Department of Energy
Office of Legacy Management

DEC 0 8 2008

Douglas Mandeville
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Gary Smith, PhD Section Manager
Texas Commission on Environmental Quality
Bureau of Radiation Control
P.O. Box 13087, Mail Code 233
Austin, TX 78711-3087

Subject: Transmittal of Data Validation Package for the Falls City, Texas, Disposal Site, May 2008

Dear Mr. Mandeville and Dr. Smith:

Enclosed is one copy for Mr. Mandeville and one copy for Dr. Smith of the subject document that presents the results of the May sampling activity at the DOE Falls City disposal site. Ground water samples were collected to monitor ground water quality as an indication of disposal cell performance, as specified in the *Long-Term Surveillance Plan for the Falls City Disposal Site, Falls City, Texas* (LTSP; DOE 2008). Sampling and analysis was conducted as specified in *Ground Water and Surface Water Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (DOE 2005).

The results from this sampling event do not indicate any large deviations in ground water chemistry or water levels, nor degradation of disposal cell performance. A more detailed evaluation is presented in the enclosed Data Validation Package.

Please contact me at (970) 248-6016 if you have any questions.

Sincerely,

Jalena Dayvault
Site Manager

Enclosures

2597 B 3/4 Road, Grand Junction, CO 81503	☐	3600 Collins Ferry Road, Morgantown, WV 26505
1000 Independence Ave., S.W., Washington, DC 20585	☐	11025 Dover St., Suite 1000, Westminster, CO 80021
10995 Hamilton-Cleves Highway, Harrison, OH 45030	☐	955 Mound Road, Miamisburg, OH 45342
232 Energy Way, N. Las Vegas, NV 89030	☐	
REPLY TO: Grand Junction Office		

DEC 0 8 2008

cc w/enclosure:
Falls City Public Library

cc w/o enclosure:
M. Miller, Stoller (e)
File FCT 410.02 (Roberts)

Sampling Events-DVPs\DVP Falls City May 2008.doc

LMS/LKV/S00508

Data Validation Package

May 2008
Groundwater Sampling
at the Falls City, Texas, Disposal Site

September 2008

U.S. Department of Energy
Office of Legacy Management

Work Performed by the S.M. Stoller Corporation Under DOE Contract No. DE–AM01–07LM00060
for the U.S. Department of Energy Office of Legacy Management.

Contents

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Sampling Event Summary

Site: Falls City, Texas, Disposal Site

Sampling Period: April 30, 2008 – May 1, 2008

Ten groundwater samples were collected at the Falls City, Texas, Disposal Site to demonstrate that legacy contamination is not affecting downgradient groundwater quality, as specified in the *Long-Term Surveillance Plan for the U.S. Department of Energy Falls City Uranium Mill Tailings Disposal Site Falls City, Texas* (March 2008).

Sampling and analysis was conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. One duplicate sample was collected from location 0862. The duplicate sample results were acceptable for all analytes.

The wells sampled included the cell performance monitor wells (0709, 0858, 0880, 0906 and 0921) and the groundwater compliance monitor wells (0862, 0886, 0891, 0924, and 0963).

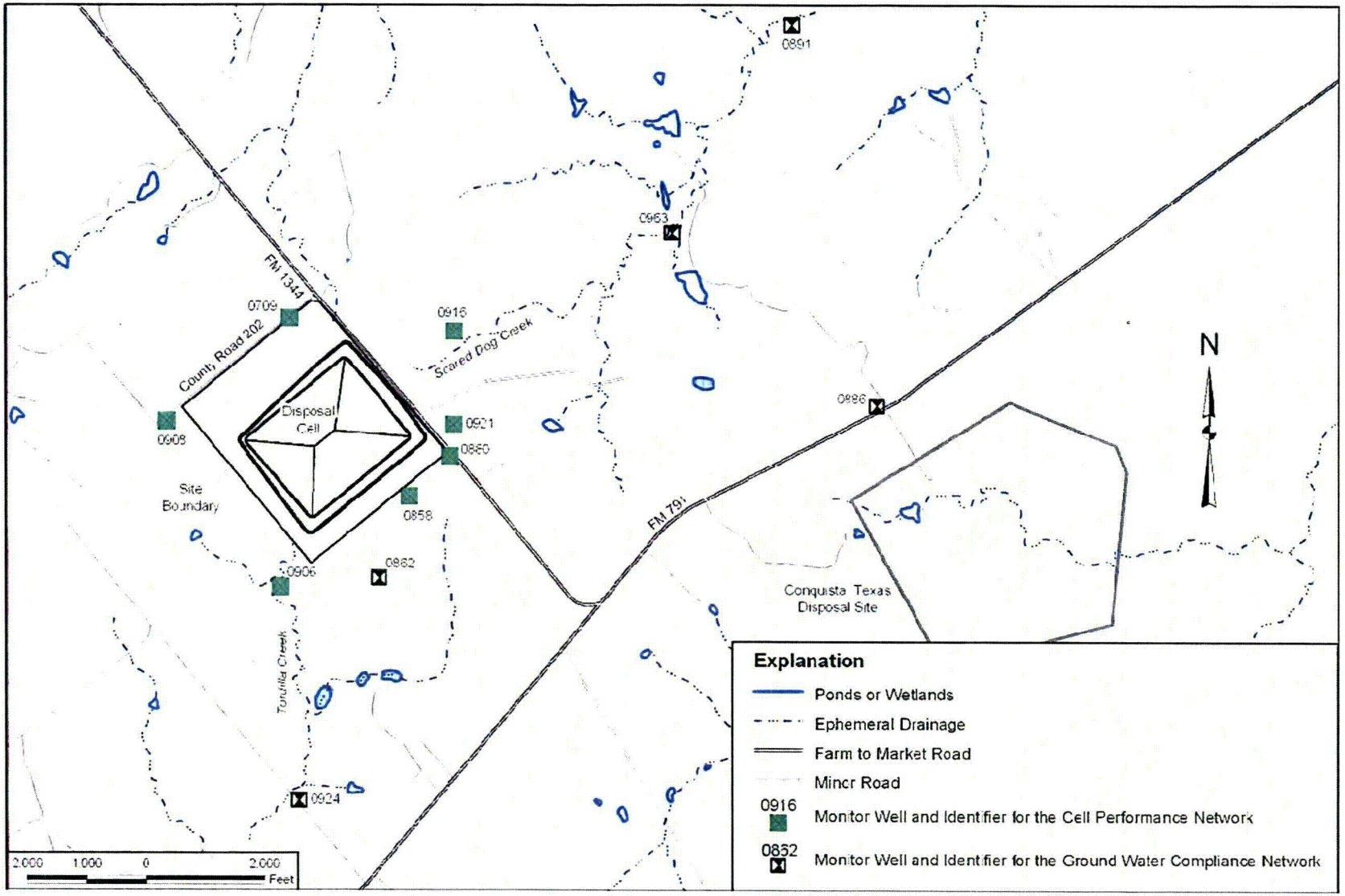
Water levels were measured at each sampled well. Historically, wells 0908 and 0916 have not produced water and were confirmed as dry. These wells are completed above the saturated interval in the formation. There were no large deviations in water levels at the other locations.

The time-concentration graphs included in this report show that the uranium concentration in well 0880 is the lowest observed since 1996. No other large changes in uranium concentration were noted. The results from this sampling event do not indicate any degradation of groundwater quality or disposal cell performance.

