OPERATION/CONSTRUCTION MANAGERS
Municipal Services
CIVIL/SANITARY ENGINEERS
Engineering Company, P.A.

June 11, 2008

Ms. Jaclynne Drummond
Compliance Hydrogeologist
Division of Waste Management – Solid Waste Section
North Carolina Department of Environment and Natural Resources
1646 Mail Service Center
Raleigh, NC 27699

Re: Petition to Return to Detection Monitoring
Lenoir County Sanitary Landfill
Permit No. 54-03

Ms. Drummond:

Recent sample results indicate that the Lenoir County Sanitary Landfill can return to detection monitoring. In compliance with Rule .1634(e), there have been at least two (2) consecutive sampling events with no statistically significant results. The January 2007 and July 2007 sampling events returned no statistically significant results. The January 2008 sampling lists Cobalt as statistically significant in MW-9 for interwell analysis; however, Cobalt is not statistically significant for intrawell. Cobalt was detected at background levels and was identified as naturally occurring in the Assessment of Corrective Measures. Table 1 summarizes results for the above mentioned sample dates. Statistical analysis and sampling results from January 2007, July 2007 and January 2008 are included.

Based on the above information as well as the factors derived from the Assessment of Corrective Measures, we request Lenoir County Sanitary Landfill return to detection monitoring.

If you have any questions or need additional information please contact me at 919-772-5393.

Sincerely,

MUNICIPAL ENGINEERING SERVICES CO., P.A.

Ethan J. Caldwell, PG

PO Box 97, Garner, North Carolina 27529 (919) 772-5393
PO Box 828, Morehead City, NC 28557 (252) 726-9481 PO Box 349, Boone, North Carolina 28607 (828) 262-1767

Table 1: 2007 & 2008 Sampling Results
Lenoir County Sanitary Landfill

Well ID	Parameter Name[1]	Sample Date	Result	Unit	PQL[2]	Qual Code	NCGW2L[3]	Exceedance
EB	Acetone	07/31/2007	2.1	ug/l	1.21	J	700	
EB	Acrylonitrile	07/31/2007	22.5	ug/l	5.96	J	-	
EB	Methyl cyanide	01/23/2008	8.8	ug/l	5.96	J	42	
EB	Methyl ethyl ketone	07/31/2007	0.9	ug/l	0.85	J	4200	
EB	Toluene	07/31/2007	0.6	ug/l	0.13	J	1000	
MW-1	Toluene	07/31/2007	0.3	ug/l	0.13	J	1000	
MW-11	1,2-Dichloropropane	01/23/2008	0.4	ug/l	0.17	J	0.51	
MW-11	Acetone	01/23/2008	1.4	ug/l	1.21	J	700	
MW-11	Chloromethane	01/23/2008	0.3	ug/l	0.18	J		
MW-12	Acetone	07/31/2007	1.3	ug/l	1.21	J	700	
MW-12	Acetone	01/23/2008	1.9	ug/l	1.21	J	700	
MW-12	Benzene	01/23/2008	0.2	ug/l	0.16	J	1	
MW-12	Mercury	01/17/2007	0.2	ug/l	0.2	*J	1.1	
MW-12	Toluene	07/31/2007	0.3	ug/l	0.13	J	1000	
MW-3	Acetone	01/23/2008	1.3	ug/l	1.21	J	700	
MW-3	Toluene	07/31/2007	0.4	ug/l	0.13	J	1000	
MW-3	Zinc	01/17/2007	89	ug/l	10		1050	
MW-4	Acetone	07/31/2007	2.8	ug/l	1.21	J	700	
MW-4	Benzene	01/23/2008	0.3	ug/l	0.16	J	1	
MW-4	Chlorobenzene	01/23/2008	0.2	ug/l	0.13	J	50	
MW-4	Toluene	07/31/2007	0.4	ug/l	0.13	J	1000	
MW-6	Methyl ethyl ketone	07/31/2007	1.6	ug/l	0.85	J	4200	
MW-6	Tetrachloroethylene	01/23/2008	0.4	ug/l	0.16	J	0.7	
MW-6	Toluene	07/31/2007	0.2	ug/l	0.13	J	1000	
MW-6	Zinc	01/17/2007	13	ug/l	10		1050	
SW-1	Methyl ethyl ketone	07/31/2007	1.8	ug/l	0.85	J	4200	
SW-2	Acetone	07/31/2007	3.3	ug/l	1.21	J	700	
SW-2	Acetone	01/23/2008	9.5	ug/l	1.21	J	700	
SW-2	Chromium, total	01/17/2007	12	ug/l	10		50	
SW-2	Lead, total	01/17/2007	11	ug/l	10		15	
SW-2	Methyl ethyl ketone	07/31/2007	2.1	ug/l	0.85	J	4200	
SW-2	Methyl ethyl ketone	01/23/2008	1.4	ug/l	0.85	J	4200	
SW-2	Toluene	07/31/2007	0.4	ug/l	0.13	J	1000	
SW-2	Zinc	01/17/2007	18	ug/l	10		1050	
TB	Acetone	07/31/2007	1.7	ug/l	1.21	J	700	
TB	Acrylonitrile	07/31/2007	11.7	ug/l	5.96	J	-	
TB	Toluene	07/31/2007	9	ug/l	0.13		1000	

[1] Table only contains detected constituents.
[2] PQL = Practical Quantitation Limit
[3] NCGW2L = North Carolina Ground Water 2L Standard or Groundwater Protection Standard
* Laboratory Failed to provide Qualitative Code

January 2007 Sampling Event

Inter-Well Analysis Summary
Lenoir County Closed Sanitary Landfill

Background Well: MW-1

Mercury, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	-	Poisson tolerance limit	ND	2.5	ug/l

Well	Result	Significance
MW-12	0.2	no

Zinc, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	log-normal	Poisson tolerance limit	ND	8	log[ug/l]

Well	Result	Significance
MW-3	4.49	no
MW-6	2.56	no

NOTE: Bold-faced monitoring points indicate detected levels exceed North Carolina Groundwater Standard.

