1107 .1600 MSW Sub D Lined

D1339

CDM

5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
tel: 919 787-5620
fax: 919 781-5730

July 13, 2005

Mr. Brian Wootton
Solid Waste Section
Division of Waste Management
401 Oberlin Road
Suite 150
Raleigh, North Carolina 27605

Subject: Initial Groundwater Sampling Results MW-13/13d
Buncombe County Subtitle D Landfill Cell 6

Dear Mr. Wootton:

CDM, on behalf of Buncombe County, is submitting the initial groundwater sampling results for the newly installed monitoring wells MW-13/13d. The June 28, 2005 letter detailed the monitoring well installation and initial sampling activities.

The wells were sampled for Appendix I Volatile Organic Compounds (VOCs) and Metals on June 24, 2005. All VOCs were below detection limits for both wells. MW-13 had detections of cadmium and chromium. The detected cadmium concentration in MW-13 exceeded the NC2L standard. MW-13d had detections of barium, beryllium, cadmium, chromium, cobalt, lead, nickel, vanadium, and zinc. The detected concentrations of beryllium, cobalt, and vanadium exceeded their respective groundwater protection standards. Copies of the laboratory data are attached.

Being that the samples were collected from newly installed wells, the detected metals in the samples from MW-13 and -13d are likely resultant from suspended sediments within the water column, and are therefore related to natural occurring background concentrations. It is anticipated that metals detections should decrease as suspended sediments are removed during future purging.

Historically, the background wells for the facility (MW-1/MW-1d) have had detections of cadmium, chromium, lead, and nickel above their respective NC2L standards and beryllium, cobalt, and vanadium above their respective groundwater protection standards.

No accumulated water was found in the alternate groundwater monitoring system; therefore no samples were collected from the alternate groundwater monitoring system.

CDM

If you have any questions or need additional information, please call me.

