/2018 12:52	4727.999	-0.217	18.676	-0.49	4727.999	-0.49
6/26/2018 12:53	4787.999	-0.217	18.674	-0.489	4787.999	-0.489
6/26/2018 12:54	4847.999	-0.218	18.673	-0.491	4847.999	-0.491
6/26/2018 12:55	4907.999	-0.219	18.675	-0.494	4907.999	-0.494
6/26/2018 12:56	4967.999	-0.22	18.674	-0.496	4967.999	-0.496
6/26/2018 12:57	5027.999	-0.219	18.676	-0.494	5027.999	-0.494
6/26/2018 12:58	5087.999	-0.219	18.674	-0.493	5087.999	-0.493
6/26/2018 12:59	5147.999	-0.221	18.672	-0.498	5147.999	-0.498
6/26/2018 13:00	5207.999	-0.222	18.674	-0.501	5207.999	-0.501
6/26/2018 13:01	5267.999	-0.225	18.674	-0.507	5267.999	-0.507
6/26/2018 13:02	5327.999	-0.226	18.674	-0.509	5327.999	-0.509
6/26/2018 13:03	5387.999	-0.223	18.673	-0.503	5387.999	-0.503
6/26/2018 13:04	5447.999	-0.227	18.674	-0.512	5447.999	-0.512
6/26/2018 13:05	5507.999	-0.226	18.673	-0.509	5507.999	-0.509
6/26/2018 13:06	5567.999	-0.227	18.674	-0.511	5567.999	-0.511
6/26/2018 13:07	5627.999	-0.227	18.674	-0.51	5627.999	-0.51
6/26/2018 13:08	5687.999	-0.229	18.673	-0.516	5687.999	-0.516
6/26/2018 13:09	5747.999	-0.229	18.673	-0.517	5747.999	-0.517
6/26/2018 13:10	5807.999	-0.229	18.675	-0.515	5807.999	-0.515
6/26/2018 13:11	5867.999	-0.232	18.673	-0.523	5867.999	-0.523
6/26/2018 13:12	5927.999	-0.232	18.672	-0.523	5927.999	-0.523
6/26/2018 13:13	5987.999	-0.232	18.673	-0.523	5987.999	-0.523
6/26/2018 13:14	6047.999	-0.232	18.675	-0.522	6047.999	-0.522
6/26/2018 13:15	6107.999	-0.235	18.675	-0.529	6107.999	-0.529
6/26/2018 13:16	6167.999	-0.237	18.674	-0.534	6167.999	-0.534
6/26/2018 13:17	6227.999	-0.236	18.671	-0.532	6227.999	-0.532
6/26/2018 13:18	6287.999	-0.236	18.674	-0.531	6287.999	-0.531
6/26/2018 13:19	6347.999	-0.237	18.673	-0.534	6347.999	-0.534
6/26/2018 13:20	6407.999	-0.237	18.672	-0.534	6407.999	-0.534
6/26/2018 13:21	6467.999	-0.238	18.674	-0.535	6467.999	-0.535
6/26/2018 13:22	6527.999	-0.239	18.673	-0.538	6527.999	-0.538
6/26/2018 13:23	6587.999	-0.241	18.673	-0.542	6587.999	-0.542
6/26/2018 13:24	6647.999	-0.24	18.674	-0.541	6647.999	-0.541

6/26/2018 13:25	6707.999	-0.242	18.671	-0.546	6707.999	-0.546
6/26/2018 13:26	6767.999	-0.242	18.672	-0.546	6767.999	-0.546
6/26/2018 13:27	6827.999	-0.243	18.67	-0.548	6827.999	-0.548
6/26/2018 13:28	6887.999	-0.243	18.673	-0.547	6887.999	-0.547
6/26/2018 13:29	6947.999	-0.243	18.671	-0.548	6947.999	-0.548
6/26/2018 13:30	7007.999	-0.248	18.671	-0.56	7007.999	-0.56
6/26/2018 13:31	7067.999	-0.244	18.673	-0.55	7067.999	-0.55
6/26/2018 13:32	7127.999	-0.249	18.673	-0.561	7127.999	-0.561
6/26/2018 13:33	7187.999	-0.247	18.672	-0.556	7187.999	-0.556
6/26/2018 13:34	7247.999	-0.248	18.673	-0.558	7247.999	-0.558
6/26/2018 13:35	7307.999	-0.247	18.674	-0.557	7307.999	-0.557
6/26/2018 13:36	7367.999	-0.25	18.675	-0.563	7367.999	-0.563

K_r 0.000142 ft/s

Adjusted Ti	Adjusted Depth
0	-1.86
0.204	-1.233
0.408	-0.876
0.611	-0.398
0.815	0.014
1.02	0.007
1.224	-0.039
1.445	-0.03
1.695	-0.021
1.945	-0.018
2.195	-0.021
2.445	-0.016
2.695	-0.016
2.945	-0.018
3.195	-0.015
3.851	-0.018
4.056	-0.015

4.261	-0.017
4.467	-0.011
4.67	-0.009
5.321	-0.02
5.526	-0.014
5.733	-0.004
5.938	-0.004
6.582	-0.022
6.789	-0.012
6.995	-0.014
7.405	-0.022
8.061	-0.013
8.425	-0.013
9.297	-0.011
9.625	-0.018
10.684	-0.014
10.89	-0.012
11.664	-0.016
12.385	-0.008
13.165	-0.003
14.005	-0.009
14.905	-0.007
15.865	0.004
16.825	-0.005
17.905	0.002
19.045	0

Report Date: ########
Report User Nam Larry
Report Compute LAI
Application: WinSitu.exe
Application Versi 5.6.25.0

Log File Properties
File Name RW-6 Falling Head 1_2018-06-29_11-18-54-265.wsl
Create Date ########

Device Properties
Device Level TROLL 700
Site EMSU B Slug Testing
Device Name
Serial Number 106161
Firmware Versio 2.04
Hardware Versio 1
Device Address 1
Device Comm Cf 19200 8 Even 1 (Modbus-RTU)
Used Memory 59
Used Battery 18140

Log Configuration
Log Name RW-6 Falling Head 1
Created By Larry
Computer I LAI
Application WinSitu.exe
Application 5.6.25.0
Create Dat 6/28/2018 6:52:11 AM Central Daylight Time
Log Setup T Central Daylight Time
Notes Size(4096
Overwrite \ Disabled
Scheduled Manual Start
Scheduled No Stop Time
Type True Logarithmic
Max Interv Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation
Level M Depth
Spe 1.024

Other Log Settings
Pressure O 4.55377 (PSI)

Depth of Pı 0.0173063 (ft)
Head Press 0.0076828 (PSI)
Temperatu 19.145 (C)

Log Notes:

Date and Time	Note
6/28/2018 6:52	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/28/2018 6:52	Used Battery: 18140% Used Memory: 60% User Name: Larry
6/28/2018 6:53	Manual Start Command
############	Suspend Command
############	Used Battery: 0% Used Memory: 60% User Name: Larry
############	Manual Stop Command

Log Data:

Record Count 362

Sensors 1

1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft			
	Elapsed Tin	SN#: 10616	SN#: 10616	SN#: 106161			
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)		Time	Depth
6/28/2018 6:53	0	0.022	19.036	0.051		0	0.051
6/28/2018 6:53	0.256	0.022	19.056	0.05		0.256	0.05
6/28/2018 6:53	0.899	0.018	19.057	0.041		0.899	0.041
6/28/2018 6:53	1.104	0.017	19.072	0.038		1.104	0.038
6/28/2018 6:53	1.309	0.02	19.087	0.046		1.309	0.046
6/28/2018 6:53	1.512	0.022	19.095	0.049		1.512	0.049
6/28/2018 6:53	1.719	0.043	19.103	0.097		1.719	0.097
6/28/2018 6:53	1.927	0.117	19.11	0.264		1.927	0.264
6/28/2018 6:53	2.134	0.223	19.115	0.502		2.134	0.502
6/28/2018 6:53	2.34	0.281	19.117	0.633		2.34	0.633
6/28/2018 6:53	2.546	0.338	19.124	0.762		2.546	0.762
6/28/2018 6:53	2.752	0.356	19.127	0.803		2.752	0.803
6/28/2018 6:53	3.395	0.474	19.096	1.067		3.395	1.067
6/28/2018 6:53	3.6	0.524	19.109	1.179		3.6	1.179
6/28/2018 6:53	3.805	0.48	19.116	1.081		3.805	1.081
6/28/2018 6:53	4.01	0.11	19.123	0.247		4.01	0.247
6/28/2018 6:53	4.214	0.415	19.2	0.936		4.214	0.936
6/28/2018 6:53	4.869	0.336	19.181	0.757		4.869	0.757
6/28/2018 6:53	5.074	0.369	19.172	0.831		5.074	0.831

6/28/2018 6:53	5.278	0.359	19.168	0.809	5.278	0.809
6/28/2018 6:53	5.482	0.328	19.167	0.739	5.482	0.739
6/28/2018 6:53	6.132	0.367	19.123	0.828	6.132	0.828
6/28/2018 6:53	6.337	0.5	19.13	1.126	6.337	1.126
6/28/2018 6:53	6.542	0.392	19.136	0.883	6.542	0.883
6/28/2018 6:53	6.746	0.333	19.143	0.751		
6/28/2018 6:53	6.951	0.369	19.146	0.831	6.951	0.831
6/28/2018 6:53	7.159	0.397	19.148	0.894	7.159	0.894
6/28/2018 6:53	7.365	0.388	19.151	0.875	7.365	0.875
6/28/2018 6:53	7.571	0.375	19.152	0.845	7.571	0.845
6/28/2018 6:53	7.98	0.368	19.133	0.829	7.98	0.829
6/28/2018 6:53	8.46	0.369	19.116	0.831	8.46	0.831
6/28/2018 6:53	9	0.365	19.109	0.822	9	0.822
6/28/2018 6:53	9.48	0.36	19.105	0.812	9.48	0.812
6/28/2018 6:53	10.223	0.349	19.091	0.786	10.223	0.786
6/28/2018 6:53	10.68	0.348	19.089	0.784	10.68	0.784
6/28/2018 6:53	11.594	0.346	19.082	0.778	11.594	0.778
6/28/2018 6:53	11.94	0.346	19.093	0.778	11.94	0.778
6/28/2018 6:53	12.983	0.339	19.074	0.764	12.983	0.764
6/28/2018 6:53	13.44	0.338	19.081	0.762	13.44	0.762
6/28/2018 6:53	14.237	0.337	19.076	0.758	14.237	0.758
6/28/2018 6:53	15.06	0.335	19.074	0.754	15.06	0.754
6/28/2018 6:53	15.96	0.332	19.066	0.747	15.96	0.747
6/28/2018 6:53	16.92	0.329	19.064	0.741	16.92	0.741
6/28/2018 6:53	17.88	0.323	19.062	0.729	17.88	0.729
6/28/2018 6:53	18.96	0.324	19.06	0.729	18.96	0.729
6/28/2018 6:53	20.1	0.32	19.056	0.721	20.1	0.721
6/28/2018 6:53	21.3	0.319	19.053	0.719	21.3	0.719
6/28/2018 6:53	22.56	0.316	19.052	0.712	22.56	0.712
6/28/2018 6:53	23.88	0.314	19.051	0.708	23.88	0.708
6/28/2018 6:53	25.32	0.314	19.046	0.707	25.32	0.707
6/28/2018 6:53	26.82	0.311	19.043	0.701	26.82	0.701
6/28/2018 6:53	28.38	0.31	19.043	0.698	28.38	0.698
6/28/2018 6:53	30.06	0.309	19.041	0.695	30.06	0.695
6/28/2018 6:53	31.86	0.308	19.044	0.694	31.86	0.694
6/28/2018 6:53	33.855	0.309	19.053	0.695	33.855	0.695
6/28/2018 6:53	35.76	0.306	19.038	0.689	35.76	0.689
6/28/2018 6:53	37.86	0.306	19.034	0.69	37.86	0.69
6/28/2018 6:53	40.08	0.304	19.034	0.685	40.08	0.685
6/28/2018 6:53	42.48	0.304	19.025	0.684	42.48	0.684
6/28/2018 6:53	45	0.304	19.031	0.684	45	0.684
6/28/2018 6:53	47.64	0.304	19.024	0.685	47.64	0.685
6/28/2018 6:53	50.46	0.303	19.024	0.683	50.46	0.683
6/28/2018 6:53	53.46	0.302	19.016	0.681	53.46	0.681
6/28/2018 6:54	56.64	0.304	19.015	0.685	56.64	0.685
6/28/2018 6:54	60	0.301	19.015	0.679	60	0.679
6/28/2018 6:54	63.6	0.304	19.035	0.685	63.6	0.685