Summary of Pooled VOCs in Background Well (MW-1)
Lenoir County Closed Sanitary Landfill

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	28	28	100.00
1,1,1-Trichloroethane	28	28	100.00
1,1,2,2-Tetrachloroethane	28	28	100.00
1,1,2-Trichloroethane	28	28	100.00
1,1-Dichloroethane	28	28	100.00
1,1-Dichloroethene	28	28	100.00
1,2,3-Trichloropropane	28	28	100.00
1,2-Dibromo-3-chloropropane	28	28	100.00
1,2-Dibromoethane	28	28	100.00
1,2-Dichlorobenzene	28	28	100.00
1,2-Dichloroethane	28	28	100.00
1,2-Dichloropropane	28	28	100.00
1,4-Dichlorobenzene	28	28	100.00
2-Butanone	28	28	100.00
2-Hexanone	28	28	100.00
4-Methyl-2-Pentanone	28	28	100.00
Acetone	28	28	100.00
Acrylonitrile	28	28	100.00
Benzene	28	28	100.00
Bromochloromethane	28	28	100.00
Bromodichloromethane	28	28	100.00
Bromoform	28	28	100.00
Bromomethane	28	28	100.00
Carbon disulfide	28	28	100.00
Carbon tetrachloride	28	28	100.00
Chlorobenzene	28	28	100.00
Chloroethane	28	28	100.00
Chloroform	28	28	100.00
Chloromethane	28	28	100.00
cis-1,2-Dichloroethene	28	28	100.00
cis-1,3-Dichloropropene	28	28	100.00
Chlorodibromomethane	28	28	100.00
Dibromomethane	28	28	100.00
Ethylbenzene	28	28	100.00
Iodomethane	28	28	100.00
Dichloromethane	28	28	100.00
Styrene	28	28	100.00
Tetrachloroethylene	28	28	100.00
Toluene	28	28	100.00
trans-1,2-Dichloroethene	28	28	100.00
trans-1,3-Dichloropropene	28	28	100.00
trans-1,4-Dichloro-2-butene	28	28	100.00
Trichloroethylene	28	28	100.00
Trichlorofluoromethane	28	28	100.00
Vinyl acetate	28	28	100.00
Vinyl chloride	28	28	100.00
Xylene	28	28	100.00
Total	**1316**	**1316**	**100.00**

January 2007 Sampling Event

Poisson Prediction Interval Based upon Pooled Background VOCs
Lenoir County Closed Sanitary Landfill

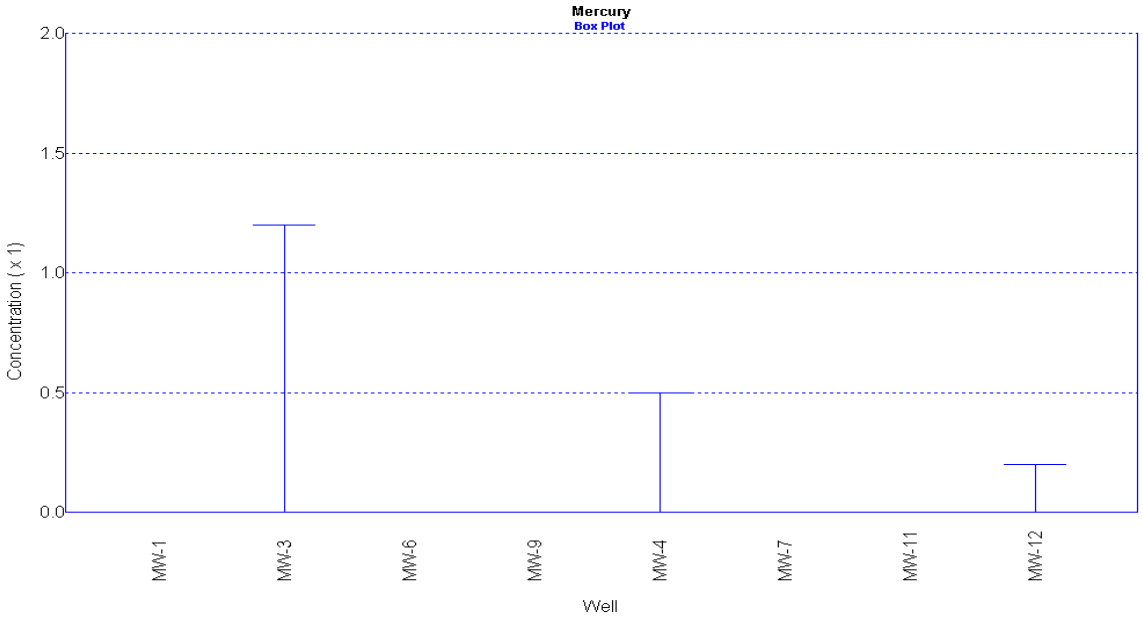
All detected VOCs (Background Well: MW-1)

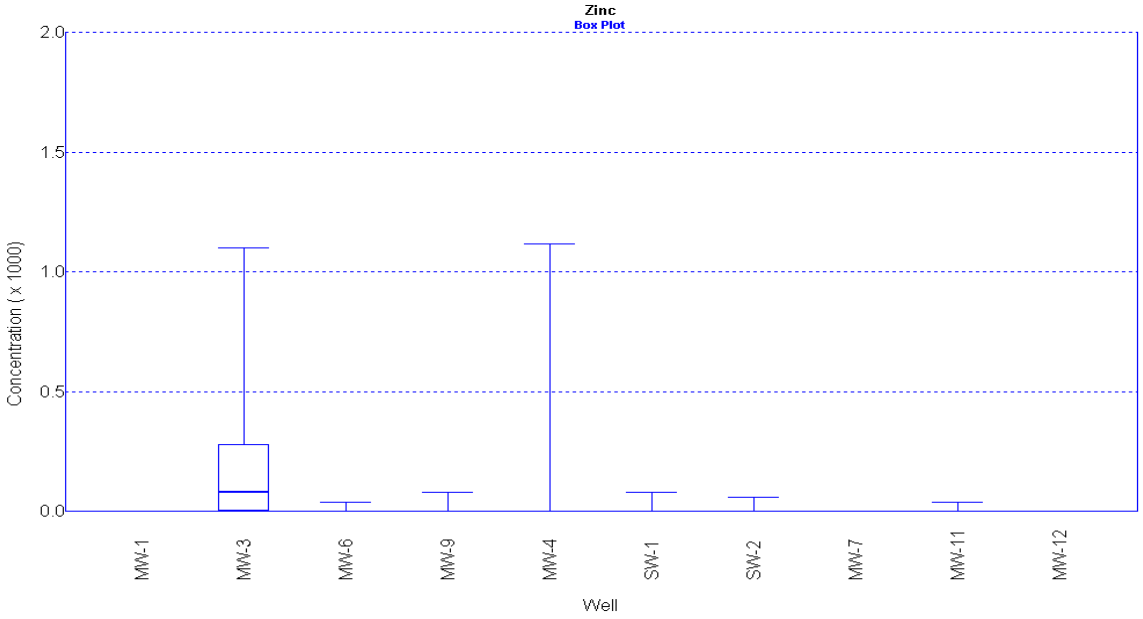
Constituent	
None	
Detection(s) per Scan	0.00

