

3399 Veterans Drive, Traverse City, Michigan 49684

## QUARTERLY PROJECT UPDATE REPORT 2<sup>nd</sup> QUARTER 2020

HARLTAND 36 GAS PLANT PORTION OF E<sup>1</sup>/<sub>2</sub> of NW <sup>1</sup>/<sub>4</sub> of SECTION 36, T03N-R06E, HARTLAND TWP, LIVINGSTON COUNTY, MICHIGAN

LAMBDA ENERGY RESOURCES, LLC 1510 THOMAS ROAD KALKASKA, MICHIGAN 49646

**September 10, 2020** 

ECT No. 130685-2000

#### **DOCUMENT REVIEW**

The dual signatory process is an integral part of Environmental Consulting & Technology, Inc.'s (ECT's) Document Review Policy No. 9.03. All ECT documents undergo technical/peer review prior to dispatching these documents to any outside entity.

This document has been authored and reviewed by the following employees:

Jeremy S. Lewandowski	Brian J. Baumann
Author	Peer Review
98Hm	Poten Bamann
Signature	Signature
September 10, 2020	September 10, 2020
Date	Date



#### TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1.0	INTRODUCTION	1
2.0	PROJECT LOCATION	1
3.0	PROJECT SUBMITTALS	1
4.0	PROJECT OVERVIEW	2
5.0	REMEDIATION SYSTEM OPERATION AND MAINTENANCE	3
6.0	PERFORMANCE MONITORING SUMMARY	3
	<ul> <li>6.1 PERFORMANCE MONITORING EVENTS</li> <li>6.2 LABORATORY ANALYSIS</li> <li>6.3 CLEANUP GOALS</li> <li>6.4 GROUNDWATER ANALYTICAL SUMMARY &amp; CLEANUP CRITERIA COMPARISON</li> </ul>	4
7.0	CONCLUSIONS AND RECOMMENDATIONS	5
8.0	SCHEDULE	6
	LIST OF APPENDICES	

### **Appendix**

- A FIGURES
- B TABLES
- C LABORATORY ANALYTICAL REPORTS
- D LOW-FLOW SAMPLING FIELD FORMS



#### 1.0 INTRODUCTION

This Quarterly Project Update Report was compiled by Environmental Consulting & Technology, Inc. (ECT), on behalf of Lambda Energy Resources, LLC (LER) and details remediation system operations and performance monitoring through the 2<sup>nd</sup> Quarter 2020 (April 1, 2020 through June 30, 2020) for the Hartland 36 Gas Plant location, herein referenced as the "Site".

#### 2.0 PROJECT LOCATION

The Site is a former natural gas processing plant which operated from 1999 to 2015. The property is located in a portion of the East ½ of the Northeast ¼ of Section 36, T03N-R06E, on the south side of Lone Tree Road between North Pleasant Valley Road and South Tipsico Lake Road in Hartland Township, Livingston County, Michigan. A Site Location Map and Site and Surrounding Properties Map are included as Figure 1 and Figure 2, respectively, in Appendix A.

#### 3.0 PROJECT SUBMITTALS

The following presents a chronological summary of previous documents submitted to the Michigan Department of Environment, Great Lakes, and Energy – Oil, Gas, and Minerals Division (EGLE-OGMD) by ECT for the Site:

- Soil Closure Report dated February 15, 2016
- Groundwater Characterization Work Plan dated February 23, 2016
- Groundwater Characterization Work Plan 2 dated July 8, 2016
- Project Update Report dated September 26, 2016
- Groundwater Characterization Work Plan 3 dated October 14, 2016
- Additional Groundwater Characterization Work Plan dated December 29, 2016
- Groundwater Characterization Work Plan 5 dated March 2, 2017
- Biosparging Pilot Study Work Plan dated April 5, 2017
- Groundwater Characterization Report dated July 3, 2017
- Technical Memorandum Biosparging Pilot Study dated July 28, 2017
- Remediation System Design Plan dated August 11, 2017
- Quarterly Project Update Report 1<sup>st</sup> Quarter 2018 dated April 24, 2018
- Quarterly Project Update Report 2<sup>nd</sup> Quarter 2018 dated August 8, 2018
- Quarterly Project Update Report 3<sup>rd</sup> Quarter 2018 dated October 26, 2018
- Quarterly Project Update Report 4<sup>th</sup> Quarter 2018 dated April 8, 2019
- Quarterly Project Update Report 1st Quarter 2019 dated April 10, 2019
- Quarterly Project Update Report 2<sup>nd</sup> Quarter 2019 dated August 19, 2019
- Quarterly Project Update Report 3<sup>rd</sup> Quarter 2019 dated November 25, 2019
- Quarterly Project Update Report 4<sup>th</sup> Quarter 2020 dated May 5, 2020
- Quarterly Project Update Report 1<sup>st</sup> Quarter 2020 dated July 17, 2020



#### 4.0 PROJECT OVERVIEW

KCS Michigan Resources developed the Site in 1999 and operated the natural gas processing plant into 2006. Merit Energy Company acquired the Site in 2006 and operated the plant until August 2015, when facility decommissioning commenced. LER acquired the Site from Merit Energy Company in July 2018.

In general, operations at the Site included crude oil and brine separation and storage, natural gas compression, dehydration, sweetening (hydrogen sulfide [H<sub>2</sub>S] removal), carbon dioxide (CO<sub>2</sub>) removal (amine process), and refrigeration for natural gas liquid (NGL) extraction and storage.

Contaminated soil was discovered in September 2015 during facility decommissioning activities at the former sweetening plant/refrigeration building; sulfolane impacts are from the gas treatment chemical Sulfinol®. Remediation activities (excavation and off-Site disposal) completed from September 2015 through December 2016 resulted in disposal of 13,481.4 tons of soil at the Venice Park Landfill in Lennon, Michigan. Verification of soil remediation (VSR) samples collected from the excavations confirmed remediation of impacted soils. Refer to the Soil Closure Report dated February 15, 2016 for a detailed summary of soil remediation and sampling activities.

Groundwater investigation activities commenced on October 29, 2015 and were completed on March 7, 2017. Seven soil borings, 13 temporary monitor wells, including two vertical aquifer profile (VAP) locations, and 37 permanent monitor wells, including 20 shallow screened monitor wells and 17 deep screened monitor wells, have been installed at the Site. The lateral and vertical extents of groundwater impacted with sulfolane have been delineated to non-detectable concentrations (laboratory reporting limit of 10 micrograms per liter,  $\mu g/L$ ). The maximum sulfolane concentration reported from a monitor well at the Site was 11,000 micrograms per liter ( $\mu g/L$ ) from MW-20D on the June 19-21, 2017 sampling event. Refer to the Groundwater Characterization Report dated July 3, 2017 for a detailed summary of groundwater characterization and assessment activities.

A biosparging pilot study was conducted at the Site from May 1, 2017 through June 16, 2017. The pilot study included three tests to evaluate the effectiveness of biosparging to enhance bioremediation of sulfolane dissolved in groundwater at the Site. Data obtained from the pilot study indicates biosparging is an effective remedial alternative for the Site. Concentrations of sulfolane were reduced by 100% within five feet of the biosparge point and 97% to 99% at a distance of 20 feet from the biosparge point. Dissolved oxygen (DO) influence of 4.2-10 milligrams per liter (mg/L) was observed at monitoring locations situated 40 feet from the biosparge point. Refer to the Technical Memorandum – Biosparging Pilot Study dated July 28, 2017 for a summary of pilot study activities and results.

Information obtained from the pilot study was utilized to compile the Remediation System Design Plan dated August 11, 2017. The Remediation System Design Plan presented the biosparge point (BSP) array, remediation system equipment, anticipated remediation system operation and maintenance (O&M), and performance monitoring activities. Biosparge system installation activities commenced at the Site on August 21, 2017 and concluded with startup of the remediation system on November 16, 2017. Remediation system equipment and components were generally consistent with



details and specifications provided in the Remediation System Design Plan and included 41 biosparge points (BSPs). Refer to the Quarterly Project Update Report – 1<sup>st</sup> Quarter 2018 dated April 24, 2018 for a summary of remediation system installation activities, O&M, and results of performance monitoring events completed through the 1<sup>st</sup> Quarter 2018.

Performance monitoring results from the 1<sup>st</sup> Quarter 2020 indicate the remediation system continues to mitigate concentrations of sulfolane in groundwater with all ten of the monitor wells that reported a concentration of sulfolane above the cleanup goal from the pre-startup sampling event reporting sulfolane non-detect. The remediation system was shut down on February 17, 2020 and has not operated since. Refer to the Quarterly Project Update Report – 1<sup>st</sup> Quarter 2020 dated July 17, 2020 for a summary of remediation system O&M and results of performance monitoring events completed through the 1<sup>st</sup> Quarter 2020.

#### 5.0 REMEDIATION SYSTEM OPERATION AND MAINTENANCE

The remediation system was shut down on February 17, 2020 for scheduled maintenance of the air sparge compressor skid. The remediation system has remained shut down since February 17, 2020.

#### 6.0 PERFORMANCE MONITORING SUMMARY

The following sections detail performance monitoring activities completed at the Site in the 2<sup>nd</sup> Quarter 2020.

#### 6.1 PERFORMANCE MONITORING EVENTS

Personnel from ECT completed the following performance monitoring events at the Site in the 2<sup>nd</sup> Quarter 2020:

- April 2, 2020 Groundwater monitoring event of the following four monitor wells:
  - o MW-7D, MW-13D, MW-14D, and MW-19D.
- June 1-2, 2020 Quarterly groundwater monitoring event of the following 14 monitor wells:
  - o MW-7, MW-7D, MW-13, MW-13D, MW-14S, MW-14D, MW-15D, MW-17S, MW-17D, MW-18, MW-19S, MW-19D, MW-20S, and MW-20D.

#### 6.2 LABORATORY ANALYSIS

Groundwater samples from the April 2, 2020 sampling event were collected with disposable polyethylene bailers after removing approximately three volumes of groundwater from each well (utilizing the bailers).

Groundwater samples from the June 1-2, 2020 quarterly sampling event were collected via low-stress sampling methods in general accordance with USEPA Region 1 Low-Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, Revision Date September 19, 2017. Groundwater samples, including QA/QC samples, were collected and analyzed in general accordance with currently applicable EGLE-RRD guidance documents.



The samples were collected into laboratory supplied containers, placed on ice, and shipped under chain-of-custody protocols to the ALS Environmental laboratory facility located in Holland, Michigan for analysis of the following:

- Sulfolane by USEPA Method 8270D
- Sulfate by Method A4500-SO4 E-11 (only for the June 1-2, 2020 sampling event)

Copies of laboratory analytical reports are included in Appendix C. Copies of low-flow sampling field forms are included in Appendix D.

#### 6.3 CLEANUP GOALS

The EGLE-OGMD established an interim drinking water criterion for sulfolane of 90  $\mu$ g/L which has been considered the cleanup goal for sulfolane dissolved in groundwater at the Site. However, per the June 28, 2020 EGLE-OGMD response to the Quarterly Project Update Report – 1st Quarter 2020, the Draft EGLE Part 201 Residential Generic Cleanup Criteria and Screening Level (Part 201 Residential GCCSL) for Drinking Water for sulfolane (5.9  $\mu$ g/L), published in the Comprehensive Cleanup Criteria Update 2017, is now considered the basis for final site closure. Per footnote (M) of the proposed cleanup criteria tables, since the calculated health-based criteria of 5.9  $\mu$ g/L is below the analytical target detection limit of 10  $\mu$ g/L, the analytical target detection limit of 10  $\mu$ g/L is considered the criterion.

The cleanup goal for sulfate, resulting from the biodegradation of sulfolane, was established in previous project submittals and is the EGLE Part 201 Residential GCCSL Drinking Water Criterion of 250 mg/L.

## 6.4 GROUNDWATER ANALYTICAL SUMMARY & CLEANUP CRITERIA COMPARISON

The following presents a summary and comparison of groundwater analytical results to the cleanup goal for sulfolane through the quarterly groundwater sampling event completed on June 1-2, 2020.

#### Monitor wells located west beyond the extent of the lower clay confining layer

 Monitor well clusters MW-6/6D and MW-12S/12D reported sulfolane non-detect from all associated sampling events.

#### Monitor wells screened below the lower clay confining layer

- Monitor wells MW-19DD and MW-21D reported sulfolane non-detect from all associated sampling events.
- Concentrations of sulfolane were reported below applicable cleanup criteria from MW-15DD from the pre-remediation system startup sampling event (September 11-13, 2017) and a confirmation sampling event (September 21, 2018). The concentration of sulfolane detected in MW-15DD is suspected to be the result of drilling activities completed on August 28, 2017. Sulfolane was reported non-detect from MW-15DD from all subsequent sampling events.



Monitor wells screened within the limits of the clay confining layer (area of sulfolane impact)

- The following monitor wells reported sulfolane non-detect from all associated sampling events:
  - ➤ MW-1, MW-2, MW-2D, MW-3, MW-3D, MW-4, MW-5, MW-8, MW-9, MW-10, MW-11, MW-15, MW-16, MW-16D, MW-22D, and MW-23D
- The following monitor wells previously reported sulfolane above the cleanup goal prior to the pre-remediation system startup event, below the cleanup goal at the pre-remediation system startup event, and currently report sulfolane non-detect:
  - ➤ MW-19S and MW-20S
- The following monitor wells previously reported sulfolane above the cleanup goal prior to the pre-remediation system startup event and non-detect at and subsequent to the pre-remediation system startup event:
  - ➤ MW-7 and MW-13
- The following presents percent reductions to the concentration of sulfolane (relative to the highest concentration from/after the pre-remediation system startup sampling event) for monitor wells that reported sulfolane above the cleanup goal from the pre-remediation system startup sampling event:
  - April 2, 2020:
    - o MW-7D:  $330 \,\mu g/L 82.6\%$
    - o MW-13D:  $16 \mu g/L 97.8\%$
    - o MW-14D, MW-19D: ND 100%
  - ➤ June 1-2, 2020: MW-7D, MW-13D, MW-14S, MW-14D, MW-15D, MW-17S, MW-17D, MW-18, MW-19D, and MW-20D: 100%
- Prior to the 2<sup>nd</sup> Quarter 2020 monitoring event, MW-13D was the only monitor well at the Site that reported concentrations of sulfate above the cleanup goal (250 μg/L). In addition to MW-13D (560 μg/L), MW-17D (260 μg/L) reported sulfate above the cleanup goal from the 2<sup>nd</sup> Quarter 2020 monitoring event. As noted in the Technical Memorandum Biosparging Pilot Study dated July 28, 2017, natural attenuation/biodegradation (i.e sulfate reduction) of sulfate is expected once biosparging has ceased. In consideration of the remediation system being shut down since mid-February 2020, natural attenuation/biodegradation appears to be occurring as supported by the decrease to the concentration of sulfate at MW-13D from the previous quarterly sampling event (920 μg/L).

Monitor well locations are illustrated on Figure 3 in Appendix A. Please refer to Table 1 and Table 2 in Appendix B for a summary of groundwater monitoring data for the Site. The cleanup goal for sulfolane has been updated on Table 1 and Table 2.

#### 7.0 CONCLUSIONS AND RECOMMENDATIONS

As supported by the data presented herein, the remediation system has been effective at reducing concentrations of sulfolane after approximately 2.5 years (31 months) of operation. All 14 monitor wells that previously reported a concentration of sulfolane above the cleanup goal were reported non-detect at the June 1-2, 2020 sampling event. The June 1-2, 2020 sampling event is the second



consecutive quarterly sampling event with all 14 monitor wells reported below the cleanup goal. The concentration of sulfate reported from MW-13D remains above the cleanup goal. However, the concentration of sulfate at MW-13D decreased to  $560~\mu g/L$  from  $920~\mu g/L$  from the March 2020~sam-pling event, thus indicating natural attenuation/biodegradation (i.e sulfate reduction) of sulfate is likely occurring. Prior to the  $2^{nd}$  Quarter 2020 monitoring event, MW-13D was the only monitor well to have reported a concentration of sulfate above the cleanup goal. In addition to MW-13D, MW-17D reported sulfate  $(260~\mu g/L)$  above the cleanup goal for the  $2^{nd}$  Quarter 2020 monitoring event.

As a result of all 14 monitor wells reporting sulfolane non-detect for the second consecutive quarterly monitoring event, the remediation system will remain shut down for the 3<sup>rd</sup> Quarter 2020.

Per recommendations presented in the Quarterly Project Update Report  $-3^{rd}$  Quarter 2018 dated October 26, 2018, and correspondence with EGLE-OGMD staff, three performance monitoring events per year were to include the 14 monitor wells with current/previous detections of sulfolane and one performance monitoring event per year was to include all (37) monitor wells. As a result of sulfolane reported non-detect from each of the 14 monitor wells samples for the previous two quarterly sampling events, sampling the remaining 23 monitor wells is no longer warranted.

#### 8.0 SCHEDULE

The following schedule of activities is proposed/anticipated for the 3<sup>rd</sup> Quarter 2020:

- The remediation system will continue to be shut down.
- The next performance/quarterly monitoring event is proposed to be completed in September 2020 and will include the 14 monitor wells with current/previous detections of sulfolane.
- A quarterly project update report will be submitted subsequent to receipt of analytical data from the September 2020 monitoring event.