Digitally signed by Michele L. Miller
DN: cn=Michele L. Miller, c=us, o=u.s. government, ou=department of energy, public cas, people
Date: 2008.09.16 14:25:42 -04'00'

Michele Miller
Site Lead, S.M. Stoller

Date



Falls City, Texas, Monitor Well Location Map

Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Falls City, Texas	**Date(s) of Water Sampling**	April 30, 2008 and May 1, 2008
Date(s) of Verification	August 27, 2008	**Name of Verifier**	Steve Donivan

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work Order Letter dated February 20, 2008
2. Were the sampling locations specified in the planning documents sampled?	Yes	Wells 0908 and 0916 were dry and not sampled.
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	Pre-trip calibration was performed on April 25, 2008
4. Was an operational check of the field equipment conducted twice daily?	Yes	Operational checks were performed as required.
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Was the category of the well documented?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	No	Turbidity did not meet the criteria in well 0880.
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	NA	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	A duplicate sample was collected from well 0862.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	An equipment blank was not required.
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	Location ID of 2596 was used for the duplicate sample.
Was the true identity of the samples recorded on the Quality Assurance Sample Log?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	No	Samples from location 0880 were not filtered.
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Are field data sheets signed and dated by both team members?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN): 08041517
Sample Event: April 30, 2008 – May 1, 2008
Site(s): Falls City, Texas
Laboratory: GPL Laboratories, Frederick, Maryland
Work Order No.: 0805142
Analysis: Metals
Validator: Steve Donivan
Review Date: July 24, 2008

This validation was performed according to the *Environmental Procedures Catalog*, "Standard Practice for Validation of Laboratory Data," GT-9(P). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N	WCH-A-006	EPA 350.3	EPA 350.3
Chloride	MIS-A-039	EPA 300.0	EPA 300.0
Metals: Ca, K, Mg, Na	LMM-01	SW-846 3005A	SW-846 6010B
Nitrate as N	WCH-A-022	EPA 353.2	ERPA 353.2
Sulfate	MIS-A-044	EPA 300.0	EPA 300.0
Uranium	LMM-02	SW-846 3005A	SW-846 6020

Sample Shipping/Receiving

GPL Laboratories in Frederick, Maryland, received 11 water sample on May 5, 2008, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all the samples were listed on the form and that signatures and dates were present indicating sample relinquishment and receipt. The sample submittal documents, including the COC form and the sample tickets, had no errors or omissions. Copies of the air waybill labels were included with the receiving documentation.

Preservation and Holding Times

The sample shipments were received intact at a temperature inside the iced cooler at 4 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Data Qualifier Summary

None of the analytical results required qualification.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method 350.3, Ammonia as N

Calibration for ammonia as N was performed using six calibration standards on May 13, 2008. The calibration curve correlation coefficient (r^2) values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the method detection limit (MDL). Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in three verification checks that met the laboratory's acceptance criteria.

Method 353.3, Nitrate as N

Calibration for nitrate as N was performed using six calibration standards on May 15, 2008. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration verification (CCV) checks were made at the required frequency resulting in two verification checks that met the laboratory's acceptance criteria.

Method SW-846 6010B, Metals

Calibration was performed for calcium, magnesium, potassium, and sodium on May 19, 2008. The initial calibrations were performed using one standard and a blank. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in ten CCVs. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the practical quantitation limit. All check results were within the acceptance range.

Method SW-846 6020A, Uranium

Calibration was performed for uranium on May 16, 2008. The initial calibration was performed using nine calibration standards resulting in a calibration curve with an r^2 value greater than 0.995. The absolute value of the curve intercept was less than 3 times the MDL. Calibration and

laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in seven CCVs. All initial and continuing calibration verification results were within the acceptance range. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curves near the practical quantitation limit. All check results were within the acceptance range. The mass calibration and resolution was checked at the beginning of each analytical run in accordance with the procedure. Internal standard recoveries were stable and within acceptance ranges.

Method SW-846 9056, Chloride and Sulfate

Calibration for chloride and sulfate was performed using five calibration standards on February 25, 2008. The calibration curve r^2 values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial calibration and calibration check standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in one verification check that met the laboratory's acceptance criteria.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and initial and continuing calibration blank results were below the MDLs.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

ICP interference check samples ICSA and ICSAB were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spike recoveries met the recovery and precision criteria for all analytes evaluated.

Laboratory Replicate Analysis

The relative percent difference values for the laboratory replicate sample results for all analytes were less than twenty percent, indicating acceptable laboratory precision.

Laboratory Control Samples (LCS)

LCS were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The LCS results were acceptable for all analysis.

Metals Serial Dilution

Serial dilutions were performed during the metals analysis to monitor physical or chemical interferences that may exist in the sample matrix. Serial dilutions were prepared and analyzed for magnesium and uranium. The acceptance criteria were met for both analytes.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium to reduce interferences. The required detection limits were achieved for both analytes.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers. Samples 0862 and 0891 were originally not analyzed for uranium as requested. The laboratory was requested to supply the missing data and the uranium data for these samples was received on August 21, 2008.

Electronic Data Deliverable (EDD) File

The revised EDD file including all requested data arrived on August 21, 2008. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 08041517 Lab Code: SCA Validator: Steve Donivan Validation Date: 7/24/2008

Project: Falls City Analysis Type: ☑ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 11 Matrix: WATER Requested Analysis Completed: Yes

Chain of Custody

Present: OK Signed: OK Dated: OK

Sample

Integrity: OK Preservation: OK Temperature: OK

Select Quality Parameters

☑ Holding Times	All analyses were completed within the applicable holding times.
☑ Detection Limits	The reported detection limits are equal to or below contract requirements.
☐ Field/Trip Blanks	
☑ Field Duplicates	There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 08041517 **Lab Code:** SCA **Date Due:** 5/31/2008

Matrix: Water **Site Code:** FCT **Date Completed:** 7/14/2008

Analyte	Date Analyzed	CALIBRATION						Method	LCS	MS	MSD	Dup.	ICSAB	Serial Dil.	CRI
		Int.	R^2	ICV	CCV	ICB	CCB	Blank	%R	%R	%R	RPD	%R	%R	%R
Calcium	05/20/2008			OK	OK	OK	OK	OK	102.0	156.0	-47.0	3.0	103.0	1.0	91.0
Magnesium	05/20/2008			OK	OK	OK	OK	OK	102.0	104.0	88.0	3.0	102.0	1.0	92.0
Potassium	05/20/2008			OK	OK	OK	OK	OK	116.0	107.0	81.0	2.0	111.0	1.0	102.0
Sodium	05/20/2008			OK	OK	OK	OK	OK	111.0	143.0	-158.0	2.0	105.0	1.0	102.0
Uranium	05/16/2008	0.0000	1.0000	OK	OK	OK	OK	OK	103.0	62.0	114.0	1.0	100.0	4.0	95.0

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 08041517 **Lab Code:** SCA **Date Due:** 5/31/2008

Matrix: Water **Site Code:** FCT **Date Completed:** 7/14/2008

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
Chloride	05/19/2008	0.000	0.9998	OK	OK	OK	OK		104	103		0.16	
Nitrate/Nitrite	05/15/2008	0.002	0.9997	OK	OK	OK	OK		99.0	110	110		
Nitrogen, Ammonia (as N)	05/13/2008	0.000	0.9999	OK	OK	OK	OK			95		5.10	
Sulfate	05/19/2008	0.000	1.0000	OK	OK	OK	OK		109	105		0.45	

Sampling Quality Control Assessment

The following information summarizes and assesses quality control for this sampling event.

