



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

OCT 06 2014

REPLY TO THE ATTENTION OF:  
WU-16J

**CERTIFIED MAIL 7009 1680 0000 7675 7027**  
**RETURN RECEIPT REQUESTED**

Richard J. Powals  
Chief Operating Officer  
Environmental Geo-Technologies, LLC  
28470 Citrin Drive  
Romulus, Michigan 48174

Subject: Approval of Proposed Procedures for Testing in the Environmental Geo-Technologies #1-12 and #2-12 Wells, U.S. Environmental Protection Agency Underground Injection Control Permit #MI-163-1W-C010 and #MI-163-1W-C011, October 2014

Dear Mr. Powals:

The U.S. Environmental Protection Agency has reviewed and hereby approves the procedures proposed in your letter of October 3, 2014, for the testing referenced above with several conditions.

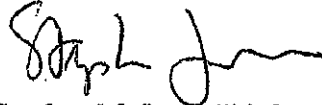
1. A copy of the pressure gauge calibration certificate for each gauge used during the testing (Standard Annulus Pressure Test and Ambient Reservoir Pressure Monitoring) should be submitted.
2. During the Radioactive Tracer Survey in Well #2-12, please run the final base log over the same portion of the well you propose for the initial base log (4300' to 3093').
3. During the Ambient Reservoir Pressure Monitoring, please ensure that the well not being tested, e.g., the #2-12 well when the test is being conducted in the #1-12 well, maintains as steady an injection rate as possible; being shut-in is optimal. As written, your proposal says that the well being tested will be shut down at least four hours prior to and during the fall off portion of the test. This is not correct.

I am enclosing information sheets that we request you fill in and return with the test results and interpretation and up-to-date well schematics. This will help ensure that all the information we require for interpretation of the test will be included in your submission. Please remember to submit the digital data either on CD or by email when you submit your report. Please note that if the tests do not provide definitive information concerning the conditions which they are designed to ascertain, or approved procedures are not followed, you will be required to rerun them.

It is our practice that testing be witnessed by an EPA staff member or our contract field inspector to the extent possible. Please contact Jeff McDonald at (312) 353-6288 to schedule the witnessing of this test. Unwitnessed tests are only acceptable if it is impossible for an EPA staff member or the field inspector to be present.

If you have any questions or comments about the contents of this letter or if you find during the test that you are unable to follow the approved procedures, please contact Stephen Roy of my staff by phone at (312) 886-6556 or by email to roy.stephen@epa.gov.

Sincerely,



Stephen M. Jann, Chief  
Underground Injection Control Branch

Enclosures

cc: Sam Williams (email only with procedure)  
Ray Vugrinovich, Michigan Department of Environmental Quality (email only)  
Rich Schildhouse, Subsurface (email only)

## BACKGROUND INFORMATION FOR ANALYSIS OF PRESSURE FALL-OFF TEST

Company Name		Operator	
Parsons Field		Environmental Geotechnologies, LLC	
Well ID		Well Number	State Permit Number
		MI-63-1070010	M-462
TEST DATE			

### GEOLOGICAL DATA

POROSITY, decimal	NET PERMEABLE THICKNESS, ft.	VISCOSITY, cp.	COMPRESSIBILITY, per psi
		1.22	6.7E-06

### WELL AND OPERATION DATA

PRETEST FLOW RATE, gpm	INJECTATE TEMPERATURE, deg.F		
GAUGE DEPTH, ft.	PRETEST FLOW TIME, hrs.	INJECTATE SPECIFIC GRAVITY	TEST DEPTH FOR COMPARISON, ft.
CUMULATIVE VOLUME INJECTED SINCE LAST PRESSURE EQUALIZATION, gallons			

### TEST DATA

GAUGE CALIBRATION DATE			
FLOW RATE, gpm	INITIAL PRESSURE, psi	FINAL PRESSURE, psi	TO SUPPORT FULL COLUMN, psi
TEST LENGTH, hrs.	INITIAL GRADIENT, psi/ft.	FINAL GRADIENT, psi/ft.	FINAL FLUID LEVEL, ft.

### REMEMBER

1. Injection of normal injectate at normal rate is preferred.
2. Please compare data in your records to those in the shaded cells. If there is a difference, be sure the correct information is noted.
3. Please submit an up-to-date well schematic
4. Data should be collected at the maximum rate for at least the first five minutes; between five and thirty minutes at no less than one reading every 30 seconds. After thirty minutes, the operator can reduce frequency as required.