# APPENDIX A FIGURES



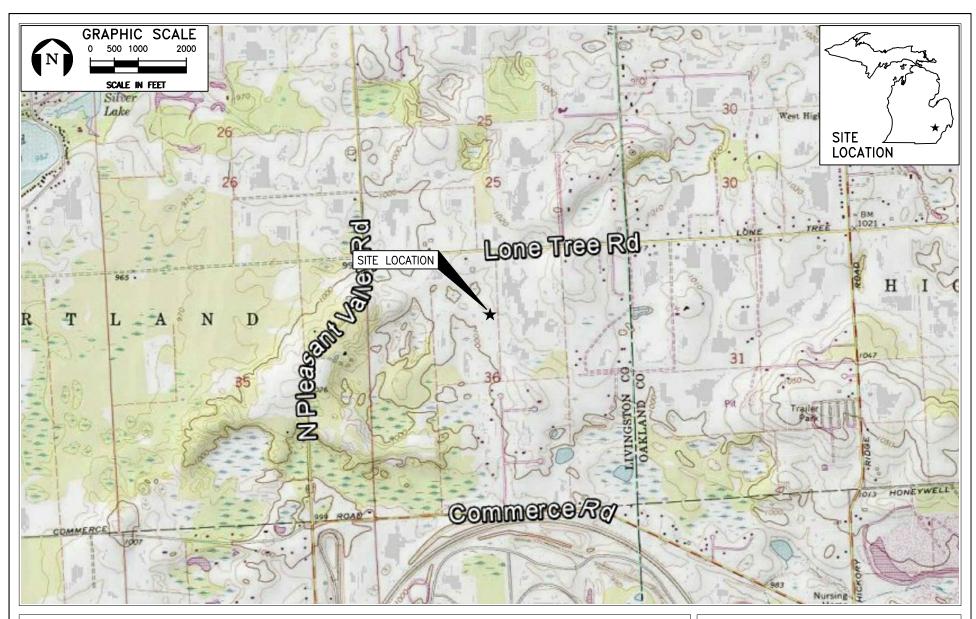


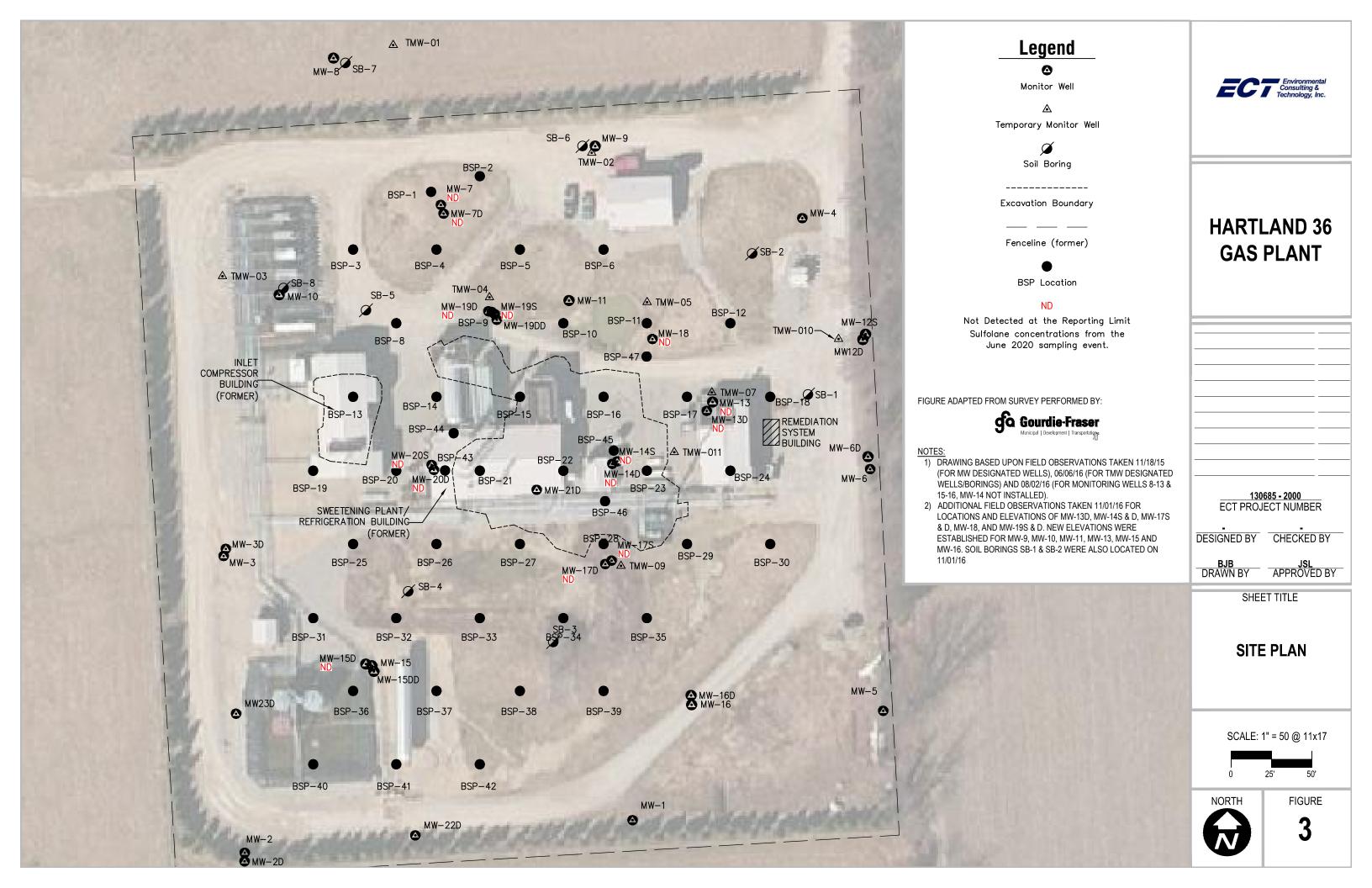
FIGURE 1
SITE LOCATION MAP
HARTLAND 36 GAS PLANT
PORTION OF E 1/2 OF NE 1/4 OF SECTION 36, T03N-R06E
HARTLAND TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN
Source: USGS QUad: Kent Lake, 2015; West Highland, 2015; ECT, 2016.





FIGURE 2 SITE AND SURROUNDING PROPERTIES MAP HARTLAND 36 GAS PLANT PORTION OF E 1/2 OF NE 1/4 OF SECTION 36, T03N-R06E HARTLAND TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN Source: Google Earth, 2016; ECT, 2016.





## **APPENDIX B**

**TABLES** 



														TABL																
									G	ROUND	VATER	ANALY				ANUP CF	RITERIA	COMPA	RISON											
															Gas Plant															
												Portio	of E1/2 of				6E,													
				_						_			ECT		3-0685-200	)0			_			_			_					
		MW-1			MW-2	0.11.		MW-2D		0 1/ 1	MW-3	0 11 1		MW-3D			MW-4	0 " .		MW-5			MW-6	0 " .		MW-6D		0 11 1	MW-7	0.16.
Date	Sulfolane	DO	Sulfate	Sulfolane		Sulfate	Sulfolane			Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate		DO		Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO		Sulfolane		Sulfate
9/11-13/17	ND	8.08		ND	4.14		ND	5.36		ND	6.96		ND	1.03		ND	7.75		ND	7.31		ND	2.77		ND	5.90		ND	1.55	
9/21/17	ND	8.83	6.4	ND	8.76	16	ND	5.02	21	ND	9.81	41	ND	1.90	27	ND	7.10	24	ND	6.85	24	ND	2.99	42	ND	9.26	19	ND	10.07	46
1/25/18	ND 	0.03	0.4	ND	8.76	16	ND	5.02	21	ND 	9.81	41	ND 	1.90		ND 	7.10	24	ND	0.85	24	IND	2.99	42	ND	9.26	19	ND	10.07	46
2/27/18			-												-															-
	28-2918 ND 7.87 5.0 ND 7.79 14 ND 4.05 17 ND 11.53 26 ND 1.31 30 ND 9.77 29 ND 6.31 24 ND 3.22 41 ND 6.92 20 ND 9.75 31																													
6/19-21/18	9-21/18 ND 15.96 9.3 ND 10.66 15 ND 7.87 18 ND 8.43 11 ND 1.06 28 ND 9.86 21 ND 12.49 28 ND 10.58 56 ND 10.91 10 ND 10.49 17																													
9/18-20/18	9-21/18 ND 15.96 9.3 ND 10.66 15 ND 7.87 18 ND 8.43 11 ND 1.06 28 ND 9.86 21 ND 12.49 28 ND 10.58 56 ND 10.91 10 ND 10.49 17 8-20/18 ND 9.98 8.5 ND 12.08 15 ND 10.21 21 ND 9.56 16 ND 1.87 34 ND 11.86 23 ND 11.26 25 ND 5.56 57 ND 8.27 22 ND 13.67 24																													
12/17-18/18	2018 ND 9.98 8.5 ND 12.08 15 ND 10.2 1 15 ND 10.2 1 15 ND 10.2 21 ND 9.56 16 ND 1.87 34 ND 11.86 23 ND 11.26 25 ND 5.56 57 ND 8.27 22 ND 13.67 24																													
3/25-26/19																												ND	15.99	44
6/24-26/19	ND	11.22	6.8	ND	7.00	17	ND	3.79	20	ND	11.36	15	ND	4.99	32	ND	11.47	27	ND	9.78	36	ND	6.25	61	ND	7.11	23	ND	12.22	20
9/23-24/19																												ND	12.78	25
12/3-4/19																												ND	9.65	29
1/2/20									-			-																		
2/13/20																														
3/5-6/20											***																	ND	49.87	22
4/2/20											***																			
6/1-2/20																												ND	18.32	23
% Decrease																														
Sulfolane Criterion (µg/L)																tect - <10														
Sulfate Criterion (mg/L)															2	50														

		MW-7D			MW-8			MW-9			MW-10			MW-11			MW-12S			MW-12D			MW-13			MW-13D	$\overline{}$
	0 1/ 1				DO.	0 " .				0 11 1	DO.						DO DO										
Date	Sulfolane	DO	Sulfate	Sulfolane		Sulfate	Sulfolane	DO	Sulfate	Sulfolane		Sulfate	Sulfolane	DO	Sulfate	Sulfolane		Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate
9/11-13/17	1,900	0.79		ND	9.09		ND	0.73		ND	7.42		ND	3.69		ND	2.65		ND	1.36		ND	0.94		660 (730)	0.52	330
9/21/17																											
12/19-20/17	4,100	0.89	46	ND	6.34	8	ND	0.57	21	ND	7.95	36	ND	5.04	20	ND	3.98	19	ND	4.00	32	ND	13.79	80	480	0.51	240
1/25/18															-										400	2.13	240
2/27/18	1,200	1.47	96																						ND	9.90	210
3/28-29/18	820	0.61	81	ND	9.65	12	ND	1.32	26	ND	10.34	48	ND	5.17	16	ND	7.70	18	ND	3.45	33	ND	10.12	63	ND	8.41	220
6/19-21/18	180 (170)	1.09	61 (57)	ND	8.58	30	ND	3.36	21	ND	9.98	39	ND	10.94	18	ND	9.09	22	ND	5.26	36	ND	8.08	93	180	2.42	480
9/18-20/18	170	1.32	58	ND	7.88	9.4	ND	1.66	29	ND	11.83	18	ND	11.00	45	ND	3.52	55	ND	4.27	34	ND	9.36	69	ND	5.06	650
12/17-18/18	270 (300)	12.68	37																			ND	10.41	94	ND	0.38	740
3/25-26/19	1,700	0.19	53																			ND	11.46	110	16	1.95	740
6/24-26/19	510	0.81	84	ND	12.70	17	ND	1.20	26	ND	8.50	61	ND	11.21	40	ND	5.84	27	ND	2.96	37	ND	8.54	140	19	2.61	740
9/23-24/19	140	2.58	57																			ND	8.93	140	ND	5.07	750
12/3-4/19	1,200	4.02	48																			ND	10.09	120	37	0.82	660
1/2/20	2,400																										
2/13/20	1,500																										
3/5-6/20	ND	12.14	32																			ND	28.96	91	ND	7.08	920
4/2/20	330																								16		
6/1-2/20	ND	15.88	30																			ND	4.51	86	ND	6.56	560
% Decrease	82.63%																								97.81%		
Sulfolane Criterion (µg/L)													No	n-detect - <	10							•					
Sulfate Criterion (mg/L)														250													

Notes

1) Concentrations of sulfolane reported in micrograms per liter (µg/L), equivalent to parts per billion (ppb).

Concentrations of sultoriane reported in micrograms per intelligency, experiment to perimpte a second upper.
 Do d'assolved oxygen.
 Concentrations of dissolved oxygen and sulfate reported in milligrams per liter (mg/L), equivalent to parts per million (ppm).
 (---) - Not sampled.
 Not - Concentration not detected above reporting limit.
 Concentrations shown in parenthesis are from duplicate sample.

7) % Decrease of sulfolane is the most recent sampling event relative to highest reported concentration since the pre-system startup event (9/11-13/17).

8) Sulfolane criterion established by EGLE-Oil, Gas, and Minerals Division (EGLE-OGMD).

9) Sulfate orderion - Part 201 Residential Generic Cleanup Criteria and Screening Levels (Part 201 Residential GCCSLs), dated January 10, 2018, per R299.44 (Table 1) of the Michigan Administrative Code.

10) Concentrations that are shaded \_\_\_\_\_ and bold exceed cleanup criteria.



