



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

NOV 12 2013

REPLY TO THE ATTENTION OF:

WU-16J

CERTIFIED MAIL 7009 1680 0000 7664 0930
RETURN RECEIPT REQUESTED

Mr. Dimitrios Papas
Environmental Geo-Technologies, LLC
1216 Beaubien
Detroit, Michigan 48174

Re: Authorization to Inject into Two Class I Wells Located at the Environmental Geo-Technologies Facility in Romulus, Michigan, U. S. Environmental Protection Agency Permit Numbers: MI-163-1W-C010 and MI-163-1W-C011

Dear Mr. Papas:

The U. S. Environmental Protection Agency has completed its review of all documentation regarding the requirements to receive authorization to inject into the two Class I wells identified above. The permit conditions identified at Part I, Section L "Commencement of Injection" contained in the two Class I permits identify requirements needed to be met in order to receive EPA written approval to inject into the wells. All conditions of this section have been met and EPA authorizes injection into the two Class I wells.

A summary of EPA's findings regarding compliance with Part I, Section L "Commencement of Injection" of the permits is as follows:

1. Information to be Submitted:

Documentation submitted by Environmental Geo-Technologies (EGT) on March 1, 2013 and collected during EPA's site inspection on June 26 and 27, 2013, identified EGT personnel and their qualifications, and established that well operators on site during the operation of the injection wells have adequate training, including training on deep well operations. EGT's personnel training and staffing plan demonstrates that all operators who will be on site during the operation of the injection wells have adequate training and provides for annual continuing education for all operators. This letter serves as the EPA Director's written approval of EGT's personnel training and staffing plan.

2. Director Inspection:

EPA has inspected all well monitoring equipment and found it to be operational. During EPA's June 26 and 27, 2013 site inspection, some monitors were found to be inoperable. After notifying EGT of the inspection findings, EGT corrected the deficiencies. EPA re-inspected the operation of all well monitors on August 8, 2013 and found all monitors to be operational.

3. Mechanical Integrity Demonstration:

In accordance with the mechanical integrity requirements of the permits and federal regulations, EGT conducted a Standard Annular Pressure Test (SAPT), Radioactive Tracer Survey (RTS) and Temperature Log (TL) on both wells. EPA approved the test procedures for the SAPT, RTS, and TL in a letter to EGT dated November 28, 2012. EGT conducted the tests on December 4 and 5, 2012 and January 16, 2013. After reviewing the test results EPA found that EGT did not conduct the RTS and TL for both wells according to the EPA approved test procedures which resulted in questionable test results. In a letter from EPA to EGT dated June 5, 2013, EPA outlined the test deficiencies and required EGT to retest the wells. EPA witnessed the re-testing of the wells during a site inspection on June 26 and 27, 2013. Upon review of the new test results, EPA has found that EGT has demonstrated mechanical integrity of the two wells. EPA's reviews of the June 26 and 27, 2013 test results are enclosed.

4. Warning and Shut-off Systems:

During EPA's site inspections on June 26 and 27, and August 8, 2013, EPA witnessed the successful test of the automatic warning and shut-off system for both wells. These tests simulated well failure conditions. In documents submitted to EPA, EGT has certified that a trained operator will be on site at all times when the wells are operating to implement the system.

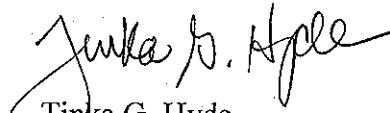
5. Notice to Inject:

EPA hereby provides written notice that the wells have been constructed in compliance with the permits, and Part III (E) of both permits has been modified to add the approved sources of waste. EPA approved the waste sources for EGT's two Class I injection wells in a letter to EGT dated June 5, 2013. The minor permit modifications were made pursuant to 40 C.F.R. §144.41. The two modified permits that reflect the approved waste sources were sent to EGT on September 5, 2013.

With this authorization, please be advised that you are now instructed to begin submitting the required monitoring reports, regardless of the well's injection status. It is EPA's understanding that EGT will not begin injection at the facility until it has received all other necessary permits and licenses from other regulatory authorities.

If you have any questions regarding this decision, please contact Allan Batka of my staff at (312) 353-7316 or e-mail at batka.allan@epa.gov.

Sincerely,


Tinka G. Hyde
Director, Water Division

Enclosures

Cc: Raymond Vugrinovich, MDEQ (w/ enclosures)
De Montgomery, MDEQ
Ronda Blayer, MDEQ
Paul Schleusener, MDEQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator ENVIRONMENTAL GEO-TECHNOLOGIES
 Address 1216 BEAUBIEN ST.
DETROIT MICHIGAN 48226
 Well Name Well Z-1Z (TEST (1))

State Permit No. MIS M452
 USEPA Permit No. M1-163-1W-C010
 Date of Test 6/26/2013
 Well Type CLASS I - HAZARDOUS COMM.