6/28/2018 6:54	67.199	0.303	19.002	0.684	67.199	0.684
6/28/2018 6:54	71.4	0.301	18.999	0.677	71.4	0.677
6/28/2018 6:54	75.6	0.303	18.998	0.682	75.6	0.682
6/28/2018 6:54	79.8	0.302	18.993	0.68	79.8	0.68
6/28/2018 6:54	84.6	0.302	18.992	0.681	84.6	0.681
6/28/2018 6:54	90	0.302	18.987	0.68	90	0.68
6/28/2018 6:54	94.8	0.304	18.983	0.684	94.8	0.684
6/28/2018 6:54	100.8	0.303	18.973	0.683	100.8	0.683
6/28/2018 6:54	106.825	0.304	18.967	0.686	106.825	0.686
6/28/2018 6:54	112.8	0.304	18.96	0.684	112.8	0.684
6/28/2018 6:55	119.399	0.301	18.966	0.679	119.399	0.679
6/28/2018 6:55	126.6	0.306	18.951	0.689	126.6	0.689
6/28/2018 6:55	134.399	0.303	18.953	0.683	134.399	0.683
6/28/2018 6:55	142.199	0.304	18.94	0.686	142.199	0.686
6/28/2018 6:55	150.6	0.302	18.934	0.681	150.6	0.681
6/28/2018 6:55	159.6	0.305	18.933	0.687	159.6	0.687
6/28/2018 6:55	169.199	0.304	18.932	0.686	169.199	0.686
6/28/2018 6:56	178.855	0.307	18.93	0.69	178.855	0.69
6/28/2018 6:56	189.599	0.304	18.916	0.685	189.599	0.685
6/28/2018 6:56	201	0.305	18.904	0.687	201	0.687
6/28/2018 6:56	213	0.307	18.895	0.691	213	0.691
6/28/2018 6:56	225.599	0.307	18.894	0.692	225.599	0.692
6/28/2018 6:57	238.861	0.307	18.901	0.692	238.861	0.692
6/28/2018 6:57	253.199	0.307	18.88	0.692	253.199	0.692
6/28/2018 6:57	268.199	0.307	18.875	0.692	268.199	0.692
6/28/2018 6:57	283.861	0.308	18.889	0.694	283.861	0.694
6/28/2018 6:58	300.599	0.308	18.87	0.694	300.599	0.694
6/28/2018 6:58	318.611	0.308	18.889	0.693	318.611	0.693
6/28/2018 6:58	337.199	0.308	18.857	0.695	337.199	0.695
6/28/2018 6:59	357.599	0.31	18.852	0.699	357.599	0.699
6/28/2018 6:59	378.616	0.307	18.877	0.691	378.616	0.691
6/28/2018 6:59	400.799	0.309	18.846	0.697	400.799	0.697
6/28/2018 7:00	424.799	0.31	18.846	0.698	424.799	0.698
6/28/2018 7:00	450	0.309	18.843	0.695	450	0.695
6/28/2018 7:01	476.399	0.31	18.838	0.699	476.399	0.699
6/28/2018 7:01	504.599	0.31	18.84	0.699	504.599	0.699
6/28/2018 7:02	534.599	0.311	18.837	0.7	534.599	0.7
6/28/2018 7:02	566.399	0.311	18.83	0.7	566.399	0.7
6/28/2018 7:03	599.999	0.311	18.83	0.701	599.999	0.701
6/28/2018 7:03	635.999	0.309	18.828	0.697	635.999	0.697
6/28/2018 7:04	671.999	0.311	18.825	0.7	671.999	0.7
6/28/2018 7:05	714.145	0.311	18.836	0.7	714.145	0.7
6/28/2018 7:05	755.999	0.315	18.824	0.71	755.999	0.71
6/28/2018 7:06	797.999	0.31	18.82	0.698	797.999	0.698
6/28/2018 7:07	845.999	0.323	18.822	0.727	845.999	0.727
6/28/2018 7:08	899.999	0.311	18.825	0.7	899.999	0.7
6/28/2018 7:08	947.999	0.313	18.821	0.704	947.999	0.704

6/28/2018 7:09	1007.999	0.312	18.82	0.703	1007.999	0.703
6/28/2018 7:10	1067.999	0.312	18.819	0.702	1067.999	0.702
6/28/2018 7:11	1127.999	0.314	18.819	0.708	1127.999	0.708
6/28/2018 7:12	1187.999	0.314	18.817	0.707	1187.999	0.707
6/28/2018 7:13	1247.999	0.313	18.818	0.704	1247.999	0.704
6/28/2018 7:14	1307.999	0.314	18.814	0.707	1307.999	0.707
6/28/2018 7:15	1367.999	0.316	18.815	0.712	1367.999	0.712
6/28/2018 7:16	1427.999	0.314	18.816	0.708	1427.999	0.708
6/28/2018 7:17	1487.999	0.315	18.816	0.71	1487.999	0.71
6/28/2018 7:18	1547.999	0.317	18.815	0.714	1547.999	0.714
6/28/2018 7:19	1607.999	0.315	18.816	0.709	1607.999	0.709
6/28/2018 7:20	1667.999	0.315	18.814	0.71	1667.999	0.71
6/28/2018 7:21	1727.999	0.315	18.814	0.71	1727.999	0.71
6/28/2018 7:22	1787.999	0.318	18.814	0.715	1787.999	0.715
6/28/2018 7:23	1847.999	0.315	18.815	0.71	1847.999	0.71
6/28/2018 7:24	1907.999	0.315	18.815	0.711	1907.999	0.711
6/28/2018 7:25	1967.999	0.316	18.816	0.713	1967.999	0.713
6/28/2018 7:26	2027.999	0.313	18.813	0.705	2027.999	0.705
6/28/2018 7:27	2087.999	0.314	18.814	0.706	2087.999	0.706
6/28/2018 7:28	2147.999	0.318	18.815	0.716	2147.999	0.716
6/28/2018 7:29	2207.999	0.317	18.816	0.714	2207.999	0.714
6/28/2018 7:30	2267.999	0.312	18.812	0.704	2267.999	0.704
6/28/2018 7:31	2327.999	0.314	18.814	0.707	2327.999	0.707
6/28/2018 7:32	2387.999	0.312	18.813	0.702	2387.999	0.702
6/28/2018 7:33	2447.999	0.311	18.814	0.701	2447.999	0.701
6/28/2018 7:34	2507.999	0.314	18.813	0.708	2507.999	0.708
6/28/2018 7:35	2567.999	0.313	18.814	0.705	2567.999	0.705
6/28/2018 7:36	2627.999	0.309	18.811	0.696	2627.999	0.696
6/28/2018 7:37	2687.999	0.312	18.811	0.703	2687.999	0.703
6/28/2018 7:38	2747.999	0.311	18.814	0.7	2747.999	0.7
6/28/2018 7:39	2807.999	0.309	18.813	0.696	2807.999	0.696
6/28/2018 7:40	2867.999	0.311	18.813	0.7	2867.999	0.7
6/28/2018 7:41	2927.999	0.31	18.811	0.699	2927.999	0.699
6/28/2018 7:42	2987.999	0.309	18.812	0.696	2987.999	0.696
6/28/2018 7:43	3047.999	0.308	18.813	0.693	3047.999	0.693
6/28/2018 7:44	3107.999	0.308	18.813	0.695	3107.999	0.695
6/28/2018 7:45	3167.999	0.309	18.811	0.695	3167.999	0.695
6/28/2018 7:46	3227.999	0.308	18.813	0.693	3227.999	0.693
6/28/2018 7:47	3287.999	0.308	18.811	0.694	3287.999	0.694
6/28/2018 7:48	3347.999	0.306	18.815	0.69	3347.999	0.69
6/28/2018 7:49	3407.999	0.308	18.836	0.694	3407.999	0.694
6/28/2018 7:50	3467.999	0.304	18.812	0.685	3467.999	0.685
6/28/2018 7:51	3527.999	0.306	18.81	0.689	3527.999	0.689
6/28/2018 7:52	3587.999	0.305	18.813	0.688	3587.999	0.688
6/28/2018 7:53	3647.999	0.304	18.813	0.686	3647.999	0.686
6/28/2018 7:54	3707.999	0.302	18.813	0.681	3707.999	0.681
6/28/2018 7:55	3767.999	0.304	18.812	0.686	3767.999	0.686

6/28/2018 7:56	3827.999	0.303	18.811	0.683	3827.999	0.683
6/28/2018 7:57	3887.999	0.301	18.813	0.679	3887.999	0.679
6/28/2018 7:58	3947.999	0.302	18.81	0.681	3947.999	0.681
6/28/2018 7:59	4007.999	0.3	18.809	0.675	4007.999	0.675
6/28/2018 8:00	4067.999	0.3	18.81	0.675	4067.999	0.675
6/28/2018 8:01	4127.999	0.3	18.812	0.676	4127.999	0.676
6/28/2018 8:02	4187.999	0.3	18.81	0.676	4187.999	0.676
6/28/2018 8:03	4247.999	0.3	18.81	0.675	4247.999	0.675
6/28/2018 8:04	4307.999	0.298	18.81	0.67	4307.999	0.67
6/28/2018 8:05	4367.999	0.298	18.813	0.671	4367.999	0.671
6/28/2018 8:06	4427.999	0.298	18.812	0.671	4427.999	0.671
6/28/2018 8:07	4487.999	0.297	18.812	0.669	4487.999	0.669
6/28/2018 8:08	4547.999	0.297	18.81	0.669	4547.999	0.669
6/28/2018 8:09	4607.999	0.298	18.814	0.672	4607.999	0.672
6/28/2018 8:10	4667.999	0.293	18.811	0.661	4667.999	0.661
6/28/2018 8:11	4727.999	0.293	18.809	0.66	4727.999	0.66
6/28/2018 8:12	4787.999	0.293	18.811	0.66	4787.999	0.66
6/28/2018 8:13	4847.999	0.293	18.808	0.659	4847.999	0.659
6/28/2018 8:14	4907.999	0.292	18.811	0.657	4907.999	0.657
6/28/2018 8:15	4967.999	0.291	18.811	0.654	4967.999	0.654
6/28/2018 8:16	5027.999	0.292	18.809	0.658	5027.999	0.658
6/28/2018 8:17	5087.999	0.291	18.81	0.655	5087.999	0.655
6/28/2018 8:18	5147.999	0.288	18.81	0.649	5147.999	0.649
6/28/2018 8:19	5207.999	0.289	18.81	0.652	5207.999	0.652
6/28/2018 8:20	5267.999	0.286	18.808	0.645	5267.999	0.645
6/28/2018 8:21	5327.999	0.285	18.809	0.642	5327.999	0.642
6/28/2018 8:22	5387.999	0.287	18.809	0.647	5387.999	0.647
6/28/2018 8:23	5447.999	0.287	18.809	0.646	5447.999	0.646
6/28/2018 8:24	5507.999	0.283	18.807	0.638	5507.999	0.638
6/28/2018 8:25	5567.999	0.286	18.81	0.644	5567.999	0.644
6/28/2018 8:26	5627.999	0.284	18.811	0.639	5627.999	0.639
6/28/2018 8:27	5687.999	0.285	18.81	0.642	5687.999	0.642
6/28/2018 8:28	5747.999	0.284	18.809	0.639	5747.999	0.639
6/28/2018 8:29	5807.999	0.285	18.808	0.642	5807.999	0.642
6/28/2018 8:30	5867.999	0.284	18.808	0.639	5867.999	0.639
6/28/2018 8:31	5927.999	0.282	18.81	0.636	5927.999	0.636
6/28/2018 8:32	5987.999	0.281	18.811	0.632	5987.999	0.632
6/28/2018 8:33	6047.999	0.28	18.809	0.632	6047.999	0.632
6/28/2018 8:34	6107.999	0.28	18.805	0.63	6107.999	0.63
6/28/2018 8:35	6167.999	0.279	18.808	0.629	6167.999	0.629
6/28/2018 8:36	6227.999	0.279	18.81	0.628	6227.999	0.628
6/28/2018 8:37	6287.999	0.276	18.808	0.622	6287.999	0.622
6/28/2018 8:38	6347.999	0.277	18.81	0.624	6347.999	0.624
6/28/2018 8:39	6407.999	0.273	18.811	0.615	6407.999	0.615
6/28/2018 8:40	6467.999	0.275	18.811	0.619	6467.999	0.619
6/28/2018 8:41	6527.999	0.274	18.811	0.616	6527.999	0.616
6/28/2018 8:42	6587.999	0.275	18.81	0.619	6587.999	0.619