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								000		***		-	ABLE 1		- 00175		4 DIO										
								GRO	UNDWA	TER ANA	LYTICA				PCRITE	RIA CON	IPARIS	ON									
										D/	ortion of E		d 36 Gas P 1/4 of Secti		N POSE												
											ortion o. L		ct #13-068		N-NOOL,												
		MW-14S			MW-14D			MW-15			MW-15D			MW-15DD			MW-16			MW-16D			MW-17S			MW-17D	
Date	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate
9/11-13/17	120	0.85		7,700	0.22		ND	4.39		230	0.22		33	0.23		ND	3.31		ND	0.28		3,100	0.25		380	0.36	
9/21/17													48	0.64													
12/19-20/17	100	2.05	91	7,100	0.45	39	ND	11.02	14	ND	4.22	46	ND	0.56	37	ND	8.42	16	ND	5.99	24	2,400	0.88	49	51	8.10	33
1/25/18	85	3.35	56	5,400	0.43	44																510	0.95	53	ND	10.07	38
2/27/18	ND	9.63	110	4,000	0.50	48																460	0.96	53	ND	11.02	38
3/28-29/18	ND	8.61	120	3,000 (5,100)	0.22	50 (51)	ND	7.96	16	ND	6.86	29	ND	0.54	37	ND	8.73	19	ND	3.88	25	52 (52)	3.28	64	ND ND	9.68	36
6/19-21/18 9/18-20/18	52 ND	0.28 4.90	67 140	2,600 (2,800)	0.09 2.89	77 (77)	ND ND	7.98 8.25	39 32	ND ND	3.80 7.45	27	ND ND	0.53	42 41	ND ND	16.43 8.12	43 21	ND ND	8.12 2.08	24	55 32	8.61 3.07	68 65	ND (ND)	10.63	42 (41) 49
9/18-20/18	ND ND	9.20	220	290	3.49	110 120	ND 	8.25	32	ND ND	6.77	20	ND 	0.60	41	ND 			ND 			ND	9.30	61	ND ND	9.75	49
3/25-26/19	ND ND	11.08	180	ND	5.71	120				ND ND	7.53	23										ND ND	5.77	80	ND ND	9.75	47
6/24-26/19	ND	9.88	160	110	5.82	120	ND	8.58	55	ND	5.65	28	ND	0.53	65	ND	11.24	23	ND	6.78	33	ND	1.43	69	ND	10.93	65
9/23-24/19	ND	5.96	100	71	2.83	150				ND	22.96	26										ND	4.78	73	ND	7.19	96
12/3-4/19	ND	8.66	93	71	10.21	150				ND	6.29	21										ND	7.98	61	ND	8.87	80
1/2/20																											
2/13/20																											
3/5-6/20	ND	8.44	100	ND	11.39	130				ND	5.66	21		-						-	-	ND	3.26	56	ND	8.20	230
4/2/20				ND				***																			
6/1-2/20	ND	5.62	120	ND	7.50	110				ND	6.87	24										ND	0.86	67	ND	5.71	260
% Decrease	100%			100%						100%			100%									100%			100%		
Sulfolane Criterion (µg/L) Sulfate Criterion (mg/L)													No	n-detect - <	10												
Suirate Criterion (mg/L)														250													
		MW-18		1	MW-19S		1	MW-19D			MW-19DD		I	MW-20S		1	MW-20D		1	MW-21D			MW-22D		1	MW-23D	
Date	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate	Sulfolane	DO	Sulfate
9/11-13/17	2,200	1.16		29	1.64		5,900	0.60		ND	3.82		63	1.50		12,000	0.45		ND	6.08		ND	7.76		ND	2.87	
9/21/17																											
12/19-20/17	660	0.67	37	ND	10.32	44	3,200	0.38	73	ND	7.16	22															
1/25/18	2,300	0.74										22	49	4.04	45	12,000	0.52	43	ND	7.58	22	ND	5.74	12	ND	2.48	20
2/27/18			34				ND	0.77	74			-	ND	4.04 3.76	45 45	12,000 10,000	0.52 1.61	43 41	ND 	7.58	22	ND 	5.74	12	ND 	2.48	20
	2,000	0.39	33				ND	0.57	51			-		3.76	45 52	10,000 9,300	1.61 0.61	41 46						-			-
3/28-29/18	980	0.71	33 34	 ND	9.45	 43	ND 290	0.57 0.47	51 54	 ND	6.27	  26	ND ND	3.76  2.03	45 52 57 (58)	10,000 9,300 10,000	1.61 0.61 2.00	41 46 51	  ND	4.13	22	 ND	5.32	 9.4	  ND	3.03	  19
3/28-29/18 6/19-21/18	980 14	0.71 3.13	33 34 39	ND ND	9.45 11.14	 43 36	ND 290 750	0.57 0.47 1.08	51 54 63	ND ND	6.27 5.25	  26 23	ND ND	3.76  2.03 4.80	45 52 57 (58) 56	10,000 9,300 10,000 6,600	1.61 0.61 2.00 3.99	41 46 51 58	  ND ND	 4.13 4.22	  22 21	 ND ND	5.32 12.97	9.4 8.0	 ND ND	3.03 5.72	- - 19 20
3/28-29/18 6/19-21/18 9/18-20/18	980 14 ND (ND)	0.71 3.13 0.67	33 34 39 49 (49)	ND ND ND	9.45 11.14 12.84	 43 36 44	ND 290 750 170 (150)	0.57 0.47 1.08 0.86	51 54 63 77 (77)	ND ND ND	6.27 5.25 6.89	 26 23 20	ND ND ND ND	3.76  2.03 4.80 9.28	45 52 57 (58) 56 63	10,000 9,300 10,000 6,600 22 (34)	1.61 0.61 2.00 3.99 5.37	41 46 51 58 80 (81)	ND ND ND	 4.13 4.22 5.77	  22 21 21	ND ND ND	5.32 12.97 7.65	9.4 8.0 6.8	ND ND ND	3.03 5.72 3.12	- - 19 20 21
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18	980 14 ND (ND) ND	0.71 3.13 0.67 2.28	33 34 39 49 (49) 53	ND ND ND ND	9.45 11.14 12.84 8.95	 43 36 44 47	ND 290 750 170 (150) 440	0.57 0.47 1.08 0.86 3.02	51 54 63 77 (77) 83	ND ND ND ND	6.27 5.25 6.89	26 23 20	ND ND ND ND ND	3.76  2.03 4.80 9.28 9.77	45 52 57 (58) 56 63 48	10,000 9,300 10,000 6,600 22 (34) 19	1.61 0.61 2.00 3.99 5.37 5.32	41 46 51 58 80 (81) 90	ND ND ND	4.13 4.22 5.77	22 21 21	ND ND ND	5.32 12.97 7.65	9.4 8.0 6.8	ND ND ND	3.03 5.72 3.12	 19 20 21
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19	980 14 ND (ND) ND ND	0.71 3.13 0.67 2.28 1.09	33 34 39 49 (49) 53 47	ND ND ND ND ND ND	9.45 11.14 12.84 8.95 14.18	 43 36 44 47 47	ND 290 750 170 (150) 440 350	0.57 0.47 1.08 0.86 3.02 0.24	51 54 63 77 (77) 83 88	ND ND ND ND	6.27 5.25 6.89	26 23 20	ND ND ND ND ND ND	3.76  2.03 4.80 9.28 9.77 12.20	45 52 57 (58) 56 63 48 62	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35	41 46 51 58 80 (81) 90 89 (84)	ND ND ND	4.13 4.22 5.77	22 21 21 	ND ND ND	5.32 12.97 7.65	9.4 8.0 6.8	ND ND ND	3.03 5.72 3.12	 19 20 21 
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19 6/24-26/19	980 14 ND (ND) ND ND ND (ND)	0.71 3.13 0.67 2.28 1.09 0.97	33 34 39 49 (49) 53 47 45 (44)	ND ND ND ND ND ND ND ND	9.45 11.14 12.84 8.95 14.18 10.42	43 36 44 47 47 62	ND 290 750 170 (150) 440 350 98 (73)	0.57 0.47 1.08 0.86 3.02 0.24 0.17	51 54 63 77 (77) 83 88 100 (94)	ND ND ND ND	6.27 5.25 6.89	26 23 20	ND ND ND ND ND ND	3.76  2.03 4.80 9.28 9.77 12.20 20.73	45 52 57 (58) 56 63 48 62 72	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35	41 46 51 58 80 (81) 90 89 (84) 94 (94)	ND N	4.13 4.22 5.77  5.66	22 21 21 21  24	ND N	5.32 12.97 7.65	9.4 8.0 6.8	ND ND ND	3.03 5.72 3.12	 19 20 21  30
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19 6/24-26/19 9/23-24/19	980 14 ND (ND) ND ND ND (ND) ND (ND)	0.71 3.13 0.67 2.28 1.09 0.97 1.60	33 34 39 49 (49) 53 47 45 (44) 43	ND	9.45 11.14 12.84 8.95 14.18 10.42 9.79	43 36 44 47 47 62 58	ND 290 750 170 (150) 440 350 98 (73) ND	0.57 0.47 1.08 0.86 3.02 0.24 0.17 8.39	51 54 63 77 (77) 83 88 100 (94) 110	ND ND ND ND	6.27 5.25 6.89  7.27	26 23 20  23	ND	3.76  2.03 4.80 9.28 9.77 12.20 20.73 6.06	45 52 57 (58) 56 63 48 62 72 66	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35 10.86 6.26	41 46 51 58 80 (81) 90 89 (84) 94 (94) 84 (79)	ND ND ND	4.13 4.22 5.77	22 21 21 	ND ND ND	5.32 12.97 7.65	9.4 8.0 6.8	ND N	3.03 5.72 3.12  6.39	 19 20 21 
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19 6/24-26/19	980 14 ND (ND) ND ND ND (ND)	0.71 3.13 0.67 2.28 1.09 0.97	33 34 39 49 (49) 53 47 45 (44)	ND ND ND ND ND ND ND ND	9.45 11.14 12.84 8.95 14.18 10.42	43 36 44 47 47 62	ND 290 750 170 (150) 440 350 98 (73)	0.57 0.47 1.08 0.86 3.02 0.24 0.17	51 54 63 77 (77) 83 88 100 (94)	ND ND ND ND 	6.27 5.25 6.89  7.27	26 23 20  23	ND ND ND ND ND ND	3.76  2.03 4.80 9.28 9.77 12.20 20.73	45 52 57 (58) 56 63 48 62 72	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35	41 46 51 58 80 (81) 90 89 (84) 94 (94)	ND N	4.13 4.22 5.77  5.66	22 21 21 21  24	ND N	5.32 12.97 7.65  9.20	9.4 8.0 6.8	ND N	3.03 5.72 3.12  6.39	 19 20 21  30
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19 6/24-26/19 9/23-24/19 12/3-4/19	980 14 ND (ND) ND ND ND (ND) ND (ND) ND	0.71 3.13 0.67 2.28 1.09 0.97 1.60 0.93	33 34 39 49 (49) 53 47 45 (44) 43 49	ND N	9.45 11.14 12.84 8.95 14.18 10.42 9.79 11.40	 43 36 44 47 47 62 58 62	ND 290 750 170 (150) 440 350 98 (73) ND 92	0.57 0.47 1.08 0.86 3.02 0.24 0.17 8.39 0.57	51 54 63 77 (77) 83 88 100 (94) 110 92	ND N	6.27 5.25 6.89  7.27	26 23 20  23 	ND N	3.76  2.03 4.80 9.28 9.77 12.20 20.73 6.06 7.23	45 52 57 (58) 56 63 48 62 72 66 64	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND) ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35 10.86 6.26 6.15	41 46 51 58 80 (81) 90 89 (84) 94 (94) 84 (79) 84 (80)	ND ND ND ND ND ND	4.13 4.22 5.77  5.66	22 21 21 21  24	ND ND ND ND ND ND ND	5.32 12.97 7.65  9.20	9.4 8.0 6.8  8.3	ND N	3.03 5.72 3.12  6.39	 19 20 21  30
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19 6/24-26/19 9/23-24/19 12/3-4/19	980 14 ND (ND) ND ND ND ND (ND) ND ND (ND) ND ND ND ND ND ND ND ND	0.71 3.13 0.67 2.28 1.09 0.97 1.60 0.93	33 34 39 49 (49) 53 47 45 (44) 43 49	ND N	9.45 11.14 12.84 8.95 14.18 10.42 9.79 11.40	 43 36 44 47 47 62 58 62	ND 290 750 170 (150) 440 350 98 (73) ND 92	0.57 0.47 1.08 0.86 3.02 0.24 0.17 8.39 0.57	51 54 63 77 (77) 83 88 100 (94) 110 92	ND ND ND ND ND	 6.27 5.25 6.89  7.27	26 23 20  23 	ND N	3.76  2.03 4.80 9.28 9.77 12.20 20.73 6.06 7.23	45 52 57 (58) 56 63 48 62 72 66 64	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND) ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35 10.86 6.26 6.15	41 46 51 58 80 (81) 90 89 (84) 94 (94) 84 (79) 84 (80)	ND ND ND ND ND	4.13 4.22 5.77  5.66	22 21 21 21  24	ND ND ND ND ND ND	5.32 12.97 7.65  9.20	9.4 8.0 6.8	 ND ND ND ND  ND	3.03 5.72 3.12  6.39	 19 20 21  30
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 3/25-26/19 6/24-26/19 9/23-24/19 1/2/20 2/13/20	980 14 ND (ND) ND ND ND ND (ND) ND ND (ND) ND	0.71 3.13 0.67 2.28 1.09 0.97 1.60 0.93	33 34 39 49 (49) 53 47 45 (44) 43 49	ND N	9.45 11.14 12.84 8.95 14.18 10.42 9.79 11.40	 43 36 44 47 47 62 58 62 	ND 290 750 170 (150) 440 350 98 (73) ND 92	0.57 0.47 1.08 0.86 3.02 0.24 0.17 8.39 0.57	51 54 63 77 (77) 83 88 100 (94) 110 92	ND ND ND ND	6.27 5.25 6.89  7.27	26 23 20 	ND N	3.76  2.03 4.80 9.28 9.77 12.20 20.73 6.06 7.23	45 52 57 (58) 56 63 48 62 72 66 64  33	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND) ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35 10.86 6.26 6.15	41 46 51 58 80 (81) 90 89 (84) 94 (94) 84 (79) 84 (80) 	 ND ND ND  ND 	4.13 4.22 5.77  5.66	22 21 21 21  24 	ND N	5.32 12.97 7.65  9.20	9.4 8.0 6.8  8.3	ND ND ND ND ND	3.03 5.72 3.12  6.39	
3/28-29/18 6/19-21/18 9/18-20/18 12/17-18/18 12/17-18/18 3/25-26/19 6/24-26/19 9/23-24/19 12/2-4/19 12/20 2/13/20 3/5-6/20	980 14 ND (ND) ND ND ND (ND) ND	0.71 3.13 0.67 2.28 1.09 0.97 1.60 0.93	33 34 39 49 (49) 53 47 45 (44) 43 49  71	ND N	9.45 11.14 12.84 8.95 14.18 10.42 9.79 11.40	 43 36 44 47 47 62 58 62  68	ND 290 750 170 (150) 440 350 98 (73) ND 92	0.57 0.47 1.08 0.86 3.02 0.24 0.17 8.39 0.57	51 54 63 77 (77) 83 88 100 (94) 110 92  100	ND ND ND ND ND	6.27 5.25 6.89  7.27	26 23 20 	ND N	3.76 2.03 4.80 9.28 9.77 12.20 20.73 6.06 7.23 9.74	45 52 57 (58) 56 63 48 62 72 66 64  33	10,000 9,300 10,000 6,600 22 (34) 19 ND (ND) ND (ND) ND (ND) ND (ND) ND (ND) ND (ND) ND (ND)	1.61 0.61 2.00 3.99 5.37 5.32 10.35 10.86 6.26 6.15	41 46 51 58 80 (81) 90 89 (84) 94 (94) 84 (79) 84 (80)  88 (91)	ND ND ND ND	4.13 4.22 5.77  5.66	22 21 21 21  24 	ND ND ND ND ND ND	5.32 12.97 7.65  9.20	9.4 8.0 6.8  8.3	ND ND ND ND ND ND ND	3.03 5.72 3.12  6.39	

Non-detect - <10

250

Notes

1) Concentrations of sulfolane reported in micrograms per liter (µg/L), equivalent to parts per billion (ppb).

Sulfolane Criterion (µg/L)

Sulfate Criterion (mg/L)

1) Concentrations of sultriane reported in micrograms per liter (µg/L), equivalent to parts per littin (ppp).
2) DO - dissolved oxygen.
3) Concentrations of dissolved oxygen and sulfate reported in milligrams per liter (mg/L), equivalent to parts per million (ppm).
4) (---) Not sampled.
5) ND - Concentration not detected above reporting limit.
6) Concentrations shown in parenthesis are from duplicate sample.

7) % Decrease of sulfolane is the most recent sampling event relative to highest reported concentration since the pre-system startup event (9/11-13/17).

8) Sulfolane criterion established by EGLE-Oil, Gas, and Minerals Division (EGLE-OGMD).

9) Sulfate Criterion - Part 201 Residential Generic Cleanup Criteria and Screening Levels (Part 201 Residential GCCSLs), dated January 10, 2018, per R299.44 (Table 1) of the Michigan Administrative Code.

10) Concentrations that are shaded \_\_\_\_\_ and bold exceed cleanup criteria.



#### TABLE 2

#### SULFOLANE GROUNDWATER ANALYTICAL SUMMARY & CLEANUP CRITERIA COMPARISON

Hartland 36 Gas Plant

Portion of E1/2 of NW1/4 of Section 36, T03N-R06E, Hartland Township, Livingston County, Michigan ECT Project #13-0685-2000

	1 .								71 Floject#1	3-0663-2000									
0	Screened	11/4-5/15	1/27/16	6/3/2016	0/2 4/40	0/24 22/46	10/12/16	44/2/46	12/8/16	12/21-23/16	2/14/17	2/4.4.46/2047	4/27/17; 5/1/17	5/11/2017	5/30-31/17	640.2447	9/11-13/17	9/21/2017	12/19-20/2017
Sample Location MW-1	Interval (ft bgs)		1/2//16 ND		8/3-4/16	9/21-22/16		11/3/16		1		3/14-16/2017 ND				6/19-21/17			
MW-2	20.1 - 25.1	ND ND	ND ND	ND ND		ND						ND ND				ND ND	ND ND		ND ND
MW-2D	19.1 - 24.1 27.7 - 29.7			ND 		ND 						ND ND				ND ND	ND ND		ND ND
MW-3	22.0 - 27.0	ND		ND		ND				ND		ND ND				ND ND	ND ND		ND ND
MW-3D	30.0 - 32.0			ND							ND	ND ND				ND ND	ND ND		ND ND
MW-4	23.1 - 28.1	ND	ND	ND	ND	ND	ND	ND		ND		ND				ND	ND ND		ND
MW-5	18.0 - 23.0	ND ND	ND	ND ND		ND	ND			ND ND		ND				ND	ND ND		ND
MW-6	25.4 - 30.4	ND	ND	ND	ND	ND	ND	ND		ND		ND			ND	ND	ND		ND
MW-6D	39.4 - 44.4				ND	ND	ND	ND		ND ND		ND			ND	ND	ND		ND
MW-7	25.2 - 30.2	880	44	510	ND	210				ND ND		ND				12	ND		ND
MW-7D	39.2 - 44.2								3,100			3,000				2,600	1,900		4,100
MW-8	24.6 - 29.6				ND	ND				ND		ND				ND	ND		ND
MW-9	23.6 - 28.6				ND	ND				ND		ND				ND	ND		ND
MW-10	21.2 - 26.2				ND	ND				ND ND		ND				ND	ND		ND
MW-11	21.7 - 26.7				ND	ND				ND		ND				ND	ND		ND
MW-12S	20.5 - 25.5				ND	ND	ND	ND		ND		ND			ND	ND	ND		ND
MW-12D	39.7 - 44.7				ND	ND	ND	ND		ND		ND			ND	ND	ND		ND
MW-13	19.1 - 24.1				6,600	8,800				3,500		5,100	7,000	3,700	97	ND	ND		ND
MW-13D	27.7 - 29.7							7,800		8,300		5,400	6,900	1,100	420	290	730		480
MW-14S	18.6 - 23.6							46		460		540	490	160	520	94	120		100
MW-14D	36.7 - 41.7							7,900		10,000		7,600	9,800	8,600	8,200	7,800	7,700		7,100
MW-15	19.3 - 24.3				ND	ND				ND		ND				ND	ND		ND
MW-15D	37.9 - 42.9										4,600	3,200				670	230		ND
MW-15DD	50 - 55																33	48	ND
MW-16	19.5 - 24.5				ND	ND				ND		ND	ND	ND	ND	ND	ND		ND
MW-16D	31.4 - 33.4										ND	ND				ND	ND		ND
MW-17S	19.9 - 24.9							3,900		5,100		3,000				5,300	3,100		2,400
MW-17D	35.4 - 37.4							440		510		400				390	400		51
MW-18	19.9 - 24.9							6,800		6,800		4,300		2,100	4,800	3,800	2,200		660
MW-19S	22.6 - 27.6							2,700		1,500		1,300				24	33		ND
MW-19D	43.0 - 48.0							7,000		7,600		4,300				7,000	5,900		3,200
MW-19DD	57 - 62																ND		ND
MW-20S	17.8 - 22.8								25			97				160	63		49
MW-20D	31.0 - 33.0								8,700			8,300				11,000	12,000		12,000
MW-21D	52.3 - 57.3								ND			ND				ND	ND		ND
MW-22D	36.4 - 41.4											ND				ND	ND		ND
MW-23D	28.1 - 30.1									Non de		ND				ND	ND		ND
EGLE-OGMD Clea	•				1					Non-de	tect - <10 μg/								
Collection Method	1	L	F	Bailer/PP								LF							

#### Notes

1) ft bgs - Feet below ground surface.

2) Collection method - Grab, peristaltic pump (PP), low flow (LF), Bailer.

3)  $\mu g/L$  - Micrograms per liter, equivalent to parts per billion (ppb).

4) (---) - Not sampled.

5) ND - Concentration not detected above reporting limit.

6) Sulfolane concentrations included on the table are for the higher concentration from samples submitted for duplicate analysis.

7) Cleanup criteria for sulfolane established by EGLE-Oil, Gas, and Minerals Division (EGLE-OGMD).

8) Concentrations that are shaded \_\_\_\_\_ and bold exceed cleanup criteria.

9) MW-7 sampled on 8/11/2016 for the 8/3-4/2016 sample event.



#### TABLE 2

#### SULFOLANE GROUNDWATER ANALYTICAL SUMMARY & CLEANUP CRITERIA COMPARISON

Hartland 36 Gas Plant SE/NE/NW Section 36, T03N-R06E,

Hartland Township, Livingston County, Michigan ECT Project #13-0685-2000

	1						ECT Projec	t #13-0685-2	000							
	Screened				1				1					1	1	
Sample Location	Interval (ft bgs)	1/25/2018	2/27/2018				12/17-18/2018	3/25-26/19	6/24-26/2019		12/3-4/19	1/2/2020	2/13/2020	3/5-6/2020	4/2/2020	6/1-2/2020
MW-1	20.1 - 25.1			ND	ND	ND			ND							
MW-2	19.1 - 24.1			ND	ND	ND			ND							
MW-2D	27.7 - 29.7			ND	ND	ND			ND							
MW-3	22.0 - 27.0			ND	ND	ND			ND							
MW-3D	30.0 - 32.0			ND	ND	ND			ND							
MW-4	23.1 - 28.1			ND	ND	ND			ND							
MW-5	18.0 - 23.0			ND	ND	ND			ND							
MW-6	25.4 - 30.4			ND	ND	ND			ND							
MW-6D	39.4 - 44.4			ND	ND	ND			ND							
MW-7	25.2 - 30.2			ND	ND	ND	ND	ND	ND	ND	ND			ND		ND
MW-7D	39.2 - 44.2		1,200	820	180	170	300	1,700	510	140	1,200	2,400	1,500	ND	330	ND
MW-8	24.6 - 29.6			ND	ND	ND			ND							
MW-9	23.6 - 28.6			ND	ND	ND			ND							
MW-10	21.2 - 26.2			ND	ND	ND			ND							
MW-11	21.7 - 26.7			ND	ND	ND			ND							
MW-12S	20.5 - 25.5			ND	ND	ND			ND							
MW-12D	39.7 - 44.7			ND	ND	ND			ND							
MW-13	19.1 - 24.1			ND	ND	ND	ND	ND	ND	ND	ND			ND		ND
MW-13D	27.7 - 29.7	400	ND	ND	180	ND	ND	16	19	ND	37			ND	16	ND
MW-14S	18.6 - 23.6	85	ND	ND	52	ND	ND	ND	ND	ND	ND			ND		ND
MW-14D	36.7 - 41.7	5,400	4,000	5,100	2,800	680	290	ND	110	71	71			ND	ND	ND
MW-15	19.3 - 24.3			ND	ND	ND			ND							
MW-15D	37.9 - 42.9			ND	ND	ND	ND	ND	ND	ND	ND			ND		ND
MW-15DD	50 - 55			ND	ND	ND			ND							
MW-16	19.5 - 24.5			ND	ND	ND			ND							
MW-16D	31.4 - 33.4			ND	ND	ND			ND							
MW-17S	19.9 - 24.9	510	460	52	55	32	ND	ND	ND	ND	ND			ND		ND
MW-17D	35.4 - 37.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			ND		ND
MW-18	19.9 - 24.9	2,300	2,000	980	14	ND	ND	ND	ND	ND	ND			ND		ND
MW-19S	22.6 - 27.6			ND	ND	ND	ND	ND	ND	ND	ND			ND		ND
MW-19D	43.0 - 48.0	ND	ND	290	750	170	440	350	98	ND	92			ND	ND	ND
MW-19DD	57 - 62			ND	ND	ND			ND							
MW-20S	17.8 - 22.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			ND		ND
MW-20D	31.0 - 33.0	10,000	9,300	10,000	6,600	34	19	ND	ND	ND	ND			ND		ND
MW-21D	52.3 - 57.3			ND	ND	ND			ND							
MW-22D	36.4 - 41.4			ND	ND	ND			ND							
MW-23D	28.1 - 30.1			ND	ND	ND			ND							
EGLE-OGMD Clea	•							No	n-detect - <10 p	ıg/L						
Collection Method						L	.F					Ba	iler	LF	Bailer	LF

#### Notes

- 1) ft bgs Feet below ground surface.
- 2) Collection method Grab, peristaltic pump (PP), low flow (LF), Bailer.
- 3) µg/L Micrograms per liter, equivalent to parts per billion (ppb).
- 4) (---) Not sampled.
- 5) ND Concentration not detected above reporting limit.
- 6) Sulfolane concentrations included on the table are for the higher concentration from samples submitted for duplicate analysis.
- 7) Cleanup criteria for sulfolane established by EGLE-Oil, Gas, and Minerals Division (EGLE-OGMD).
- 8) Concentrations that are shaded \_\_\_\_\_ and bold exceed cleanup criteria.
- 9) MW-7 sampled on 8/11/2016 for the 8/3-4/2016 sample event.