LOCATION INFORMATION _____ Quarter of the _____ Quarter of the _____ Quarter
 of Section 12; Range 9e; Township 33; County WAYNE;
 Company Representative R. Schildhouse; Field Inspector J. WAWCZAK;
 Type of Pressure Gauge _____ inch face; _____ psi full scale; _____ psi increments;

New Gauge? Yes No If no, date of calibration _____ Calibration certification submitted? Yes No

<p>TEST RESULTS Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells. For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure. Original chart recordings must be submitted with this form.</p>	<p>5-year or annual test on time? Yes <input type="checkbox"/> No <input type="checkbox"/> 2-year test for TA'd wells on time? Yes <input type="checkbox"/> No <input type="checkbox"/> After rework? Yes <input type="checkbox"/> No <input type="checkbox"/> Newly permitted well? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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Time	Pressure (in psig)	
	Annulus	Tubing
<u>10:30</u>	<u>906</u>	<u>101</u>
<u>10:40</u>	<u>909</u>	<u>101</u>
<u>10:50</u>	<u>909</u>	<u>101</u>
<u>11:00</u>	<u>908</u>	<u>101</u>
<u>11:10</u>	<u>907</u>	<u>101</u>
<u>11:20</u>	<u>908</u>	<u>101</u>
<u>11:30</u>	<u>909</u>	<u>101</u>

Casing size 7" (STEEL)
 Tubing size 4.5" (Fiberglass)
 Packer type _____
 Packer set @ _____
 Top of Permitted Injection Zone 3937
 Is packer 100 ft or less above top of _____
 Injection Zone? Yes No
 If not, please submit a justification.
 Fluid return (gal.) _____

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 27.2 psi
 Test Period Pressure change +3 psi

Test Passed Test Failed

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Printed Name of Company Representative _____ Signature of Company Representative _____ Date _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator Environmental Geo-Technologies
 Address 1216 BEAUBIEN ST.
DETROIT Michigan 48226
 Well Name WELL 2-12 (TEST 2)

State Permit No. MISM452
 USEPA Permit No. MI-163-1W-C010
 Date of Test 6/26/2013
 Well Type CLASS I - Hazardous Comm

LOCATION INFORMATION _____ Quarter of the _____ Quarter of the _____ Quarter
 of Section 12 ; Range 9e ; Township 35 ; County WAYNE ;
 Company Representative R. Schildhouse ; Field Inspector J. Wawczak ;
 Type of Pressure Gauge _____ inch face; _____ psi full scale; _____ psi increments;

New Gauge? Yes No If no, date of calibration _____ Calibration certification submitted? Yes No

TEST RESULTS
 Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.
 For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.
 Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes No
 2-year test for TA'd wells on time? Yes No
 After rework? Yes No
 Newly permitted well? Yes No

Time	Pressure (in psig)	
	Annulus	Tubing
<u>11:40</u>	<u>1045</u>	<u>102</u>
<u>11:50</u>	<u>1044</u>	<u>101</u>
<u>12:00</u>	<u>1043</u>	<u>101</u>
<u>12:10</u>	<u>1041</u>	<u>101</u>
<u>12:20</u>	<u>1039</u>	<u>101</u>
<u>12:30</u>	<u>1038</u>	<u>101</u>
<u>12:40</u>	<u>1039</u>	<u>101</u>

Casing size 7" (Steel)
 Tubing size 4.5" (Fiber Glass)
 Packer type _____
 Packer set @ _____
 Top of Permitted Injection Zone 3937
 Is packer 100 ft or less above top of Injection Zone? Yes No
 If not, please submit a justification.
 Fluid return (gal.) _____

Comments: _____

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 31.3 psi
 Test Period Pressure change 6 psi

Test Passed Test Failed

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

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Printed Name of Company Representative _____ Signature of Company Representative _____ Date _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator ENVIRONMENTAL Geo-technologies
 Address 1216 BEAUBIEN Street
DETROIT Michigan 48226
 Well Name Well 1-12 (Test 2)

State Permit No. M15M453
 USEPA Permit No. MI-163-W-C011
 Date of Test 6/26/13
 Well Type Class I - Hazardous Comm.

LOCATION INFORMATION _____ Quarter of the _____ Quarter of the _____ Quarter
 of Section 12; Range 9e; Township 35; County WAYNE;
 Company Representative R. Schildhouse; Field Inspector J. Wawczak;
 Type of Pressure Gauge _____ inch face; _____ psi full scale; _____ psi increments;

New Gauge? Yes No If no, date of calibration _____ Calibration certification submitted? Yes No

TEST RESULTS

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.
 For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.
 Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes No
 2-year test for TA'd wells on time? Yes No
 After rework? Yes No
 Newly permitted well? Yes No

Time	Pressure (in psig)	
	Annulus	Tubing
<u>10:25</u>	<u>1075</u>	<u>3</u>
<u>10:35</u>	<u>1073</u>	<u>3</u>
<u>10:45</u>	<u>1069</u>	<u>3</u>
<u>10:55</u>	<u>1069</u>	<u>3</u>
<u>11:05</u>	<u>1069</u>	<u>3</u>
<u>11:15</u>	<u>1070</u>	<u>3</u>
<u>11:25</u>	<u>1069</u>	<u>2</u>

Casing size 7" (STEEL)
 Tubing size 4.5" (FIBER GLASS)
 Packer type _____
 Packer set @ _____
 Top of Permitted Injection Zone 3937
 Is packer 100 ft or less above top of _____
 Injection Zone? Yes No
 If not, please submit a justification.
 Fluid return (gal.) _____

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 32.2 psi
 Test Period Pressure change 0 psi

Test Passed Test Failed

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Printed Name of Company Representative _____ Signature of Company Representative _____ Date _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
STANDARD ANNULAR PRESSURE TEST

Operator ENVIRONMENTAL Geotechnologies
 Address 1216 BEACHVIEW Street
Detroit Michigan 48226
 Well Name Well 1-12 (test 1)

State Permit No. MISM453
 USEPA Permit No. MI-1603-1W-C011
 Date of Test 6/26/13
 Well Type CLASS I-HAZARDOUS Comm.