Sampling Protocol

Sample results for monitor wells that met the Category I and II low-flow sampling criteria were qualified with an "F" flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. All wells were equipped with dedicated bladder pumps.

All wells met the Category I criteria using the low-flow purge procedure with the following exceptions:

- Turbidity requirements were not met for well 0880.
- Wells 0858 and 0862 were classified as Category II.

The sample results for these three wells were qualified with a "Q" flag, indicating the data are qualitative because of the sampling technique.

Equipment Blank Assessment

Collection and analysis of an equipment blank was not performed because all samples were collected with dedicated bladder pumps.

Field Duplicate Assessment

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. Duplicate samples were collected from location 0862. The duplicate results were acceptable, meeting the Environmental Protection Agency recommended laboratory duplicate criteria of less than 20 percent relative difference for results that are greater than 5 times the practical quantitation limit.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 08041517 Lab Code: SCA Project: Falls City Validation Date: 7/24/2008

Duplicate: 2596 Sample: 0862

Analyte	Sample Result	Sample Flag	Sample Error	Duplicate Result	Duplicate Flag	Duplicate Error	RPD	RER	Units
Calcium	363000	D		372000	D		2.45		ug/L
Chloride	620			560			10.17		mg/L
Magnesium	24000	D		24500	D		2.06		ug/L
Nitrate/Nitrite	0.05	U		0.05	U				mg/L
Nitrogen, Ammonia (as N)	0.25			0.25					mg/L
Potassium	49600	D		49600	D		0		ug/L
Sodium	611000	D		620000	D		1.46		ug/L
Sulfate	1300			1200			8.00		mg/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator: Steve Donivan — Date: 9-15-2008

Steve Donivan

Date

Data Validation Lead: Steve Donivan — Date: 9-15-2008

Steve Donivan

Date

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the SEEPro database. The application compares the new data set with historical data and lists all new data that fall outside the historical data range. Data listed in the report are highlighted if the concentration detected is not within 50 percent of historical minimum or maximum values. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition.

There were no potential outliers identified, and the data for this event are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters
Laboratory: GPL Laboratories Alabama (formerly SANFORD, COHEN AND ASSOCIATES) (Montgomery, AL)
RIN: 08041517
Comparison: All Historical Data
Report Date: 8/28/2008

				Current			Historical Maximum			Historical Minimum			Count		Normally	Statistical
					Qualifiers			Qualifiers			Qualifiers				Distributed	Outlier
Site Code	Location Code	Sample Date	Analyte	Result	Lab	Data	Result	Lab	Data	Result	Lab	Data	N	N Below Detect		
FCT03	0891	05/01/2008	Chloride	4400		F	4380			1120	N	J	17	0	Yes	No
FCT03	0891	05/01/2008	Magnesium	135	D	F	124			59.1		F	17	0	Yes	No

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:
- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:
- F Low flow sampling method used.
- G Possible grout contamination, pH > 9.
- J Estimated value.
- L Less than 3 bore volumes purged prior to sampling.
- Q Qualitative result due to sampling technique.
- R Unusable result.
- U Parameter analyzed for but was not detected.
- X Location is undefined.