6/28/2018 8:43	6647.999	0.273	18.809	0.615	6647.999	0.615
6/28/2018 8:44	6707.999	0.273	18.808	0.615	6707.999	0.615
6/28/2018 8:45	6767.999	0.271	18.806	0.61	6767.999	0.61
6/28/2018 8:46	6827.999	0.272	18.807	0.612	6827.999	0.612
6/28/2018 8:47	6887.999	0.271	18.807	0.61	6887.999	0.61
6/28/2018 8:48	6947.999	0.27	18.808	0.609	6947.999	0.609
6/28/2018 8:49	7007.999	0.269	18.809	0.606	7007.999	0.606
6/28/2018 8:50	7067.999	0.268	18.81	0.604	7067.999	0.604
6/28/2018 8:51	7127.999	0.268	18.808	0.603	7127.999	0.603
6/28/2018 8:52	7187.999	0.265	18.809	0.597	7187.999	0.597
6/28/2018 8:53	7247.999	0.267	18.807	0.602	7247.999	0.602
6/28/2018 8:54	7307.999	0.265	18.809	0.597	7307.999	0.597
6/28/2018 8:55	7367.999	0.265	18.807	0.596	7367.999	0.596
6/28/2018 8:56	7427.999	0.264	18.806	0.595	7427.999	0.595
6/28/2018 8:57	7487.999	0.263	18.811	0.592	7487.999	0.592
6/28/2018 8:58	7547.999	0.261	18.808	0.589	7547.999	0.589
6/28/2018 8:59	7607.999	0.261	18.809	0.589	7607.999	0.589
6/28/2018 9:00	7667.999	0.261	18.808	0.587	7667.999	0.587
6/28/2018 9:01	7727.999	0.262	18.806	0.591	7727.999	0.591
6/28/2018 9:02	7787.999	0.258	18.807	0.582	7787.999	0.582
6/28/2018 9:03	7847.999	0.259	18.806	0.584	7847.999	0.584
6/28/2018 9:04	7907.999	0.258	18.806	0.581	7907.999	0.581
6/28/2018 9:05	7967.999	0.256	18.809	0.577	7967.999	0.577
6/28/2018 9:06	8027.999	0.256	18.806	0.577	8027.999	0.577
6/28/2018 9:07	8087.999	0.254	18.808	0.573	8087.999	0.573
6/28/2018 9:08	8148.002	0.252	18.808	0.568	8148.002	0.568
6/28/2018 9:09	8207.999	0.253	18.809	0.57	8207.999	0.57
6/28/2018 9:10	8267.999	0.252	18.807	0.568	8267.999	0.568
6/28/2018 9:11	8327.999	0.251	18.81	0.566	8327.999	0.566
6/28/2018 9:12	8387.999	0.252	18.806	0.567	8387.999	0.567
6/28/2018 9:13	8447.999	0.248	18.809	0.56	8447.999	0.56
6/28/2018 9:14	8507.999	0.248	18.807	0.558	8507.999	0.558
6/28/2018 9:15	8567.999	0.248	18.806	0.558	8567.999	0.558
6/28/2018 9:16	8627.999	0.248	18.807	0.559	8627.999	0.559
6/28/2018 9:17	8687.999	0.246	18.808	0.555	8687.999	0.555
6/28/2018 9:18	8747.999	0.245	18.807	0.551	8747.999	0.551
6/28/2018 9:19	8807.999	0.246	18.808	0.555	8807.999	0.555
6/28/2018 9:20	8867.999	0.245	18.806	0.552	8867.999	0.552
6/28/2018 9:21	8927.999	0.244	18.808	0.55	8927.999	0.55
6/28/2018 9:22	8987.999	0.242	18.809	0.544	8987.999	0.544
6/28/2018 9:23	9047.999	0.242	18.809	0.544	9047.999	0.544
6/28/2018 9:24	9107.999	0.239	18.809	0.538	9107.999	0.538
6/28/2018 9:25	9167.999	0.239	18.808	0.539	9167.999	0.539
6/28/2018 9:26	9227.999	0.238	18.806	0.537	9227.999	0.537
6/28/2018 9:27	9287.999	0.237	18.807	0.535	9287.999	0.535
6/28/2018 9:28	9347.999	0.237	18.81	0.534	9347.999	0.534
6/28/2018 9:29	9407.999	0.236	18.809	0.532	9407.999	0.532

6/28/2018 9:30	9467.999	0.233	18.809	0.526	9467.999	0.526
6/28/2018 9:31	9527.999	0.234	18.808	0.526	9527.999	0.526
6/28/2018 9:32	9587.999	0.233	18.812	0.524	9587.999	0.524
6/28/2018 9:33	9647.999	0.233	18.808	0.524	9647.999	0.524
6/28/2018 9:34	9707.999	0.233	18.807	0.524	9707.999	0.524
6/28/2018 9:35	9767.999	0.229	18.808	0.515	9767.999	0.515
6/28/2018 9:36	9827.999	0.229	18.808	0.516	9827.999	0.516
6/28/2018 9:37	9887.999	0.229	18.806	0.517	9887.999	0.517
6/28/2018 9:38	9947.999	0.228	18.806	0.514	9947.999	0.514
6/28/2018 9:39	10008	0.228	18.807	0.513	10008	0.513
6/28/2018 9:40	10068	0.226	18.806	0.509	10068	0.509
6/28/2018 9:41	10128	0.226	18.807	0.509	10128	0.509
6/28/2018 9:42	10188	0.225	18.807	0.507	10188	0.507
6/28/2018 9:43	10248	0.223	18.807	0.502	10248	0.502
6/28/2018 9:44	10308	0.224	18.807	0.505	10308	0.505
6/28/2018 9:45	10368	0.222	18.804	0.5	10368	0.5
6/28/2018 9:46	10428	0.221	18.807	0.499	10428	0.499
6/28/2018 9:47	10488	0.221	18.804	0.498	10488	0.498
6/28/2018 9:48	10548	0.221	18.835	0.497	10548	0.497
6/28/2018 9:49	10608	0.219	18.805	0.494	10608	0.494
6/28/2018 9:50	10668	0.217	18.807	0.49	10668	0.49
6/28/2018 9:51	10728	0.217	18.809	0.488	10728	0.488
6/28/2018 9:52	10788	0.215	18.808	0.483	10788	0.483
6/28/2018 9:53	10848	0.215	18.807	0.485	10848	0.485
6/28/2018 9:54	10908	0.211	18.808	0.475	10908	0.475
6/28/2018 9:55	10968	0.214	18.808	0.483	10968	0.483
6/28/2018 9:56	11028	0.211	18.808	0.475	11028	0.475
6/28/2018 9:57	11088	0.212	18.81	0.477	11088	0.477
6/28/2018 9:58	11148	0.208	18.808	0.47	11148	0.47
6/28/2018 9:59	11208	0.209	18.809	0.471	11208	0.471
##########	11268	0.211	18.807	0.475	11268	0.475
##########	11328.02	0.206	18.806	0.464	11328.02	0.464
##########	11388	0.207	18.805	0.465	11388	0.465
##########	11448	0.205	18.806	0.463	11448	0.463
##########	11508	0.206	18.806	0.464	11508	0.464
##########	11568	0.203	18.809	0.458	11568	0.458
##########	11628	0.202	18.806	0.456	11628	0.456
##########	11688	0.202	18.808	0.454	11688	0.454
##########	11748	0.201	18.804	0.453	11748	0.453
##########	11808	0.199	18.806	0.448	11808	0.448
##########	11868	0.199	18.807	0.449	11868	0.449
##########	11928	0.198	18.809	0.446	11928	0.446
##########	11988	0.196	18.806	0.442	11988	0.442
##########	12048	0.197	18.808	0.444	12048	0.444
##########	12108	0.195	18.808	0.439	12108	0.439
##########	12168	0.193	18.805	0.435	12168	0.435
##########	12228	0.192	18.805	0.433	12228	0.433

##########	12288	0.191	18.806	0.431	12288	0.431
##########	12348	0.19	18.807	0.428	12348	0.428
##########	12408	0.188	18.808	0.423	12408	0.423
##########	12468	0.187	18.806	0.422	12468	0.422
##########	12528	0.186	18.807	0.42	12528	0.42
##########	12588	0.186	18.807	0.42	12588	0.42
##########	12648	0.186	18.808	0.418	12648	0.418
##########	12708	0.185	18.807	0.416	12708	0.416
##########	12768	0.183	18.808	0.413	12768	0.413
##########	12828	0.181	18.808	0.409	12828	0.409
##########	12888	0.179	18.809	0.403	12888	0.403
##########	12948	0.18	18.806	0.406	12948	0.406
##########	13008	0.179	18.806	0.402	13008	0.402
##########	13068	0.177	18.806	0.398	13068	0.398
##########	13128	0.174	18.804	0.392	13128	0.392
##########	13188	0.174	18.806	0.393	13188	0.393
##########	13248	0.174	18.807	0.392	13248	0.392
##########	13308	0.174	18.805	0.392	13308	0.392
##########	13368	0.172	18.807	0.388	13368	0.388
##########	13428	0.17	18.808	0.382	13428	0.382
##########	13488	0.168	18.805	0.38	13488	0.38
##########	13548	0.169	18.807	0.381	13548	0.381
##########	13608	0.168	18.807	0.379	13608	0.379
##########	13668	0.166	18.805	0.374	13668	0.374
##########	13728	0.167	18.807	0.376	13728	0.376
##########	13788	0.163	18.808	0.367	13788	0.367
##########	13848	0.164	18.809	0.369	13848	0.369
##########	13908	0.161	18.805	0.362	13908	0.362
##########	13968	0.161	18.806	0.363	13968	0.363
##########	14028	0.16	18.808	0.36	14028	0.36
##########	14088	0.158	18.806	0.357	14088	0.357
##########	14148	0.159	18.807	0.357	14148	0.357
##########	14208	0.158	18.805	0.355	14208	0.355
##########	14268	0.155	18.806	0.349	14268	0.349
##########	14328	0.155	18.806	0.349	14328	0.349
##########	14388	0.153	18.807	0.344	14388	0.344
##########	14448	0.151	18.805	0.34	14448	0.34
##########	14508	0.151	18.807	0.34	14508	0.34
##########	14568	0.151	18.806	0.34	14568	0.34
##########	14628	0.147	18.806	0.331	14628	0.331
##########	14688	0.148	18.807	0.333	14688	0.333
##########	14748	0.146	18.806	0.329	14748	0.329
##########	14808	0.144	18.805	0.325	14808	0.325
##########	14868	0.145	18.806	0.326	14868	0.326
##########	14928	0.142	18.805	0.321	14928	0.321
##########	14988	0.142	18.806	0.319	14988	0.319
##########	15048	0.143	18.804	0.323	15048	0.323

##############	15108	0.14	18.806	0.316	15108	0.316
##############	15168	0.139	18.806	0.314	15168	0.314
##############	15228.04	0.138	18.805	0.311	15228.04	0.311
##############	15288	0.14	18.804	0.315	15288	0.315
##############	15348	0.135	18.804	0.305	15348	0.305
##############	15408	0.133	18.806	0.299	15408	0.299
##############	15468	0.136	18.805	0.305	15468	0.305
##############	15528	0.133	18.806	0.299	15528	0.299
##############	15588	0.131	18.807	0.295	15588	0.295
##############	15648	0.13	18.81	0.294	15648	0.294
##############	15708	0.129	18.806	0.291	15708	0.291
##############	15768	0.128	18.806	0.289	15768	0.289
##############	15828	0.128	18.803	0.288	15828	0.288
##############	15888	0.126	18.805	0.285	15888	0.285

Adjusted Ti	Adjusted Depth			
0	0.397	K	0.00106 ft/sec	(poor fit)
0.205	0.154			
0.614	0.102			
0.822	0.165			
1.028	0.146			
1.234	0.116			
1.643	0.1			
2.123	0.102			
2.663	0.093			
3.143	0.083			
3.886	0.057			
4.343	0.055			
5.257	0.049			
5.603	0.049			
6.646	0.035			
7.103	0.033			
7.9	0.029			
8.723	0.025			
9.623	0.018			
10.583	0.012			
11.543	0			

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	RW-6 Rising Head 1_2018-06-29_11-16-46-953.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	60				
Used Battery	0				

Log Configuration

Log Name	RW-6 Rising Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/28/2018 11:20:24 AM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	4.67158 (PSI)

Depth of Pı 0.00859942 (ft)
Head Press 0.00381756 (PSI)
Temperatu 18.8192 (C)

Log Notes:

Date and Time	Note
6/28/2018 11:20	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/28/2018 11:20	Used Battery: 0% Used Memory: 62% User Name: Larry
6/28/2018 11:21	Manual Start Command
6/28/2018 12:17	Used Battery: 0% Used Memory: 62% User Name: Larry
6/28/2018 12:17	Manual Stop Command

Log Data:

Record Count	153		
Sensors	1		
	1	106161	Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft			
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161			
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Depth	
6/28/2018 11:21	0	0.004	18.79	0.01	0	0.01	
6/28/2018 11:21	0.25	0.009	18.809	0.02	0.25	0.02	
6/28/2018 11:21	0.868	-0.001	18.807	-0.002	0.868	-0.002	
6/28/2018 11:21	1.072	-0.009	18.827	-0.021	1.072	-0.021	
6/28/2018 11:21	1.277	-0.173	18.842	-0.389	1.277	-0.389	
6/28/2018 11:21	1.481	-0.18	18.851	-0.406	1.481	-0.406	
6/28/2018 11:21	1.686	-0.191	18.86	-0.43	1.686	-0.43	
6/28/2018 11:21	1.89	-0.171	18.864	-0.384	1.89	-0.384	
6/28/2018 11:21	2.096	-0.065	18.873	-0.146	2.096	-0.146	
6/28/2018 11:21	2.3	0.256	18.875	0.577	2.3	0.577	outlier
6/28/2018 11:21	2.504	-0.126	18.879	-0.285	2.504	-0.285	
6/28/2018 11:21	2.75	-0.251	18.878	-0.565	2.75	-0.565	
6/28/2018 11:21	3	-0.348	18.877	-0.784	3	-0.784	
6/28/2018 11:21	3.25	-0.328	18.878	-0.739	3.25	-0.739	
6/28/2018 11:21	3.5	-0.382	18.88	-0.861	3.5	-0.861	
6/28/2018 11:21	3.75	-0.336	18.882	-0.756	3.75	-0.756	
6/28/2018 11:21	4	-0.401	18.883	-0.902	4	-0.902	
6/28/2018 11:21	4.25	-0.387	18.883	-0.873	4.25	-0.873	
6/28/2018 11:21	4.92	-0.472	18.855	-1.064	4.92	-1.064	
6/28/2018 11:21	5.125	-0.475	18.871	-1.07	5.125	-1.07	