## **APPENDIX C**

## LABORATORY ANALYTICAL REPORTS





09-Jun-2020

Nick Summerland Lambda Energy Resources 1510 Thomas Rd Kalkaska, MI 49646

Re: Lambda (Hartland 6.1.20) Work Order: 20060143

Dear Nick,

ALS Environmental received 11 samples on 02-Jun-2020 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 22.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

## **Gary Byar**

Electronically approved by: Gary Byar

Gary Byar Project Manager

#### **Report of Laboratory Analysis**

Certificate No: MI: 0022

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 🚴

ALS Group, USA

Date: 09-Jun-20

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Work Order: 20060143

## **Work Order Sample Summary**

Lab Samp ID Clier	nt Sample ID	<u>Matrix</u>	Tag Number	<b>Collection Date</b>	Date Received	Hold
20060143-01 MW-	-7s	Groundwater		6/1/2020 10:50	6/2/2020 10:30	
20060143-02 MW-	-7d	Groundwater		6/1/2020 11:35	6/2/2020 10:30	
20060143-03 MW-	-19d	Groundwater		6/1/2020 12:25	6/2/2020 10:30	
20060143-04 MW-	-19s	Groundwater		6/1/2020 13:05	6/2/2020 10:30	
20060143-05 MW-	-18	Groundwater		6/1/2020 13:55	6/2/2020 10:30	
20060143-06 MW-	-15D	Groundwater		6/1/2020 10:50	6/2/2020 10:30	
20060143-07 MW-	-20S	Groundwater		6/1/2020 11:30	6/2/2020 10:30	
20060143-08 MW-	-20D	Groundwater		6/1/2020 12:10	6/2/2020 10:30	
20060143-09 MW-	-17S	Groundwater		6/1/2020 13:25	6/2/2020 10:30	
20060143-10 MW-	-17D	Groundwater		6/1/2020 14:10	6/2/2020 10:30	
20060143-11 MW-	-DUPE	Groundwater		6/1/2020	6/2/2020 10:30	

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-7s

**Collection Date:** 6/1/2020 10:50 AM

**Date:** 09-Jun-20

**Work Order:** 20060143

**Lab ID:** 20060143-01

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS	;		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 09:49 AM
Surr: 2-Fluorobiphenyl	65.9		26-79	%REC	1	6/6/2020 09:49 AM
Surr: 4-Terphenyl-d14	94.3		43-106	%REC	1	6/6/2020 09:49 AM
Surr: Nitrobenzene-d5	65.3		29-80	%REC	1	6/6/2020 09:49 AM
SULFATE			A4500-	SO4 E-11		Analyst: JDR
Sulfate	23		1.0	mg/L	1	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-7d

**Collection Date:** 6/1/2020 11:35 AM

**Date:** 09-Jun-20

**Work Order:** 20060143

**Lab ID:** 20060143-02

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUN	IDS		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 10:10 AM
Surr: 2-Fluorobiphenyl	40.3		26-79	%REC	1	6/6/2020 10:10 AM
Surr: 4-Terphenyl-d14	81.5		43-106	%REC	1	6/6/2020 10:10 AM
Surr: Nitrobenzene-d5	38.8		29-80	%REC	1	6/6/2020 10:10 AM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	30		1.0	mg/L	1	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-19d

**Collection Date:** 6/1/2020 12:25 PM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-03

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS	3		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 10:31 AM
Surr: 2-Fluorobiphenyl	62.1		26-79	%REC	1	6/6/2020 10:31 AM
Surr: 4-Terphenyl-d14	91.5		43-106	%REC	1	6/6/2020 10:31 AM
Surr: Nitrobenzene-d5	60.9		29-80	%REC	1	6/6/2020 10:31 AM
SULFATE			A4500-	SO4 E-11		Analyst: JDR
Sulfate	92		1.0	mg/L	1	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-19s

**Collection Date:** 6/1/2020 01:05 PM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-04

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUND	s		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 10:52 AM
Surr: 2-Fluorobiphenyl	60.4		26-79	%REC	1	6/6/2020 10:52 AM
Surr: 4-Terphenyl-d14	91.7		43-106	%REC	1	6/6/2020 10:52 AM
Surr: Nitrobenzene-d5	59.6		29-80	%REC	1	6/6/2020 10:52 AM
SULFATE			A4500-	SO4 E-11		Analyst: JDR
Sulfate	72		1.0	mg/L	1	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-18

**Collection Date:** 6/1/2020 01:55 PM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-05

Matrix: GROUNDWATER

Analyses	Result Qual		Report Limit	Units	Dilution Factor	Date Analyzed		
SEMI-VOLATILE ORGANIC COMPOUN	DS		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>		
Sulfolane	ND		10	μg/L	1	6/6/2020 09:28 AM		
Surr: 2-Fluorobiphenyl	61.7		26-79	%REC	1	6/6/2020 09:28 AM		
Surr: 4-Terphenyl-d14	94.1		43-106	%REC	1	6/6/2020 09:28 AM		
Surr: Nitrobenzene-d5	58.9		29-80	%REC	1	6/6/2020 09:28 AM		
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>		
Sulfate	61		1.0	mg/L	1	6/3/2020 05:23 PM		

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-15D

**Collection Date:** 6/1/2020 10:50 AM

**Date:** 09-Jun-20

**Work Order:** 20060143

**Lab ID:** 20060143-06

Matrix: GROUNDWATER

Analyses	Result	esult Qual		Units	Dilution Factor	Date Analyzed		
SEMI-VOLATILE ORGANIC COMPOUND	S		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>		
Sulfolane	ND		10	μg/L	1	6/6/2020 11:13 AM		
Surr: 2-Fluorobiphenyl	56.9		26-79	%REC	1	6/6/2020 11:13 AM		
Surr: 4-Terphenyl-d14	87.3		43-106	%REC	1	6/6/2020 11:13 AM		
Surr: Nitrobenzene-d5	55.0		29-80	%REC	1	6/6/2020 11:13 AM		
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>		
Sulfate	24		1.0	mg/L	1	6/3/2020 05:23 PM		

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-20S

**Collection Date:** 6/1/2020 11:30 AM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-07

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit Units		Dilution Factor	Date Analyzed		
SEMI-VOLATILE ORGANIC COMPOUNI	os		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>		
Sulfolane	ND		10	μg/L	1	6/6/2020 11:34 AM		
Surr: 2-Fluorobiphenyl	57.7		26-79	%REC	1	6/6/2020 11:34 AM		
Surr: 4-Terphenyl-d14	86.6		43-106	%REC	1	6/6/2020 11:34 AM		
Surr: Nitrobenzene-d5	53.7		29-80	%REC	1	6/6/2020 11:34 AM		
SULFATE			A4500-	SO4 E-11		Analyst: JDR		
Sulfate	36		1.0	mg/L	1	6/3/2020 05:23 PM		

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-20D

**Collection Date:** 6/1/2020 12:10 PM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-08

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS	6		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 11:56 AM
Surr: 2-Fluorobiphenyl	53.3		26-79	%REC	1	6/6/2020 11:56 AM
Surr: 4-Terphenyl-d14	84.1		43-106	%REC	1	6/6/2020 11:56 AM
Surr: Nitrobenzene-d5	50.4		29-80	%REC	1	6/6/2020 11:56 AM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	83		1.0	mg/L	1	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-17S

**Collection Date:** 6/1/2020 01:25 PM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-09

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit Units		Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS	;		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 12:17 PM
Surr: 2-Fluorobiphenyl	42.9		26-79	%REC	1	6/6/2020 12:17 PM
Surr: 4-Terphenyl-d14	74.4		43-106	%REC	1	6/6/2020 12:17 PM
Surr: Nitrobenzene-d5	37.9		29-80	%REC	1	6/6/2020 12:17 PM
SULFATE			A4500-	SO4 E-11		Analyst: JDR
Sulfate	67		1.0	mg/L	1	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

Sample ID: MW-17D

**Collection Date:** 6/1/2020 02:10 PM

**Date:** 09-Jun-20

**Work Order: 20060143** 

**Lab ID:** 20060143-10

Matrix: GROUNDWATER

Analyses	Result		Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUN	DS		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 12:38 PM
Surr: 2-Fluorobiphenyl	47.9		26-79	%REC	1	6/6/2020 12:38 PM
Surr: 4-Terphenyl-d14	85.8		43-106	%REC	1	6/6/2020 12:38 PM
Surr: Nitrobenzene-d5	45.4		29-80	%REC	1	6/6/2020 12:38 PM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	260		4.0	mg/L	4	6/3/2020 05:23 PM

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

**Sample ID:** MW-DUPE **Collection Date:** 6/1/2020

**Work Order: 20060143** 

**Lab ID:** 20060143-11

**Date:** 09-Jun-20

Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUN	DS		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 12:59 PM
Surr: 2-Fluorobiphenyl	40.5		26-79	%REC	1	6/6/2020 12:59 PM
Surr: 4-Terphenyl-d14	79.6		43-106	%REC	1	6/6/2020 12:59 PM
Surr: Nitrobenzene-d5	40.5		29-80	%REC	1	6/6/2020 12:59 PM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	85		1.0	mg/L	1	6/3/2020 05:23 PM

Date: 09-Jun-20

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

**Work Order:** 20060143

**Case Narrative** 

Batch R289961, Method SO4\_4500E\_DISC\_W, Sample 20060143-05BMS/MSD The MS/MSD recovery for Sulfate was below the lower control limit. The corresponding result in the parent sample may be biased low for this analyte: sulfate Client Sample ID: MW-18

Date: 09-Jun-20

## QC BATCH REPORT

Client: Lambda Energy Resources

**Work Order:** 20060143

**Project:** Lambda (Hartland 6.1.20)

Batch ID: <b>156976</b>	Instrument ID S	VMS8		Method	d: <b>SW84</b>	6 82	70D						
MBLK	Sample ID: SBLKW1-	156976-156	976			Units:µg/L			Analysis Date: 6/6/2020 05:35 AM				
Client ID:		Run IE	: SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3135	Prep Date: 6/5/	2020	DF: <b>1</b>		
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
•		ND					771			74			
Sulfolane Surr: 2-Fluorobiphe	nvl	26.59	10 0	50		0	53.2	26-79	0				
Surr: 4-Terphenyl-a		40.34	0	50 50		0	80.7	43-106					
Surr: Nitrobenzene-		26.6	0	50		0	53.2	29-80	0				
LCS	Sample ID: SLCSW1-	156976-156	976				Units: µg/L		Analysis	s Date: <b>6/6/</b>	2020 05:5	6 AM	
Client ID:	·			_200605A			eqNo: <b>646</b> 8		Prep Date: 6/5/		DF: 1		
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfolane		87.44	10	100		0	87.4	30-100	0				
Surr: 2-Fluorobiphe	nvl	28.86	0	50		0	57.7	26-79	0				
Surr: 4-Terphenyl-a		44.47	0	50		0	88.9	43-106					
Surr: Nitrobenzene-		29.92	0	50		0	59.8	29-80	0				
MS	Sample ID: 20060143	-05A MS				-	Units: µg/L		Analysis	s Date: <b>6/6/</b>	2020 08:4	5 AM	
Client ID: MW-18		Run I	: SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3137	Prep Date: 6/5/	2020	DF: <b>1</b>		
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfolane		73	10	100		0	73	30-100	0				
Surr: 2-Fluorobiphe	nyl	29.83	0	50		0	59.7	26-79	0				
Surr: 4-Terphenyl-a		46.17	0	50		0	92.3	43-106	0				
Surr: Nitrobenzene-		28.4	0	50		0	56.8	29-80	0				
MSD	Sample ID: <b>20060143</b>	-05A MSD					Units:µg/L		Analysis	s Date: <b>6/6/</b>	2020 09:0	7 AM	
Client ID: MW-18		Run II	SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3138	Prep Date: 6/5/	2020	DF: <b>1</b>		
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sulfolane		66.27	10	100		0	66.3	30-100	73		30		
Surr: 2-Fluorobiphe	nyl	25.09	0	50		0	50.2	26-79	29.83		40		
Surr: 4-Terphenyl-a		46.89	0	50		0	93.8	43-106			40		
Surr: Nitrobenzene-		24.09	0	50		0	48.2	29-80	28.4		40		
The following sample	es were analyzed in th	nis batch:	20 20	060143-014 060143-044 060143-074 060143-104	A 2	0060 0060	0143-02A 0143-05A 0143-08A 0143-11A	20	060143-03A 060143-06A 060143-09A				

QC BATCH REPORT

Client: Lambda Energy Resources

**Work Order:** 20060143

**Project:** Lambda (Hartland 6.1.20)

Batch ID: <b>R289961</b>	Instrument ID GALLERY		Method:	A4500	-SO4	E-11						
MBLK	Sample ID: MB-R289961-R28996	51			U	Jnits: <b>mg/L</b>	-	Analy	sis	Date: 6/3/2	2020 05:2	3 PM
Client ID:	Run II	D: GALLE	RY_200603C		Se	qNo: <b>645</b> 8	605	Prep Date:			DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value		%RPD	RPD Limit	Qual
Sulfate	ND	1.0										
MS	Sample ID: <b>20060143-05BMS</b>				U	Jnits: <b>mg/l</b>	-	Analy	sis	Date: 6/3/2	2020 05:2	3 PM
Client ID: MW-18	Run II	D: <b>GALLE</b>	RY_200603C		Se	qNo: <b>645</b> 8	613	Prep Date:			DF: <b>4</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value		%RPD	RPD Limit	Qual
Sulfate	104.4	4.0	50	61.	47	85.9	95-118		0			S
MSD	Sample ID: 20060143-05BMSD				U	Jnits: <b>mg/L</b>	•	Analy	sis	Date: 6/3/2	2020 05:2	3 PM
Client ID: MW-18	Run II	D: GALLE	RY_200603C		Se	qNo: <b>645</b> 8	614	Prep Date:			DF: <b>4</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value		%RPD	RPD Limit	Qual
Sulfate	102.8	4.0	50	61.	47	82.7	95-118	104	.4	1.55	10	S
LCS1	Sample ID: <b>LCS1-R289961</b>				Units: mg/L			Analysis Date: 6/3/			/2020 05:23 PM	
Client ID:	Run II	D: <b>GALLE</b>	RY_200603C		Se	qNo: <b>645</b> 8	606	Prep Date:			DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value		%RPD	RPD Limit	Qual
Sulfate	10.64	1.0	10		0	106	90-119		0			
LCS2	Sample ID: <b>LCS2-R289961</b>				U	Jnits: <b>mg/L</b>	•	Analy	sis	Date: 6/3/2	2020 05:2	3 PM
Client ID:	Run II	D: <b>GALLE</b>	RY_200603C		Se	qNo: <b>645</b> 8	626	Prep Date:			DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value		%RPD	RPD Limit	Qual
Sulfate	52.83	1.0	50		0	106	95-118		0			
	oles were analyzed in this batch:	20 20 20	060143-01B 060143-04B 060143-07B 060143-10B	20 20	0060	143-02B 143-05B 143-08B 143-11B	20	060143-03B 060143-06B 060143-09B				

ALS Group, USA

Date: 09-Jun-20

Client: Lambda Energy Resources
Project: Lambda (Hartland 6.1.20)

West Orders

ACRONYMS, UNITS

WorkOrder: 20060143

mg/L

Milligrams per Liter

#### Qualifier **Description** Value exceeds Regulatory Limit \*\* Estimated Value a Analyte is non-accredited B Analyte detected in the associated Method Blank above the Reporting Limit Е Value above quantitation range Н Analyzed outside of Holding Time Hr BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated. J Analyte is present at an estimated concentration between the MDL and Report Limit ND Not Detected at the Reporting Limit O Sample amount is > 4 times amount spiked Dual Column results percent difference > 40% R RPD above laboratory control limit S Spike Recovery outside laboratory control limits U Analyzed but not detected above the MDL X Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level. **Acronym** Description DUP Method Duplicate LCS Laboratory Control Sample LCSD Laboratory Control Sample Duplicate LOD Limit of Detection (see MDL) LOQ Limit of Quantitation (see PQL) MBLK Method Blank MDL Method Detection Limit MS Matrix Spike MSD Matrix Spike Duplicate POL Practical Quantitation Limit RPD Relative Percent Difference TDL Target Detection Limit TNTC Too Numerous To Count APHA Standard Methods A D **ASTM** Е **EPA** SW SW-846 Update III **Units Reported** Description $\mu g/L$ Micrograms per Liter

Client Name: LAMBDA-KAL

#### Sample Receipt Checklist

Date/Time Received:

02-Jun-20 10:30

Work Order:	20060143			ı	Received by	y: <u>D</u>	<u>s</u>		
Checklist comp	leted by Diane Shaw  eSignature		02-Jun-20 Date	Revi	ewed by:	Gary Byar	r		02-Jun-20 Date
Matrices: Carrier name:	Groundwater UPS		Julo			ooig.ia.a.o			24.0
Shipping contai	ner/cooler in good condition?		Yes	<b>✓</b>	No 🗌	Not Present	t 🗆		
Custody seals in	ntact on shipping container/coole	r?	Yes	<b>✓</b>	No 🗌	Not Present	t 🗆		
Custody seals in	ntact on sample bottles?		Yes		No 🗌	Not Present	t 🔽		
Chain of custod	ly present?		Yes	<b>✓</b>	No 🗌				
Chain of custod	ly signed when relinquished and	eceived?	Yes	<b>✓</b>	No 🗌				
Chain of custod	ly agrees with sample labels?		Yes	<b>✓</b>	No 🗌				
Samples in prop	per container/bottle?		Yes	<b>✓</b>	No 🗌				
Sample contain	ers intact?		Yes	<b>✓</b>	No 🗌				
Sufficient samp	le volume for indicated test?		Yes	<b>✓</b>	No 🗌				
All samples rec	eived within holding time?		Yes	<b>✓</b>	No 🗌				
Container/Temp	o Blank temperature in complianc	e?	Yes	<b>✓</b>	No 🗌				
Sample(s) received Temperature(s)	ived on ice? /Thermometer(s):		Yes 3.0/3.0,	3.8/3.8	No 🗆	SR1			
Cooler(s)/Kit(s):	:								
	ple(s) sent to storage:			0 12:19:4					
	als have zero headspace?		Yes			No VOA vials su	ubmitted	✓	
	eptable upon receipt?			<b>✓</b>	No L	N/A $\square$			
pH adjusted? pH adjusted by:			Yes		No 🗸	N/A 📙			
Login Notes:									
	- — — — — — — — — -					- — — — —			- — — — — –
	- — — — — — — — — -			- — — -					- — — — — –
Client Contacte	d:	Date Contacted:			Person	Contacted:			
Contacted By:		Regarding:							
		-3 <b>3</b> -							
Comments:									
CorrectiveAction	n:							050	D 4 6 6



Cincinnati, OH +1 513 733 5336

Everett, WA +1 425 356 2600 Fort Collins, CO +1 970 490 1511

+1 616 399 6070

Holland, MI

#### **Chain of Custody Form**

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Middletown, PA +1 717 944 5541 Salt Lake City, UT +1 801 266 7700 York, PA +1 717 505 5280

	( 🚜	LS)					C	OC ID: 🔾	3/Ul	j										
Envi	roi	nmental						LS Project	Manager:					ALS W	/ork C	rder #	#: <u>2</u>	٥٥	(00	143
		Customer Information	on			Proje	ct Informat	ion		-		Para	meter	/Meti	nod R	eques	t for A	ınalys	sis	***************************************
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Send Repo	ort To	Jeremy Lews	mpowski	Invoice	e Attn	3	IL SUMA	,	1	D										
	Iress	3399 Veter	rans Da.	Ad	dress	15/	0 Thom	ias Pd		E	*****									
City/State	e/Zip	Traverse City,	NI 49284	City/Stat	e/Zip	Kal	Kaska,	W/ 4	9646	G										
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No.		Sample Description		Date		lime -	Matrix	Pres.	# Bottles	A	В	C	D	E	F	G	H	41	J	Hold
339-39-35 <b>1</b>		) <del>-</del> 75	4	11/2020	10:	50	GW	•••	2	X	X		***			A A A LAMBOR SEE VAND.	>			
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Relinquished	by:	UPS	Date/ / Ti	me:			aboratory:	1		100000000000000000000000000000000000000	ooler ID						(One Bo	x Belo	w)	
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Preservativ	e Key:		3-H <sub>2</sub> SO <sub>4</sub> 4-NaOi		O <sub>3</sub> 1	6-NaHS	O₄ 7-Othe	r 8-4°C	9-5035		V1.72			-	ther			***************************************	^	

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

The Chain of Custody is a local document. All information must be completed accurately.