Total number of sampling events [n] =	28
Total number of detections in background wells [y] =	0
Number of comparisons (downgradient wells) [k] =	6
One-sided value of Student's t-statistic (95% confidence) [t] =	2.53
Expected number of detections in a single future sample [y*] =	**0.2286**

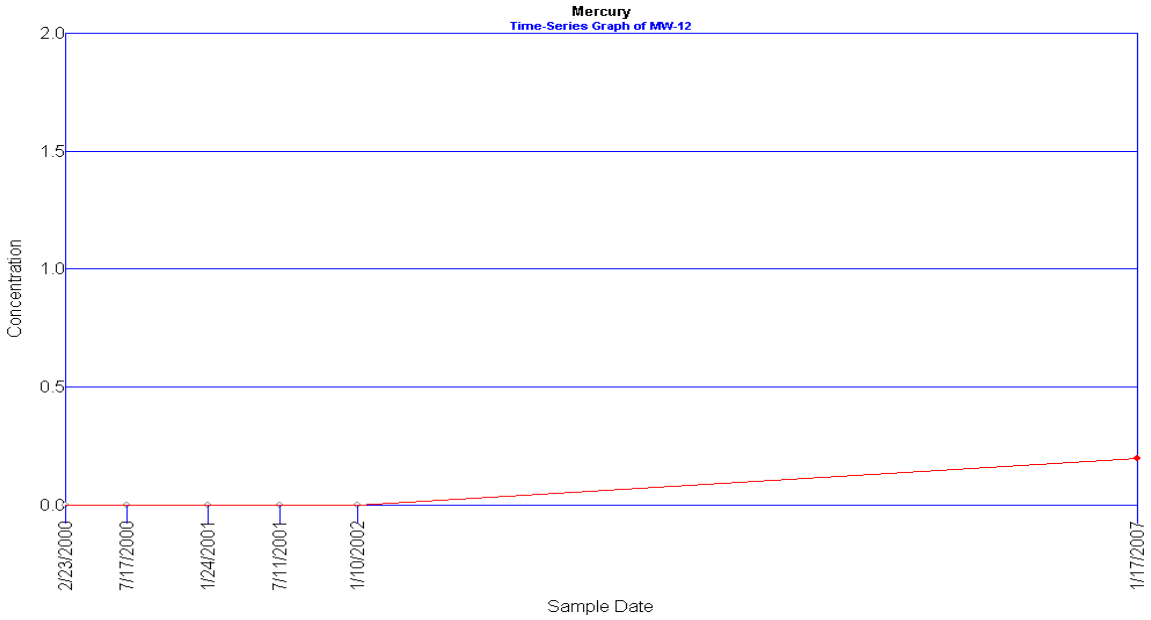
No Statistically Significant VOC Detections

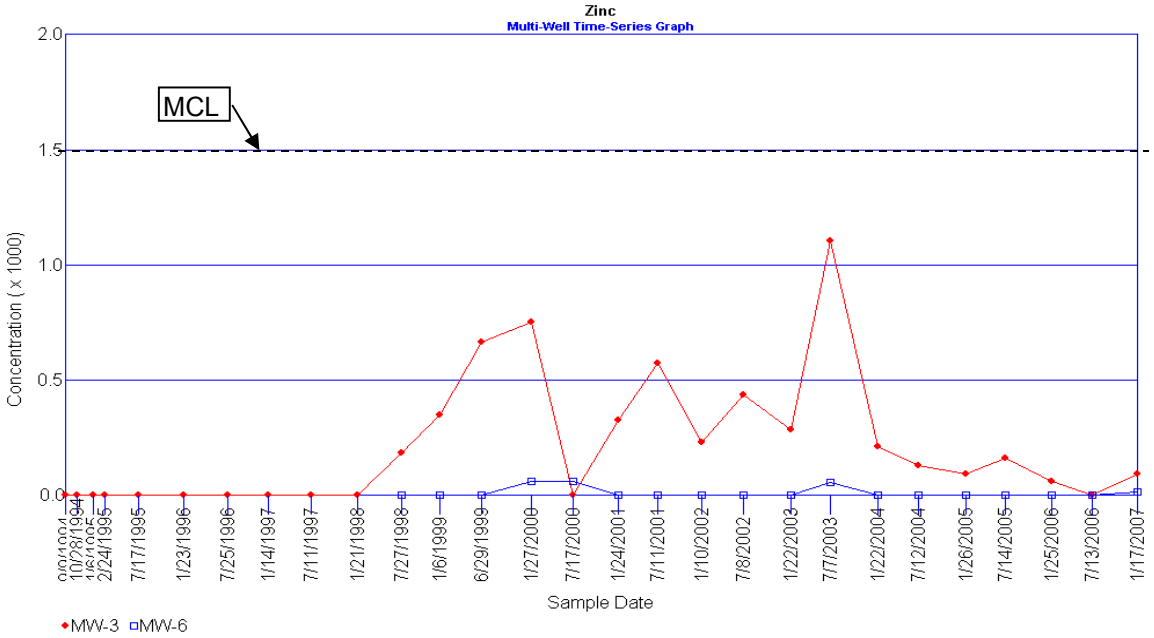
Box Plots for Select Constituents (Metals)
Lenoir County Closed Sanitary Landfill





Time Series Plots for Select Constituents (Metals)
Lenoir County Closed Sanitary Landfill





July 2007 Sampling Event

Inter-Well Analysis Summary
Lenoir County Closed Sanitary Landfill

Background Well: MW-1

Mercury, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	-	Poisson tolerance limit	ND	2.5	ug/l

Well	Result	Significance
MW-12	1.16	no

Zinc, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
100	log-normal	Poisson tolerance limit	ND	8	log[ug/l]

Well	Result	Significance
MW-3	4.08	no

NOTE: Bold-faced monitoring points indicate detected levels exceed North Carolina Groundwater Standard.