6/28/2018 11:21	5.33	-0.48	18.878	-1.08	5.33	-1.08
6/28/2018 11:21	5.536	-0.482	18.886	-1.086	5.536	-1.086
6/28/2018 11:21	5.74	-0.483	18.969	-1.088	5.74	-1.088
6/28/2018 11:21	6.39	-0.493	18.947	-1.111	6.39	-1.111
6/28/2018 11:21	6.595	-0.499	18.938	-1.125	6.595	-1.125
6/28/2018 11:21	6.801	-0.509	18.931	-1.147	6.801	-1.147
6/28/2018 11:21	7.007	-0.513	18.931	-1.155	7.007	-1.155
6/28/2018 11:21	7.65	-0.498	18.889	-1.121	7.65	-1.121
6/28/2018 11:21	7.856	-0.493	18.897	-1.11	7.856	-1.11
6/28/2018 11:21	8.063	-0.492	18.903	-1.108	8.063	-1.108
6/28/2018 11:21	8.46	-0.49	18.89	-1.103	8.46	-1.103
6/28/2018 11:21	9	-0.486	18.876	-1.095	9	-1.095
6/28/2018 11:21	9.48	-0.498	18.872	-1.123	9.48	-1.123
6/28/2018 11:21	10.08	-0.494	18.863	-1.113	10.08	-1.113
6/28/2018 11:21	10.68	-0.487	18.86	-1.096	10.68	-1.096
6/28/2018 11:21	11.741	-0.49	18.846	-1.105	11.741	-1.105
6/28/2018 11:21	11.947	-0.492	18.861	-1.109	11.947	-1.109
6/28/2018 11:21	13.115	-0.485	18.841	-1.094	13.115	-1.094
6/28/2018 11:21	13.44	-0.489	18.852	-1.101	13.44	-1.101
6/28/2018 11:21	14.505	-0.483	18.841	-1.088	14.505	-1.088
6/28/2018 11:21	15.06	-0.48	18.846	-1.082	15.06	-1.082
6/28/2018 11:21	15.96	-0.481	18.841	-1.083	15.96	-1.083
6/28/2018 11:21	16.92	-0.478	18.838	-1.078	16.92	-1.078
6/28/2018 11:21	17.88	-0.477	18.837	-1.074	17.88	-1.074
6/28/2018 11:21	18.96	-0.473	18.835	-1.066	18.96	-1.066
6/28/2018 11:21	20.1	-0.472	18.833	-1.063	20.1	-1.063
6/28/2018 11:21	21.3	-0.468	18.831	-1.054	21.3	-1.054
6/28/2018 11:21	22.56	-0.466	18.83	-1.05	22.56	-1.05
6/28/2018 11:21	23.88	-0.467	18.829	-1.051	23.88	-1.051
6/28/2018 11:21	25.32	-0.462	18.828	-1.042	25.32	-1.042
6/28/2018 11:21	26.82	-0.463	18.828	-1.044	26.82	-1.044
6/28/2018 11:21	28.38	-0.457	18.825	-1.029	28.38	-1.029
6/28/2018 11:21	30.06	-0.458	18.825	-1.031	30.06	-1.031
6/28/2018 11:21	31.86	-0.456	18.826	-1.027	31.86	-1.027
6/28/2018 11:21	33.72	-0.453	18.822	-1.02	33.72	-1.02
6/28/2018 11:21	35.788	-0.45	18.851	-1.015	35.788	-1.015
6/28/2018 11:21	37.86	-0.449	18.827	-1.011	37.86	-1.011
6/28/2018 11:21	40.08	-0.448	18.822	-1.009	40.08	-1.009
6/28/2018 11:21	42.48	-0.446	18.821	-1.005	42.48	-1.005
6/28/2018 11:21	45	-0.448	18.82	-1.009	45	-1.009
6/28/2018 11:21	47.64	-0.446	18.818	-1.004	47.64	-1.004
6/28/2018 11:21	50.46	-0.442	18.821	-0.997	50.46	-0.997
6/28/2018 11:22	53.46	-0.441	18.818	-0.993	53.46	-0.993
6/28/2018 11:22	56.64	-0.439	18.821	-0.989	56.64	-0.989
6/28/2018 11:22	60	-0.439	18.829	-0.99	60	-0.99
6/28/2018 11:22	63.6	-0.439	18.821	-0.989	63.6	-0.989
6/28/2018 11:22	67.2	-0.438	18.82	-0.986	67.2	-0.986

6/28/2018 11:22	71.404	-0.434	18.831	-0.978	71.404	-0.978
6/28/2018 11:22	75.6	-0.434	18.82	-0.978	75.6	-0.978
6/28/2018 11:22	79.8	-0.431	18.822	-0.972	79.8	-0.972
6/28/2018 11:22	84.6	-0.43	18.823	-0.97	84.6	-0.97
6/28/2018 11:22	90	-0.432	18.819	-0.973	90	-0.973
6/28/2018 11:22	94.8	-0.431	18.821	-0.97	94.8	-0.97
6/28/2018 11:22	100.889	-0.429	18.852	-0.966	100.889	-0.966
6/28/2018 11:22	106.8	-0.43	18.828	-0.968	106.8	-0.968
6/28/2018 11:23	112.8	-0.429	18.825	-0.967	112.8	-0.967
6/28/2018 11:23	119.399	-0.427	18.823	-0.961	119.399	-0.961
6/28/2018 11:23	126.6	-0.427	18.831	-0.961	126.6	-0.961
6/28/2018 11:23	134.399	-0.425	18.82	-0.958	134.399	-0.958
6/28/2018 11:23	142.2	-0.423	18.824	-0.954	142.2	-0.954
6/28/2018 11:23	150.6	-0.424	18.818	-0.955	150.6	-0.955
6/28/2018 11:23	159.6	-0.424	18.818	-0.955	159.6	-0.955
6/28/2018 11:23	169.2	-0.422	18.822	-0.949	169.2	-0.949
6/28/2018 11:24	178.8	-0.422	18.819	-0.952	178.8	-0.952
6/28/2018 11:24	189.599	-0.421	18.819	-0.948	189.599	-0.948
6/28/2018 11:24	201.172	-0.421	18.834	-0.949	201.172	-0.949
6/28/2018 11:24	213.033	-0.421	18.82	-0.948	213.033	-0.948
6/28/2018 11:24	225.599	-0.42	18.815	-0.945	225.599	-0.945
6/28/2018 11:25	238.8	-0.421	18.818	-0.949	238.8	-0.949
6/28/2018 11:25	253.2	-0.421	18.818	-0.947	253.2	-0.947
6/28/2018 11:25	268.2	-0.418	18.816	-0.942	268.2	-0.942
6/28/2018 11:25	283.799	-0.418	18.815	-0.941	283.799	-0.941
6/28/2018 11:26	300.599	-0.416	18.816	-0.938	300.599	-0.938
6/28/2018 11:26	318.599	-0.416	18.815	-0.937	318.599	-0.937
6/28/2018 11:26	337.2	-0.416	18.82	-0.937	337.2	-0.937
6/28/2018 11:27	357.599	-0.414	18.819	-0.933	357.599	-0.933
6/28/2018 11:27	378.599	-0.413	18.817	-0.93	378.599	-0.93
6/28/2018 11:27	400.799	-0.412	18.816	-0.927	400.799	-0.927
6/28/2018 11:28	424.799	-0.414	18.816	-0.932	424.799	-0.932
6/28/2018 11:28	450	-0.412	18.814	-0.928	450	-0.928
6/28/2018 11:29	476.399	-0.411	18.812	-0.925	476.399	-0.925
6/28/2018 11:29	504.599	-0.409	18.815	-0.921	504.599	-0.921
6/28/2018 11:30	534.599	-0.41	18.815	-0.923	534.599	-0.923
6/28/2018 11:30	566.407	-0.409	18.831	-0.921	566.407	-0.921
6/28/2018 11:31	599.999	-0.408	18.813	-0.919	599.999	-0.919
6/28/2018 11:31	635.999	-0.409	18.815	-0.922	635.999	-0.922
6/28/2018 11:32	671.999	-0.41	18.822	-0.923	671.999	-0.923
6/28/2018 11:33	713.999	-0.408	18.815	-0.92	713.999	-0.92
6/28/2018 11:33	755.999	-0.406	18.812	-0.915	755.999	-0.915
6/28/2018 11:34	797.999	-0.406	18.819	-0.915	797.999	-0.915
6/28/2018 11:35	845.999	-0.406	18.812	-0.914	845.999	-0.914
6/28/2018 11:36	899.999	-0.404	18.814	-0.911	899.999	-0.911
6/28/2018 11:36	947.999	-0.405	18.818	-0.911	947.999	-0.911
6/28/2018 11:37	1007.999	-0.403	18.814	-0.908	1007.999	-0.908

6/28/2018 11:38	1067.999	-0.401	18.819	-0.904	1067.999	-0.904
6/28/2018 11:39	1127.999	-0.403	18.817	-0.908	1127.999	-0.908
6/28/2018 11:40	1187.999	-0.403	18.818	-0.907	1187.999	-0.907
6/28/2018 11:41	1247.999	-0.401	18.817	-0.903	1247.999	-0.903
6/28/2018 11:42	1308.078	-0.401	18.816	-0.902	1308.078	-0.902
6/28/2018 11:43	1367.999	-0.402	18.819	-0.907	1367.999	-0.907
6/28/2018 11:44	1427.999	-0.399	18.819	-0.899	1427.999	-0.899
6/28/2018 11:45	1487.999	-0.402	18.82	-0.906	1487.999	-0.906
6/28/2018 11:46	1547.999	-0.403	18.818	-0.907	1547.999	-0.907
6/28/2018 11:47	1607.999	-0.401	18.818	-0.902	1607.999	-0.902
6/28/2018 11:48	1667.999	-0.4	18.821	-0.901	1667.999	-0.901
6/28/2018 11:49	1727.999	-0.399	18.819	-0.899	1727.999	-0.899
6/28/2018 11:50	1787.999	-0.401	18.82	-0.904	1787.999	-0.904
6/28/2018 11:51	1847.999	-0.4	18.82	-0.902	1847.999	-0.902
6/28/2018 11:52	1907.999	-0.402	18.819	-0.905	1907.999	-0.905
6/28/2018 11:53	1967.999	-0.4	18.823	-0.901	1967.999	-0.901
6/28/2018 11:54	2027.999	-0.401	18.823	-0.904	2027.999	-0.904
6/28/2018 11:55	2087.999	-0.4	18.823	-0.902	2087.999	-0.902
6/28/2018 11:56	2147.999	-0.401	18.823	-0.903	2147.999	-0.903
6/28/2018 11:57	2208.083	-0.399	18.823	-0.898	2208.083	-0.898
6/28/2018 11:58	2268.119	-0.398	18.822	-0.897	2268.119	-0.897
6/28/2018 11:59	2328.141	-0.401	18.824	-0.903	2328.141	-0.903
6/28/2018 12:00	2388.164	-0.399	18.826	-0.899	2388.164	-0.899
6/28/2018 12:01	2447.999	-0.398	18.829	-0.896	2447.999	-0.896
6/28/2018 12:02	2507.999	-0.398	18.829	-0.897	2507.999	-0.897
6/28/2018 12:03	2568.019	-0.398	18.831	-0.897	2568.019	-0.897
6/28/2018 12:04	2628.041	-0.4	18.828	-0.901	2628.041	-0.901
6/28/2018 12:05	2688.078	-0.4	18.831	-0.901	2688.078	-0.901
6/28/2018 12:06	2748.148	-0.401	18.829	-0.902	2748.148	-0.902
6/28/2018 12:07	2807.999	-0.401	18.838	-0.902	2807.999	-0.902
6/28/2018 12:08	2868.005	-0.398	18.84	-0.897	2868.005	-0.897
6/28/2018 12:09	2928.058	-0.398	18.843	-0.895	2928.058	-0.895
6/28/2018 12:10	2988.096	-0.398	18.841	-0.898	2988.096	-0.898
6/28/2018 12:11	3048.132	-0.397	18.841	-0.894	3048.132	-0.894
6/28/2018 12:12	3107.999	-0.399	18.813	-0.899	3107.999	-0.899
6/28/2018 12:13	3167.999	-0.399	18.813	-0.899	3167.999	-0.899
6/28/2018 12:14	3227.999	-0.399	18.812	-0.9	3227.999	-0.9
6/28/2018 12:15	3287.999	-0.399	18.812	-0.9	3287.999	-0.9
6/28/2018 12:16	3347.999	-0.402	18.809	-0.905	3347.999	-0.905

Adjusted Ti	Adjusted Depth			
0	1.103	K	0.000245 ft/s	poor fit
0.618	1.081			
0.822	1.062			
1.027	0.694			
1.231	0.677			
1.436	0.653			
1.64	0.699			
1.846	0.937			
2.254	0.798			
2.5	0.518			
2.75	0.299			
3	0.344			
3.25	0.222			
3.5	0.327			
3.75	0.181			
4	0.21			
4.67	0.019			
4.875	0.013			