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Everett, WA +1 425 356 2600 Fort Collins, CO +1 970 490 1511

#### **Chain of Custody Form**

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+1 717 944 5541

Spring City, PA +1 610 948 4903

+1 304 356 3168 York, PA

South Charleston, WV

Salt Lake City, UT +1 717 505 5280 +1 801 266 7700

Page \_2\_ of \_2\_\_ Holland, MI +1 616 399 6070

				COCID.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,									
Enviro	nmental			ALS Project	Manager:				_ A	LS Worl	Order	#: 20	<u> </u>	001	43_
	Customer Information		Project Infor	rmation				Parar	neter/	/Method	Reques	st for A	Inalys	is	
Purchase Order		Project Name	HANTLAN	IP 36 GA	s PLONT	A	541f	plane			CI	) Aou	ber	liter	٧
Work Order		Project Number				B	Sulfa	ite			a:	) 12,	50		
Company Name	ECT. FAC.	Bill To Company	Lambda	Energy		C									
Send Report To	Teremy Lewandowski	Invoice Attn		vumer/a		D									
Address	3399 Veteraus Daive	Address	1510 7	tomas Ro	n.D	E CONTRACTOR CONTRACTO			***************************************						
City/State/Zip	Traverse City, MI 49684	City/State/Zip	Kal Kush	a, M/ 4	7646	G									
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e-Mail Address	j lewandowski@ectivc.com	e-Mail Address	m:ch:gau	-TAVOICES C	Lamb	dee	uerg	sylle.	, cor						
No.	Sample Description		Time Mat	rix Pres.	# Bottles	A	В	C	ם	E F	G	H	1	J	Hold
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Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

LISA ZUBER (517) 272-9200 ECT, INC. 3125 SOVEREIGN DRIVE LANSING MI 48911-4240 FROM:

SHIP TO:

**HOLLAND MI 49424-9263** (616) 399-6070 ALS ENVIRONMENTAL 3352 128TH AVENUE SAMPLE RECEIVING

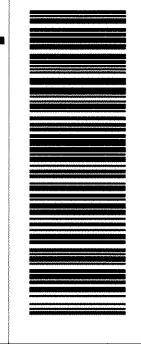


1 OF 1

**50 LBS** 

MI 495 9-04

UPS NEXT DAY AIR
TRACKING #: 12 V54 9W4 01 5081 6242



BILLING: 3RD PARTY

REF 1:130685, 2000

Fold here and place in label pouch

Matrix s/Remarks Sampled By し初の 1530

decore

11/10

FROM:
LISA ZUBER
(517) 272-9200
ECT, INC.
3125 SOVEREIGN DRIVE
LANSING MI 48911-4240

SHIP TO:

HOLLAND MI 49424-9263 (616) 399-6070 ALS ENVIRONMENTAL 3352 128TH AVENUE SAMPLE RECEIVING

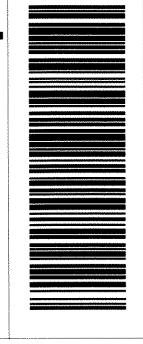


1 OF 1

**50 LBS** 

495 9-04

# UPS NEXT DAY AIR TRACKING #: 12 V54 9W4 01 5088 9432



BILLING: 3RD PARTY

REF 1:130685, 2000

Fold here and place in label pouch

WS 22.0.17 KONICA MINOLT 28.0A 04/2020

SEAL

Sampled By

Time



09-Jun-2020

Nick Summerland Lambda Energy Resources 1510 Thomas Rd Kalkaska, MI 49646

Re: Lambda (Hartland 36 Gas Plant) Work Order: 20060273

Dear Nick,

ALS Environmental received 4 samples on 03-Jun-2020 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

# **Gary Byar**

Electronically approved by: Gary Byar

Gary Byar Project Manager

#### **Report of Laboratory Analysis**

Certificate No: MI: 0022

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 為

ALS Group, USA

Date: 09-Jun-20

Client: Lambda Energy Resources
Project: Lambda (Hartland 36 Gas Plant)

Work Order: 20060273

<b>Work Order Sample Summary</b>
----------------------------------

Lab Samp ID Client Sample ID	Matrix Tag Number	<b>Collection Date</b>	Date Received	Hold
20060273-01 MW-14D	Groundwater	6/2/2020 10:05	6/3/2020 10:30	
20060273-02 MW-14S	Groundwater	6/2/2020 10:25	6/3/2020 10:30	
20060273-03 MW-13D	Groundwater	6/2/2020 10:59	6/3/2020 10:30	
20060273-04 MW-13S	Groundwater	6/2/2020 11:50	6/3/2020 10:30	

Client: Lambda Energy Resources

Project: Lambda (Hartland 36 Gas Plant) Work Order: 20060273

**Sample ID:** MW-14D **Lab ID:** 20060273-01

Collection Date: 6/2/2020 10:05 AM Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS	;		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 01:20 PM
Surr: 2-Fluorobiphenyl	43.2		26-79	%REC	1	6/6/2020 01:20 PM
Surr: 4-Terphenyl-d14	81.3		43-106	%REC	1	6/6/2020 01:20 PM
Surr: Nitrobenzene-d5	43.3		29-80	%REC	1	6/6/2020 01:20 PM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	110		4.0	mg/L	4	6/3/2020 05:23 PM

**Date:** 09-Jun-20

Client: Lambda Energy Resources

Project: Lambda (Hartland 36 Gas Plant) Work Order: 20060273

**Sample ID:** MW-14S **Lab ID:** 20060273-02

Collection Date: 6/2/2020 10:25 AM Matrix: GROUNDWATER

Analyses	Result			Dilution Factor	Date Analyzed	
SEMI-VOLATILE ORGANIC COMPOUNDS	<b>;</b>		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 01:41 PM
Surr: 2-Fluorobiphenyl	44.0		26-79	%REC	1	6/6/2020 01:41 PM
Surr: 4-Terphenyl-d14	82.2		43-106	%REC	1	6/6/2020 01:41 PM
Surr: Nitrobenzene-d5	41.8		29-80	%REC	1	6/6/2020 01:41 PM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	120		4.0	mg/L	4	6/3/2020 05:23 PM

**Date:** 09-Jun-20

Client: Lambda Energy Resources

Project: Lambda (Hartland 36 Gas Plant) Work Order: 20060273

**Sample ID:** MW-13D **Lab ID:** 20060273-03

Collection Date: 6/2/2020 10:59 AM Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS	}		SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		100	μg/L	1	6/6/2020 02:02 PM
Surr: 2-Fluorobiphenyl	48.0		26-79	%REC	1	6/6/2020 02:02 PM
Surr: 4-Terphenyl-d14	81.5		43-106	%REC	1	6/6/2020 02:02 PM
Surr: Nitrobenzene-d5	46.0		29-80	%REC	1	6/6/2020 02:02 PM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	560		10	mg/L	10	6/3/2020 05:23 PM

**Date:** 09-Jun-20

Client: Lambda Energy Resources

Project: Lambda (Hartland 36 Gas Plant) Work Order: 20060273

**Sample ID:** MW-13S **Lab ID:** 20060273-04

Collection Date: 6/2/2020 11:50 AM Matrix: GROUNDWATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
SEMI-VOLATILE ORGANIC COMPOUNDS			SW846	8270D	Prep: SW3510 6/5/20 18:34	Analyst: <b>EE</b>
Sulfolane	ND		10	μg/L	1	6/6/2020 02:24 PM
Surr: 2-Fluorobiphenyl	52.6		26-79	%REC	1	6/6/2020 02:24 PM
Surr: 4-Terphenyl-d14	98.1		43-106	%REC	1	6/6/2020 02:24 PM
Surr: Nitrobenzene-d5	53.1		29-80	%REC	1	6/6/2020 02:24 PM
SULFATE			A4500-	SO4 E-11		Analyst: <b>JDR</b>
Sulfate	86		4.0	mg/L	4	6/3/2020 05:23 PM

**Date:** 09-Jun-20

Date: 09-Jun-20

Client: Lambda Energy Resources
Project: Lambda (Hartland 36 Gas Plant)

**Work Order:** 20060273

**Case Narrative** 

Batch R289961 The MS/MSD data for Sulfate is not related to this project's saples. NO data requires qualification.

Date: 09-Jun-20

# QC BATCH REPORT

Client: Lambda Energy Resources

**Work Order:** 20060273

**Project:** Lambda (Hartland 36 Gas Plant)

Batch ID: <b>156976</b>		Instrument ID SVMS8		Method	: SW846 8270D										
MBLK	Samp	le ID: <b>SBLKW1-156976-1</b> 5	6976			Į	Jnits:µg/L		Analysis Date: 6/6/2020 05:35 AM						
Client ID:		Run	ID: SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3135	Prep Date: 6/5/2	2020	DF: <b>1</b>	1			
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua			
Sulfolane		ND	10												
Surr: 2-Fluorobiph	nenvl	26.59	0	50		0	53.2	26-79	0						
Surr: 4-Terphenyl-	•	40.34	0	50		0	80.7	43-106	0						
Surr: Nitrobenzen		26.6	0	50		0	53.2	29-80	0						
LCS	Samp	le ID: <b>SLCSW1-156976-15</b>	6976			ι	Jnits:µg/L		Analysis	Date: 6/6/2	2020 05:5	6 AM			
Client ID:		Run	ID: SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3136	Prep Date: 6/5/2	2020	DF: <b>1</b>				
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua			
Sulfolane		87.44	10	100		0	87.4	30-100	0						
Surr: 2-Fluorobiph	nenvl	28.86	0	50		0	<i>57.7</i>	26-79	0						
Surr: 4-Terphenyl-		44.47	0	50		0	88.9	43-106	0						
Surr: Nitrobenzen		29.92	0	50		0	59.8	29-80	0						
MS	Samp	le ID: <b>20060143-05A MS</b>				Į	Jnits: µg/L		Analysis Date: 6/6/2		2020 08:4	5 AM			
Client ID:		Run	ID: SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3137	Prep Date: 6/5/2	2020	DF: <b>1</b>				
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua			
Sulfolane		73	10	100		0	73	30-100	0						
Surr: 2-Fluorobiph	nenvl	29.83	0	50		0	59.7	26-79	0						
Surr: 4-Terphenyl-		46.17	0	50		0	92.3	43-106	0						
Surr: Nitrobenzen		28.4	0	50		0	56.8	29-80	0						
MSD	Samp	le ID: <b>20060143-05A MSD</b>				Į	Jnits: µg/L		Analysis	Date: 6/6/2	2020 09:0	7 AM			
Client ID:		Run	ID: SVMS8	_200605A		Se	eqNo: <b>646</b> 8	3138	Prep Date: 6/5/2	2020	DF: <b>1</b>				
Analyte		Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qua			
·												Quu			
Sulfolane		66.27	10	100		0	66.3	30-100	73	9.66	30				
Surr: 4 Tambanul		25.09	0	50		0	50.2	26-79	29.83	17.3	40				
Surr: 4-Terphenyl		46.89 24.09	0	50		0	93.8	43-106		1.55	40				
Surr: Nitrobenzen		re analyzed in this batch:	0	50 0060273-01A	. 20	0	48.2 0273-02A	29-80	28.4 060273-03A	16.4	40				

**Client:** Lambda Energy Resources

20060273 Work Order:

Lambda (Hartland 36 Gas Plant) **Project:** 

Batch ID: R289961 Instrument ID GALLERY Method: A4500-SO4 E-11 MBLK Sample ID: MB-R289961-R289961 Units: mg/L Analysis Date: 6/3/2020 05:23 PM Client ID: Run ID: GALLERY 200603C SeqNo: 6458605 Prep Date: DF: 1 SPK Ref RPD RPD Ref Control Value Limit Value Limit SPK Val %REC %RPD Qual Analyte Result **PQL** Sulfate ND 1.0 MS Sample ID: 20060143-05BMS Units: mg/L Analysis Date: 6/3/2020 05:23 PM SeqNo: 6458613 Client ID: Run ID: GALLERY 200603C Prep Date: DF: 4 RPD Ref RPD SPK Ref Control Value Limit Value Limit SPK Val %REC %RPD Qual Result **PQL** Analyte 104.4 Sulfate 4.0 50 61.47 85.9 95-118 0 S MSD Sample ID: 20060143-05BMSD Units: mg/L Analysis Date: 6/3/2020 05:23 PM Client ID: Run ID: GALLERY 200603C SeqNo: 6458614 Prep Date: RPD SPK Ref Control RPD Ref Value Limit Value Limit Analyte **PQL** SPK Val %REC %RPD Qual Result 102.8 Sulfate 4.0 50 61.47 82.7 95-118 104.4 1.55 10 S LCS1 Sample ID: LCS1-R289961 Units: mg/L Analysis Date: 6/3/2020 05:23 PM Client ID: Run ID: GALLERY\_200603C SeqNo: 6458606 Prep Date: RPD SPK Ref RPD Ref Control Value Limit Value Limit %RPD PQL SPK Val %REC Qual Analyte Result 10.64 0 0 Sulfate 1.0 10 106 90-119 . . . . .

LCS2	Sample ID: LCS2-R2899	61				U	nits: mg/L		Analys	sis Date: <b>6/3/</b>	2020 05:23	S PM
Client ID:		Run ID:	GALLER	RY_2006030	3	Sec	qNo: <b>6458</b>	626	Prep Date:		DF: <b>1</b>	
Analyte	F	Result	PQL	SPK Val	SPK Ref Value		%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate		52.83	1.0	50		0	106	95-118		0		

The following samples were analyzed in this batch:

20060273-01B 20060273-02B 20060273-03B 20060273-04B

**QC BATCH REPORT** 

ALS Group, USA

Date: 09-Jun-20

Client: Lambda Energy Resources
Project: Lambda (Hartland 36 Gas Plant)

West Orders

ACRONYMS, UNITS

WorkOrder: 20060273

#### Qualifier **Description** Value exceeds Regulatory Limit \*\* Estimated Value a Analyte is non-accredited B Analyte detected in the associated Method Blank above the Reporting Limit Е Value above quantitation range Н Analyzed outside of Holding Time Hr BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated. J Analyte is present at an estimated concentration between the MDL and Report Limit ND Not Detected at the Reporting Limit O Sample amount is > 4 times amount spiked Dual Column results percent difference > 40% R RPD above laboratory control limit S Spike Recovery outside laboratory control limits U Analyzed but not detected above the MDL X Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level. **Acronym** Description DUP Method Duplicate LCS Laboratory Control Sample LCSD Laboratory Control Sample Duplicate LOD Limit of Detection (see MDL) LOQ Limit of Quantitation (see PQL) MBLK Method Blank MDL Method Detection Limit MS Matrix Spike MSD Matrix Spike Duplicate POL Practical Quantitation Limit RPD Relative Percent Difference TDL Target Detection Limit TNTC Too Numerous To Count APHA Standard Methods A D **ASTM** Е **EPA** SW SW-846 Update III

#### **Units Reported Description**

μg/L Micrograms per Liter mg/L Milligrams per Liter Client Name: LAMBDA-KAL

#### Sample Receipt Checklist

Date/Time Received:

03-Jun-20 10:30

Work Order:	20060273				R	Received by	/: <u>D</u>	<u>)S</u>			
Checklist compl		Diane Shaw		03-Jun-20	Revie	ewed by:	Gary Bya	r		1	04-Jun-20
Matrices: Carrier name:	eS <u>Groundv</u> <u>UPS</u>	ignature <u>vater</u>		Date			eSignature				Date
Shipping contain	ner/cooler i	n good condition?		Yes	<b>/</b>	No 🗌	Not Presen	t 🗌			
Custody seals in	ntact on sh	ipping container/coole	?	Yes	<b>/</b>	No 🗌	Not Presen	t 🗌			
Custody seals in	ntact on sa	mple bottles?		Yes [		No 🗌	Not Presen	t 🗸			
Chain of custod	ly present?			Yes	<b>/</b>	No 🗌					
Chain of custod	ly signed w	hen relinquished and r	eceived?	Yes	<b>/</b>	No 🗌					
Chain of custod	ly agrees w	ith sample labels?		Yes	<b>✓</b>	No 🗌					
Samples in prop	per contain	er/bottle?		Yes	✓	No 🗌					
Sample contain	ers intact?			Yes [	<b>✓</b>	No 🗌					
Sufficient sample	le volume f	or indicated test?		Yes	<b>/</b>	No 🗌					
All samples rece	eived withir	n holding time?		Yes [	<b>/</b>	No 🗌					
Container/Temp	p Blank tem	perature in compliance	e?	Yes [	<b>/</b>	No 🗌					
Sample(s) recei Temperature(s)				Yes 4.2/4.2 c		No 🗆	SR1				
Cooler(s)/Kit(s):	:										
Date/Time samp Water - VOA via		_		6/3/2020 Yes	12:58:58		No VOA vials s	ubmitted	<b>✓</b>		
Water - pH acce	eptable upo	on receipt?		Yes	<b>/</b>	No 🗌	N/A				
pH adjusted? pH adjusted by:	:			Yes [		No 🗹	N/A				
Login Notes:	:===	======	====	====		:===	=====		===	==	====
Client Contacted Contacted By:	·d:		Date Contacted: Regarding:			Person	Contacted:				
Comments:											
CorrectiveAction	n:								91	PC Pa	ne 1 of 1