July 2007 Sampling Event

Summary of Pooled VOCs in Background Well (MW-1)
Lenoir County Closed Sanitary Landfill

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	29	29	100.00
1,1,1-Trichloroethane	29	29	100.00
1,1,2,2-Tetrachloroethane	29	29	100.00
1,1,2-Trichloroethane	29	29	100.00
1,1-Dichloroethane	29	29	100.00
1,1-Dichloroethene	29	29	100.00
1,2,3-Trichloropropane	29	29	100.00
1,2-Dibromo-3-chloropropane	29	29	100.00
1,2-Dibromoethane	29	29	100.00
1,2-Dichlorobenzene	29	29	100.00
1,2-Dichloroethane	29	29	100.00
1,2-Dichloropropane	29	29	100.00
1,4-Dichlorobenzene	29	29	100.00
2-Butanone	29	29	100.00
2-Hexanone	29	29	100.00
4-Methyl-2-Pentanone	29	29	100.00
Acetone	29	29	100.00
Acrylonitrile	29	29	100.00
Benzene	29	29	100.00
Bromochloromethane	29	29	100.00
Bromodichloromethane	29	29	100.00
Bromoform	29	29	100.00
Bromomethane	29	29	100.00
Carbon disulfide	29	29	100.00
Carbon tetrachloride	29	29	100.00
Chlorobenzene	29	29	100.00
Chloroethane	29	29	100.00
Chloroform	29	29	100.00
Chloromethane	29	29	100.00
cis-1,2-Dichloroethene	29	29	100.00
cis-1,3-Dichloropropene	29	29	100.00
Chlorodibromomethane	29	29	100.00
Dibromomethane	29	29	100.00
Ethylbenzene	29	29	100.00
Iodomethane	29	29	100.00
Dichloromethane	29	29	100.00
Styrene	29	29	100.00
Tetrachloroethylene	29	29	100.00
Toluene	29	29	100.00
trans-1,2-Dichloroethene	29	29	100.00
trans-1,3-Dichloropropene	29	29	100.00
trans-1,4-Dichloro-2-butene	29	29	100.00
Trichloroethylene	29	29	100.00
Trichlorofluoromethane	29	29	100.00
Vinyl acetate	29	29	100.00
Vinyl chloride	29	29	100.00
Xylene	29	29	100.00
Total	**1363**	**1363**	**100.00**

July 2007 Sampling Event

Poisson Prediction Interval Based upon Pooled Background VOCs
Lenoir County Closed Sanitary Landfill

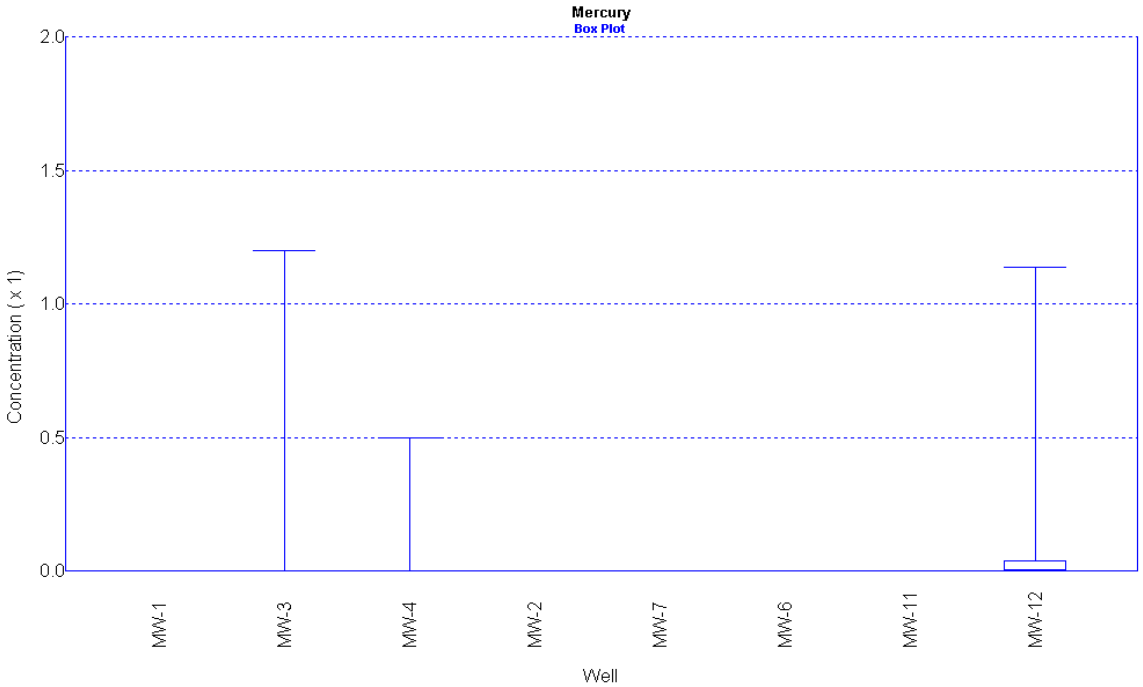
All detected VOCs (Background Well: MW-1)