5.08	0.003
5.286	-0.003
5.49	-0.005
6.14	-0.028
6.345	-0.042
6.551	-0.064
6.757	-0.072
7.4	-0.038
7.606	-0.027
7.813	-0.025
8.21	-0.02
8.75	-0.012
9.23	-0.04
9.83	-0.03
10.43	-0.013
11.491	-0.022
11.697	-0.026
12.865	-0.011
13.19	-0.018
14.255	-0.005
14.81	0.001
15.71	0

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	RW-7 Falling Head 1_2018-06-29_11-19-41-984.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	56				
Used Battery	18140				

Log Configuration

Log Name	RW-7 Falling Head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/27/2018 10:10:14 AM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite \	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	5.88486 (PSI)

Depth of Pı 0.0241613 (ft)
Head Press 0.010726 (PSI)
Temperatu 19.1599 (C)

Log Notes:

Date and Time	Note
6/27/2018 10:10	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/27/2018 10:10	Used Battery: 18140% Used Memory: 57% User Name: Larry
6/27/2018 10:11	Manual Start Command
6/27/2018 13:48	Used Battery: 0% Used Memory: 57% User Name: Larry
6/27/2018 13:48	Manual Stop Command

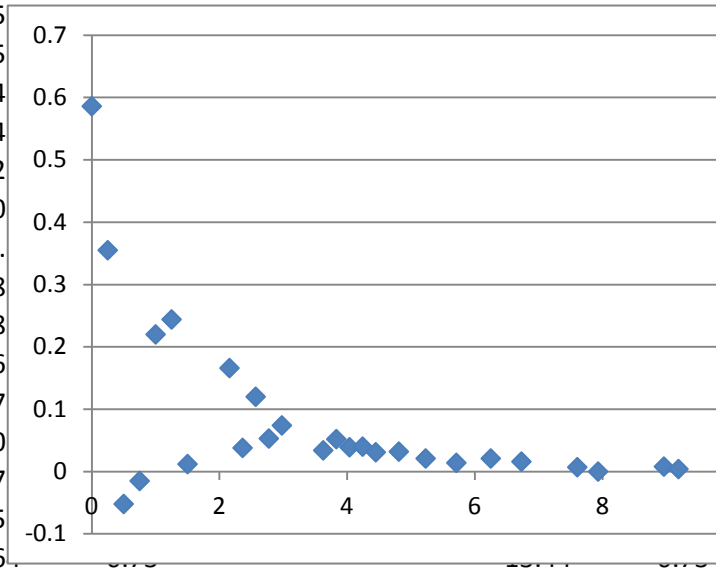
Log Data:

Record Count	313		
Sensors	1		
	1	106161	Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft		
	Elapsed Tin	SN#: 1061€	SN#: 1061€	SN#: 106161		
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Depth
6/27/2018 10:11	0	0.024	19.014	0.053	0	0.053
6/27/2018 10:11	0.251	0.025	19.035	0.056	0.251	0.056
6/27/2018 10:11	0.853	0.077	19.035	0.174	0.853	0.174
6/27/2018 10:11	1.058	0.157	19.055	0.353	1.058	0.353
6/27/2018 10:11	1.263	0.207	19.066	0.465	1.263	0.465
6/27/2018 10:11	1.466	0.373	19.074	0.84	1.466	0.84
6/27/2018 10:11	1.67	0.275	19.082	0.619	1.67	0.619
6/27/2018 10:11	1.874	0.459	19.09	1.034	1.874	1.034
6/27/2018 10:11	2.078	0.451	19.094	1.015	2.078	1.015
6/27/2018 10:11	2.282	0.482	19.098	1.086	2.282	1.086
6/27/2018 10:11	2.501	0.393	19.099	0.885	2.501	0.885
6/27/2018 10:11	2.751	0.584	19.099	1.316	2.751	1.316
6/27/2018 10:11	3.001	0.482	19.1	1.085	3.001	1.085
6/27/2018 10:11	3.251	0.301	19.099	0.678	3.251	0.678
6/27/2018 10:11	3.501	0.317	19.101	0.715	3.501	0.715
6/27/2018 10:11	3.751	0.422	19.103	0.95	3.751	0.95
6/27/2018 10:11	4.001	0.432	19.101	0.974	4.001	0.974
6/27/2018 10:11	4.251	0.329	19.105	0.742	4.251	0.742
6/27/2018 10:11	4.908	0.398	19.079	0.896	4.908	0.896
6/27/2018 10:11	5.113	0.341	19.093	0.768	5.113	0.768

6/27/2018 10:11	5.318	0.377	19.1	0.85		5.318	0.85
6/27/2018 10:11	5.524	0.348	19.106	0.783		5.524	0.783
6/27/2018 10:11	5.728	0.357	19.187	0.804		5.728	0.804
6/27/2018 10:11	6.376	0.339	19.166	0.764		6.376	0.764
6/27/2018 10:11	6.581	0.347	19.15				
6/27/2018 10:11	6.788	0.341	19.15				
6/27/2018 10:11	6.993	0.342	19.14				
6/27/2018 10:11	7.199	0.338	19.14				
6/27/2018 10:11	7.56	0.338	19.12				
6/27/2018 10:11	7.98	0.333	19.10				
6/27/2018 10:11	8.461	0.33	19.				
6/27/2018 10:11	9	0.334	19.08				
6/27/2018 10:11	9.48	0.331	19.08				
6/27/2018 10:11	10.355	0.327	19.06				
6/27/2018 10:11	10.681	0.324	19.07				
6/27/2018 10:11	11.712	0.328	19.0				
6/27/2018 10:11	11.94	0.326	19.07				
6/27/2018 10:11	13.084	0.325	19.05				
6/27/2018 10:11	13.44	0.324	19.06				
6/27/2018 10:12	14.473	0.325	19.048	0.731		14.473	0.731
6/27/2018 10:12	15.06	0.325	19.057	0.733		15.06	0.733
6/27/2018 10:12	15.963	0.326	19.048	0.733		15.963	0.733
6/27/2018 10:12	16.92	0.327	19.044	0.737		16.92	0.737
6/27/2018 10:12	17.88	0.328	19.043	0.738		17.88	0.738
6/27/2018 10:12	18.96	0.327	19.041	0.736		18.96	0.736
6/27/2018 10:12	20.1	0.325	19.037	0.732		20.1	0.732
6/27/2018 10:12	21.301	0.326	19.037	0.733		21.301	0.733
6/27/2018 10:12	22.561	0.327	19.032	0.736		22.561	0.736
6/27/2018 10:12	23.88	0.325	19.032	0.731		23.88	0.731
6/27/2018 10:12	25.321	0.325	19.03	0.731		25.321	0.731
6/27/2018 10:12	26.82	0.323	19.026	0.728		26.82	0.728
6/27/2018 10:12	28.38	0.325	19.03	0.732		28.38	0.732
6/27/2018 10:12	30.06	0.324	19.024	0.73		30.06	0.73
6/27/2018 10:12	31.942	0.325	19.034	0.732		31.942	0.732
6/27/2018 10:12	33.72	0.326	19.021	0.734		33.72	0.734
6/27/2018 10:12	35.76	0.324	19.017	0.729		35.76	0.729
6/27/2018 10:12	37.86	0.327	19.02	0.736		37.86	0.736
6/27/2018 10:12	40.08	0.324	19.014	0.729		40.08	0.729
6/27/2018 10:12	42.48	0.325	19.017	0.731		42.48	0.731
6/27/2018 10:12	45	0.325	19.009	0.732		45	0.732
6/27/2018 10:12	47.641	0.326	19.037	0.734		47.641	0.734
6/27/2018 10:12	50.46	0.326	19.004	0.734		50.46	0.734
6/27/2018 10:12	53.46	0.325	19.003	0.733		53.46	0.733
6/27/2018 10:12	56.687	0.325	19.017	0.732		56.687	0.732
6/27/2018 10:12	60	0.325	18.996	0.732		60	0.732
6/27/2018 10:12	63.6	0.325	18.993	0.732		63.6	0.732
6/27/2018 10:12	67.2	0.325	18.999	0.731		67.2	0.731



6/27/2018 10:12	71.44	0.325	19.019	0.732	71.44	0.732
6/27/2018 10:13	75.6	0.325	18.982	0.733	75.6	0.733
6/27/2018 10:13	79.8	0.326	18.982	0.735	79.8	0.735
6/27/2018 10:13	84.6	0.325	18.978	0.733	84.6	0.733
6/27/2018 10:13	90	0.326	18.975	0.734	90	0.734
6/27/2018 10:13	94.8	0.326	18.971	0.735	94.8	0.735
6/27/2018 10:13	100.8	0.326	18.966	0.735	100.8	0.735
6/27/2018 10:13	106.952	0.324	18.976	0.729	106.952	0.729
6/27/2018 10:13	112.8	0.326	18.962	0.735	112.8	0.735
6/27/2018 10:13	119.4	0.326	18.953	0.734	119.4	0.734
6/27/2018 10:13	126.691	0.325	18.966	0.733	126.691	0.733
6/27/2018 10:14	134.4	0.326	18.943	0.735	134.4	0.735
6/27/2018 10:14	142.2	0.327	18.947	0.737	142.2	0.737
6/27/2018 10:14	150.6	0.327	18.933	0.737	150.6	0.737
6/27/2018 10:14	159.6	0.326	18.928	0.733	159.6	0.733
6/27/2018 10:14	169.2	0.327	18.924	0.737	169.2	0.737
6/27/2018 10:14	178.8	0.329	18.918	0.741	178.8	0.741
6/27/2018 10:14	189.6	0.329	18.91	0.741	189.6	0.741
6/27/2018 10:15	201	0.329	18.905	0.741	201	0.741
6/27/2018 10:15	213	0.329	18.903	0.741	213	0.741
6/27/2018 10:15	225.6	0.328	18.893	0.738	225.6	0.738
6/27/2018 10:15	238.8	0.33	18.889	0.744	238.8	0.744
6/27/2018 10:15	253.2	0.33	18.883	0.744	253.2	0.744
6/27/2018 10:16	268.2	0.332	18.882	0.747	268.2	0.747
6/27/2018 10:16	283.8	0.329	18.876	0.741	283.8	0.741
6/27/2018 10:16	300.6	0.333	18.871	0.749	300.6	0.749
6/27/2018 10:17	318.6	0.331	18.866	0.745	318.6	0.745
6/27/2018 10:17	337.2	0.331	18.869	0.746	337.2	0.746
6/27/2018 10:17	357.6	0.331	18.864	0.746	357.6	0.746
6/27/2018 10:18	378.6	0.332	18.854	0.749	378.6	0.749
6/27/2018 10:18	400.8	0.331	18.849	0.746	400.8	0.746
6/27/2018 10:18	424.8	0.33	18.846	0.742	424.8	0.742
6/27/2018 10:19	450	0.333	18.844	0.749	450	0.749
6/27/2018 10:19	476.475	0.332	18.869	0.748	476.475	0.748
6/27/2018 10:20	504.6	0.331	18.837	0.745	504.6	0.745
6/27/2018 10:20	534.6	0.33	18.833	0.743	534.6	0.743
6/27/2018 10:21	566.476	0.332	18.86	0.748	566.476	0.748
6/27/2018 10:21	600	0.33	18.829	0.742	600	0.742
6/27/2018 10:22	636	0.331	18.826	0.745	636	0.745
6/27/2018 10:22	672	0.33	18.836	0.744	672	0.744
6/27/2018 10:23	714	0.329	18.825	0.742	714	0.742
6/27/2018 10:24	756	0.333	18.82	0.749	756	0.749
6/27/2018 10:25	798	0.328	18.826	0.739	798	0.739
6/27/2018 10:25	846	0.327	18.82	0.736	846	0.736
6/27/2018 10:26	900	0.328	18.818	0.738	900	0.738
6/27/2018 10:27	948	0.327	18.819	0.737	948	0.737
6/27/2018 10:28	1008	0.326	18.823	0.734	1008	0.734