LOCATION INFORMATION Quarter of the _____ Quarter of the _____ Quarter of the _____
 of Section 12 ; Range 9e ; Township 35 ; County WAYNE ;
 Company Representative R. Schildhouse ; Field Inspector J. Wawczak ;
 Type of Pressure Gauge _____ inch face; _____ psi full scale; _____ psi increments;

New Gauge? Yes No If no, date of calibration _____ Calibration certification submitted? Yes No

<p>TEST RESULTS Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells. For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure. Original chart recordings must be submitted with this form.</p>	<p>5-year or annual test on time? Yes <input type="checkbox"/> No <input type="checkbox"/> 2-year test for TA'd wells on time? Yes <input type="checkbox"/> No <input type="checkbox"/> After rework? Yes <input type="checkbox"/> No <input type="checkbox"/> Newly permitted well? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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Time	Pressure (in psig)	
	Annulus	Tubing
9:20	917	1
9:30	916	1
9:40	916	2
9:50	916	2
10:00	915	2
10:10	915	2
10:20	916	3

Casing size 7" (steel)
 Tubing size 4.5 (fiberglass)
 Packer type _____
 Packer set @ _____
 Top of Permitted Injection Zone 3937
 Is packer 100 ft or less above top of _____
 Injection Zone? Yes No
 If not, please submit a justification.
 Fluid return (gal.) _____

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 28 psi
 Test Period Pressure change 1 psi