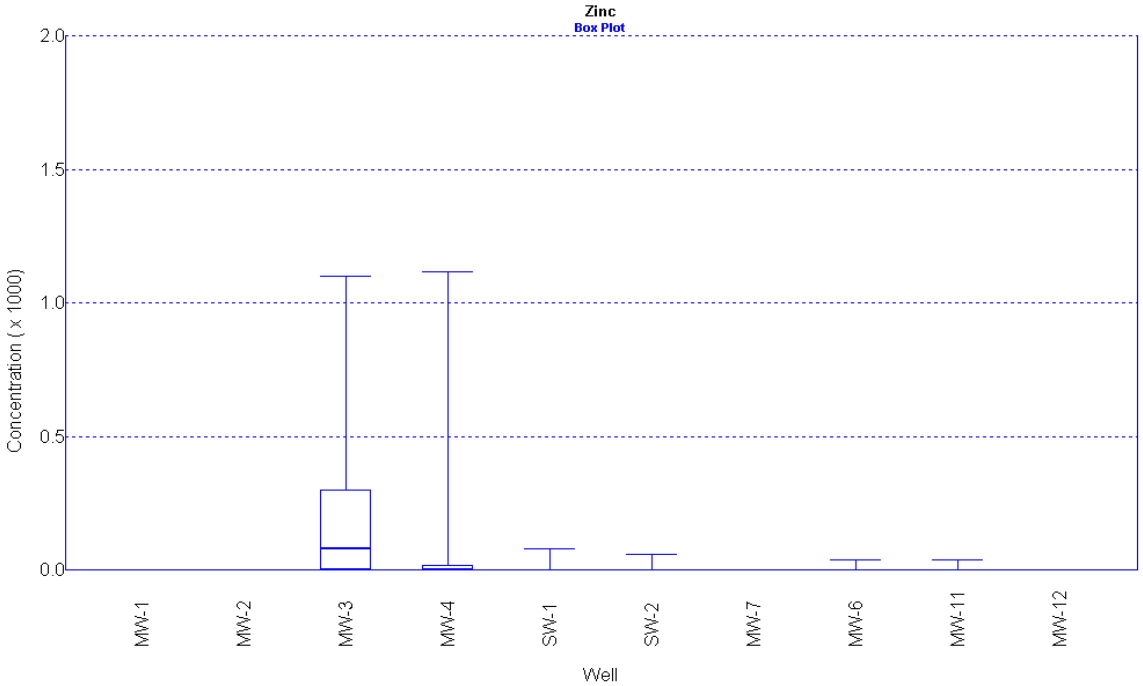
Constituent	
None	
Detection(s) per Scan	0.00

Total number of sampling events [n] =	29
Total number of detections in background wells [y] =	0
Number of comparisons (downgradient wells) [k] =	6
One-sided value of Student's t-statistic (95% confidence) [t] =	2.52
Expected number of detections in a single future sample [y*] =	**0.2198**

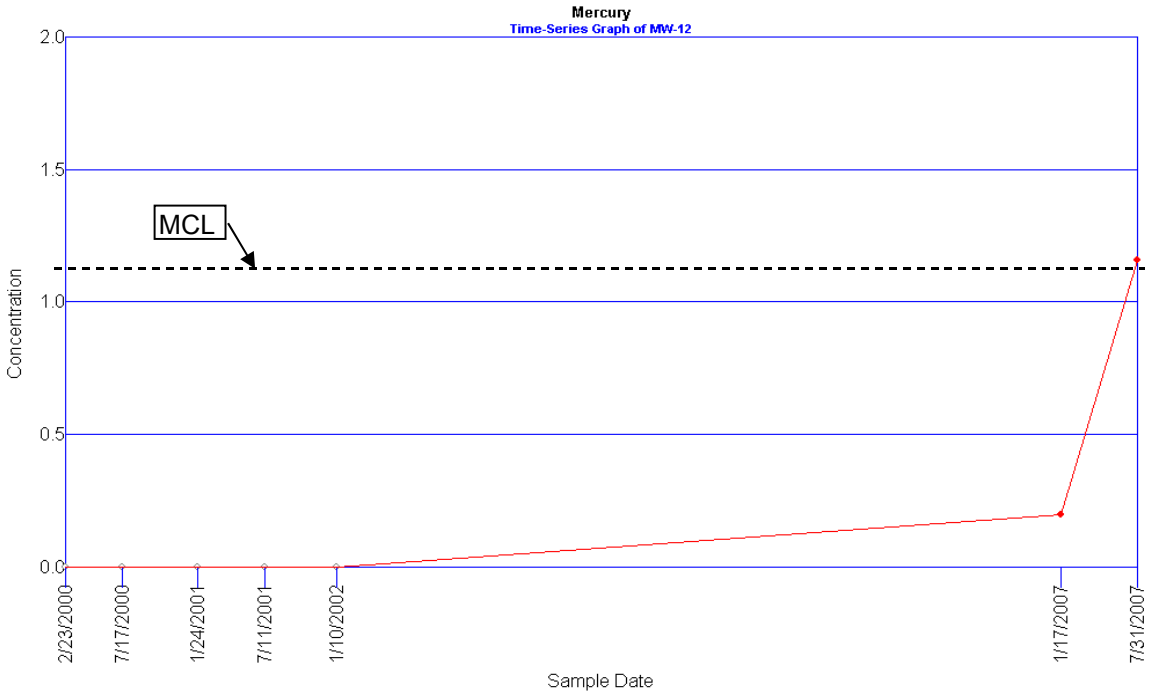
No Statistically Significant VOC Detections

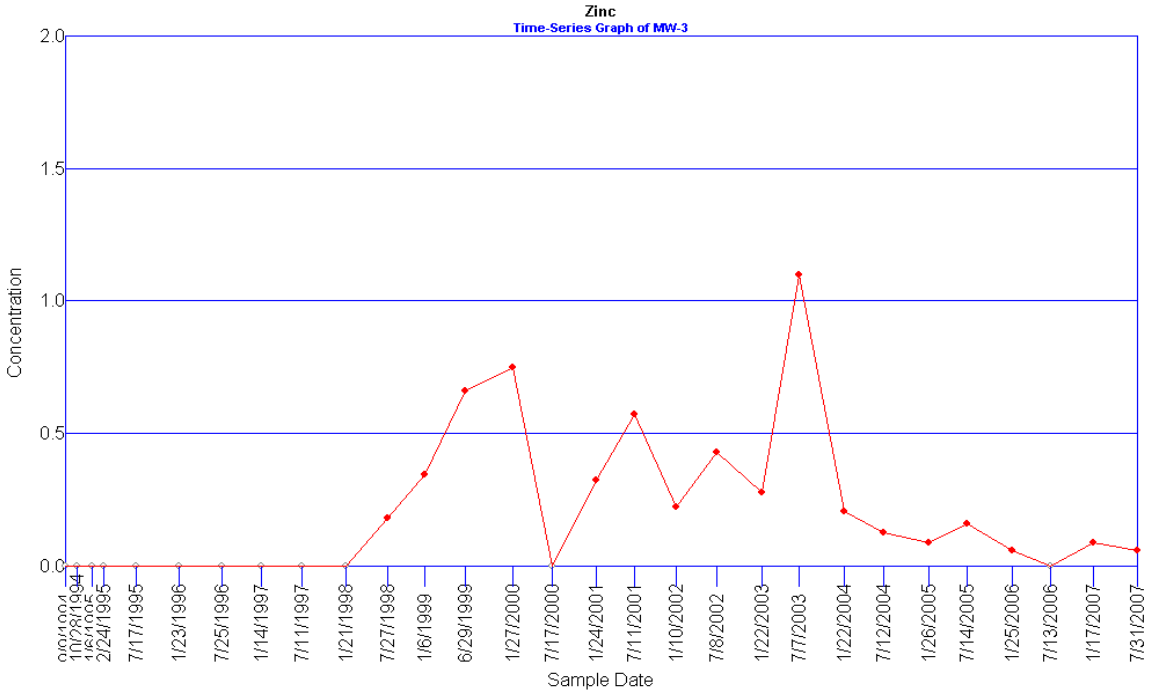
Box Plots for Select Constituents (Metals)
Lenoir County Closed Sanitary Landfill