Cincinnati, OH +1 513 733 5336

Everett, WA +1 425 356 2600 Fort Collins, CO +1 970 490 1511

+1 616 399 6070

Holland, MI

#### **Chain of Custody Form**

Houston, TX +1 281 530 5656 Spring City, PA +1 610 948 4903

South Charleston, WV +1 304 356 3168

Middletown, PA +1 717 944 5541 Salt Lake City, UT +1 801 266 7700

York, PA +1 717 505 5280

<u>770</u>01

`				:	COC ID: (	DIUZ.	<b>A.</b>										
Enviro	nmental	1 2.2		ALS Project	Manager:					ALS	Nork (	Order	#: 2	00	60.	2)3	
	Customer Information		Projec	ct Inform	nation	···			Pai	ramete				st for A			
Purchase Order		Project Nar	ne HAR	EAND	36 GAS 1	PLANT	'A	Su	fo!	anc	0	(	1/2	nus	e32	Lite	<b>/</b>
Work Order		Project Numb	and the state of t	B Gylfate (1) 125 p							775757AAA						
Company Name	ECT, Inc.	Bill To Compa	ny Lau	n b de	the the	( i	С	······································					· · · · · · · · · · · · · · · · · · ·				/-///
Send Report To	JEREMY LEWANDOWSK	Invoice At		NICK SUMMERLAND									~~~				***
Address	3399 Veteran's Drive	Addre	151	1510 Thomas ROAD			E		^^^	***************************************		~~~~					
City/State/Zip	Traverse City, MI 49.	684 City/State/2	ip Kal	Kaska	es, M/ 4	19646	G							WASSESSEE AND A SECOND			***************************************
Phone	231-946-8200				8-6411		Н										**************************************
	231-946-8208	Fi	ax				1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
e-Mail Address	j lewandowskie ectine.	e-Mail Addre	ssecich:	9 AU.	invoïces	( Lan	26	daer	vers	4110	·	eru					
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	В	c	D	<b>.</b>	F	G	Н		J	Hold
1 Mu	v-14D	alztrozo	1005	GW		7	X	X					A A A A A A A A A A A A A A A A A A A			-	
2 MW		Grano .				Ź	X						1			- Victoria de la companya de la comp	
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9 W	<b>M</b>															Andrea	
10																	
Sampler(s) Please	Print & Sign	Shipment	Method	176	urnaround Time	in Business	Davs	(BD)	☐ Othe				1 07	esults D	iua Da	te)	
Fren Kr	enterfreedte state gete geterte transport in de transport en en de projekt de transport en en state de de transport		GROU			<b>₫</b> 5 BD		3 BD		7 ] 2 BD		∏1BD					
Relinquished by:	Date / ZOZO	Time: R	leceived by:	<u> </u>			Notes	968,6969898647849 Jeffs	10000 00000		e e .	Company (Company)	Transfer (and)	ersy.	41		<u> </u>
Relinquished by:	( D < Date:/_/	Time: B	Regeived by (La	borakory):	7		Co	oler ID		J CCA ler Temp		-		k One Bo		,,,,,,,	
Logged by (Laborator	U/S 6(3/20 VI: DES 6(3/20 1-HCI 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-Na	1300	Checked by (La		ther 8-4°C	9-5035		Р.I ρН2。		<u>2</u> ^(	X	evel II S evel III S	td QC	Raw Date		] TRRP	Checklist Level IV
· · · · · · · · · · · · · · · · · · ·	7 11-10 4-1110/3 0-1120-04 4-148	1011 U-14d2O2U3	6-NaHSO	4 1-JI	11CI 0"4 U	2-0000	1003		1	遊 机多环	ા 📖 '	~#161					

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

3. The Chain of Custody is a legal document. All information must be completed accurately.

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FROM: LISA ZUBER (517) 272-9200 ECT, INC. 3125 SOVEREIGN DRIVE LANSING MI 48911-4240

SHIP TO:

SAMPLE RECEIVING
(616) 399-6070
ALS ENVIRONMENTAL
3352 128TH AVENUE
HOLLAND MI 49424-9263

REF 1:130685, 2000



1 OF 1

**50 LBS** 





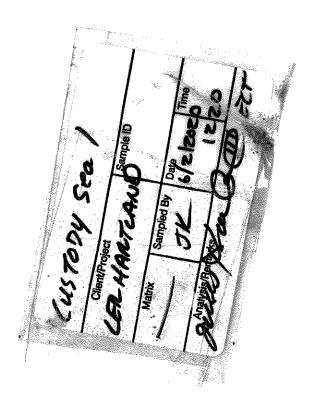
UPS NEXT DAY AIR TRACKING #: 12 V54 9W4 01 5050 5426



BILLING: 3RD PARTY

Fold here and place in label pouch

WS 22.0.17 KONICA MINOLT 28.0A 04/2020



# **APPENDIX D**

# **LOW-FLOW SAMPLING FIELD FORMS**



CLIENT: Lambda Energy	Monitoring Location: Hartland #36
LOCATION: 13390 Lone Tree Road	Sample ID:MW75
Hartland Township, Michigan	Well Type:2" PVC
PROJECT: 130685.2000	
INSPECTION	<b>A</b>
Label on well? YES NO REMEDIED	Is cement pad in good repair?
Is reference mark visible?	Is protective casing locked and in good repair?  YES NO REMEDIED
Standing water present?  Indication of surface runoff in well?  YES NO REMEDIED  YES NO REMEDIED	Is inner cap in place and properly sealing well?  Is well casing in visibly good repair?  YES NO REMEDIED  REMEDIED
Indication of surface runoff in well?  Repair Notes:	is well desiring in visitory good report.
STATIC WATER LEVEL	1/1/2 2 /20 000
	Date: 6/1/2000 Time: 10:08
Top of Casing Elevation:	
Depth to Water: 21. 60 Measured wi	
Elevation of Water: Well depth v	erified?
WELL PURGING	111.
	Date: 6/1/2000 Start Time: 10:10
	Start Hills
Measured Well Depth: 33.00 Screen Length:	Depth to Screen Midpoint:
Weasured Well Depth	
Water Level Drawdown Pumping Rate Temp	Spec Cond. Diss Oxy pH ORP Turbidity
Time (feet) (feet) (ml/min) (°C)	(umho/cm) (mg/l) (S.U.) (mV) (NTU)
10:25 21.6505 250 9.61	502 22 21 5.91 42 2 2.63
10:30 21.65 05 250 9.45	478 21.15 6.23 94.9 2.36
10:35 21.6505 250 9.28	465 20.15 6.35 91.1 1.81
10:40 21.65 05 250 9.36	457 19.47 6.44 89.3 1.80
10:45 21.6505 250 9.32	456 18.32 6.51 88.1 1.67
01-13-13-03-13-14-14-14-14-14-14-14-14-14-14-14-14-14-	+/- 3% +/- 10% +/- 0.1 Units +/- 10 mV +/- 10 %
Total Volume Purged (gal): 2 Stabilization Criteria: +/- 3%	+/- 3% +/- 10% +/- 0.1 Units +/- 10 mV +/- 10 % (if > 0.5 mg/l) (if > 5 NTU)
Total Volume Furged (gar).	Stabilization Criteria Reference Doc. USEPA EQASOP-GW 001 Rev #3, January 19, 2010
FIELD ANALYSIS	
Time: 10:45	CALIBRATION CHECK Mark if
Temperature: 9.32 deg. C	Standard (conc.) Reading Recalibrated
Specific Conductance: 456 umhos/cm	Specific Cond.: umhos/cm
Dissolved Oxygen: 18.32 mg/L	Dissolved Oxygen: mg/L
pH: 6.51 s.u.	pH: S.U
ORP:	Eh: mV
Turbidity: 1.67 NTU	Turbidity: NTU
	110
SAMPLE COLLECTION Time: 10150	Sample Method: 40W Flow
Appearance of Sample: Clear, no oder	Sample Method: 40W FOW
NO./BOTTLES: SIZE: TYPE: FILTERED:	PRESERVATIVE: PARAMETER:
	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
1 125 ml glass plastic yes no None HCl, H	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK Sulfate
ml glass plastic yes no None, HCl, H	INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
[	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
	INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
	1NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
	HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK
SAMPLING PERSONNEL Chair	n of Custody No.
	(SIGNATURE):
Name (SIGNATURE).	(515.10.11.5)

CLIENT: Lambda Energy	Monitoring Location: Hartland #36					
LOCATION: 13390 Lone Tree Road	Sample ID:MW- 7 d					
Hartland Township, Michigan	Well Type: 2" PVC					
PROJECT: 130685.2000						
INSPECTION						
	Is cement pad in good repair?					
Label on well?	Is protective casing locked and in good repair?					
Is reference mark visible?  Standing water present?  YES NO REMEDIED  YES NO REMEDIED	Is inner cap in place and properly sealing well?					
Standing water present?  Indication of surface runoff in well?  YES NO REMEDIED  YES NO REMEDIED	Is well casing in visibly good repair?  YES NO REMEDIED					
Repair Notes:	is well dealing in violally good repair.					
STATIC WATER LEVEL	11.1.					
STATIC WATER LEVEL	Date: 6/1/2000 Time: 10:58					
	Date. Otto PO					
Top of Casing Elevation:	h: ELECTRONIC TAPE CHALKED TAPE OTHER					
Depth to Water: Adams Measured with Measured						
Elevation of Water: Well depth ve	erified? YES NO					
MELL BURGING						
WELL PURGING	Date: 6/1/2020 Start Time: 11:00					
Purge Method: PERISTALTIC BLADDER OTHER	Date: Of the Start Time: 1/ * CO					
110.00	St. 18 In 1968 - Married III. 191					
Measured Well Depth: 48.50 Screen Length: 5	Depth to Screen Midpoint:					
Water Level Drawdown Pumping Rate Temp	Spec Cond. Diss Oxy pH ORP Turbidity					
- (1)	(umho/cm) (mg/l) (S.U.) (mV) (NTU)					
23 19 25	423 16.20 6.88 93.5 196					
11 10 30110	419 15.71 7.00 90.3 1.74					
decks.	10 10 10 10 10 10 10 10 10 10 10 10 10 1					
11:25 22.1802 250 9.80	417 16.15 7.03 88.8 1.59					
11:30 27.1802 250 9.78	417 15.88 6.98 87.5 1.55					
	+/- 3% +/- 10% +/- 0.1 Units +/- 10 mV +/- 10 %					
Stabilization Criteria: +/- 3%						
Total Volume Purged (gal): 1. 75	(if > 0.5 mg/l) (if > 5 NTU)  Stabilization Criteria Reference Doc. USEPA EQASOP-GW 001 Rev #3, January 19, 2010					
FIFLD ANALYSIS	Stabilization Citiena Neterlatice 500. COLL A Edition 1907 100 1100 1100 1100 1100 1100 1100					
FIELD ANALYSIS						
Tillio.	CALIBRATION CHECK Mark if					
Temperature: 9.78 deg. C	Standard (conc.) Reading Recalibrated					
Specific Conductance: umhos/cm	Specific Cond.:umhos/cm					
00	Dissolved Oxygen: mg/L					
pH: 6.98 s.u.	pH:S.U.					
ORP: 87-5 mV	Eh: mV					
Turbidity: 1 - 55 NTU	Turbidity: NTU					
Turbidity N10	Turbidity					
CAMPLE COLLECTION Times 1132	Sample Duplicate ?:					
SAMPLE COLLECTION Time: 11:35						
Appearance of Sample: Cert, No odor	Sample Method:					
NO POTTI FO DITE. TURE. FUTERED	PRESERVATIVE: PARAMETER:					
NO./BOTTLES: SIZE: TYPE: FILTERED:	PRESERVATIVE:         PARAMETER:           NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK         Sulfolane					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAKSulidiare					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK					
SAMPLING PERSONNEL Chair	of Custody No					
Name (SIGNATURE): Name (	SIGNATURE):					

CLIENT: Lambda En LOCATION: 13390 Lone Hartland To PROJECT: 130685.200	Tree Road ownship, Michigan	Sam	ation: ple ID: Type:	MW-15D			
INSPECTION		Is cement pad in good repa	ir2	VES NO REMEDIED N/A			
Label on well? Is reference mark visible? Standing water present? Indication of surface runoff in well? Repair Notes:	YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED	Is protective casing locked Is inner cap in place and pro Is well casing in visibly good	and in good repair? operly sealing well?	YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED			
STATIC WATER LEVEL		Date: 4/1/2020	Time: 09	77			
Top of Casing Elevation: Depth to Water: Elevation of Water:	17.19		DNIC TAPE CHALKED TAPE				
WELL PURGING	J	Date: 6/1/2020	Start Time:	10:17			
Purge Method: PERISTALTIC	BLADDER OTHER	Date:	Start Time	/			
Measured Well Depth:	O' Screen Length		to Screen Midpoint: _				
Water Level  Time (feet)  10:17	(feet) (ml/min)	(°C) (umho/cm) (m 12.3 0.569 7.8 12.4 0.552 7.3 13.5 0.523 6.5 12.5 0.523 6.5 12.5 0.518 6.5 12.5 0.518 6.5	7.38 72 7.43 72 7.44 87 7.44	ORP Turbidity (mV) (NTU)  ZZ3.9 1.99  2140 0.78 195.4 0.64 191.4 0.61 189.8 0.59  +/- 10 mV +/- 10 % - (if > 5 NTU)			
Total Volume Purged (gal): ਤੰ	e punges	face Line pant. (if > 0. Stabilization Criteri	a Reference Doc. USEPA EQA	ASOP-GW 001 Rev #3, January 19, 2010			
FIELD ANALYSIS	e: 1049	C	ALIBRATION CHECK	Mark if			
Temperatur		Standar	d (conc.) Reading	Recalibrated			
Specific Conductance		Specific Cond.:		s/cm			
Dissolved Oxyge	n: 6.66 mg/L H: 7.44 s.U.	Dissolved Oxygen:	mg/L S.U.				
OR	H: 7.09 S.U. P: 188.3 mV	Eh:					
	y: 0.55 NTU	Turbidity:	NTU				
SAMPLE COLLECTION	Time: _/050	Sample	e Duplicate ?:/	Vo			
Appearance of Sample:			e Method:	y flow			
NO./BOTTLES: SIZE:	ml glass plastic yes no	PRESERVATIVE: None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T	SP, BAK	Sulfate			
		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T					
		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T					
		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T					
		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T					
		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T	SP, BAK				
		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T					
CAMPUNIC PERCONNEL		None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, T					
Name (SIGNATURE): 9		Chain of Custody No Name (SIGNATURE):					

CLIENT:	Lambda Ener	gy			Monitoring Location: Hartland #36 Sample ID: MW/ 72					
	13390 Lone T					MW-/7	2			
	<b>Hartland Tow</b>		higan		Well Type:2" PVC					
	130685.2000	14.4								
INSPECTION										
Label on well?		YES NO REMED	IED		Is cement pad in g	ood repair?		YES NO REMEDIE	DNA	
Is reference mark vi	sible?	YES NO REMED			Is protective casing	and the first of the second section and the second section is a second section of the section of the second section of the secti	od repair?	YES NO REMEDIE		
Standing water pres		YES NO REMED			Is inner cap in plac			YES NO REMEDIE	ED.	
Indication of surface		YES NO REMED			Is well casing in vis	sibly good repair?	(	YES NO REMEDIE	ED.	
Repair Notes:									-	
STATIC WAT	ER LEVEL				111			-		
					Date: 6/1/	ww	Time: NA			
Top of Casing E	levation:									
Depth to Water:		17.12		Measured with	(0)	ELECTRONIC TAPE	CHALKED TAPE	E OTHER		
Elevation of Wa	ter:			Well depth ve	rified?	YES NO				
WELL PURG	NG				61.1					
Purge Method: /	(PERISTALTIC)	BLADDER	OTHER		Date: 6/1/	2020	Start Time:/	1335		
(										
Measured Well D	Depth: 40.75		Screen Length	ı:		Depth to Scree	en Midpoint: _		-0	
					M8/cm					
	Water Level	Drawdown	Pumping Rate	Temp	Spec Cond.	Diss Oxy	pН	ORP	Turbidity	
Time	(feet)	(feet)	(ml/min)	(°C)	(timho/cm)	— (mg/l)	(S.U.)	(mV)	(NTU)	
initial	17.12									
1340	17.27	0.15	200	13.6	0.78	2.78	7.28	166.4	10.6	
1345	17.27	0.15	200	13.4	0.81	3.34	7.30	166.1	9.45	
1350	17.28	0.16	200	13.2	0.809	4.30	7.37	165.6	7.94	
	17.28		200	13.0	0.96	6.25	7,45	169.0	6.22	
1355	-	0.16	200	TO THE PARTY OF TH	0.98	5.88	7.43	168.4	4.29	
1400	17.28	0.16		13.1	0.98	5.21	7.43	168.3	6.26	
1405	17.78	0.16	200	15-1	01.0	3.61	2.13	100.3	6.26	
	-									
		S								
	-									
	-	Ctabili	ti Criteria:	1/ 20/	+1 20/	+/- 10%	+/- 0.1 Units	+/- 10 mV	+/- 10 %	
Tatal Values a Du	read (apl):	Stabili	zation Criteria:	+1-3%	-/- 376	(if > 0.5  mg/l)	+/- 0.1 Onks	17- 10 1120	(if > 5 NTU)	
Total Volume Pu	rged (gal):	to Clea	na pun	ge ster	Stabilizat	tion Criteria Reference	e Doc. USEPA EQ	ASOP-GW 001 Rev		
FIELD ANALY	VSIS	,-,							-10-10-10-20-10-10-10-10-10-10-10-10-10-10-10-10-10	
FILLD ANAL	1010	-				CALIBRATI	ON CHECK		Mark if	
	Time: Temperature:	100/1							Recalibrated	
	1 emperature:	12.1	deg. C		0 2: 0 1	Standard (conc.)	Reading	-1	Recalibrated	
	fic Conductance:		umhos/cm		Specific Cond.:		umho	io/cill		
Di	ssolved Oxygen:		mg/L	1	Dissolved Oxygen:					
		7.43	S.U.							
		167.9	mV							
	Turbidity:	6.27	NTU		Turbidity:		NTU		I	
							-1-0			
SAMPLE COL	LECTION	Time:	140	, ,		Sample Duplic	ate?:	2/		
Appearance of S	ample:	ean; slig	at gary +	tout		Sample Metho	d: Zou	100-	-	
					PRESER	\/ATI\/E-		PARAMETER:		
NO./BOTTLES:	SIZE:	TYPE:	FILTERED:	CHICA UNIT	PRESER NO3, NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
1	ml	glass plastic	, –		NO3, NaOH, H <sub>2</sub> SO <sub>4</sub> , NO3, NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
2	ml	glass plastic	yes no		NO3, NaOH, H <sub>2</sub> SO <sub>4</sub> , NO3, NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
1	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
SAMPLING P	EDSONNEL		1		of Custody No.					
SAMPLING P		. 11/2	ATTE							
Name (SIGNA	TURE): Juli	ma	d m	Name (	SIGNATURE):	1				