STATISTICAL TESTS:
The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test
Outliers are identified using Dixon's Test when there are 25 or fewer data points.
Outliers are identified using Rosner's Test when there are 26 or more data points.
See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Attachment 2
Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0709 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	04/30/2008	N001	12.65	-	32.65	121		F	#		
Oxidation Reduction Potential	mV	04/30/2008	N001	12.65	-	32.65	147.5		F	#		
pH	s.u.	04/30/2008	N001	12.65	-	32.65	6.14		F	#		
Specific Conductance	umhos /cm	04/30/2008	N001	12.65	-	32.65	9125		F	#		
Temperature	C	04/30/2008	N001	12.65	-	32.65	24.03		F	#		
Turbidity	NTU	04/30/2008	N001	12.65	-	32.65	0.64		F	#		
Uranium	mg/L	04/30/2008	N001	12.65	-	32.65	0.603	D	F	#	0.00042	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0858 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	39.42 - 49.42	80		FQ	#		
Oxidation Reduction Potential	mV	05/01/2008	N001	39.42 - 49.42	234.8		FQ	#		
pH	s.u.	05/01/2008	N001	39.42 - 49.42	6.03		FQ	#		
Specific Conductance	umhos /cm	05/01/2008	N001	39.42 - 49.42	11227		FQ	#		
Temperature	C	05/01/2008	N001	39.42 - 49.42	22.99		FQ	#		
Turbidity	NTU	05/01/2008	N001	39.42 - 49.42	0.65		FQ	#		
Uranium	mg/L	05/01/2008	N001	39.42 - 49.42	0.0746	D	FQ	#	0.000042	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0862 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	117.77	-	127.77	280		FQ	#		
Ammonia Total as N	mg/L	05/01/2008	N001	117.77	-	127.77	0.25		FQ	#	0.1	
Ammonia Total as N	mg/L	05/01/2008	N002	117.77	-	127.77	0.25		FQ	#	0.1	
Calcium	mg/L	05/01/2008	N001	117.77	-	127.77	363	D	FQ	#	0.281	
Calcium	mg/L	05/01/2008	N002	117.77	-	127.77	372	D	FQ	#	0.281	
Chloride	mg/L	05/01/2008	N001	117.77	-	127.77	620		FQ	#	60	
Chloride	mg/L	05/01/2008	N002	117.77	-	127.77	560		FQ	#	60	
Magnesium	mg/L	05/01/2008	N001	117.77	-	127.77	24	D	FQ	#	0.058	
Magnesium	mg/L	05/01/2008	N002	117.77	-	127.77	24.5	D	FQ	#	0.058	
Nitrate + Nitrite as Nitrogen	mg/L	05/01/2008	N001	117.77	-	127.77	0.05	U	FQ	#	0.05	
Nitrate + Nitrite as Nitrogen	mg/L	05/01/2008	N002	117.77	-	127.77	0.05	U	FQ	#	0.05	
Oxidation Reduction Potential	mV	05/01/2008	N001	117.77	-	127.77	36.8		FQ	#		
pH	s.u.	05/01/2008	N001	117.77	-	127.77	6.87		FQ	#		
Potassium	mg/L	05/01/2008	N001	117.77	-	127.77	49.6	D	FQ	#	0.238	
Potassium	mg/L	05/01/2008	N002	117.77	-	127.77	49.6	D	FQ	#	0.238	
Sodium	mg/L	05/01/2008	N001	117.77	-	127.77	611	D	FQ	#	1.28	
Sodium	mg/L	05/01/2008	N002	117.77	-	127.77	620	D	FQ	#	1.28	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0862 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)	Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Specific Conductance	umhos /cm	05/01/2008	N001	117.77 - 127.77	4312		FQ	#		
Sulfate	mg/L	05/01/2008	N001	117.77 - 127.77	1300		FQ	#	58	
Sulfate	mg/L	05/01/2008	N002	117.77 - 127.77	1200		FQ	#	58	
Temperature	C	05/01/2008	N001	117.77 - 127.77	25.22		FQ	#		
Turbidity	NTU	05/01/2008	N001	117.77 - 127.77	0.46		FQ	#		
Uranium	mg/L	05/01/2008	N001	117.77 - 127.77	0.0038	E	FQ	#	0.000021	
Uranium	mg/L	05/01/2008	N002	117.77 - 127.77	0.0038	E	FQ	#	0.000021	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0880 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)			Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	04/30/2008	N001	32.3	-	42.3	0		FQ	#		
Oxidation Reduction Potential	mV	04/30/2008	N001	32.3	-	42.3	164		FQ	#		
pH	s.u.	04/30/2008	N001	32.3	-	42.3	4.11		FQ	#		
Specific Conductance	umhos /cm	04/30/2008	N001	32.3	-	42.3	16655		FQ	#		
Temperature	C	04/30/2008	N001	32.3	-	42.3	24.26		FQ	#		
Turbidity	NTU	04/30/2008	N001	32.3	-	42.3	12.3		FQ	#		
Uranium	mg/L	04/30/2008	N001	32.3	-	42.3	1.38	D	FQ	#	0.00021	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0886 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	19.17 - 49.17	59		F	#		
Oxidation Reduction Potential	mV	05/01/2008	N001	19.17 - 49.17	36.4		F	#		
pH	s.u.	05/01/2008	N001	19.17 - 49.17	6.14		F	#		
Specific Conductance	umhos /cm	05/01/2008	N001	19.17 - 49.17	1267		F	#		
Temperature	C	05/01/2008	N001	19.17 - 49.17	26.19		F	#		
Turbidity	NTU	05/01/2008	N001	19.17 - 49.17	8.61		F	#		
Uranium	mg/L	05/01/2008	N001	19.17 - 49.17	0.0164		F	#	0.000021	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0891 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	10.74 - 20.74	97		F	#		
Ammonia Total as N	mg/L	05/01/2008	N001	10.74 - 20.74	0.24		F	#	0.1	
Calcium	mg/L	05/01/2008	N001	10.74 - 20.74	1400	D	F	#	0.281	
Chloride	mg/L	05/01/2008	N001	10.74 - 20.74	4400		F	#	150	
Magnesium	mg/L	05/01/2008	N001	10.74 - 20.74	135	D	F	#	0.058	
Nitrate + Nitrite as Nitrogen	mg/L	05/01/2008	N001	10.74 - 20.74	0.05	U	F	#	0.05	
Oxidation Reduction Potential	mV	05/01/2008	N001	10.74 - 20.74	113.6		F	#		
pH	s.u.	05/01/2008	N001	10.74 - 20.74	5.83		F	#		
Potassium	mg/L	05/01/2008	N001	10.74 - 20.74	77.7	D	F	#	0.238	
Sodium	mg/L	05/01/2008	N001	10.74 - 20.74	1370	D	F	#	1.28	
Specific Conductance	umhos /cm	05/01/2008	N001	10.74 - 20.74	13251		F	#		
Sulfate	mg/L	05/01/2008	N001	10.74 - 20.74	1500		F	#	140	
Temperature	C	05/01/2008	N001	10.74 - 20.74	23.32		F	#		
Turbidity	NTU	05/01/2008	N001	10.74 - 20.74	2.57		F	#		
Uranium	mg/L	05/01/2008	N001	10.74 - 20.74	0.0582	E	F	#	0.000021	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0906 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	12.49 - 27.49	101		F	#		
Oxidation Reduction Potential	mV	05/01/2008	N001	12.49 - 27.49	228.5		F	#		
pH	s.u.	05/01/2008	N001	12.49 - 27.49	5.62		F	#		
Specific Conductance	umhos /cm	05/01/2008	N001	12.49 - 27.49	10772		F	#		
Temperature	C	05/01/2008	N001	12.49 - 27.49	22.81		F	#		
Turbidity	NTU	05/01/2008	N001	12.49 - 27.49	1.06		F	#		
Uranium	mg/L	05/01/2008	N001	12.49 - 27.49	0.108	D	F	#	0.0001	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0921 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)			Result	Lab	Qualifiers Data	QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	44.55	-	54.55	441		F	#		
Oxidation Reduction Potential	mV	05/01/2008	N001	44.55	-	54.55	105.7		F	#		
pH	s.u.	05/01/2008	N001	44.55	-	54.55	6.05		F	#		
Specific Conductance	umhos /cm	05/01/2008	N001	44.55	-	54.55	10795		F	#		
Temperature	C	05/01/2008	N001	44.55	-	54.55	24.45		F	#		
Turbidity	NTU	05/01/2008	N001	44.55	-	54.55	1.64		F	#		
Uranium	mg/L	05/01/2008	N001	44.55	-	54.55	1.03	D	F	#	0.00042	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0924 WELL

Parameter	Units	Sample Date	ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	19.7	-	29.7	384		F	#		
Oxidation Reduction Potential	mV	05/01/2008	N001	19.7	-	29.7	126.2		F	#		
pH	s.u.	05/01/2008	N001	19.7	-	29.7	6.31		F	#		
Specific Conductance	umhos /cm	05/01/2008	N001	19.7	-	29.7	10785		F	#		
Temperature	C	05/01/2008	N001	19.7	-	29.7	24.44		F	#		
Turbidity	NTU	05/01/2008	N001	19.7	-	29.7	0.1		F	#		
Uranium	mg/L	05/01/2008	N001	19.7	-	29.7	0.529	D	F	#	0.00021	

Groundwater Quality Data by Location (USEE100) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008
Location: 0963 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	05/01/2008	N001	4.38	-	14.38	0		F	#		
Oxidation Reduction Potential	mV	05/01/2008	N001	4.38	-	14.38	314		F	#		
pH	s.u.	05/01/2008	N001	4.38	-	14.38	3.45		F	#		
Specific Conductance	umhos /cm	05/01/2008	N001	4.38	-	14.38	7557		F	#		
Temperature	C	05/01/2008	N001	4.38	-	14.38	22.2		F	#		
Turbidity	NTU	05/01/2008	N001	4.38	-	14.38	8.77		F	#		
Uranium	mg/L	05/01/2008	N001	4.38	-	14.38	0.0909	D	F	#	0.000042	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:
- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X,Y,Z Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:
- F Low flow sampling method used.
- G Possible grout contamination, pH > 9.
- J Estimated value.
- L Less than 3 bore volumes purged prior to sampling.
- Q Qualitative result due to sampling technique.
- R Unusable result.
- U Parameter analyzed for but was not detected.
- X Location is undefined.

QA QUALIFIER:
- # Validated according to quality assurance guidelines.