Time Series Plots for Select Constituents (Metals)
Lenoir County Closed Sanitary Landfill





January 2008 Sampling Event

Inter-Well Analysis Summary
Lenoir County Closed MSWLF and Active C&D Landfill

Background Well: MW-1

Cobalt, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
96.67	-	Poisson tolerance limit	ND	15.5	ug/l

Well	Result	Significance
MW-9	20	yes

Zinc, total

%ND	Normality	Method	ND Adj.	Upper Limit (a = 95%)	Unit
96.67	log-normal	Poisson tolerance limit	ND	7.5	log[ug/l]

Well	Result	Significance
MW-3	3.30	no
MW-6	4.06	no

NOTE: Bold-faced monitoring points indicate detected levels exceed North Carolina Groundwater Standard.

January 2008 Sampling Event

Intra-Well Analysis Summary (Metals)
Lenoir County Closed MSWLF and Active C&D Landfill

Well	Cobalt
MW-9	no

EXPLANATION

yes=detection statistically significant by intrawell analysis

no=detection not statistically significant by intrawell analysis

n/a=not available, intrawell not possible via Shewhart CUSUM chart due to detection rate requirement

No Metals have increased according to Intrawell Analysis

Summary of Pooled VOCs in Background Well (MW-1)
Lenoir County Closed MSWLF and Active C&D Landfill

Constituent	Samples	NDs	% NDs
1,1,1,2-Tetrachloroethane	30	30	100.00
1,1,1-Trichloroethane	30	30	100.00
1,1,2,2-Tetrachloroethane	30	30	100.00
1,1,2-Trichloroethane	30	30	100.00
1,1-Dichloroethane	30	30	100.00
1,1-Dichloroethene	30	30	100.00
1,2,3-Trichloropropane	30	30	100.00
1,2-Dibromo-3-chloropropane	30	30	100.00
1,2-Dibromoethane	30	30	100.00
1,2-Dichlorobenzene	30	30	100.00
1,2-Dichloroethane	30	30	100.00
1,2-Dichloropropane	30	30	100.00
1,4-Dichlorobenzene	30	30	100.00
2-Butanone	30	30	100.00
2-Hexanone	30	30	100.00
4-Methyl-2-Pentanone	30	30	100.00
Acetone	30	30	100.00
Acrylonitrile	30	30	100.00
Benzene	30	30	100.00
Bromochloromethane	30	30	100.00
Bromodichloromethane	30	30	100.00
Bromoform	30	30	100.00
Bromomethane	30	30	100.00
Carbon disulfide	30	30	100.00
Carbon tetrachloride	30	30	100.00
Chlorobenzene	30	30	100.00
Chloroethane	30	30	100.00
Chloroform	30	30	100.00
Chloromethane	30	30	100.00
cis-1,2-Dichloroethene	30	30	100.00
cis-1,3-Dichloropropene	30	30	100.00
Chlorodibromomethane	30	30	100.00
Dibromomethane	30	30	100.00
Ethylbenzene	30	30	100.00
Iodomethane	30	30	100.00
Dichloromethane	30	30	100.00
Styrene	30	30	100.00
Tetrachloroethylene	30	30	100.00
Toluene	30	30	100.00
trans-1,2-Dichloroethene	30	30	100.00
trans-1,3-Dichloropropene	30	30	100.00
trans-1,4-Dichloro-2-butene	30	30	100.00
Trichloroethylene	30	30	100.00
Trichlorofluoromethane	30	30	100.00
Vinyl acetate	30	30	100.00
Vinyl chloride	30	30	100.00
Xylene	30	30	100.00
Total	**1410**	**1410**	**100.00**

January 2008 Sampling Event

Poisson Prediction Interval Based upon Pooled Background VOCs
Lenoir County Closed MSWLF and Active C&D Landfill