Lambda Low Flow Logs 2018.xls 5/29/2020, 12:46 PM

CLIENT: Lambda Energ LOCATION: 13390 Lone Tr Hartland Town PROJECT: 130685.2000		Monitoring Location: Sample ID: Well Type:	MW/7S
INSPECTION  Label on well? Is reference mark visible? Standing water present?	YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED	Is cement pad in good repair? Is protective casing locked and in go Is inner cap in place and properly se Is well casing in visibly good repair?	
Top of Casing Elevation: Depth to Water: Elevation of Water:		Date: 6/1/2020  Measured with: FLECTRONIC TAPE  Well depth verified? YES NO	Time:
WELL PURGING  Purge Method: PERISTALTIC B  Measured Well Depth: 27.10	Screen Length:		Start Time: 12-47
Water Level  Time (feet)  14.30  1255  16.40  1305  14.41  Total Volume Purged (gal):  Temperature:  Specific Conductance:  Dissolved Oxygen:  pH: ORP:	Drawdown Pumping Rate (feet) (ml/min)	Temp Spec Cond. Diss Oxy (mg/l)    12.5	pH ORP Turbidity (S.U.) (mV) (NTU)  7.12 221.5 1.02  7.13 193.2 0.62  7.13 191.9 0.62  7.13 199.5 0.62  189.5 0.62
SAMPLE COLLECTION	Time: _/325		cate?: NO od: Low flow
Appearance of Sample:	TYPE: FILTERED: glass plastic yes no	PRESERVATIVE:  None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK None, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	PARAMETER: Sulfolane Sulfate
SAMPLING PERSONNEL  Name (SIGNATURE)	Na Com	Chain of Custody No Name (SIGNATURE):	



CLIENT:	Lambda Ener	rgy		Monitori	ng Location:		Hartland #36	1		
	13390 Lone T			Sample ID: MW-18 /MS/MS						
		nship, Michigan			Well Type:		2" PVC			
PROJECT:	130685.2000	, , , ,			THE PROPERTY OF THE PROPERTY OF					
INSPECTION										
Label on well?		YES NO REMEDIED		Is cement pad in g	good repair?	/	YES NO REMEDIE	D		
Is reference mark vi	isible?	YES NO REMEDIED			ng locked and in goo	od repair?	YES NO REMEDIE	D		
Standing water pres	0.03000	YES NO REMEDIED			ce and properly sea		YES NO REMEDIE	D		
Indication of surface	runoff in well?	YES NO REMEDIED		Is well casing in vi	isibly good repair?	-	YES NO REMEDIE	D		
Repair Notes:										
STATIC WAT	ER LEVEL			Date: 6/14	2020	171	16			
				Date:		Time: 13:	/٦			
Top of Casing E	levation:									
Depth to Water:		18.67	Measured wit		ELECTRONIC TAPE	CHALKED TAPE	OTHER			
Elevation of Wa	ter:	-	Well depth ve	eritied?	YES NO					
THE PURC	110			(1)						
WELL PURG				Date: 6/16	2020	Start Time: /	3:20			
Purge Method:	PERISTALTIC	BLADDER OTHER		Date:		Start Time:_/	2 20			
	27	50	~1							
Measured Well D	Depth:	Screen L	ength:	-	Depth to Scree	en Midpoint: _		-		
				NAMES AND ASSESSMENT OF STREET		0047	100 90 Table	o <u>morphore</u>		
I	Water Level	Drawdown Pumping		Spec Cond.	Diss Oxy	pН	ORP	Turbidity		
Time	(feet)	(feet) (ml/mi	A	(umho/cm)	(mg/l)	(S.U.)	(mV)	(NTU)		
15:35	18.72	05 250		576	6.42	7.04	101.5	5.17		
13:40	18.72	05 250		578	6.24	7.19	97.7	2.84		
13:45	18.72	05 253	10.23	281	6.19	7.14	92.2	2.34		
13:50	18.72	05 257	10.36	585	6.08	7.14	90.	2.21		
						21.00				
	) -	Stabilization Crit	eria: +/- 3%	+/- 3%	+/- 10%	+/- 0.1 Units	+/- 10 mV	+/- 10 %		
Total Volume Pu	irged (gal): /-	15			(if > 0.5 mg/l)			(if > 5 NTU)		
	200 000			Stabiliza	ation Criteria Referenc	e Doc. USEPA EQA	SOP-GW 001 Rev #	3, January 19, 2010		
FIELD ANAL'	YSIS									
	Time:	13:56			CALIBRATIO	ON CHECK		Mark if		
	Temperature:		С		Standard (conc.)	Reading		Recalibrated		
Specif	fic Conductance:		os/cm	Specific Cond.:		umhos	s/cm			
	ssolved Oxygen:			Dissolved Oxygen:		mg/L				
I	pH:	120				S.U.				
I	ORP:									
I		2.21 NTU								
	· c.c.c.y.						- 5			
SAMPLE COI	LLECTION	Time: /3:55			Sample Duplic	ate ?: VES	MS/M	SD		
Appearance of S		Clearino			Sample Metho					
ppodianoe or o	p.o				9					
NO./BOTTLES:	SIZE:	TYPE: FILTERI	D:	PRESER	RVATIVE:		PARAMETER:			
1	1000 ml		None, HCI, H	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
1	<u>125</u> ml	glass plastic yes		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
	ml	glass plastic yes		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
	ml	glass plastic yes		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
·	ml			NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
	ml		or warming a self-se	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
	ml			NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
	ml			NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
· ·	ml	,		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>						
	ml			$NO_3$ , NaOH, $H_2SO_4$ $NO_3$ , NaOH, $H_2SO_4$						
		glass plastic yes								
SAMPLING P	ERSONNEL	MA	Chair	of Custody No						
Name (SIGNA	TURE):	19 / W/	Name (	(SIGNATURE):						

5/29/2020, 12:46 PM

CLIENT:	Lambda Ener	rgy		Monitoring Location: Hartland #36						
LOCATION:	13390 Lone T				Sample ID:		MW- 19 d			
		nship, Michigan			Well Type:		2" PVC			
PROJECT:	130685.2000	mongan								
INSPECTION										
-				Is assent and in a	and ropair?		NO REMEDIE	D.		
Label on well?	inible?	YES NO REMEDIED		Is cement pad in g	good repail? ig locked and in go	od renair?	YES NO REMEDIE			
Is reference mark vi Standing water pres		YES NO REMEDIED YES NO REMEDIED			ce and properly sea	D	YES NO REMEDIE			
Indication of surface		YES NO REMEDIED		Is well casing in vi	12 C.		YES NO REMEDIE			
Repair Notes:	ranon in man						0			
STATIC WAT	ER LEVEL			11.	1		N. C. C.			
		•		Date: 6/1/	2000	Time: //:	48			
Top of Casing E	levation.					The second secon				
Depth to Water:		1958	Measured wit	th:	ELECTRONIC TAPE	CHALKED TAP	E OTHER			
Elevation of Wa			Well depth ve	erified?	VES NO					
Lioration of tra			• • • • • • • • • • • • • • • • • • •		0					
WELL PURG	ING			1	HA DAS		1000 0000			
Purge Method:		BLADDER OTHER		Date: COVI	10000	Start Time:	11:50			
ruige Method.	PERISTALTIC	BEADDER OTTER		7.1	1/2020					
Measured Well [	50.	Screen Lengt	h. 5	0/	Depth to Scree	an Midnoint				
ivieasured vveil L	Depth.	Screen Lengt		-	Deptil to ocici	on whoponic.		-		
				0	Dian Out	mLI	ORP	Turbidity		
	Water Level	Drawdown Pumping Rate		Spec Cond.	Diss Oxy	pH		Turbidity		
Time	(feet)	(feet) (ml/min)	9.88	(umho/cm)	(mg/l)	(S.U.)	102.0	(NTU)		
12:05	14.64	06 250	7.88		13.38	6.45	-			
12:16	19.64	06 250	9.88	574	15.34	7.07	98.0	3.84		
12:15	19.64	06 250	9.89	579	14.97	7.11	96.3	2.26		
12:20	19.64	Ole 250	9.91	583	15.02	7.09	94.7	1.89		
						10				
			4		- To					
			3	· ·						
			-							
	-	·	-							
				-						
	Tall as	Stabilization Criteria:	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 Units	+/- 10 mV	+/- 10 %		
Total Volume Pu	roed (gal):	75 Stabilization Criteria.	17- 376	.7- 370	(if > 0.5 mg/l)	7 0.1 01mts	7 10 1110	(if > 5 NTU)		
Total volume i d	irged (gai).			Stabiliza		e Doc. USEPA EQ	ASOP-GW 001 Rev #			
FIELD ANAL	YSIS					2000 - 14-50 - 14-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 - 15-60 -		The state of the s		
112271111	Time:	17:20			CALIBRATI	ON CHECK		Mark if		
		891						Recalibrated		
	Temperature:	4-77 deg. C			Standard (conc.)	Reading		Recalibrated		
Specif	fic Conductance:	umhos/cm				umho				
Di	ssolved Oxygen:	- 44		Dissolved Oxygen:		mg/L				
	pH:			pH:						
1	ORP:	94.7 mv		Eh:		mV				
	Turbidity:	1.89 NTU		Turbidity:	-	NTU				
								AND AND ADDRESS		
SAMPLE CO	LLECTION	Time: 12:25	1		Sample Duplic		10	1		
Appearance of S	Sample:	Clear, 10 0	dur		Sample Metho	od:	ow Flou			
NO./BOTTLES:	SIZE:	TYPE: FILTERED:			RVATIVE:		PARAMETER:			
1	1000 ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
_1	<u>125</u> ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
-	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
i s <del></del>	ml	glass plastic yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,						
	ml	glass plastic yes no		$NO_3$ , NaOH, $H_2SO_4$ , $NO_3$ , NaOH, $H_2SO_4$ ,						
		glass plastic yes no	#	The second second						
SAMPLING P	ERSONNEL	-Alr	Chair	of Custody No.	•					
Name (SIGNA	TURE):	4900	Name	(SIGNATURE):						

CLIENT: LOCATION: PROJECT:	Lambda Ene 13390 Lone T Hartland Tov 130685.2000	ree Road	nigan		Monitori	ng Location: Sample ID: Well Type:		Hartland #36 MW/9s 2" PVC	
Label on well? Is reference mark v Standing water pre- Indication of surface Repair Notes:	visible? sent? e runoff in well?	YES NO REMED YES NO REMED YES TO REMED YES NO REMED	IED IED		Is inner cap in pla	good repair?  ng locked and in go ce and properly se isibly good repair?	aling well?	YES NO REMEDI YES NO REMEDI YES NO REMEDI YES NO REMEDI	ED ED
Top of Casing B Depth to Water Elevation of Wa	Elevation:	19.64		Measured wi Well depth v		2026 ELECTRONIC TAP YES NO	Time: L:	a) convergence	
WELL PURG Purge Method: Measured Well	PERISTALTIC Depth: 30.0	BLADDER	OTHERScreen Lengtl	h: 51	Date: 6/	Depth to Scre	Start Time:		_
72:50 72:55 13:00	Water Level (feet) /4.80 /9.80	Drawdown (feet)/6/6	Pumping Rate (ml/min) 250 250 250	7 Temp 9.43 9.51	Spec Cond. (umho/cm) 401 400	Diss Oxy (mg/l) /1.35 /1.35	pH (S.U.) 7.66 7.68	ORP 90.8 89.1	Turbidity  (NTU)  7.7.7  2.14  1.85
Total Volume Pi	urged (gal):/	5 Stabiliz	zation Criteria:	+/- 3%	+/- 3% Stabiliza	+/- 10% (if > 0.5 mg/l) ation Criteria Referen	+/- 0.1 Units	+/- 10 mV ASOP-GW 001 Rev	+/- 10 % (if > 5 NTU) #3, January 19, 2010
	YSIS  Time: Temperature: ific Conductance: issolved Oxygen: pH: ORP: Turbidity:	13:00 9.47 401 11.36 7.68 86.1 1.85	deg. C umhos/cm mg/L S.U. mV NTU		Dissolved Oxygen: pH: Eh:	Standard (conc.)	umho	s/cm	Mark if Recalibrated
SAMPLE CO Appearance of S			13.05	9		Sample Dupli Sample Metho	1		_
NO./BOTTLES:	SIZE:	glass plastic	FILTERED: yes no	None, HCI, H None, HCI, H	INO3, NaOH, H <sub>2</sub> SO,	I. Znac, TSP, Bak II. Znac, TSP, Bak III. Znac, TSP, Bak		PARAMETER: Sulfolane Sulfate	
SAMPLING F	PERSONNEL	glass plastic	yes no		n of Custody No				CHECK YOUR STREET
Name (SIGNA	TURE)	1400		Name	(SIGNATURE):				

CLIENT:	Lambda Ener	gy			Monitoring Location: Hartland #36					
	13390 Lone T					MW-205				
	Hartland Tow		nigan			Well Type:		2" PVC		
PROJECT:	130685.2000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				Puntations & Booking				
INSPECTION										
Label on well?		YES NO REMED	ED		Is cement pad in g	ood repair?		YES NO REMEDIE	D 2/4	
Is reference mark vi	isible?	YES NO REMED			Is protective casing			YES NO REMEDIE		
Standing water pres	10000000	YES NO REMED			Is inner cap in place	e and properly sea	aling well?	YES NO REMEDIE	D	
Indication of surface		YES NO REMED	ED		Is well casing in vis	sibly good repair?	~	YES NO REMEDIE	D	
Repair Notes:										
STATIC WAT	ER LEVEL				11.1		m1/2 Acres			
					Date: 6/1/	2020	Time:	e_		
Top of Casing E	levation:				-					
Depth to Water:		18.90		Measured wit		ELECTRONIC TAPE	CHALKED TAPE	OTHER		
Elevation of Wa	ter:			Well depth ve	erified?	YES INO	<b>E</b> )			
WELL PURG	ING				61.1			1107		
Purge Method: /	PERISTALTIC	BLADDER	OTHER		Date: 4/1/	2020	Start Time:	1101		
		_								
Measured Well [	Depth: 25.19	7_	Screen Length	1:		Depth to Scree	en Midpoint: _		_	
	sal	7			MS/cm					
	Water Level	Drawdown	Pumping Rate	Temp	Spec Cond.	Diss Oxy	pН	ORP	Turbidity	
Time	(feet)	(feet)	(ml/min)	(°C)	(umho/cm)	(mg/l)	(S.U.)	(mV)	(NTU)	
initial	18.90				Association of the second				-	
1110	18.85	0.05	200	11.7	0.419	10.34	7.82	201.5	4.45	
1115		0.05	200	11.7	0.419	10.18	7.82	200.3	3.97	
	18.95	0.05	200	11.7	0.419	10.30	7.83	198.9	3.76	
1120	18.95					11.51	7.91	191.6	2.62	
1125	18.95	0.05	200	11.4	0.413	11.21	7.71	111.0	2.02	
					· <del></del>					
									-	
			ar the second		- 1 001 7				/ 1/ 10 0/1/	
	221	Stabiliz	zation Criteria:	+/- 3%	+/- 3%		+/- 0.1 Units	+/- 10 mV	+/- 10 % (if > 5 NTU)	
Total Volume Pu	irged (gal):	V elea	mitnace	part.	Stabilizat	(if > 0.5 mg/l) tion Criteria Reference	e Doc LISEPA FOA	SOP-GW 001 Rev		
FIELD ANAL	veie	(0 po	age of		Otabilizar	don Ontena Neterano				
FIELD ANAL		1121				OAL IDDATE	ON OUEOU		Mark if	
	Time:	110	<u></u> W			CALIBRATIO			Mark if	
	Temperature:	11.0	deg. C	01		Standard (conc.)	Reading	20	Recalibrated I	
Specif	fic Conductance:	0.414	-umhos/cm	ms/cm			umhos	s/cm		
Di	ssolved Oxygen:	10.5	mg/L		Dissolved Oxygen:		mg/L			
1		7.93	S.U.		pH:					
	ORP:		mV		Eh:		mV			
1	Turbidity:	204	NTU		Turbidity:		NTU			
		• (								
SAMPLE CO	LLECTION	Time:	1130			Sample Duplic	ate ?:	)		
Appearance of S		clear				Sample Metho	d: Low y	Yow		
			20200112							
NO./BOTTLES:	SIZE:	TYPE:	FILTERED:		PRESER			PARAMETER:		
1	1000 ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,			Sulfolane		
1	<u>125</u> ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
8	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
( <del></del>	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
-	mi	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
5 S	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
-	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,					
	The same of the sa	glass plastic	yes no							
SAMPLING P		1/	TID	Chain	of Custody No.					
Name (SIGNA	TURE PAUL	Month	M	Name (	SIGNATURE):					

Lambda Low Flow Logs 2018.xls 5/29/2020, 12:46 PM

CLIENT: Lambda Ener	rav	Monitoring Location:	Hartland #36 (MW Do Pe
LOCATION: 13390 Lone T		Sample ID:	MW-20D touplicate
	nship, Michigan	Well Type:	
PROJECT: 130685.2000	monigan	,,, <u> </u>	
INSPECTION	16)		
Label on well?	YES NO REMEDIED	Is cement pad in good repair?	YES NO REMEDIED NA
Is reference mark visible?	YES NO REMEDIED	Is protective casing locked and in good re	pair? YES NO REMEDIED
Standing water present?	YES TO REMEDIED	Is inner cap in place and properly sealing to	well? YES NO REMEDIED
Indication of surface runoff in well?	YES NO DEMEDIED	Is well casing in visibly good repair?	YES NO REMEDIED
Repair Notes:			
STATIC WATER LEVEL		Date: 6/1/2020 Tim	2
		Date:Tim	e:NR
Top of Casing Elevation:			
Depth to Water:			HALKED TAPE OTHER
Elevation of Water:	Well d	depth verified? YES NO	1
WELL PURGING			
	BLADDER OTHER	Date: 6/1/2020 Star	rt Time: //40_
			NEL TOTAL STATE OF THE STATE OF
Measured Well Depth: 35-2	Screen Length:	Depth to Screen M	/lidpoint:
ivicasureu vveii Depin:	As Screen Length.	nes/cm	
10/	Drawdown Pumping Rate Te	emp Spec Cond. Diss Oxy	pH ORP Turbidity
Water Level	지역 2010년 전 10 10 10 10 10 10 10 10 10 10 10 10 10	1000년	(S.U.) (mV) (NTU)
Time (feet)	(feet) (ml/min) (	°C) (umho/cm) (mg/l)	(0.0.)
initial 18.76		0.4 0.587 7.00	7.77 190.1 26.2
1145 19.82			
1150 19.82	1.06 150 12		
1155 19.82	1.060 150 10		7.76 192.6 3.97
1200 19.82	1.06 150 12		.75 192,1 3.27
1205 18.82	1.06 150 13.	1 0.608 7.29 7	1.74 188.1 1.59
	Ct-Liliantian Criteria	- 3% - +/- 3% - +/- 10% - +/-	0.1 Units +/- 10 mV +/- 10 %
			(if > 5 NTU)
Total Volume Purged (gal):	- brow trut/5:144	Stabilization Criteria Reference Do	c. USEPA EQASOP-GW 001 Rev #3, January 19, 2010
FIELD ANALYSIS	7007	Ottomization Criteria Notes and	
Time:	12:07	CALIBRATION C	CHECK Mark if
			Reading Recalibrated
	0.408 deg. C	Standard (conc.)	TOTOGRAPH AND
Specific Conductance:			umhos/cm
Dissolved Oxygen:		Dissolved Oxygen:	
pH:		pH:	
ORP:		Eh:	mV
Turbidity:		Turbidity:	NTU
			- 1/
SAMPLE COLLECTION	Time: /2:/D	Sample Duplicate	(ow flow
Appearance of Sample:	clean, trace fine	Sample Method: _	· Courton
NO./BOTTLES: SIZE:	TYPE: FILTERED:	PRESERVATIVE:	PARAMETER:
NO./BOTTLES: SIZE:  1000 ml	glass plastic yes no Non		Sulfolane + DUPE NW
3 125 ml	glass plastic yes no Non	a HCI HNO, NaOH H-SO, ZnAc TSP BAK	Sulfate + DUPE MW-
		e, HCl, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZhAc, TSP, BAK	
mi		e, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZhAC, TSP, BAK	
		e, HCl, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZhAc, TSP, BAK	
ml	는 기업성으로 가입으라면 - 스템이트 문의관 - 얼마인트		
ml		he, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	
ml		e, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	
ml	할 그렇게 되었어야 하셨다. 그렇게 걸었어?	ie, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	
ml	,	ne, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	
ml		ne, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	
ml	glass plastic yes no Non	e, HCI, HNO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , ZnAc, TSP, BAK	
SAMPLING PERSONNEL	100	Chain of Custody No	
Name (SIGNATURE): SALL	advalt HD	Name (SIGNATURE):	