Very truly yours,

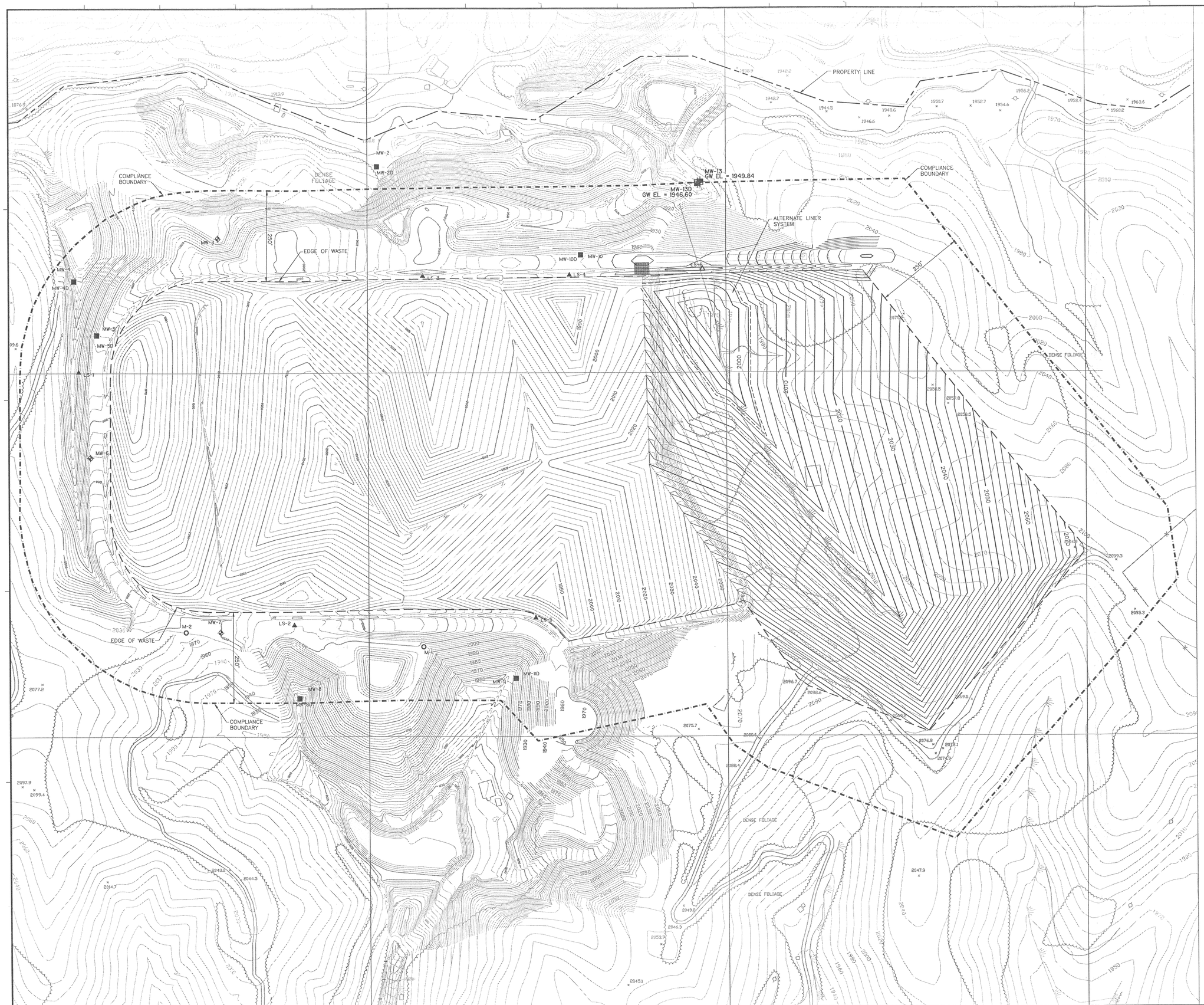
Mat Colone

Mathew F. Colone, P.G.
Camp Dresser & McKee

xc: Bob Hunter, Buncombe County
Tim Jewet, NCDENR
Jim Barber, NCDENR
Mike Brinchek, CDM

NORTH CAROLINA LICENSED SEAL 1851 GEOLOGIST MATHEW F. COLONE

7/13/2005



N

1" = 100'

50 0 100

LEGEND

MW-1	MONITORING WELL
MW-2 MW-2D	MONITORING WELL CLUSTER
M-1	METHANE GAS WELL
MW-13	MW-13 CLUSTER
LS-1	LEACHATE SUMP MONITORING OUTFALL
LS-6	PROPOSED LEACHATE SUMP MONITORING OUTFALL

NOTE:

1. BACKGROUND WELLS MW-1/MW-1D LOCATED EAST OF SITE

REV. NO.	DATE	DRWN	CHKD	REMARKS
3	7/05	JSK	MC	ADDED COMPLIANCE BOUNDARY, PROPERTY LINE, EDGE OF WASTE PER DENR COMMENTS
2	11/04	JSK	MC	ADDED PROPOSED MW-13/13D LOCATION
1	3/02	JSK	MC	ADDED MW-10/10D AND MW-11/11D LOCATIONS

DESIGNED BY: M. COLONE
DRAWN BY: J. KILLINGSWORTH
SHEET CHK'D BY: T. GRANT
CROSS CHK'D BY:
APPROVED BY:
DATE: NOVEMBER 2004

CDM Camp Dresser & McKee
consulting engineering construction operations
5400 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612
Tel: 919-787-5620 Fax: 919-781-5730