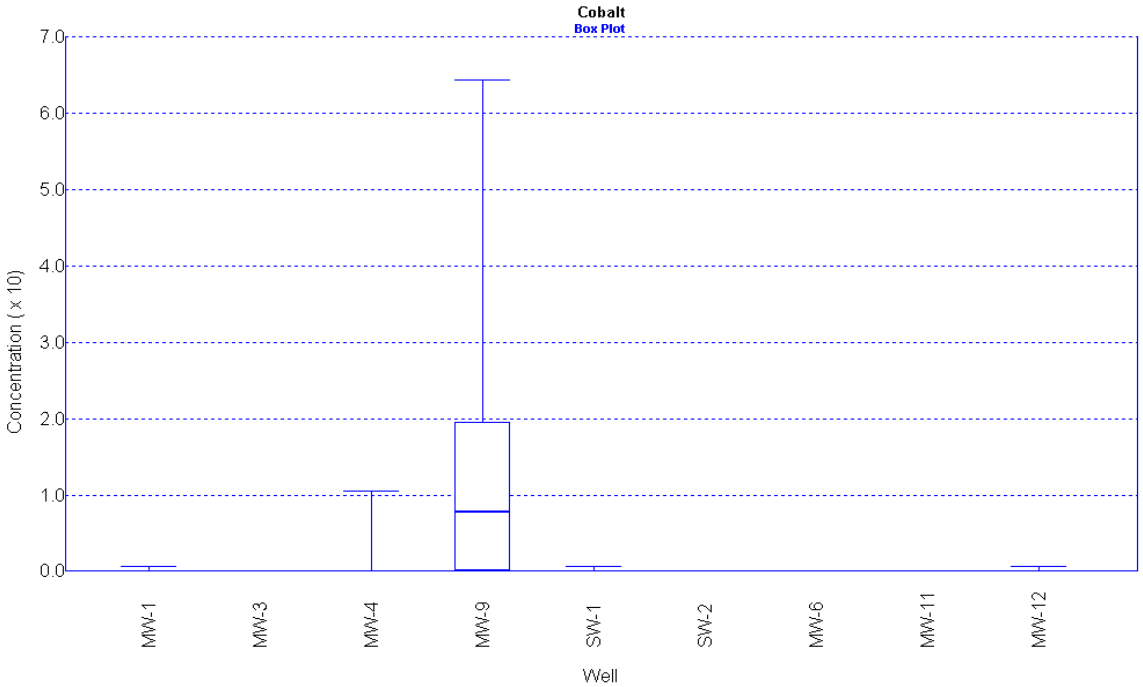
All detected VOCs (Background Well: MW-1)

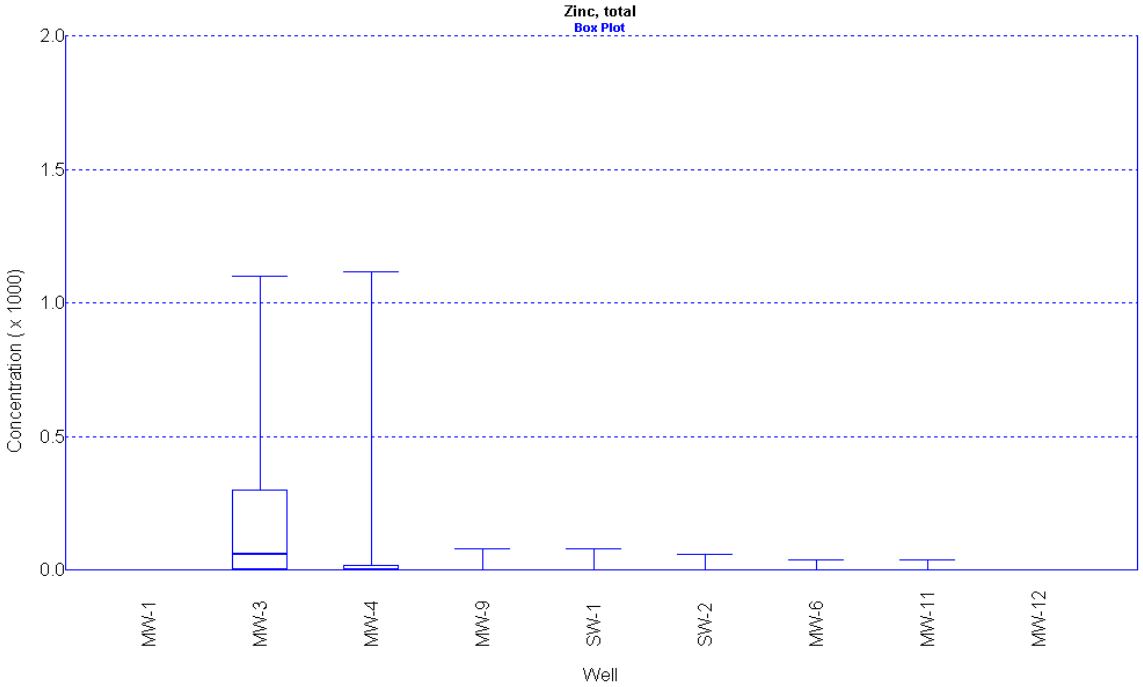
Constituent	
None	
Detection(s) per Scan	0.00

Total number of sampling events [n] =	30
Total number of detections in background wells [y] =	0
Number of comparisons (downgradient wells) [k] =	6
One-sided value of Student's t-statistic (95% confidence) [t] =	2.52
Expected number of detections in a single future sample [y*] =	**0.2115**

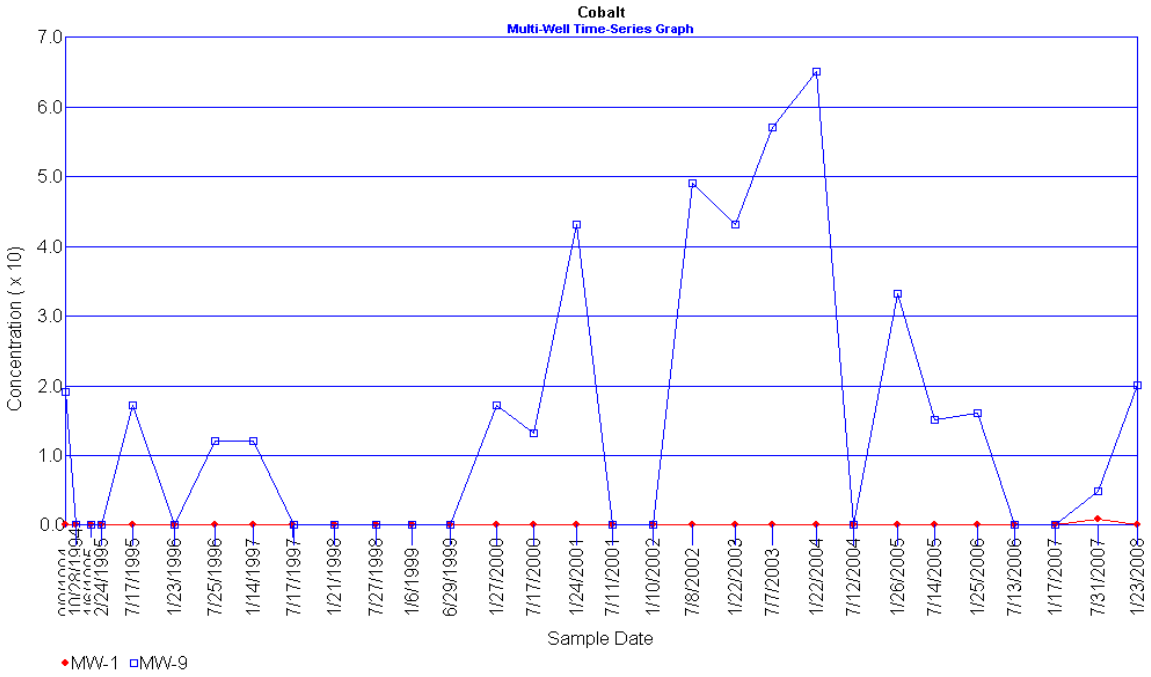
No Statistically Significant VOC Detections