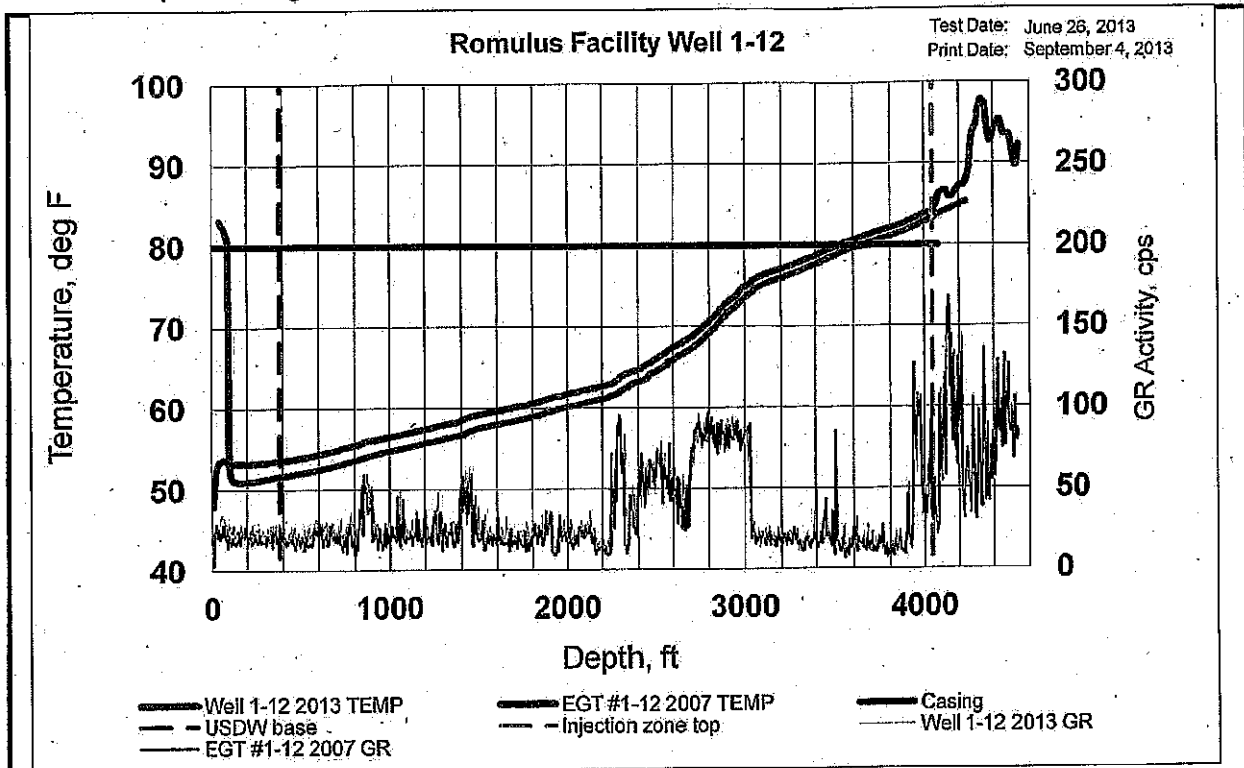
Test Passed Test Failed

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

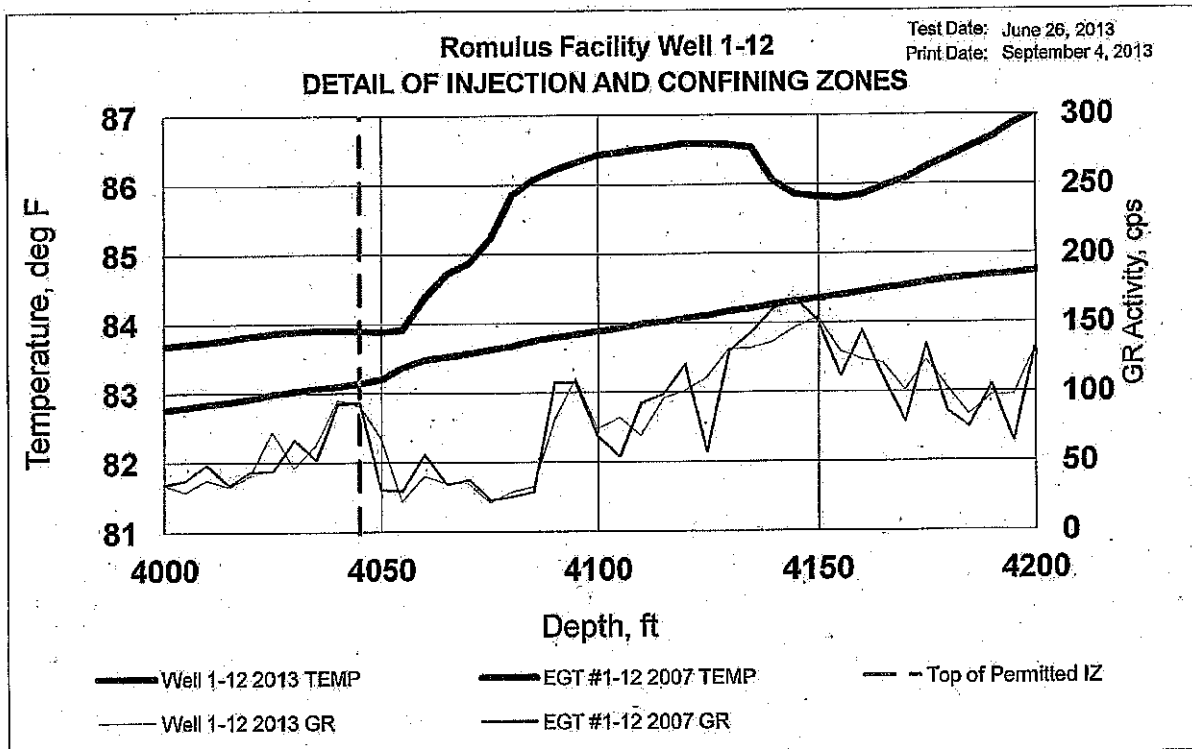
I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Printed Name of Company Representative _____ Signature of Company Representative _____ Date _____

REVIEW OF TEMPERATURE LOGS FOR PART (2) OF MI			
Facility Name Romulus Facility		Operator Environmental GeoTechnologies	
Well Name Well 1-12	Test ID Number 2013-037	US EPA Permit Number MI-163-1W-C010	Analyst J. Wawczak
County Wayne	State Michigan	Test Date June 26, 2013	Analysis Date July 26, 2013
Well and Operational Information			
Long String Casing Length, ft 4080	Tubing Depth, ft 4050	Tailpipe Depth, ft 4055	Does Injectate Temperature vary? No
Depth to Base of USDW, ft. 387	Name of Lowermost USDW Dundee Limestone	Date of Last Injection December 4, 2012	Is this a Multi-zone Facility? No
Depth to Top of Injection Interval, ft 4045	Name of Injection Zone Trempealeau, Franconia, Eau Claire, Mt. Simon	Hour of Last Injection NA	Other Zones Used at Facility NA
Top of Fill/Plugged Back Depth, ft. 4246	Total Depth, ft 4645	Volume Injected in Past Year, gal 0	Depth to Other Injection Zone, ft NA
Calibration Information		Logging Information	
Low Gauge Temp, deg F 40.5	High Gauge Temperature, deg. F 135.6	Time of start of Logging 11:51	For Data Plot, Data Interval, ft 5
Low Thermometer Temp., deg. F 41	High Thermometer Temp, deg. F 137	Hours since Injection NA	Max Log Depth, ft. 4240
Were Log Readings Adjusted? No	Overall Appearance Good? Yes	Decay Series? No	Maximum Logging Speed, ft/min 33
Observations			
Depth to Liquid Level, ft 140	Top of Receptive Strata, ft. Not Apparent	Depth of Most Extreme temp above receptive strata, ft NA	Depth of Most Extreme temp in receptive strata, ft 4050
Temperature at Total Depth, deg F 85.21	Bottom of Receptive Strata, ft. Not Apparent	Most Extreme Temp above IZ, deg F NA	Most Extreme Temp in IZ, deg F 83.20
Top of Receptive Strata to top of IZ, ft NA	Thickness of Receptive Interval, ft NA		
Analysis			
Is a Log Available for Comparison? Yes	Are traces Essentially Congruent? Yes	Intervals with Constant Temp over more than 50 ft. present in cased hole? No	
What Well Log Used? EGT #1-12	Is there a Pivot Point No	Top of Interval #1, ft NA	Top of Interval #2, ft NA
What Year? 2007	If yes, What depth? ft NA	Bottom of Interval #1, ft NA	Bottom of Interval #2, ft NA
Gauge calibration submitted? Yes	If Yes, What Temp? deg F NA	Is Constant Temp More or Less than Temp Above? NA	
		Does this Suggest Flow? NA	Does this Suggest Flow? NA
Comments			
Before conducting the test, the tool was tested in hot water as well as ice water, per the submitted procedures.			
Does the Well Have External Mechanical Integrity?			
Yes			