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Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE FCT03, Falls City Disposal Site
REPORT DATE: 8/28/2008

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
0709	D	451.58	04/30/2008		29.94	421.64	
0858	O	441.03	05/01/2008		26.95	414.08	
0862	O	428.67	05/01/2008		67.02	361.65	
0880	O	446.84	04/30/2008		26.22	420.62	
0886	D	403.52	05/01/2008		34.5	369.02	
0891	D	349.63	05/01/2008		11.51	338.12	
0906	D	420.17	05/01/2008		8.71	411.46	
0921	D	435.75	05/01/2008		29.3	406.45	
0924	D	396.44	05/01/2008		14.52	381.92	
0963	D	373.23	05/01/2008		8.82	364.41	

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
N UNKNOWN O ON SITE U UPGRADIENT

WATER LEVEL FLAGS: D Dry F FLOWING

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Hydrographs

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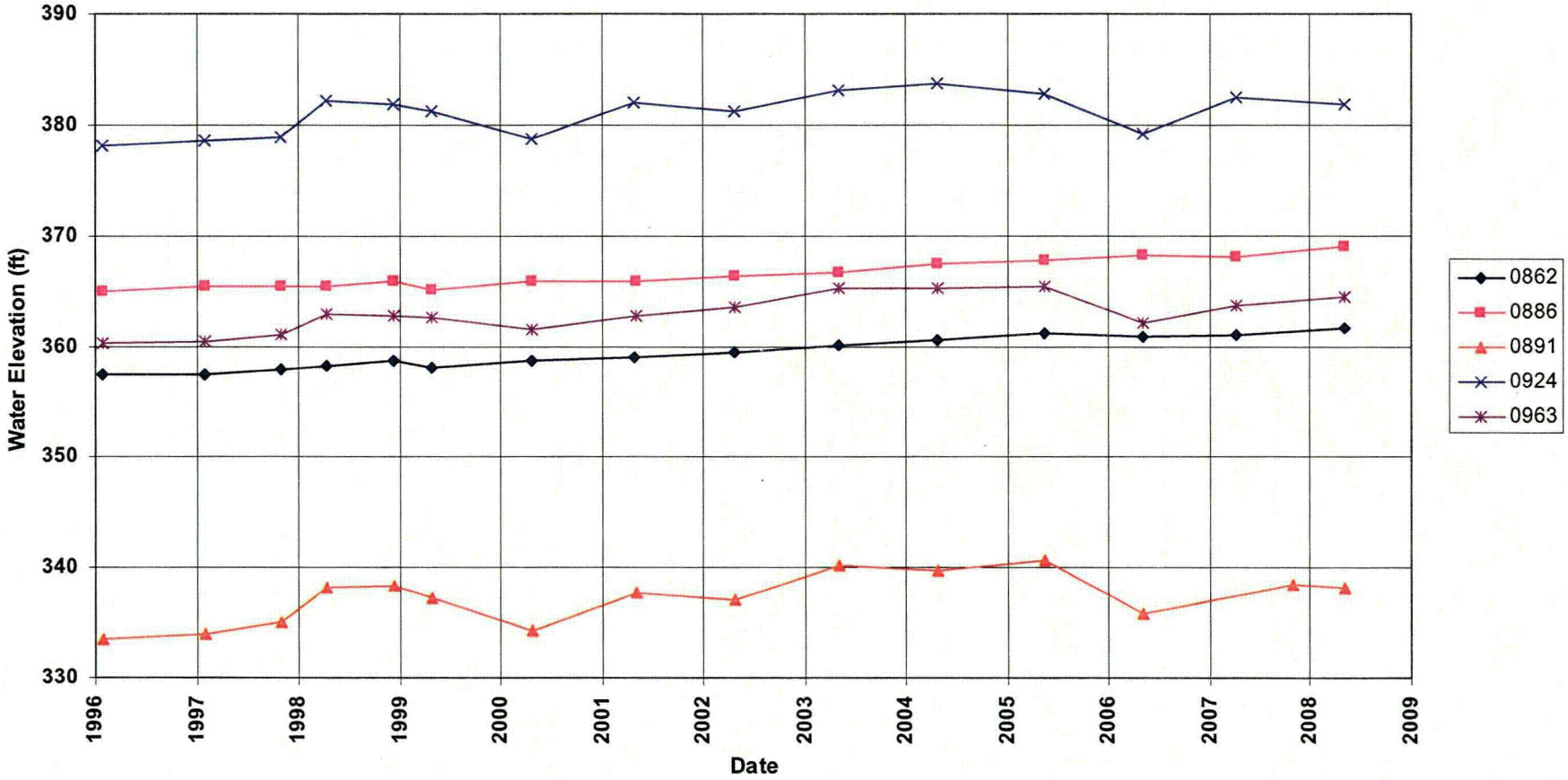
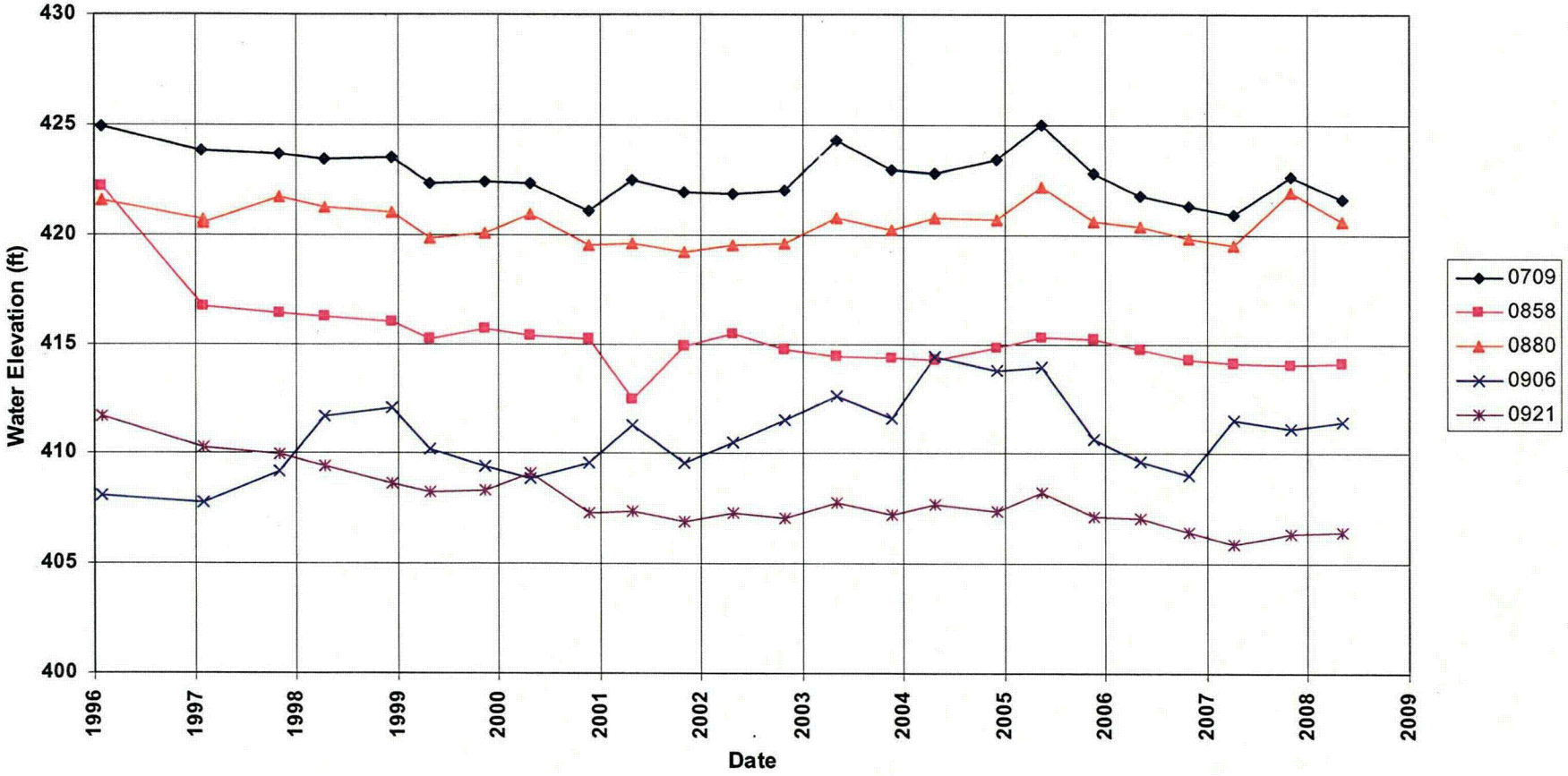
Falls City Disposal Site
Hydrograph
Groundwater Compliance Monitoring Wells