6/27/2018 10:29	1068	0.325	18.821	0.733	1068	0.733
6/27/2018 10:30	1128	0.326	18.819	0.735	1128	0.735
6/27/2018 10:31	1188	0.323	18.818	0.727	1188	0.727
6/27/2018 10:32	1248	0.325	18.816	0.732	1248	0.732
6/27/2018 10:33	1308	0.323	18.817	0.727	1308	0.727
6/27/2018 10:34	1368	0.319	18.817	0.718	1368	0.718
6/27/2018 10:35	1428	0.319	18.817	0.719	1428	0.719
6/27/2018 10:36	1488	0.319	18.815	0.718	1488	0.718
6/27/2018 10:37	1548	0.316	18.815	0.713	1548	0.713
6/27/2018 10:38	1608	0.317	18.813	0.714	1608	0.714
6/27/2018 10:39	1668	0.315	18.814	0.709	1668	0.709
6/27/2018 10:40	1728	0.312	18.815	0.703	1728	0.703
6/27/2018 10:41	1788	0.312	18.815	0.702	1788	0.702
6/27/2018 10:42	1848	0.309	18.814	0.695	1848	0.695
6/27/2018 10:43	1908	0.31	18.814	0.698	1908	0.698
6/27/2018 10:44	1968	0.308	18.814	0.693	1968	0.693
6/27/2018 10:45	2028	0.308	18.814	0.693	2028	0.693
6/27/2018 10:46	2088	0.305	18.813	0.688	2088	0.688
6/27/2018 10:47	2148	0.303	18.813	0.683	2148	0.683
6/27/2018 10:48	2208	0.304	18.811	0.686	2208	0.686
6/27/2018 10:49	2268	0.301	18.812	0.679	2268	0.679
6/27/2018 10:50	2328	0.303	18.813	0.682	2328	0.682
6/27/2018 10:51	2388.035	0.299	18.812	0.674	2388.035	0.674
6/27/2018 10:52	2448	0.297	18.812	0.669	2448	0.669
6/27/2018 10:53	2508	0.298	18.813	0.671	2508	0.671
6/27/2018 10:54	2568	0.293	18.814	0.661	2568	0.661
6/27/2018 10:55	2628	0.293	18.813	0.661	2628	0.661
6/27/2018 10:56	2688	0.29	18.814	0.654	2688	0.654
6/27/2018 10:57	2748	0.29	18.814	0.653	2748	0.653
6/27/2018 10:58	2808	0.288	18.813	0.648	2808	0.648
6/27/2018 10:59	2868	0.287	18.814	0.646	2868	0.646
6/27/2018 11:00	2928	0.285	18.814	0.642	2928	0.642
6/27/2018 11:01	2988	0.284	18.811	0.64	2988	0.64
6/27/2018 11:02	3048	0.283	18.811	0.637	3048	0.637
6/27/2018 11:03	3108	0.28	18.812	0.631	3108	0.631
6/27/2018 11:04	3168	0.278	18.81	0.626	3168	0.626
6/27/2018 11:05	3228	0.278	18.811	0.626	3228	0.626
6/27/2018 11:06	3288	0.275	18.811	0.619	3288	0.619
6/27/2018 11:07	3348	0.274	18.812	0.618	3348	0.618
6/27/2018 11:08	3408	0.273	18.811	0.614	3408	0.614
6/27/2018 11:09	3468	0.271	18.812	0.61	3468	0.61
6/27/2018 11:10	3528	0.268	18.814	0.604	3528	0.604
6/27/2018 11:11	3588	0.269	18.813	0.606	3588	0.606
6/27/2018 11:12	3648	0.266	18.811	0.6	3648	0.6
6/27/2018 11:13	3708	0.265	18.81	0.596	3708	0.596
6/27/2018 11:14	3768	0.262	18.81	0.591	3768	0.591
6/27/2018 11:15	3828	0.26	18.811	0.586	3828	0.586

6/27/2018 11:16	3888	0.258	18.809	0.581	3888	0.581
6/27/2018 11:17	3948	0.257	18.81	0.578	3948	0.578
6/27/2018 11:18	4008	0.257	18.81	0.579	4008	0.579
6/27/2018 11:19	4068	0.255	18.809	0.575	4068	0.575
6/27/2018 11:20	4128	0.255	18.809	0.573	4128	0.573
6/27/2018 11:21	4188	0.249	18.81	0.561	4188	0.561
6/27/2018 11:22	4248	0.248	18.809	0.559	4248	0.559
6/27/2018 11:23	4308	0.248	18.81	0.558	4308	0.558
6/27/2018 11:24	4368	0.245	18.809	0.552	4368	0.552
6/27/2018 11:25	4428	0.247	18.809	0.556	4428	0.556
6/27/2018 11:26	4488	0.244	18.808	0.549	4488	0.549
6/27/2018 11:27	4548	0.242	18.811	0.546	4548	0.546
6/27/2018 11:28	4608	0.239	18.811	0.539	4608	0.539
6/27/2018 11:29	4668	0.239	18.809	0.538	4668	0.538
6/27/2018 11:30	4728	0.236	18.81	0.532	4728	0.532
6/27/2018 11:31	4788.012	0.236	18.811	0.532	4788.012	0.532
6/27/2018 11:32	4848	0.236	18.809	0.533	4848	0.533
6/27/2018 11:33	4908	0.235	18.809	0.528	4908	0.528
6/27/2018 11:34	4968	0.232	18.81	0.524	4968	0.524
6/27/2018 11:35	5028	0.233	18.808	0.524	5028	0.524
6/27/2018 11:36	5088	0.229	18.811	0.515	5088	0.515
6/27/2018 11:37	5148	0.226	18.808	0.51	5148	0.51
6/27/2018 11:38	5208	0.226	18.807	0.508	5208	0.508
6/27/2018 11:39	5268	0.224	18.81	0.504	5268	0.504
6/27/2018 11:40	5328	0.223	18.808	0.503	5328	0.503
6/27/2018 11:41	5388	0.221	18.806	0.498	5388	0.498
6/27/2018 11:42	5448	0.217	18.81	0.49	5448	0.49
6/27/2018 11:43	5508	0.217	18.809	0.488	5508	0.488
6/27/2018 11:44	5568	0.217	18.809	0.489	5568	0.489
6/27/2018 11:45	5628	0.216	18.81	0.487	5628	0.487
6/27/2018 11:46	5688	0.213	18.808	0.481	5688	0.481
6/27/2018 11:47	5748	0.211	18.809	0.475	5748	0.475
6/27/2018 11:48	5808	0.211	18.807	0.475	5808	0.475
6/27/2018 11:49	5868	0.207	18.807	0.467	5868	0.467
6/27/2018 11:50	5928	0.206	18.808	0.463	5928	0.463
6/27/2018 11:51	5988	0.206	18.809	0.464	5988	0.464
6/27/2018 11:52	6048	0.206	18.809	0.464	6048	0.464
6/27/2018 11:53	6108	0.201	18.808	0.453	6108	0.453
6/27/2018 11:54	6168	0.2	18.81	0.45	6168	0.45
6/27/2018 11:55	6228	0.199	18.807	0.449	6228	0.449
6/27/2018 11:56	6288	0.197	18.809	0.443	6288	0.443
6/27/2018 11:57	6348	0.197	18.811	0.444	6348	0.444
6/27/2018 11:58	6408	0.198	18.81	0.446	6408	0.446
6/27/2018 11:59	6468	0.191	18.807	0.43	6468	0.43
6/27/2018 12:00	6528	0.191	18.807	0.431	6528	0.431
6/27/2018 12:01	6588	0.19	18.806	0.428	6588	0.428
6/27/2018 12:02	6648	0.188	18.808	0.424	6648	0.424

6/27/2018 12:03	6708	0.185	18.805	0.417	6708	0.417
6/27/2018 12:04	6768	0.185	18.806	0.416	6768	0.416
6/27/2018 12:05	6828	0.182	18.808	0.411	6828	0.411
6/27/2018 12:06	6888	0.183	18.809	0.411	6888	0.411
6/27/2018 12:07	6948	0.18	18.805	0.406	6948	0.406
6/27/2018 12:08	7008	0.178	18.806	0.401	7008	0.401
6/27/2018 12:09	7068	0.177	18.808	0.398	7068	0.398
6/27/2018 12:10	7128	0.174	18.805	0.393	7128	0.393
6/27/2018 12:11	7188	0.173	18.806	0.391	7188	0.391
6/27/2018 12:12	7248	0.171	18.803	0.384	7248	0.384
6/27/2018 12:13	7308	0.172	18.806	0.387	7308	0.387
6/27/2018 12:14	7368	0.168	18.805	0.379	7368	0.379
6/27/2018 12:15	7428	0.166	18.806	0.374	7428	0.374
6/27/2018 12:16	7488	0.163	18.804	0.368	7488	0.368
6/27/2018 12:17	7548	0.164	18.807	0.369	7548	0.369
6/27/2018 12:18	7608	0.162	18.806	0.366	7608	0.366
6/27/2018 12:19	7668	0.161	18.807	0.363	7668	0.363
6/27/2018 12:20	7728	0.161	18.806	0.362	7728	0.362
6/27/2018 12:21	7788	0.158	18.806	0.356	7788	0.356
6/27/2018 12:22	7848	0.157	18.803	0.354	7848	0.354
6/27/2018 12:23	7908	0.156	18.804	0.352	7908	0.352
6/27/2018 12:24	7968	0.154	18.804	0.346	7968	0.346
6/27/2018 12:25	8028	0.153	18.807	0.345	8028	0.345
6/27/2018 12:26	8088	0.151	18.802	0.341	8088	0.341
6/27/2018 12:27	8148	0.149	18.804	0.337	8148	0.337
6/27/2018 12:28	8208	0.149	18.804	0.335	8208	0.335
6/27/2018 12:29	8268	0.146	18.807	0.329	8268	0.329
6/27/2018 12:30	8328	0.144	18.806	0.325	8328	0.325
6/27/2018 12:31	8388	0.142	18.805	0.321	8388	0.321
6/27/2018 12:32	8448	0.139	18.806	0.313	8448	0.313
6/27/2018 12:33	8508	0.14	18.806	0.316	8508	0.316
6/27/2018 12:34	8568	0.139	18.806	0.312	8568	0.312
6/27/2018 12:35	8628	0.138	18.807	0.311	8628	0.311
6/27/2018 12:36	8688	0.138	18.806	0.312	8688	0.312
6/27/2018 12:37	8748.043	0.135	18.814	0.305	8748.043	0.305
6/27/2018 12:38	8808.002	0.136	18.806	0.306	8808.002	0.306
6/27/2018 12:39	8868	0.132	18.805	0.297	8868	0.297
6/27/2018 12:40	8928	0.131	18.807	0.296	8928	0.296
6/27/2018 12:41	8988	0.132	18.806	0.297	8988	0.297
6/27/2018 12:42	9048	0.127	18.806	0.287	9048	0.287
6/27/2018 12:43	9108	0.128	18.806	0.288	9108	0.288
6/27/2018 12:44	9168	0.127	18.807	0.287	9168	0.287
6/27/2018 12:45	9228	0.123	18.805	0.278	9228	0.278
6/27/2018 12:46	9288	0.123	18.804	0.277	9288	0.277
6/27/2018 12:47	9348	0.123	18.807	0.276	9348	0.276
6/27/2018 12:48	9408	0.12	18.806	0.269	9408	0.269
6/27/2018 12:49	9468	0.121	18.806	0.273	9468	0.273

6/27/2018 12:50	9528	0.119	18.807	0.267	9528	0.267
6/27/2018 12:51	9588	0.116	18.806	0.262	9588	0.262
6/27/2018 12:52	9648	0.113	18.804	0.254	9648	0.254
6/27/2018 12:53	9708	0.113	18.804	0.255	9708	0.255
6/27/2018 12:54	9768	0.11	18.804	0.249	9768	0.249
6/27/2018 12:55	9828	0.109	18.804	0.246	9828	0.246
6/27/2018 12:56	9888	0.108	18.807	0.243	9888	0.243
6/27/2018 12:57	9948	0.105	18.804	0.236	9948	0.236
6/27/2018 12:58	10008	0.106	18.806	0.238	10008	0.238
6/27/2018 12:59	10068	0.104	18.803	0.235	10068	0.235
6/27/2018 13:00	10128	0.103	18.804	0.232	10128	0.232
6/27/2018 13:01	10188	0.101	18.804	0.227	10188	0.227
6/27/2018 13:02	10248	0.099	18.804	0.223	10248	0.223
6/27/2018 13:03	10308	0.097	18.802	0.218	10308	0.218
6/27/2018 13:04	10368	0.096	18.806	0.217	10368	0.217
6/27/2018 13:05	10428	0.096	18.825	0.217	10428	0.217
6/27/2018 13:06	10488	0.095	18.803	0.214	10488	0.214
6/27/2018 13:07	10548	0.092	18.805	0.207	10548	0.207
6/27/2018 13:08	10608	0.09	18.804	0.202	10608	0.202
6/27/2018 13:09	10668	0.089	18.804	0.201	10668	0.201
6/27/2018 13:10	10728	0.087	18.803	0.195	10728	0.195
6/27/2018 13:11	10788	0.088	18.805	0.198	10788	0.198
6/27/2018 13:12	10848	0.086	18.804	0.194	10848	0.194
6/27/2018 13:13	10908	0.086	18.802	0.193	10908	0.193
6/27/2018 13:14	10968	0.084	18.803	0.188	10968	0.188
6/27/2018 13:15	11028	0.082	18.801	0.184	11028	0.184
6/27/2018 13:16	11088	0.083	18.805	0.187	11088	0.187
6/27/2018 13:17	11148	0.079	18.804	0.177	11148	0.177
6/27/2018 13:18	11208	0.08	18.808	0.179	11208	0.179
6/27/2018 13:19	11268	0.077	18.804	0.174	11268	0.174
6/27/2018 13:20	11328	0.076	18.804	0.172	11328	0.172
6/27/2018 13:21	11388	0.075	18.802	0.168	11388	0.168
6/27/2018 13:22	11448	0.073	18.802	0.165	11448	0.165
6/27/2018 13:23	11508	0.072	18.803	0.162	11508	0.162
6/27/2018 13:24	11568	0.068	18.801	0.154	11568	0.154
6/27/2018 13:25	11628	0.07	18.804	0.157	11628	0.157
6/27/2018 13:26	11688	0.07	18.805	0.157	11688	0.157
6/27/2018 13:27	11748	0.069	18.804	0.155	11748	0.155
6/27/2018 13:28	11808	0.065	18.806	0.147	11808	0.147
6/27/2018 13:29	11868	0.065	18.802	0.146	11868	0.146
6/27/2018 13:30	11928	0.063	18.804	0.143	11928	0.143
6/27/2018 13:31	11988	0.062	18.806	0.14	11988	0.14
6/27/2018 13:32	12048	0.06	18.805	0.135	12048	0.135
6/27/2018 13:33	12108	0.06	18.806	0.134	12108	0.134
6/27/2018 13:34	12168	0.058	18.807	0.13	12168	0.13
6/27/2018 13:35	12228	0.057	18.805	0.129	12228	0.129
6/27/2018 13:36	12288	0.056	18.806	0.126	12288	0.126