The 2013 test mirrors the 2007 test very well. There appears to be a sudden drop in temperature right at the start of the test, this is most likely caused by the high temperature outside on the testing day. The other major difference is in the injection zone. In the 2013 test the curve remains constant after entering the injection zone. For the 2007 test there was a rise in temperature after entering the injection zone.



REVIEW OF TEMPERATURE LOGS FOR PART (2) OF MI

Facility Name Romulus Facility		Operator Environmental GeoTechnologies	
Well Name Well 1-12		USEPA Permit Number MI-163-1W-C010	Analyst J. Wawczak
County Wayne	State Michigan	Test Date June 26, 2013	Analysis Date July 26, 2013

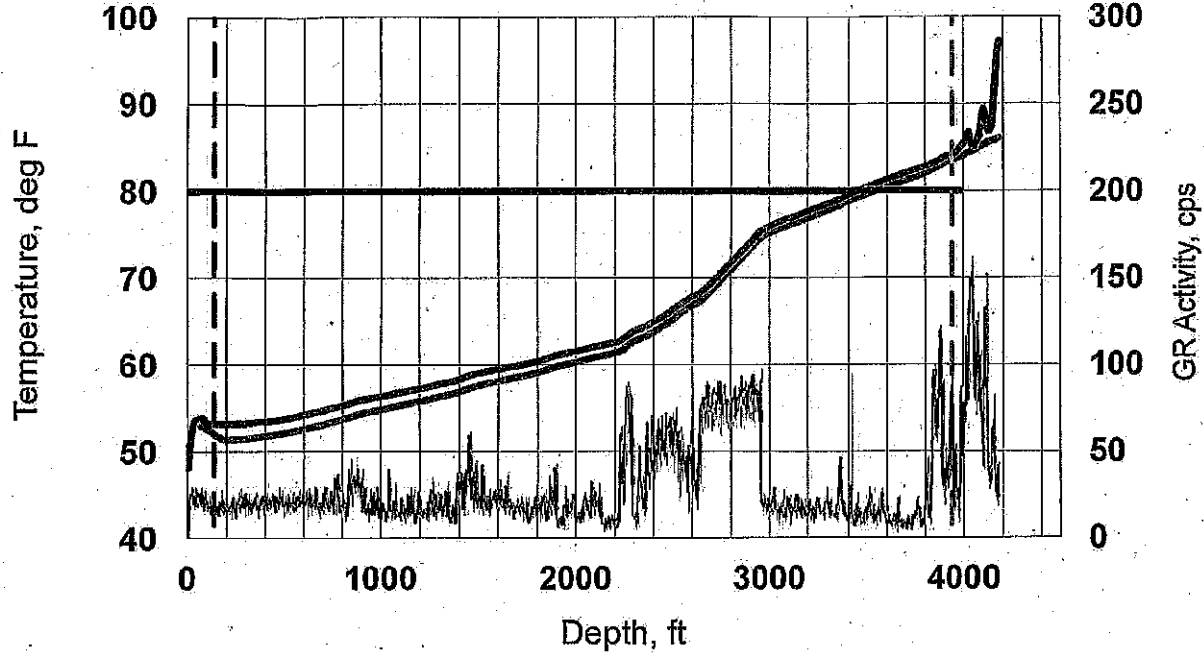
COMMENTS

The 2013 test mirrors the 2007 test very well. There appears to be a sudden drop in temperature near the surface, this is most likely caused by the high temperature outside on the testing day. The other major difference is in the injection zone. In the 2013 test the gradient remains constant after entering the injection zone. For the 2007 test there was a rise in temperature after entering the injection zone. The lack of apparent injection zone in the 2013 is possibly due to the lack of injection over the past few years causing a return to geothermal temperatures.