Falls City Disposal Site
Hydrograph
Disposal Cell Performance Monitoring Wells



Time-Concentration Graphs

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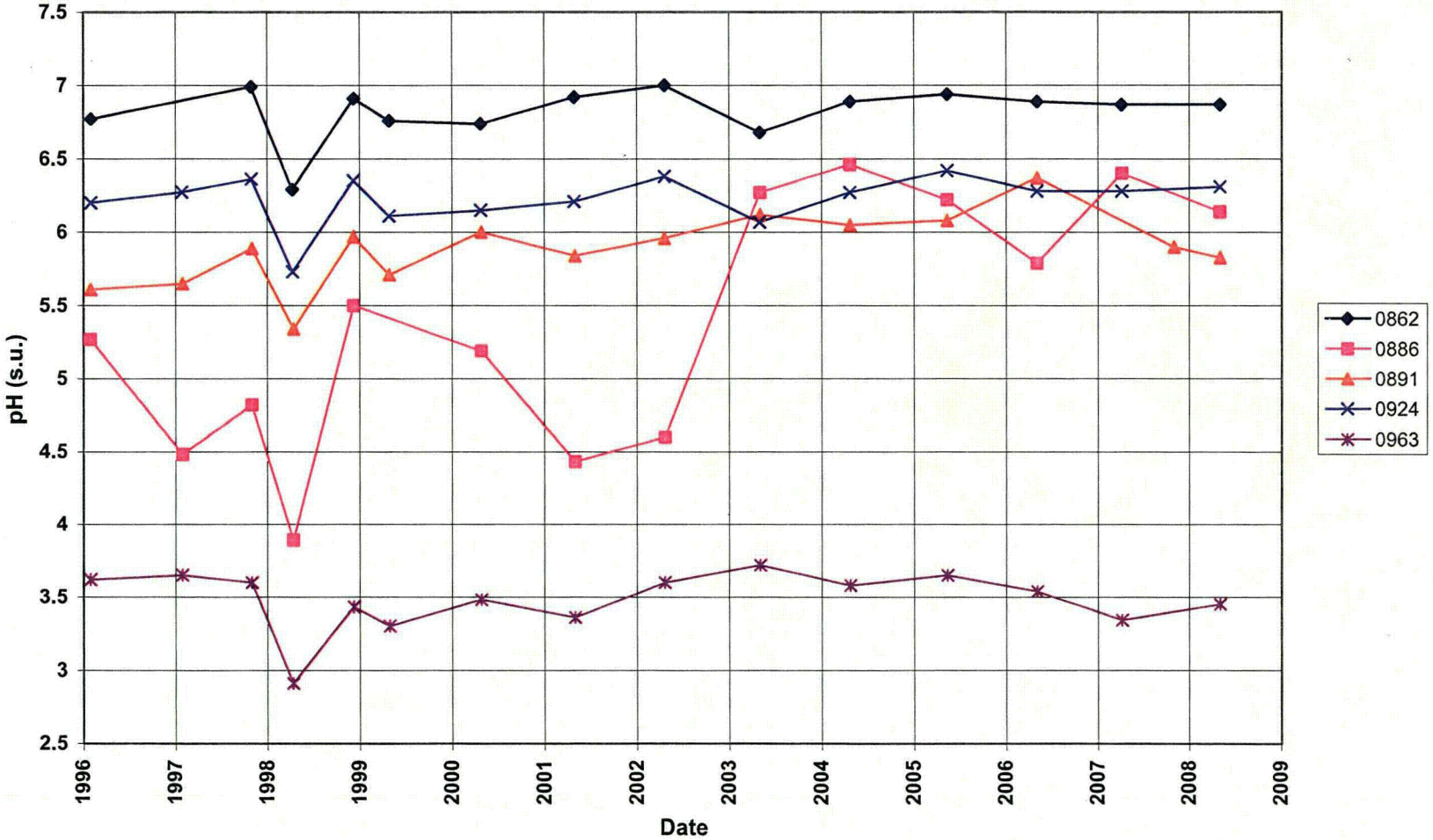
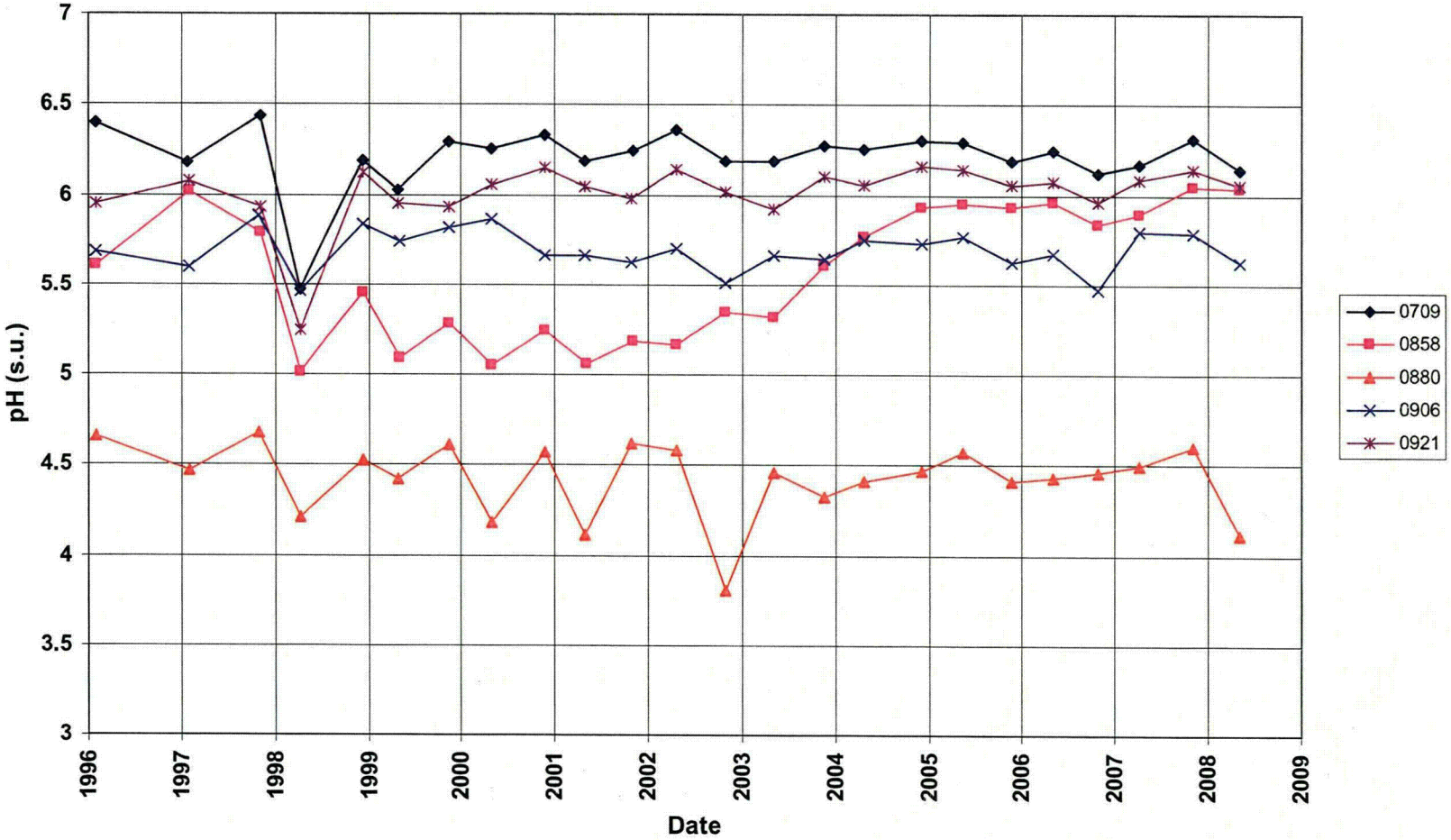
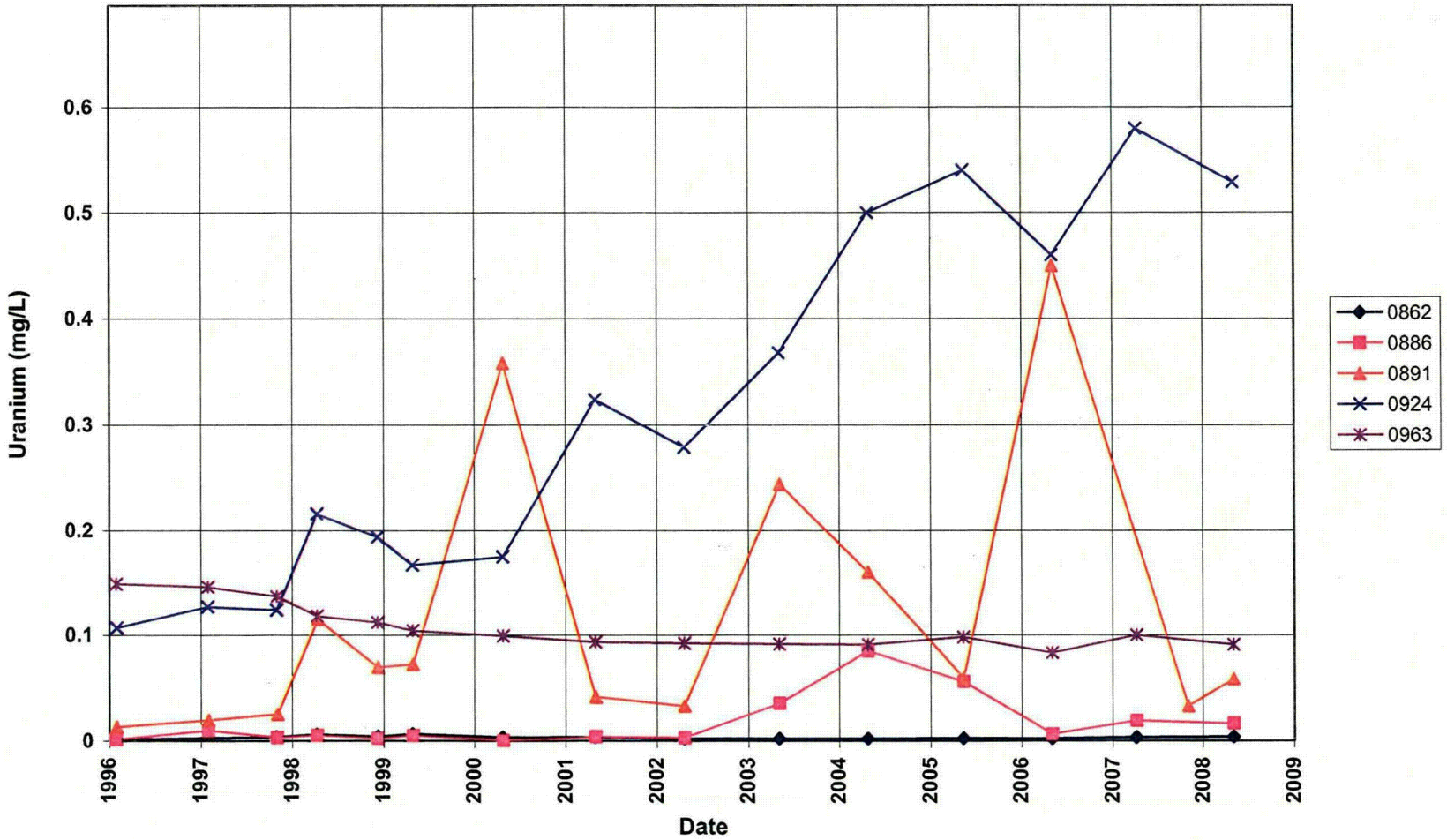
Falls City Disposal Site
pH
Groundwater Compliance Monitoring Wells