6/27/2018 13:37	12348	0.057	18.807	0.128		12348	0.128
6/27/2018 13:38	12408	0.054	18.806	0.121		12408	0.121
6/27/2018 13:39	12468	0.052	18.806	0.118		12468	0.118
6/27/2018 13:40	12528	0.051	18.805	0.115		12528	0.115
6/27/2018 13:41	12588	0.051	18.806	0.114		12588	0.114
6/27/2018 13:42	12648	0.048	18.807	0.108		12648	0.108
6/27/2018 13:43	12708	0.048	18.807	0.108		12708	0.108
6/27/2018 13:44	12768	0.044	18.804	0.1		12768	0.1
6/27/2018 13:45	12828	0.045	18.802	0.101		12828	0.101
6/27/2018 13:46	12888	0.047	18.807	0.105		12888	0.105
6/27/2018 13:47	12948	0.043	18.803	0.097		12948	0.097

S_s	Specific Storage
h	Well screen length
S	Storativity - assume 0.2 (Lohman 1972)
r_c	Well casing radius
r_s	Well screen radius

Transmissivity Equation

$T = r_c*(\omega^2+\gamma^2)/(8*\gamma)*\ln(0.79*r_$

Function Equation

$W(t) = A_0 * e^{(\gamma*t)}*\cos(\omega*t)$

A_o (ft)	0.586
γ (s^-1)	-1.49822986
ω (s^-1)	5.084731799
r_c (ft)	0.208333333
r_s (ft)	0.354166667
S	0.2
T_i (ft^2/s)	0.488409528
T_f (ft^2/s)	0.243558359
difference	0.24485117

K_r 0.002161 ft/s

no good fit: try AQTEsolve

Adjusted Ti	Adjusted Depth	W(t) Approximation	difference	square of difference
0	0.586	0.586	0	0
0.25	0.355	0.118925061	0.2360749	0.055731
0.5	-0.052	-0.228781696	0.1767817	0.031252
0.75	-0.015	-0.149085612	0.1340856	0.017979
1	0.22	0.047652513	0.1723475	0.029704
1.25	0.244	0.089826977	0.154173	0.023769
1.5	0.012	0.01393027	-0.00193	3.73E-06
2.157	0.166	-0.000643438	0.1666434	0.02777
2.362	0.038	0.014455841	0.0235442	0.000554

2.567	0.12	0.011069896	0.1089301	0.011866
2.773	0.053	0.000342051	0.0526579	0.002773
2.977	0.074	-0.005700403	0.0797004	0.006352
3.625	0.034	0.002345433	0.0316546	0.001002
	0.052	0.001530494	0.0504695	0.002547
	0.039	-0.000147405	0.0391474	0.001533
	0.04	-0.0009288	0.0409288	0.001675
	0.031	-0.000606002	0.031606	0.000999
	0.032	0.000338422	0.0316616	0.001002
	0.021	2.67332E-05	0.0209733	0.00044
	0.014	-8.18479E-05	0.0140818	0.000198
	0.021	4.71308E-05	0.0209529	0.000439
	0.016	-2.30969E-05	0.0160231	0.000257
	0.007	3.76264E-06	0.0069962	4.89E-05
	0	-3.52203E-06	3.522E-06	1.24E-11
	0.008	-9.68205E-09	0.008	6.4E-05
	0.004	-5.66368E-07	0.0040006	1.6E-05
	0.003	-7.17317E-08	0.0030001	9E-06
	0	-3.81406E-08	3.814E-08	1.45E-15
			Sum	0.217984

Report Date:	########
Report User Name	Larry
Report Computer	LAI
Application:	WinSitu.exe
Application Versio	5.6.25.0

Log File Properties

File Name	RW-7 Rising head 1_2018-06-29_11-19-13-390.wsl
Create Date	########

Device Properties

Device	Level TROLL 700				
Site	EMSU B Slug Testing				
Device Name					
Serial Number	106161				
Firmware Version	2.04				
Hardware Version	1				
Device Address	1				
Device Comm Cfg	19200	8	Even	1	(Modbus-RTU)
Used Memory	57				
Used Battery	0				

Log Configuration

Log Name	RW-7 Rising head 1
Created By	Larry
Computer I	LAI
Application	WinSitu.exe
Application	5.6.25.0
Create Dat	6/27/2018 1:49:16 PM Central Daylight Time
Log Setup T	Central Daylight Time
Notes Size(	4096
Overwrite	Disabled
Scheduled	Manual Start
Scheduled	No Stop Time
Type	True Logarithmic
Max Interv	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level M	Depth
Spe	1.024

Other Log Settings

Pressure O	5.92495 (PSI)

Depth of Pı -0.0106768 (ft)
Head Press -0.00473976 (PSI)
Temperatu 18.8149 (C)

Log Notes:

Date and Time	Note
6/27/2018 13:49	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:00:03 PM
6/27/2018 13:49	Used Battery: 0% Used Memory: 59% User Name: Larry
6/27/2018 13:50	Manual Start Command
6/27/2018 15:25	Used Battery: 0% Used Memory: 59% User Name: Larry
6/27/2018 15:25	Manual Stop Command

Log Data:

Record Count	192
Sensors	1
	1 106161 Pressure/Temp 30 PSIG (21m/69ft)

Time Zone: Central Daylight Time

		Sensor: Pre	Sensor: Pre	Sensor: Pres(G) 69ft		
	Elapsed Tin	SN#: 1061(	SN#: 1061(	SN#: 106161		
Date and Time	Seconds	Pressure (P	Temperatu	Depth (ft)	Time	Displaceme
6/27/2018 13:50	0	-0.026	18.785	-0.058	0	-0.058
6/27/2018 13:50	0.25	-0.139	18.803	-0.314	0.25	-0.314
6/27/2018 13:50	0.851	0.04	18.803	0.089	0.851	0.089
6/27/2018 13:50	1.055	-0.027	18.822	-0.061	1.055	-0.061
6/27/2018 13:50	1.26	0.056	18.834	0.126	1.26	0.126
6/27/2018 13:50	1.465	-0.101	18.845	-0.228	1.465	-0.228
6/27/2018 13:50	1.668	-0.176	18.852	-0.397	1.668	-0.397
6/27/2018 13:50	1.872	-0.133	18.859	-0.3	1.872	-0.3
6/27/2018 13:50	2.078	-0.169	18.864	-0.381	2.078	-0.381
6/27/2018 13:50	2.282	-0.183	18.867	-0.411	2.282	-0.411
6/27/2018 13:50	2.5	-0.186	18.869	-0.418	2.5	-0.418
6/27/2018 13:50	2.75	-0.213	18.871	-0.479	2.75	-0.479
6/27/2018 13:50	3	-0.256	18.871	-0.578	3	-0.578
6/27/2018 13:50	3.25	-0.34	18.87	-0.767	3.25	-0.767
6/27/2018 13:50	3.5	-0.267	18.872	-0.601	3.5	-0.601
6/27/2018 13:50	3.75	-0.292	18.874	-0.659	3.75	-0.659
6/27/2018 13:50	4	-0.334	18.876	-0.753	4	-0.753
6/27/2018 13:50	4.25	-0.402	18.876	-0.906	4.25	-0.906
6/27/2018 13:50	4.906	-0.376	18.851	-0.848	4.906	-0.848
6/27/2018 13:50	5.111	-0.309	18.864	-0.697	5.111	-0.697

6/27/2018 13:50	5.316	-0.355	18.872	-0.8	5.316	-0.8
6/27/2018 13:50	5.522	-0.342	18.876	-0.771	5.522	-0.771
6/27/2018 13:50	5.725	-0.376	18.957	-0.847	5.725	-0.847
6/27/2018 13:50	6.377	-0.406	18.938	-0.914	6.377	-0.914
6/27/2018 13:50	6.582	-0.424	18.927	-0.956	6.582	-0.956
6/27/2018 13:50	6.788	-0.438	18.924	-0.987	6.788	-0.987
6/27/2018 13:50	6.993	-0.426	18.924	-0.959	6.993	-0.959
6/27/2018 13:50	7.636	-0.424	18.882	-0.955	7.636	-0.955
6/27/2018 13:50	7.843	-0.42	18.891	-0.946	7.843	-0.946
6/27/2018 13:50	8.049	-0.418	18.897	-0.941	8.049	-0.941
6/27/2018 13:50	8.46	-0.413	18.83	-0.931	8.46	-0.931
6/27/2018 13:50	9.116	-0.41	18.865	-0.924	9.116	-0.924
6/27/2018 13:50	9.48	-0.404	18.864	-0.909	9.48	-0.909
6/27/2018 13:50	10.349	-0.397	18.847	-0.894	10.349	-0.894
6/27/2018 13:50	10.68	-0.395	18.854	-0.89	10.68	-0.89
6/27/2018 13:50	11.739	-0.387	18.837	-0.872	11.739	-0.872
6/27/2018 13:50	11.944	-0.387	18.855	-0.871	11.944	-0.871
6/27/2018 13:50	12.902	-0.38	18.835	-0.856	12.902	-0.856
6/27/2018 13:50	13.44	-0.376	18.842	-0.846	13.44	-0.846
6/27/2018 13:50	14.22	-0.374	18.835	-0.843	14.22	-0.843
6/27/2018 13:50	15.06	-0.368	18.836	-0.829	15.06	-0.829
6/27/2018 13:50	15.96	-0.368	18.832	-0.828	15.96	-0.828
6/27/2018 13:50	16.92	-0.363	18.833	-0.818	16.92	-0.818
6/27/2018 13:50	17.88	-0.363	18.832	-0.818	17.88	-0.818
6/27/2018 13:50	18.96	-0.36	18.828	-0.81	18.96	-0.81
6/27/2018 13:50	20.1	-0.357	18.824	-0.805	20.1	-0.805
6/27/2018 13:50	21.3	-0.359	18.825	-0.808	21.3	-0.808
6/27/2018 13:50	22.56	-0.356	18.821	-0.803	22.56	-0.803
6/27/2018 13:50	23.88	-0.353	18.82	-0.795	23.88	-0.795
6/27/2018 13:50	25.32	-0.353	18.82	-0.795	25.32	-0.795
6/27/2018 13:50	26.82	-0.352	18.82	-0.792	26.82	-0.792
6/27/2018 13:50	28.38	-0.351	18.82	-0.791	28.38	-0.791
6/27/2018 13:50	30.06	-0.351	18.816	-0.791	30.06	-0.791
6/27/2018 13:50	31.86	-0.349	18.817	-0.787	31.86	-0.787
6/27/2018 13:50	33.72	-0.349	18.816	-0.786	33.72	-0.786
6/27/2018 13:50	35.86	-0.349	18.828	-0.786	35.86	-0.786
6/27/2018 13:50	37.86	-0.347	18.819	-0.782	37.86	-0.782
6/27/2018 13:50	40.08	-0.345	18.825	-0.777	40.08	-0.777
6/27/2018 13:50	42.48	-0.345	18.815	-0.776	42.48	-0.776
6/27/2018 13:50	45	-0.343	18.826	-0.772	45	-0.772
6/27/2018 13:50	47.64	-0.345	18.817	-0.778	47.64	-0.778
6/27/2018 13:50	50.46	-0.344	18.824	-0.774	50.46	-0.774
6/27/2018 13:50	53.46	-0.34	18.814	-0.767	53.46	-0.767
6/27/2018 13:51	56.64	-0.34	18.814	-0.766	56.64	-0.766
6/27/2018 13:51	60	-0.34	18.825	-0.766	60	-0.766
6/27/2018 13:51	63.6	-0.338	18.815	-0.762	63.6	-0.762
6/27/2018 13:51	67.2	-0.339	18.818	-0.764	67.2	-0.764