REVIEW OF TEMPERATURE LOGS FOR PART (2) OF MI			
Facility Name Romulus Facility		Operator Environmental GeoTechnologies	
Well Name Well #2-12	Test ID Number 2013-039	US EPA Permit Number MI-163-1W-C011	Analyst J. Wawczak
County Wayne	State Michigan	Test Date June 27, 2013	Analysis Date July 22, 2013
Well and Operational Information			
Long String Casing Length, ft 3983	Tubing Depth, ft 3953	Tailpipe Depth, ft NA	Does Injectate Temperature vary? No
Depth to Base of USDW, ft. 136	Name of Lowermost USDW Dundee Limestone	Date of Last Injection January 16, 2013	Is this a Multi-zone Facility? No
Depth to Top of Injection Interval, ft 3940	Name of Injection Zone Black River, Glenwood, Trempealeau	Hour of Last Injection NA	Other Zones Used at Facility No
Top of Fill/Plugged Back Depth, ft. 4180	Total Depth, ft. 4550	Volume Injected in Past Year, gal 0	Depth to Other Injection Zone, ft NA
Calibration Information		Logging Information	
Low Gauge Temp, deg F 40.6	High Gauge Temperature, deg. F 131.8	Time of start of Logging 09:00	For Data Plot, Data Interval, ft 0.25
Low Thermometer Temp, deg. F 49	High Thermometer Temp, deg. F 135	Hours since injection NA	Max Log Depth, ft. 413
Were Log Readings Adjusted? No	Overall Appearance Good? Yes	Decay Series? 0	Maximum Logging Speed, ft/min 34
Observations			
Depth to Liquid Level, ft 150	Top of Receptive Strata, ft. Not Apparent	Depth of Most Extreme temp above receptive strata, ft 205	Depth of Most Extreme temp in receptive strata, ft 4172
Temperature at Total Depth, deg F 51.83	Bottom of Receptive Strata, ft. Not Apparent	Most Extreme Temp above IZ, deg F 51.35	Most Extreme Temp in IZ, deg F 51.83
Top of Receptive Strata to top of IZ, ft. NA	Thickness of Receptive Interval, ft NA		
Analysis			
Is a Log Available for Comparison? Yes	Are traces Essentially Congruent? Yes	Intervals with Constant Temp over more than 50 ft. present in cased hole? No	
What Well Log Used? Well #2-12	Is there a Pivot Point No	Top of Interval #1, ft NA	Top of Interval #2, ft NA
What Year? 2007	If yes, What depth? ft NA	Bottom of Interval #1, ft NA	Bottom of Interval #2, ft NA
	If Yes, What Temp? deg F NA	Is Constant Temp More or Less than Temp Above? NA	NA
		Does this Suggest Flow? NA	Does this Suggest Flow? NA
Comments Before conducting the test, the tool was tested in hot water as well as ice water, per the submitted procedures.			
Does the Well Have External Mechanical Integrity?			
Yes			

Romulus Facility Well #2-12

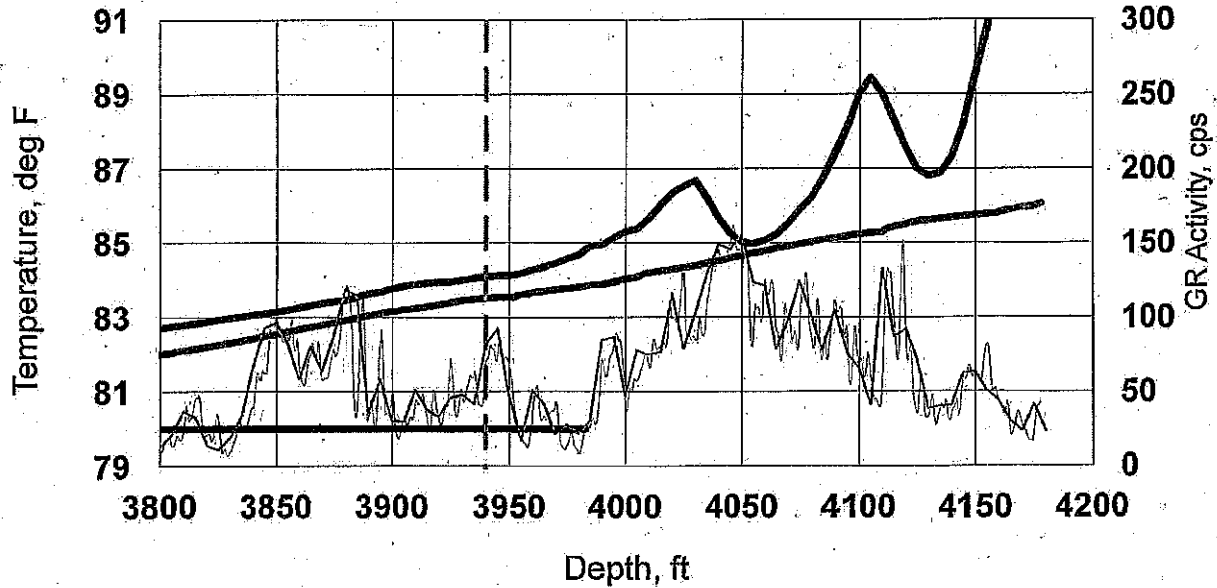
Test Date: June 27, 2013
 Print Date: September 4, 2013



- Well #2-12 2013 TEMP
- Well #2-12 2007 TEMP
- Casing
- - USDW base
- - Injection zone top
- Well #2-12 2013 GR
- Well #2-12 2007 GR

Romulus Facility Well #2-12
 DETAIL OF INJECTION AND CONFINING ZONES

Test Date: June 27, 2013
 Print Date: September 4, 2013



- Well #2-12 2013 TEMP
- Well #2-12 2007 TEMP
- Casing
- - Top of Permitted IZ
- Well #2-12 2013 GR
- Well #2-12 2007 GR