# BACKGROUND INFORMATION FOR REVIEW OF RADIOACTIVE TRACER SURVEYS FOR CEMENT INTEGRITY

Company Name		Environmental Geotechnologies, LLC	
Address		Witness	
City, State, Zip		Date	
Test Date		Logging Company	

## Well and Operational Information


## Geological Information


## TOOL INFORMATION

Ejector, ft above BDET	TDET, ft above BDET	MDET, ft above BDET		

## CALIBRATION INFORMATION

Depth BDET, ft	Depth TDET, ft	BDET CPSP1	Shaly zone	Maximum Reading, LD	Minimum Reading, LD
Depth BDET, ft	Depth TDET, ft	BDET CPSP1	Clean zone	Maximum Reading, LD	Minimum Reading, LD

## BACKGROUND LOG (BDET) BEFORE TESTS

Appearance of Log, lithology discernible, extremely suppressed, noisy, etc. Is calibration the same as for statistical checks?

## FIRST SLUG TRACKING SEQUENCE

Flow Rate, gpm	Velocity in tubing, fps	Depth of deflection on	Deflection on 1st pass	Deflection/Background	Passes Through Slug
Slug Split? yes or no	Depth of Split, ft	Moved up, yes or no	Minimum Slug Depth,	Distance above shoe,	Maximum Slug Depth, ft

## FIRST STATIONARY TEST

Depth of BDET, ft	Depth of TDET, ft	BDET to open interval	Time at station, mins	Injection Rate, gpm	Log Divisions per Minute
Depth at Injection, ft		BDET above end of tubing or casing, ft	Reached BDET up, LD	Reach UDET up, LD	Velocity Up, ft/min
2nd Setting Depth, ft	Time of reset	Slug already passed BDET?	Reached BDET up, LD	Slug arrival time	
3rd Setting Depth	Time of reset	Slug already passed BDET?	Reached BDET up, LD	Slug arrival time	
4th setting depth, ft	Time of reset	Slug already passed BDET?	Reached BDET up, LD	Slug arrival time	Upper Limit of Movement, ft

## REMEMBER

1. Inject at highest practicable rate to maximize pressure differentials, but at low enough velocity during slug tracking so the slug can be followed effectively.
2. Leave the scaling at the same level for all phases. 40 counts per second per inch is usually effective. We need to see evidence of variation due to lithology.
3. Use big slugs. The height of the deflection caused by the slug should be at least 50 times the difference of the high and low levels measured during logging the initial log.
4. If you record times of arrival, that should be the arrival of the leading edge.
5. The purpose is to determine the shallowest depth at which tracer material leaves the well.
6. When slug tracking, logging through the slug while the last part of the slug is leaving the deeper of the tailpipe or casing is the best way to identify a split.
7. When running the stationary test, set the tool with the bottom detector five (5) feet above the end of the deeper of the tail pipe or casing. If the slug reaches it, move it up in steps to find the shallowest extent of movement.
8. The stationary test must be run long enough to be able to detect upward motion of 2 ft/min.
9. Superimpose the traces of the initial and final base logs.
10. Please submit both the merged and unmerged records unless the traces are coded so they can be identified when necessary (they don't need to be identified when they are all superimposed).
11. Please compare data in your records to those in the shaded cells. If there is a difference, be sure the correct value is noted.
12. Please submit the digital logging data on a CD.
13. Please submit an up-to-date well schematic

## BACKGROUND INFORMATION FOR ANALYSIS OF PRESSURE FALL-OFF TEST

Romulus Facility		Environmental Geotechnologies, Inc.	
Well #2		ML 103 W.COH	W-433
TEST DATE			

### GEOLOGICAL DATA

POROSITY, decimal	NET PERMEABLE THICKNESS, ft.	VISCOSITY, cp.	COMPRESSIBILITY, per psi
0.1	3	12	6.70E-06

### WELL AND OPERATION DATA

WELL ID	PRETEST FLOW RATE, gpm	INJECTATE TEMPERATURE, deg.F	WELL ELEVATION, ft.
576			6266
GAUGE DEPTH, ft	PRETEST FLOW TIME, hrs.	INJECTATE SPECIFIC GRAVITY	TEST DEPTH FOR COMPARISON, ft
CUMULATIVE VOLUME INJECTED SINCE LAST PRESSURE EQUALIZATION, gallons			

### TEST DATA

GAUGE CALIBRATION DATE			
FLOW RATE, gpm	INITIAL PRESSURE, psi	FINAL PRESSURE, psi	TO SUPPORT FULL COLUMN, psi
TEST LENGTH, hrs.	INITIAL GRADIENT, psi/ft.	FINAL GRADIENT, psi/ft.	FINAL FLUID LEVEL, ft.

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