6/27/2018 13:51	71.4	-0.339	18.819	-0.763	71.4	-0.763
6/27/2018 13:51	75.616	-0.338	18.82	-0.762	75.616	-0.762
6/27/2018 13:51	79.949	-0.339	18.826	-0.763	79.949	-0.763
6/27/2018 13:51	84.682	-0.337	18.831	-0.76	84.682	-0.76
6/27/2018 13:51	90	-0.337	18.824	-0.76	90	-0.76
6/27/2018 13:51	94.939	-0.334	18.826	-0.751	94.939	-0.751
6/27/2018 13:51	100.8	-0.333	18.819	-0.75	100.8	-0.75
6/27/2018 13:51	106.8	-0.334	18.814	-0.753	106.8	-0.753
6/27/2018 13:51	112.8	-0.333	18.814	-0.751	112.8	-0.751
6/27/2018 13:52	119.435	-0.332	18.845	-0.747	119.435	-0.747
6/27/2018 13:52	126.6	-0.331	18.815	-0.746	126.6	-0.746
6/27/2018 13:52	134.439	-0.331	18.843	-0.746	134.439	-0.746
6/27/2018 13:52	142.2	-0.328	18.814	-0.739	142.2	-0.739
6/27/2018 13:52	150.6	-0.33	18.815	-0.743	150.6	-0.743
6/27/2018 13:52	159.694	-0.329	18.828	-0.742	159.694	-0.742
6/27/2018 13:52	169.2	-0.322	18.809	-0.726	169.2	-0.726
6/27/2018 13:53	178.8	-0.328	18.81	-0.739	178.8	-0.739
6/27/2018 13:53	189.705	-0.326	18.824	-0.733	189.705	-0.733
6/27/2018 13:53	201	-0.326	18.812	-0.734	201	-0.734
6/27/2018 13:53	213	-0.326	18.805	-0.735	213	-0.735
6/27/2018 13:53	225.6	-0.326	18.813	-0.735	225.6	-0.735
6/27/2018 13:54	238.8	-0.324	18.805	-0.731	238.8	-0.731
6/27/2018 13:54	253.2	-0.324	18.805	-0.73	253.2	-0.73
6/27/2018 13:54	268.2	-0.325	18.806	-0.732	268.2	-0.732
6/27/2018 13:54	283.799	-0.325	18.804	-0.733	283.799	-0.733
6/27/2018 13:55	300.6	-0.324	18.808	-0.729	300.6	-0.729
6/27/2018 13:55	318.6	-0.323	18.803	-0.727	318.6	-0.727
6/27/2018 13:55	337.2	-0.322	18.805	-0.726	337.2	-0.726
6/27/2018 13:56	357.6	-0.322	18.803	-0.725	357.6	-0.725
6/27/2018 13:56	378.6	-0.322	18.802	-0.725	378.6	-0.725
6/27/2018 13:56	400.799	-0.322	18.806	-0.725	400.799	-0.725
6/27/2018 13:57	424.981	-0.319	18.812	-0.72	424.981	-0.72
6/27/2018 13:57	450.013	-0.319	18.811	-0.719	450.013	-0.719
6/27/2018 13:58	476.4	-0.322	18.806	-0.726	476.4	-0.726
6/27/2018 13:58	504.755	-0.319	18.818	-0.719	504.755	-0.719
6/27/2018 13:58	534.749	-0.32	18.817	-0.72	534.749	-0.72
6/27/2018 13:59	566.4	-0.321	18.802	-0.723	566.4	-0.723
6/27/2018 14:00	600.02	-0.322	18.813	-0.725	600.02	-0.725
6/27/2018 14:00	635.999	-0.322	18.806	-0.725	635.999	-0.725
6/27/2018 14:01	671.999	-0.32	18.801	-0.721	671.999	-0.721
6/27/2018 14:01	713.999	-0.321	18.801	-0.722	713.999	-0.722
6/27/2018 14:02	755.999	-0.318	18.803	-0.716	755.999	-0.716
6/27/2018 14:03	797.999	-0.321	18.803	-0.723	797.999	-0.723
6/27/2018 14:04	845.999	-0.32	18.805	-0.721	845.999	-0.721
6/27/2018 14:05	900.032	-0.319	18.814	-0.718	900.032	-0.718
6/27/2018 14:05	947.999	-0.321	18.8	-0.723	947.999	-0.723
6/27/2018 14:06	1007.999	-0.319	18.8	-0.719	1007.999	-0.719

6/27/2018 14:07	1067.999	-0.321	18.802	-0.722	1067.999	-0.722
6/27/2018 14:08	1127.999	-0.32	18.801	-0.721	1127.999	-0.721
6/27/2018 14:09	1187.999	-0.32	18.8	-0.72	1187.999	-0.72
6/27/2018 14:10	1247.999	-0.322	18.799	-0.726	1247.999	-0.726
6/27/2018 14:11	1307.999	-0.322	18.799	-0.724	1307.999	-0.724
6/27/2018 14:12	1367.999	-0.322	18.796	-0.725	1367.999	-0.725
6/27/2018 14:13	1427.999	-0.322	18.802	-0.726	1427.999	-0.726
6/27/2018 14:14	1487.999	-0.322	18.798	-0.725	1487.999	-0.725
6/27/2018 14:15	1547.999	-0.322	18.801	-0.726	1547.999	-0.726
6/27/2018 14:16	1607.999	-0.322	18.8	-0.725	1607.999	-0.725
6/27/2018 14:17	1667.999	-0.324	18.799	-0.729	1667.999	-0.729
6/27/2018 14:18	1727.999	-0.324	18.8	-0.731	1727.999	-0.731
6/27/2018 14:19	1787.999	-0.325	18.797	-0.733	1787.999	-0.733
6/27/2018 14:20	1847.999	-0.326	18.796	-0.735	1847.999	-0.735
6/27/2018 14:21	1907.999	-0.326	18.8	-0.734	1907.999	-0.734
6/27/2018 14:22	1967.999	-0.328	18.801	-0.739	1967.999	-0.739
6/27/2018 14:23	2027.999	-0.328	18.8	-0.738	2027.999	-0.738
6/27/2018 14:24	2087.999	-0.33	18.801	-0.743	2087.999	-0.743
6/27/2018 14:25	2147.999	-0.329	18.8	-0.74	2147.999	-0.74
6/27/2018 14:26	2207.999	-0.328	18.802	-0.739	2207.999	-0.739
6/27/2018 14:27	2267.999	-0.329	18.802	-0.741	2267.999	-0.741
6/27/2018 14:28	2327.999	-0.331	18.799	-0.747	2327.999	-0.747
6/27/2018 14:29	2387.999	-0.331	18.801	-0.745	2387.999	-0.745
6/27/2018 14:30	2447.999	-0.332	18.801	-0.749	2447.999	-0.749
6/27/2018 14:31	2507.999	-0.332	18.799	-0.747	2507.999	-0.747
6/27/2018 14:32	2567.999	-0.334	18.8	-0.753	2567.999	-0.753
6/27/2018 14:33	2627.999	-0.333	18.802	-0.749	2627.999	-0.749
6/27/2018 14:34	2687.999	-0.333	18.799	-0.751	2687.999	-0.751
6/27/2018 14:35	2747.999	-0.335	18.801	-0.754	2747.999	-0.754
6/27/2018 14:36	2807.999	-0.337	18.799	-0.76	2807.999	-0.76
6/27/2018 14:37	2867.999	-0.337	18.801	-0.76	2867.999	-0.76
6/27/2018 14:38	2927.999	-0.337	18.8	-0.76	2927.999	-0.76
6/27/2018 14:39	2987.999	-0.337	18.797	-0.76	2987.999	-0.76
6/27/2018 14:40	3047.999	-0.338	18.8	-0.762	3047.999	-0.762
6/27/2018 14:41	3107.999	-0.34	18.798	-0.765	3107.999	-0.765
6/27/2018 14:42	3167.999	-0.339	18.798	-0.765	3167.999	-0.765
6/27/2018 14:43	3227.999	-0.34	18.798	-0.765	3227.999	-0.765
6/27/2018 14:44	3287.999	-0.34	18.8	-0.767	3287.999	-0.767
6/27/2018 14:45	3347.999	-0.342	18.798	-0.77	3347.999	-0.77
6/27/2018 14:46	3407.999	-0.343	18.798	-0.773	3407.999	-0.773
6/27/2018 14:47	3467.999	-0.344	18.8	-0.775	3467.999	-0.775
6/27/2018 14:48	3527.999	-0.343	18.799	-0.773	3527.999	-0.773
6/27/2018 14:49	3587.999	-0.344	18.8	-0.775	3587.999	-0.775
6/27/2018 14:50	3647.999	-0.345	18.796	-0.778	3647.999	-0.778
6/27/2018 14:51	3707.999	-0.345	18.798	-0.777	3707.999	-0.777
6/27/2018 14:52	3767.999	-0.347	18.799	-0.781	3767.999	-0.781
6/27/2018 14:53	3827.999	-0.349	18.797	-0.786	3827.999	-0.786

6/27/2018 14:54	3887.999	-0.347	18.799	-0.781	3887.999	-0.781
6/27/2018 14:55	3947.999	-0.349	18.797	-0.786	3947.999	-0.786
6/27/2018 14:56	4007.999	-0.35	18.799	-0.789	4007.999	-0.789
6/27/2018 14:57	4067.999	-0.351	18.799	-0.79	4067.999	-0.79
6/27/2018 14:58	4127.999	-0.353	18.8	-0.795	4127.999	-0.795
6/27/2018 14:59	4187.999	-0.352	18.8	-0.792	4187.999	-0.792
6/27/2018 15:00	4247.999	-0.351	18.8	-0.79	4247.999	-0.79
6/27/2018 15:01	4307.999	-0.354	18.799	-0.798	4307.999	-0.798
6/27/2018 15:02	4367.999	-0.355	18.8	-0.8	4367.999	-0.8
6/27/2018 15:03	4427.999	-0.355	18.8	-0.8	4427.999	-0.8
6/27/2018 15:04	4487.999	-0.356	18.797	-0.802	4487.999	-0.802
6/27/2018 15:05	4547.999	-0.357	18.8	-0.803	4547.999	-0.803
6/27/2018 15:06	4607.999	-0.358	18.799	-0.807	4607.999	-0.807
6/27/2018 15:07	4667.999	-0.359	18.801	-0.808	4667.999	-0.808
6/27/2018 15:08	4727.999	-0.359	18.801	-0.808	4727.999	-0.808
6/27/2018 15:09	4787.999	-0.358	18.799	-0.807	4787.999	-0.807
6/27/2018 15:10	4847.999	-0.359	18.801	-0.81	4847.999	-0.81
6/27/2018 15:11	4907.999	-0.361	18.801	-0.814	4907.999	-0.814
6/27/2018 15:12	4967.999	-0.362	18.798	-0.815	4967.999	-0.815
6/27/2018 15:13	5027.999	-0.361	18.801	-0.814	5027.999	-0.814
6/27/2018 15:14	5087.999	-0.364	18.801	-0.819	5087.999	-0.819
6/27/2018 15:15	5147.999	-0.365	18.8	-0.822	5147.999	-0.822
6/27/2018 15:16	5207.999	-0.366	18.802	-0.824	5207.999	-0.824
6/27/2018 15:17	5267.999	-0.366	18.8	-0.824	5267.999	-0.824
6/27/2018 15:18	5327.999	-0.366	18.801	-0.824	5327.999	-0.824
6/27/2018 15:19	5387.999	-0.368	18.802	-0.829	5387.999	-0.829
6/27/2018 15:20	5447.999	-0.368	18.803	-0.829	5447.999	-0.829
6/27/2018 15:21	5507.999	-0.367	18.803	-0.826	5507.999	-0.826
6/27/2018 15:22	5567.999	-0.369	18.801	-0.832	5567.999	-0.832
6/27/2018 15:23	5627.999	-0.369	18.802	-0.831	5627.999	-0.831
6/27/2018 15:24	5688.055	-0.37	18.794	-0.834	5688.055	-0.834

ɛnt	K_r	0.000941	ft/s	AQTEsolv, decent fit

	Adjusted Ti	Adjusted Depth
Start	0	-0.196
	0.205	-0.168
	0.848	-0.164
	1.055	-0.155
	1.261	-0.15
	1.672	-0.14
	2.328	-0.133
	2.692	-0.118
	3.561	-0.103
	3.892	-0.099
	4.951	-0.081
	5.156	-0.08
	6.114	-0.065
	6.652	-0.055
	7.432	-0.052
	8.272	-0.038
	9.172	-0.037
	10.132	-0.027
	11.092	-0.027
	12.172	-0.019
	13.312	-0.014
	14.512	-0.017
	15.772	-0.012
	17.092	-0.004
	18.532	-0.004
	20.032	-0.001
	21.592	0
	23.272	0

Slug Test	K_r (ft/s)	Method	Fit Quality
MW-5 Falling Head	0.003567646	Calculated	good
MW-5 Rising Head	1.06E-07	AQTESOLV	poor
MW-6 Falling Head 1	0.066324764	Calculated	poor
MW-6 Falling Head 2	N/A - no convergence	Calculated	N/A
MW-6 Rising Head 1	2.45E-07	AQTESOLV	poor
MW-6 Rising Head 2	0.0001511	AQTESOLV	poor
MW-8 Falling Head	0.003191403	Calculated	good
MW-8 Rising Head	0.0001422	AQTESOLV	poor
RW-6 Falling Head	0.00106	AQTESOLV	poor
RW-6 Rising Head	0.000245	AQTESOLV	poor
RW-7 Falling Head	0.002161	AQTESOLV	good
RW-7 Rising Head	0.000941	AQTESOLV	good

Average of 'good' values:	0.002465262
standard deviation:	0.001177353
%stdev	47.76%

Average of all values:	0.007071315
standard deviation	0.019694241
%stdev	278.51%

Pumping Test	T (ft^2/s)	K_r (ft/s)	Method	Fit Quality
RW-6 - Run 1	0.00002126	1.53724E-06	AQTESOLV	poor
RW-7 - Run 1	0.00003936	2.27514E-06	AQTESOLV	poor
RW-7 - Run 2	0.00008632	4.9896E-06	AQTESOLV	poor
RW-7 - Run 3	0.0003417	1.97514E-05	AQTESOLV	poor