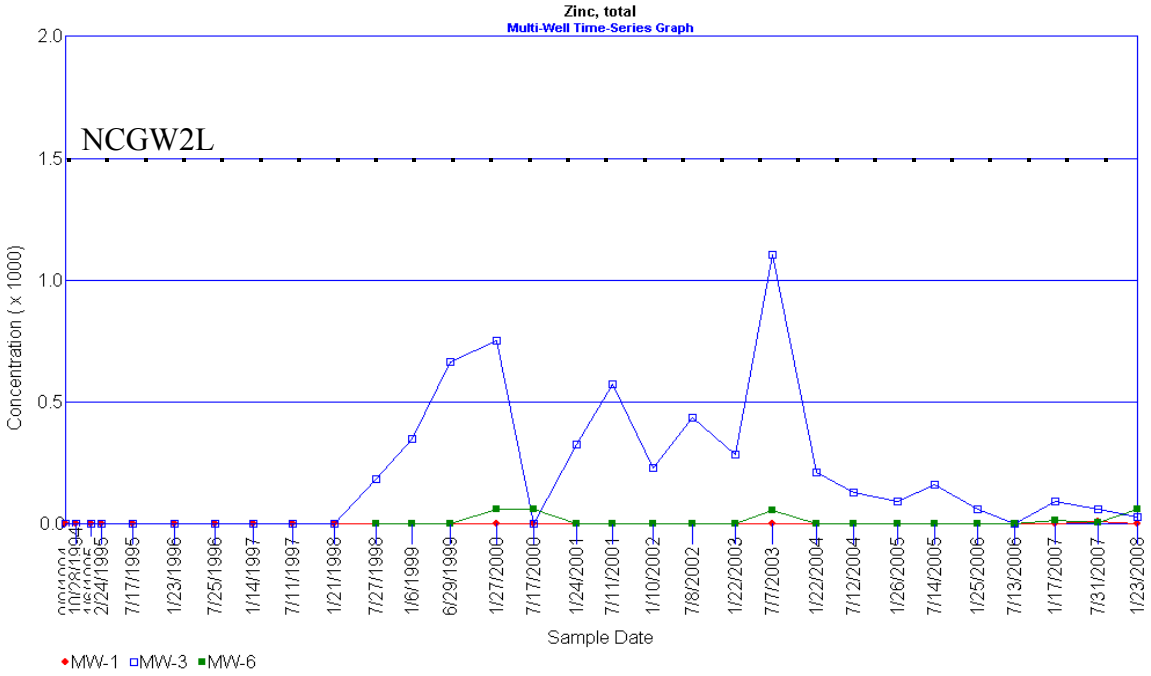
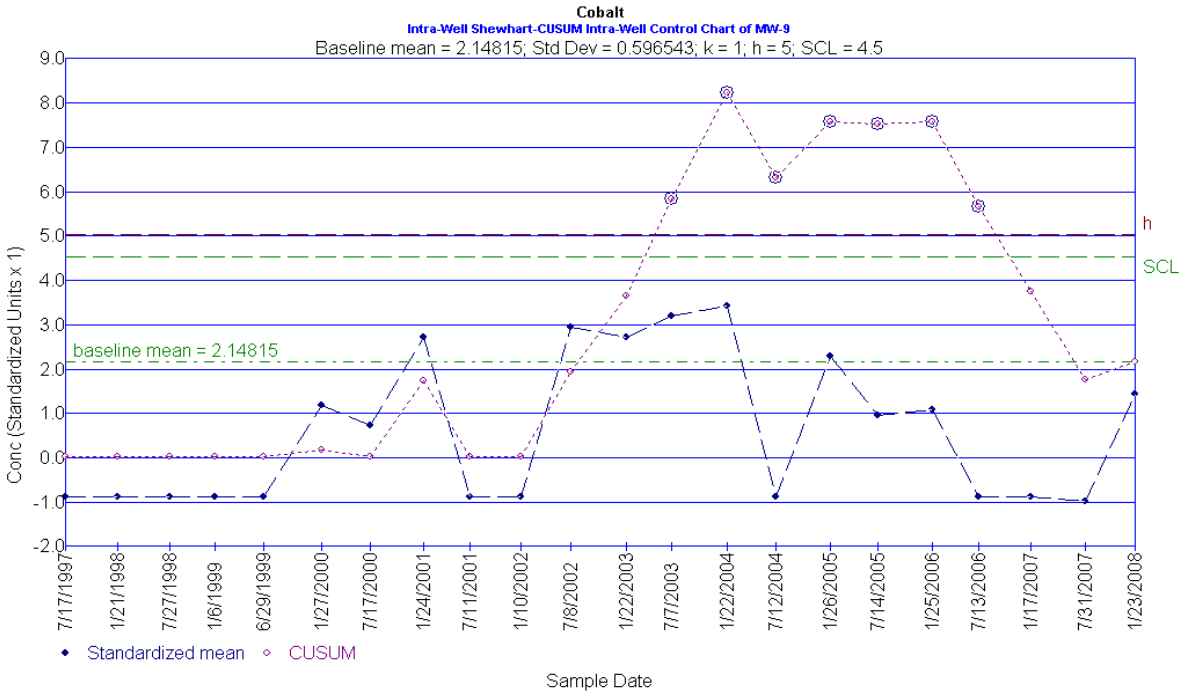
Box Plots for Select Constituents (Metals)
Lenoir County Closed MSWLF and Active C&D Landfill





Time Series Plots for Select Constituents (Metals)
Lenoir County Closed MSWLF and Active C&D Landfill





Shewhart-CUSUM charts for selected constituents
Lenoir County Closed MSWLF and Active C&D Landfill