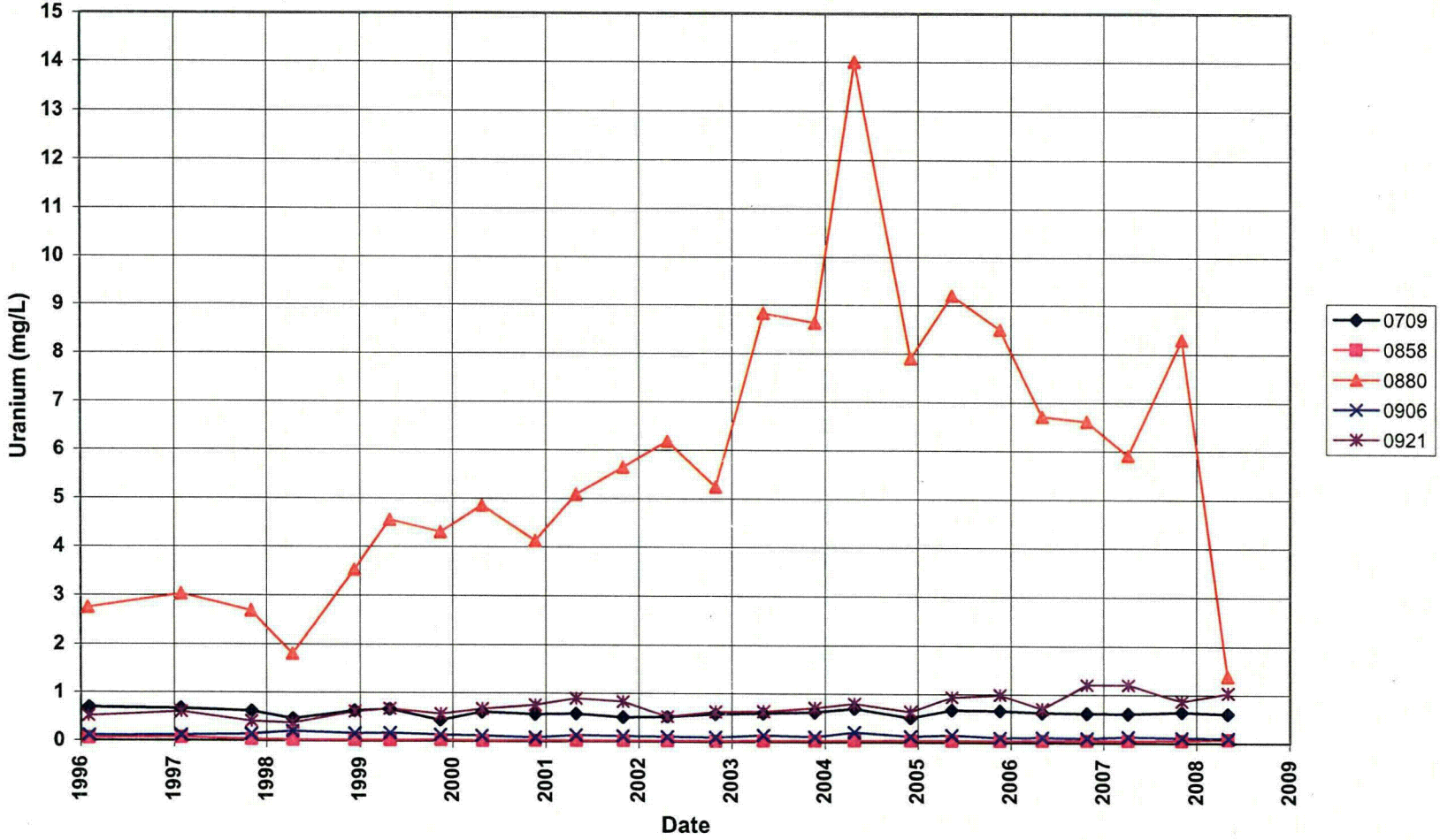
Falls City Disposal Site
pH
Disposal Cell Performance Monitoring Wells