CLIENT:	Lambda Ener			Monitoring Location: Hartland #36						
LOCATION:	13390 Lone T					Sample ID:		MW-141		
	Hartland Tow	nship, Mich	igan			Well Type:		2" PVC		
PROJECT:	130685.2000				t-t-site-si	-				
INSPECTION					le coment and in a	and rappir?		YES NO REMEDIE	0 12/4	
Label on well?  Is reference mark v	risible?	YES NO REMEDIE			Is cement pad in g	good repair? ng l <del>ocked and</del> in go	od repair?	YES NO REMEDIE		
Standing water pres		YES NO REMEDIE			사용에 하는 것이 보고 하는데 얼마를 하는데 되었다.	ce and properly sea		YES NO REMEDIE	ED.	
Indication of surface		YES NO REMEDIE			Is well casing in vi	sibly good repair?	(	YES NO REMEDIE	ED	
Repair Notes:					Total Value of the Control					
STATIC WAT	ER LEVEL				Date: 6/1/	10000	- 110			
Hasting is known to write					Date: 0///	2020	Time: NR			
Top of Casing B		101 14		Manager	h. (	E FOYDONIO TADE	CHALKED TAPE	OTHER		
Depth to Water		17.45		Measured wit Well depth ve		YES) NO	CHALKED TAPE	E OTHER		
Elevation of Wa	ater.			vven depair ve	Zimou.	ico ito				
WELL PURG	ING	The second second			,	,				
Purge Method:	-	BLADDER (	THER		Date: 6/2/	2020	Start Time:	0925		
arge wiether.	- CHOTALIN	50.1050.1			15		h			
Measured Well	Depth: 45.1	/	Screen Length	າ:	_	Depth to Scree	en Midpoint: _		_	
	Te 3. 101,000		ementante Sa	-	us/cm	2				
I	Water Level	Drawdown F	umping Rate	Temp	Spec Cond.	Diss Oxy	pН	ORP	Turbidity	
Time	(feet)	(feet)	(ml/min)	(°C)	(umho/cm)	(mg/l)	(S.U.)	(mV)	(NTU)	
inifia (	17.45									
6/2/2020	1740									
0930	17.41	0.01	200	12.2	0.80	8.79	7.24	257.1	9.40	
0995	17.41	0.01	200	12.2	0.79	8.34	7.23	253.7	6.58	
0940	17.41	0.01	200	12.0	0.79	7.95	7.24	248.9	5.45	
0945	17.41	0.01	200	12.0	0.79	7.67	7.26	245.1	5.42	
1000	17.41	0.01	200	12.0	0.79	7.50	7.27	242.9	2.75	
		2								
				-				-		
		-			S ————		·			
		Stabiliza	ation Criteria:	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 Units	+/- 10 mV	+/- 10 %	
Total Volume Po	urged (gal):	clear	, ack	cetice	065.	(if > 0.5 mg/l)	i, ou ormo		(if > 5 NTU)	
Total Volume 1	argoa (gar)	@ 10	inge s	fart		ation Criteria Reference	ce Doc. USEPA EQA	ASOP-GW 001 Rev	#3, January 19, 2010	
FIELD ANAL	YSIS	,	/							
	Time:	10:01				CALIBRATI	ON CHECK		Mark if	
l	Temperature:		deg. C	0.		Standard (conc.)	Reading		Recalibrated	
Speci	ific Conductance:	0.79	umhos/cm	m Yem	Specific Cond.:		umho	os/cm		
D	issolved Oxygen:	7.50	mg/L		Dissolved Oxygen:		mg/L			
	pH:	7.28	S.U.		pH:		S.U.			
1	ORP:	241.2	mV		Eh:		mV			
l	Turbidity:	2.42	NTU		Turbidity:		NTU			
				,			/2			
SAMPLE CO	LLECTION	Time:	10:05	14		Sample Duplic	cate ?:	7		
Appearance of S	Sample:	eun, tu	ace ae	nation		Sample Metho	od: Cow 4	700	-	
NO./BOTTLES:	SIZE:	TYPE:	FILTERED:		PRESE	RVATIVE:		PARAMETER:		
NO./BOTTLES:	1000 ml	glass plastic	yes no	None, HCI, H	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
1	125ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
	ml	glass plastic	yes no	None, HCI, H	NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>	, ZnAc, TSP, BAK				
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
	mi	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
-	ml		yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub>					
SAMDI ING	-	1	0	Here was a second	of Custody No					
	PERSONNEL	m/al	ATT							
Name (SIGNA	ATURE): JUM	VI Cat	CHI)	Name	(SIGNATURE):			ALEXANDER VI		

Lambda Low Flow Logs 2018.xls 5/29/2020, 12:46 PM

CLIENT: Lambda Energy					Monitoring Location: Hartland #36				
LOCATION:	2014 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			Sample ID:MW-/45					
	Hartland Township, Michigan			Well Type: 2" PVC					
PROJECT:	130685.2000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3						
INSPECTION					-/				
	7	YES NO REMEDIE			Is cement pad in go	nod renair?		YES NO REMEDIE	DN/A
Label on well?  Is reference mark v	risible?	YES NO REMEDIE			Is protective casing		od repair?	YES NO REMEDIE	
Standing water pre-		YES NO REMEDIE			Is inner cap in place			YES NO REMEDIE	D
Indication of surface		YES O REMEDIE			Is well casing in vis	sibly good repair?	(	YES NO REMEDIE	ED
Repair Notes:									
STATIC WAT	ER LEVEL				11.1				
					Date: 6/1/2	020	Time: NA		
Top of Casing 8	Elevation:								
Depth to Water		17.63		Measured with	n: 🖳	ELECTRONIC TAPE	CHALKED TAPE	OTHER	
Elevation of Wa	ater:			Well depth ve	rified?	YES NO			
Name of the Association of the A	7							to the second	
WELL PURG	ING				10/0/				
Purge Method:	PERISTALTIE	BLADDER C	THER		Date: 6/2/-	20.00	Start Time:	1008	
Measured Well	Depth: 26.52	2' 5	Screen Length	1:		Depth to Scree	en Midpoint:		_
Inicacaroa rron					ni Skin				
ı	Water Level	Drawdown P	rumping Rate	Temp	Spec Cond.	Diss Oxy	pН	ORP	Turbidity
Time	(feet)		(ml/min)	(°C)	-(umho/cm)	(mg/l)	(S.U.)	(mV)	(NTU)
iaitia (		(leet)	(minimi)		-(aminorom)				
	77.63								
6/2/2020		0.07	200	120	1.14	5.86	7.02	222.8	1.37
1010	17.62			10.0			7.02		1.24
1015	17.62	the state of the s	200	12.2	1.15	5.07		219.4	203
1020	17.42	0.02	200	11.7	1.//	5.62	7.02	214.7	0.0
					<del></del>				1:5
									-
									S <u>-11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-</u>
									S. <del></del>
		<u> </u>							) e
							+/- 0.1 Units	11 10 01	+/- 10%
		Stabiliza	ation Criteria:	+1-3%	, granth	+/- 10%	+/- 0.1 Units	+/- 10 mV	+/- 10 % (if > 5 NTU)
Total Volume P	urged (gal):	- Carl	ege sto	-+	Stabilizati	(IT > 0.5 mg/I) ion Criteria Reference	e Doc LISEPA FOA	SOP-GW 001 Rev	[일 : [ ] 전
FIELD ANAL	Veie		10 11.		Stabilizati	ion cineria Referenc	e Doc. OOLI A Lar	toor our terr	ro, candary ro, go
FIELD ANAL	110 100 201 (2012)	1-27							
	Time:	1027	=			CALIBRATI			Mark if
1	Temperature:	11.9	deg. C			Standard (conc.)	Reading		Recalibrated I
Spec	ific Conductance:	1.17	umhos/cm		Specific Cond.: _		umho:	s/cm	
D	issolved Oxygen:		mg/L		Dissolved Oxygen: _		mg/L		
	pH:		S.U.		pH: _		S.U.		
1	ORP:	218.4	mV		Eh: _		mV		
1	Turbidity:	0.03	NTU		Turbidity:		NTU		
									-
SAMPLE CO	LLECTION	Time:	1025	11		Sample Duplic	ate ?:_ No		
Appearance of	Sample:	lear, no	partien	lates		Sample Metho	d: Low	Flow	20
NO./BOTTLES:	SIZE:	TYPE:	FILTERED:		PRESER			PARAMETER:	
_1	1000 ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
	<u>125</u> ml		yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
1 <del>-11-11-11-11-11-11-11-11-11-11-11-11-1</del>	ml	glass plastic	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
	ml		yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
	ml		yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
	ml	A STATE OF THE STA	yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
1	ml		yes no		$NO_3$ , NaOH, H <sub>2</sub> SO <sub>4</sub> , $NO_3$ , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
	ml		yes no						
	ml		yes no		NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , NO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,				
	ml	James Process	yes no		$NO_3$ , NaOH, $H_2SO_4$ , $NO_3$ , NaOH, $H_2SO_4$ ,				
		glass plastic	J05 110	The state of the s					And the second second
SAMPLING F	PERSONNEL	1//	200	Chain	of Custody No.				
Name (SIGNA	ATURE): Juli	dras	(11)	Name (	SIGNATURE):				

CLIENT:	Lambda Ena			· · · · · · · · · · · · · · · · · · ·					
	0,				Monitoring Location: Hartland #36				
LOCATION:	OCATION: 13390 Lone Tree Road			Sample ID:MW-/3D					
Hartland Township, Michigan				Well Type: 2" PVC					
PROJECT:	130685.2000								
INSPECTION								NI NI	
Label on well?		YES NO REMED	NED		Is cement pad in	good repair?		YES NO REMEDI	ED N/A
Is reference mark v	isible?	YES NO REMED				ing looked and in go	nod ranair?	YES NO REMEDI	맛값 보 이 이 이 기
Standing water pres	(	YES NO REMED				ace and properly se		YES NO REMEDI	
Indication of surface		YES TO BEMEE				visibly good repair?		YES NO REMEDI	
Repair Notes:		The state of the s	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		is well dusing in	visitify good repair?	(	TES NO REWEDI	20
STATIC WAT	ER LEVEL	, ,		,				200	CARLES CHILD
		17	.91 'clz	(2020	Date: 6/1/	7070	Time:	2	
Ton of Cooling 5	Tlauration.				Date/		Time:		
Top of Casing E		1907							
Depth to Water:		17.97		Measured wit		ELECTRONIC TAP	E CHALKED TAPE	E OTHER	
Elevation of Wa	iter:			Well depth ve	erified?	YES NO			
WELL BUIDS	1110								
WELL PURG	ING				11	. /		11-	
Purge Method:	PERISTALTIC	BLADDER	OTHER		Date: 4/2	12020	Start Time:	1046	
		,							
Measured Well [	Depth: 32.2		Screen Length	1:		Depth to Scre	en Midpoint:		
	and the second		•		.01				-,11
	Water Level	Drawdown	Pumping Rate	Tomp	Spec Cond.	Diss Oxy	5H	OPP	Tuebleite.
Time	442.751.6540						pH (C.L.)	ORP	Turbidity
Time	(feet)	(feet)	(ml/min)	(°C)	(umho/cm)	(mg/l)	(S.U.)	(mV)	(NTU)
initial	17.71								
6/2/202	0 17.91							_	
1045	18.03	250	0.12'	14.2	1.26	7.33	7.56	228.3	3.13
1050	18.05	250	0.14	14.2	1.26	7.20	7.54	226.9	2.36
1051	18.05	250	0.14	14.2	1.28	TW 10.85	7.56	224.6	2.02
10560	18.05	250	0.14	14.2	179	6.56			172-
10)40	10.03		0.17	17.0	1.61	6.16	7.56	214.1	1.10
	S N-		_		-				
		Stabiliz	zation Criteria:	+/- 3%	+/- 3%	+/- 10%	+/- 0.1 Upits	+/- 10 mV	+/- 10%
Total Volume Pu	rged (gal):	/		1 .		(if > 0.5 mg/l)	5		(if > 5 NTU)
	THE CONTROL OF THE PARTY OF THE	Clean	@purge:	start	Stabiliza	ation Criteria Referenc	e Doc. USEPA EQA	SOP-GW 001 Rev #	3, January 19, 2010
FIELD ANALY	/SIS		,						
	Time:	1056				CALIBRATI	ON CHECK		Mark if
	Temperature:	14.1	4 0						63/69/96/96/96
0 1			deg. C		120 220020 20	Standard (conc.)	Reading		Recalibrated
	ic Conductance:		umhos/cm				umhos	s/cm	
Dis	ssolved Oxygen:		mg/L		Dissolved Oxygen:		mg/L		
	pH:	7.55	S.U.		pH:		S.U.		
	ORP:	207.7	mV		Eh:		mV		
		1.48	NTU					3	
								27	
SAMPLE COL	LECTION I	Time:	1059			Sample Duplic	ate ?: ND	— W. W. H. H. H.	
Appearance of Sa	ample.	Jona.	uo app	Partia	ulater	Sample Metho		land	
rippediance of O	ampio	1201-	11/1			Sample Metric	u. war	eu	
NO./BOTTLES:	SIZE:	TYPE:	FILTERED:		PRESER	RVATIVE:		PARAMETER:	
1	1000 ml	glass plastic	yes no	None HCL HN		, ZnAc, TSP, BAK			- 1
1	ml	glass plastic	yes no			, ZnAc, TSP, BAK			
	ml	glass plastic	yes no			, ZnAc, TSP, BAK			
) il	ml	glass plastic	11000						
	ml	glass plastic	yes no			, ZnAc, TSP, BAK			
	ml	glass plastic	yes no			, ZnAc, TSP, BAK			
-	ml	The state of the s	yes no			ZnAc, TSP, BAK			
2-7	The state of the s	glass plastic	yes no			, ZnAc, TSP, BAK			
	ml	glass plastic	yes no			, ZnAc, TSP, BAK			
-	ml	glass plastic	yes no			, ZnAc, TSP, BAK			
	ml	glass plastic	yes no	None, HCI, HN	O <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,	, ZnAc, TSP, BAK			
	ml	glass plastic	yes no	None, HCI, HN	O <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> ,	, ZnAc, TSP, BAK	D-10-10-10-10-10-10-10-10-10-10-10-10-10-		
SAMPLING PI	ERSONNEL	. 1 /	2	Chain	of Custody No.			_	
Name (SIGNAT	URE): Janua	Such	(911)	Name (S	SIGNATURE):			7	- 1
TANIO (OIOITA)		7		radine (c					

Hartland T PROJECT: 130685.200	e Tree Road ownship, Michiga	n	Monitoring Location: Sample ID: Well Type:			MW/3 S		
INSPECTION  Label on well? Is reference mark visible? Standing water present? Indication of surface runoff in well? Repair Notes:	YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED YES NO REMEDIED		Is cement pad in good Is protective casing I Is inner cap in place Is well casing in visib	locked and in goo and properly sea	od repair?	YES NO REMEDIE YES NO REMEDIE YES NO REMEDIE	D D	
Top of Casing Elevation: Depth to Water: Elevation of Water:  Well depth verified?  Date: 6/1/2020 Time:								
Purge Method: PERISTALTIC	BLADDER OTHE	R	Date: 6/2/2	2020	Start Time:	125		
Measured Well Depth: 30.  Water Leve Time (feet)  (A. 45	el Drawdown Pum (feet) (n	en Length: ping Rate Temp nl/min) (°C)	Spec Cond.	Diss Oxy (mg/l)	pH (S.U.)	ORP (mV)	Turbidity (NTU)	
initial 18.63 612/2020 18.70 11/50 18.72 11/40 18.72 11/45 18.72 11/50 18.72	0.02 2	100 17.0 00 14.7 200 15.2 200 15.2	0.92	5.20 5.22 4.77 4.58 4.51	7.58 7.59 7.59 7.59 7.59	183.6 183.5 181.6 180.5 180.6	9.97 3.60 0.02 0.02 0.02	
Total Volume Purged (gal):	Stabilization  Clear, s/	Criteria: +/-3%	+1-3% Eprope Start Stabilizatio	+/- 10% (if > 0.5 mg/l) on Criteria Reference	+/- 0.1 Units e Doc. USEPA EQA	+/- 10 m	+/- 10 % (if > 5 NTU) 3, January 19, 2010	
FIELD ANALYSIS	111100				OV OUE OV			
720225 23112-5-9/19035 F	ne: _//47	4 0	c	CALIBRATIO Standard (conc.)	ON CHECK Reading		Mark if Recalibrated	
Temperatu Specific Conductano		deg. C umhos/cm	Specific Cond.:	1	umhos	s/cm	Trecambrated	
Dissolved Oxyge	en: 4.46	mg/L	Dissolved Oxygen:		mg/L	04-000		
Disserved Oxyge	07-0	S.U.	A CONTRACTOR OF THE CONTRACTOR		S.U.			
OF OF	P: 180.5	mV			mV			
		NTU			NTU			
SAMPLE COLLECTION	Time: // 5	p. particula	ster S		ate ?: <u>No</u>			
Appearance of Sample:	ear, no y	p. pauricula	3	ample Wello	u	1000		
NO./BOTTLES: SIZE:	TYPE: FIL	TERED:	PRESERV			PARAMETER:		
1			INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z			Sulfolane		
1	_ml glass plastic ye		INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
	ml glass plastic ye		INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
	ml glass plastic ye	to bear a second series of	INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
			INO $_3$ , NaOH, H $_2$ SO $_4$ , Z INO $_3$ , NaOH, H $_2$ SO $_4$ , Z					
	기가 보고 있다면 보는 20개의 없다		INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
		and the second s	INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
	CONTRACTOR OF THE PROPERTY OF		INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
	ml glass plastic ye	es no None, HCl, H	INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z					
	ml glass plastic ye	es no None, HCl, H	INO <sub>3</sub> , NaOH, H <sub>2</sub> SO <sub>4</sub> , Z	ZnAc, TSP, BAK				
SAMPLING PERSONNEL Chain of Custody No								
Name (SIGNATURE)	entral 2.	Wame Name	(SIGNATURE):					