REVIEW OF TEMPERATURE LOGS FOR PART (2) OF MI

Facility Name Romulus Facility		Operator Environmental GeoTechnologies	
Well Name Well #2-12		USEPA Permit Number MI-163-1W-C011	Analyst J. Wawczak
County Wayne	State Michigan	Test Date June 27, 2013	Analysis Date July 22, 2013
COMMENTS			
<p>The 2013 test mirrors the 2007 test very well. The graphs are almost perfectly in line, all the way to the injection zone. Once in the injection zone the the 2007 graph has two small bumps where the temperature rapidly increases, for the 2013 test it stays at a steady rising slope and at around 4200 feet the temperature reading is almost 10 degrees less then in 2007. The absence in activity for the 2013 test is most likely due to the lack of injection activity in the past few years.</p>			
Page 3			

REVIEW OF RADIOACTIVE TRACER SURVEY FOR CEMENT INTEGRITY					
Facility Name Romulus Facility			Operator Environmental GeoTechnologies		
Well Name Well 1-12			USEPA Permit Number MI-163-1W-C010	Witness USEPA	Analyst Greenhagen
State Michigan	Test Date June 26, 2013	Test Number 2013-038	Logging Company Baker Hughes		Analysis Date July 30, 2013
Well and Operational Information					
LS Csg Material Steel and Hastelloy	LS Casing OD, in 7	Casing weight, #/ft 26	Casing ID, in 6.28	Long String Casing Length, ft 4080	
Tubing Material Fiberglass	Tubing OD, in 4.5		Tubing ID, in 3.980	Tubing Length, ft 4050	
Tail Pipe Material NA	Tail Pipe OD, in NA	Tail Pipe weight#/ft NA	Tail Pipe ID, in NA	Tail Pipe Length, ft NA	Tail Pipe Depth, ft NA
	Open Hole diameter, in ID, ft 8.75	4645	PBTD, ft N/A	Top of Open Interval, ft 4080	
Packer Model GPS		Packer Type		Top of Packer, ft 4050	Bottom of Packer, ft 4055
Geological Information					
Name of Lowermost USDW Dundee Limestone		Formations in Arrestment Interval Black River Glenwood, Trempealeau		Formations in Injection Interval Franconia, Eau Claire, Mt. Simon	
Base of Lowermost USDW, ft 387		Depth to top of Arrestment Interval, ft 3467		Injection Interval Top, ft 4045	
TOOL INFORMATION					
Tool Zero 0.0	BDET, ft below tool zero 0.0	Ejector, ft below tool zero	TDET, ft below tool zero -8.50	MDET, ft below tool zero NA	
CALIBRATION INFORMATION					
Depth BDET, ft 3955	Depth TDET, ft 3947	BDET CPSPI 40	Lithology Hot (shale)	Maximum Reading, LD 1.7	Minimum Reading, LD 0.3
Depth BDET, ft 3802	Depth TDET, ft 3794	BDET CPSPI 40	Lithology Cool (sandstone)	Maximum Reading, LD 0.4	Minimum Reading, LD 0
BACKGROUND LOG (BDET) BEFORE TESTS					
Appearance of Log, lithology discernible, extremely suppressed, noisy, etc. Is calibration the same as for statistical checks?					
Lithology is discernible on the log.					
Page 1					

REVIEW OF RADIOACTIVE TRACER SURVEY FOR CEMENT INTEGRITY					
Facility Name Romulus Facility			Operator Environmental GeoTechnologies		
Well Name Well 1-12			USEPA Permit Number MI-163-1W-C010	Witness USEPA	Analyst Greenhagen
State Michigan	Test Date June 26, 2013	Test Number 2013-038	Logging Company Baker Hughes		Analysis Date July 30, 2013
FIRST SLUG TRACKING SEQUENCE					
Flow Rate, gpm 22	Velocity in tubing, fpm 34	Depth of deflection on 1st pass 3149	Deflection on 1st pass, ft 65.5	Deflection/Background 38	Passes Through Slug 9
Slug Split? yes or no No	Depth of Split, ft NA	Moved up, yes or no NA	Minimum Slug Depth, ft NA	Maximum Slug Depth, ft 4140	
Comments There does not appear to be any cause for concern with the slug tracking sequence.					
FIRST STATIONARY TEST					
Tool Setting Depth, ft 4080	Depth of BDET, ft 4080.0	BDET to open interval, ft 0.0	Time at station, min 30.5	Injection Rate, gpm 22	Log Divisions per Minute 12
Ejector Depth, ft	Depth of TDET, ft 4071.5	BDET above deeper of tbg or casing, ft Zero	Pass BDET up, LD 179.3	Pass UDET up, LD NA	Velocity Up, ft/min NA
Comments: A small amount of upward moving radioactivity is detected in the bottom detector at 14.94 minutes into the test; however, there is no noticeable increase in activity detected in the top detector after this time. This indicates that the upward moving fluid remained below 4071.5 ft, which is well below the packer. This indicates that the increased activity in the bottom detector was likely fluid located inside the casing due to an eddy near the bottom of the long string casing.					
FINAL LOG					
Is the appearance much the same as the first log? Yes					
Do the traces overlay well above the casing shoe? Yes					
At what depths above the casing shoe does the final log show higher gamma ray activity? NA					
COMMENTS					
There does not appear to be any cause for concern with the bottom casing cement at this well. See comments above on the stationary test analysis.					
REGULATORY AND ENFORCEMENT REQUIREMENTS					
Is there movement above the casing shoe? NO		Is there movement above the top of the injection interval? NO		Is there cause for concern? NO	
HAVE REGULATORY OR ENFORCEMENT REQUIREMENTS BEEN MET? YES					
What follow-up actions have been taken?					
What follow-up actions are needed?					
Date follow-up action completed					