Falls City Disposal Site
Uranium Concentration
Groundwater Compliance Monitoring Wells



Falls City Disposal Site
Uranium Concentration
Disposal Cell Performance Monitoring Wells



Attachment 3
Sampling and Analysis Work Order

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Stoller

established 1959

Task Order ST08-01-1-105
Control Number 1000-T08-0386

February 20, 2008

Jalena Maestas
Site Manager
U.S. Department of Energy
Grand Junction Office
2597 B ¾ Road
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AC01-02GJ79491, Stoller
April 2008 Environmental Sampling at Falls City, Texas

Reference: FY 2008 LM Task Order No. ST08-01-1-105

Dear Ms. Maestas:

The purpose of this letter is to inform you of the upcoming sampling at Falls City, Texas. Enclosed are the map and tables specifying sample locations and analytes for routine monitoring at Falls City, Texas. Water quality data will be collected from monitor wells at this site as part of the routine environmental sampling currently scheduled to begin the week of April 7, 2008.

The following list shows the monitor wells (with associated zone of completion) scheduled to be sampled during this event.

Monitor Wells*

709 Cq/Ct	862 Dl	886 De	906 Cq	916 Cq	924 Cq	963 Cq
858 Cq	880 De	891 Dl	908 Cq	921 Cq		

*NOTE: Cq = Conquista Clay – Whitsett Formation; Ct = Claystone; De = DeWeesville Sand – Whitsett Formation

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

If you have any questions, please call me at (513) 738-3281.

Sincerely,

Michele Miller
Project Manager

MM/lcg/mat
Enclosures (3)

cc: C. I. Bahrke, Stoller
S. E. Donivan, Stoller (e)
B. J. Gallagher, Stoller (e)
L. C. Goodknight, Stoller (e)
EDD Delivery (e)

cc w/o enclosures:
Correspondence Control File (Thru C. Weston)

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Attachment 4
Trip Report

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Stoller established 1959
Grand Junction Office

Memorandum

Control Number N/A

DATE: May 7, 2008

TO: Michele Miller

FROM: Jeff Walters

SUBJECT: Sampling Trip Report

Site: Falls City, Texas

Dates of Sampling Event: April 28, 29 and May 1, through 3, 2008.
(Panna Maria sampled on April 30)

Team Members: Joe Trevino and Jeff Walters.

Number of Locations Sampled: 10 monitor wells, and 1 duplicate sample, for a total of 11 samples. No equipment blanks were required.

Locations Not Sampled/Reason: Monitor wells 0908 and 0916 were dry.

Location Specific Information:

Ticket Number	Location	Sample Date	Description
NFJ 260	0880	4/30/2008	Cat I
NFJ 261	0709	4/30/2008	Cat I
NFJ 262	0858	5/1/2008	Cat II
NFJ 263	0906	5/1/2008	Cat I
NFJ 264	0862	5/1/2008	Cat II
NFJ 266	0921	5/1/2008	Cat I
NFJ 267	0924	5/1/2008	Cat I
NFJ 268	0891	5/1/2008	Cat I
NFJ 269	0886	5/1/2008	Cat I
NFJ 270	0963	5/1/2008	Cat I
-	0908	-	Well Dry
-	0916	-	Well Dry

Quality Control Sample Cross Reference: The following is the false identification assigned to the quality control sample:

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
2596	0862	Duplicate	Groundwater	NFJ 265

Field Variance: Turbidity criteria was not met for well 0880. Turbidity did not stabilize or drop under 10 NTU's.

Alkalinity was 0 at wells 0880 and 0963 due to the low pH of the water.

Requisition Numbers Assigned: All samples were assigned to RIN 08041517.

Sample Shipment: Samples were shipped overnight FedEx to GPL Laboratories from San Antonio, Texas, on May 2, 2008.

Water Level Measurements: Water levels measurements were collected in all sampled wells. Water level data are provided in the table below. These data represent depth to water (ft btoc) measurements:

Well	Date	Depth to water (ft.)
0880	4/30/2008	26.22
0709	4/30/2008	29.24
0858	5/1/2008	26.95
0906	5/1/2008	8.71
0862	5/1/2008	67.02
0921	5/1/2008	29.30
0924	5/1/2008	14.52
0891	5/1/2008	11.51
0886	5/1/2008	34.50
0963	5/1/2008	8.82
0908	5/1/2008	Dry
0916	5/1/2008	Dry

Well Inspection Summary: Well inspections were conducted at all sampled wells; all wells were in good condition. No evidence of damage from the recent earthquake was observed anywhere on or around the site.

Equipment: The ten wells sampled were equipped with dedicated submersible pumps. Each well was sampled using low-flow techniques.

Institutional Controls: All gates accessed during the sampling event were appropriately closed and locked. No evidence of damage from the recent earthquake was observed anywhere on or around the site.

Fences, Gates, Locks: All OK
Signs: N/A
Trespassing/Site Disturbances: None Observed

Site Issues

Disposal Cell/Drainage Structure Integrity: Looked OK.
Vegetation/Noxious Weed Concerns: N/A
Maintenance Requirements: None

Corrective Action Taken: None.

(JWW/lcg)

cc: Jalena Maestas, DOE (e)
Cheri Bahrke, Stoller (e)
Steve Donivan, Stoller (e)
EDD Delivery (e)

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