REVIEW OF RADIOACTIVE TRACER SURVEY FOR CEMENT INTEGRITY					
Facility Name			Operator		
Romulus Facility			Environmental GeoTechnologies		
Well Name			USEPA Permit Number	Witness	Analyst
Well #2-12			MI-163-1W-C011	USEPA	Greenhagen
State	Test Date	Test Number	Logging Company		Analysis Date
Michigan	June 27, 2013	2013-040	Baker Hughes		August 14, 2013
Well and Operational Information					
LS Csg Material	LS Casing OD, in	Casing weight, #/ft	Casing ID, in	Long String Casing Length, ft	
Steel and Hastelloy	7	26		3983	
Tubing Material	Tubing OD, in		Tubing ID, in	Tubing Length, ft	
Fiberglass	4.5		3.980	3953	
Tail Pipe Material	Tail Pipe OD, in	Tail Pipe weight#/ft	Tail Pipe ID, in	Tail Pipe Length, ft	Tail Pipe Depth, ft
NA	NA	NA	NA	NA	NA
	Open Hole diameter, in	ID, ft	PBTD, ft	Top of Open Interval, ft	
	8.75	4550	4025	3983	
Packer Model	Packer Type		Top of Packer, ft		Bottom of Packer, ft
GPS			3953		3958
Geological Information					
Name of Lowermost USDW	Formations in Arrestment Interval		Formations in Injection Interval		
Dundee Limestone	Black River Glenwood, Trempealeau		Franconia, Eau Claire, Mt. Simon		
Base of Lowermost USDW, ft	Depth to top of Arrestment Interval, ft		Injection Interval Top, ft		
387	3382		3950		
TOOL INFORMATION					
Tool Zero	BDET, ft below tool zero	Ejector, ft below tool zero	TDET, ft below tool zero	MDET, ft below tool zero	
0.0	0.0		-8.50	NA	
CALIBRATION INFORMATION					
Depth BDET, ft	Depth TDET, ft	BDET CPSPI	Lithology	Maximum Reading, LD	Minimum Reading, LD
3855	3847	40	Hot (shale)	2.3	0.6
Depth BDET, ft	Depth TDET, ft	BDET CPSPI	Lithology	Maximum Reading, LD	Minimum Reading, LD
3800	3792	40	Cool (sandstone)	0.9	0
BACKGROUND LOG (BDET) BEFORE TESTS					
Appearance of Log, lithology discernible, extremely suppressed, noisy, etc. Is calibration the same as for statistical checks?					
Lithology is discernible on the log.					
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REVIEW OF RADIOACTIVE TRACER SURVEY FOR CEMENT INTEGRITY					
Facility Name Romulus Facility			Operator Environmental GeoTechnologies		
Well Name Well #2-12			USEPA Permit Number MI-163-1W-C011	Witness USEPA	Analyst Greenhagen
State Michigan	Test Date June 27, 2013	Test Number 2013-040	Logging Company Baker Hughes		Analysis Date August 14, 2013
FIRST SLUG TRACKING SEQUENCE					
Flow Rate, gpm 36	Velocity in tubing, fpm 56	Depth of deflection on 1st pass 3793	Deflection on 1st pass, ft 104.9	Deflection/Background 45	Passes Through Slug 6
Slug Split? yes or no No	Depth of Split, ft NA	Moved up, yes or no NA	Minimum Slug Depth, ft NA	Maximum Slug Depth, ft 4052	
Comments There does not appear to be any cause for concern with the slug tracking sequence.					
FIRST STATIONARY TEST					
Tool Setting Depth, ft 3980	Depth of BDET, ft 3980.0	BDET to open interval, ft 3.0	Time at station, min 31.8	Injection Rate, gpm 36	Log Divisions per Minute 12
Ejector Depth, ft	Depth of TDET, ft 3971.5	BDET above deeper of tbg or casing, ft 3	Pass BDET up, LD NA	Pass UDET up, LD NA	Velocity Up, ft/min NA
Comments: There does not appear to be any cause for concern with the stationary test.					
FINAL LOG					
Is the appearance much the same as the first log? Yes					
Do the traces overlay well above the casing shoe? Yes, except between 3375-3840 feet in the bottom detector.					
At what depths above the casing shoe does the final log show higher gamma ray activity? Between 3375-3840 feet in the bottom detector.					
COMMENTS					
A large portion of the final gamma ray log bottom detector appear elevated compared to the run before the test (see notes above). Due to this being only in one detector, it is unknown what would cause this tool response; however, it is not likely that it is the result of a problem with the cement at the base of the long string casing. This area should be more closely reviewed during next year's tracer survey. There does not appear to be any cause for concern with the bottom casing cement at this well.					
REGULATORY AND ENFORCEMENT REQUIREMENTS					
Is there movement above the casing shoe? NO		Is there movement above the top of the injection interval? NO		Is there cause for concern? NO	
HAVE REGULATORY OR ENFORCEMENT REQUIREMENTS BEEN MET? YES					
What follow-up actions have been taken?					
What follow-up actions are needed?					
Date follow-up action completed					