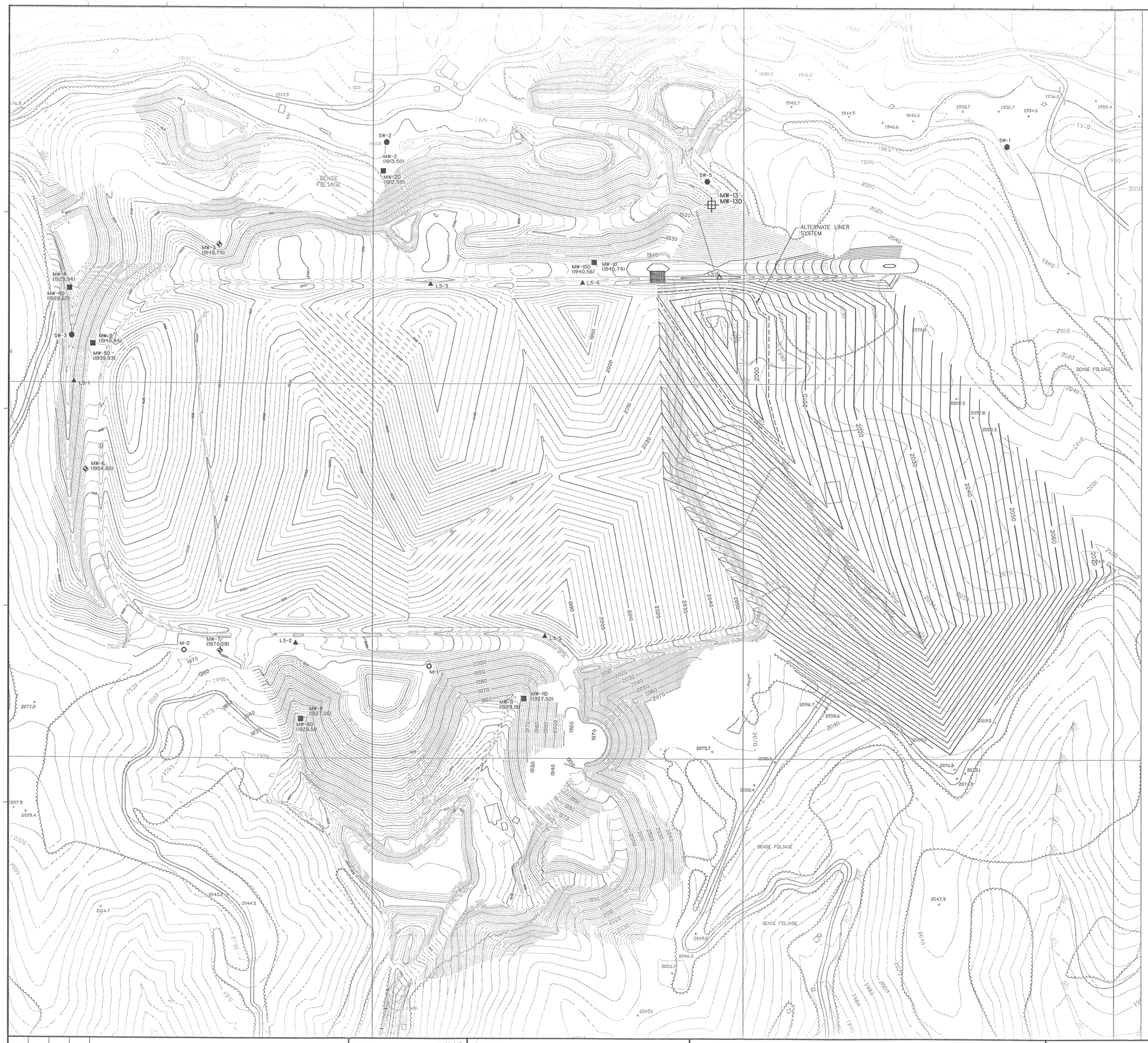
BUNCOMBE COUNTY
NORTH CAROLINA

CELL 6 AREA
BUNCOMBE COUNTY SOLID WASTE MANAGEMENT FACILITY

MONITORING WELL LOCATION

PROJECT NO. 6447-42379
FILE NAME: MON-WELL-LOCA.dwg

FIGURE NO.
1



N

1" = 100'

50 0 100

LEGEND

MW-1	MONITORING WELL
MW-2 MW-2D	MONITORING WELL CLUSTER
M-1	METHANE GAS WELL
MW-13	PROPOSED MW-13 CLUSTER
LS-1	LEACHATE SUMP MONITORING OUTFALL
LS-6	PROPOSED LEACHATE SUMP MONITORING OUTFALL
SW-1	SURFACE WATER SAMPLING LOCATION

NOTE:

1. BACKGROUND WELLS MW-1/MW-1D LOCATED EAST OF SITE

REV. NO.	DATE	DRWN	CHKD	REMARKS
3	7/05	PWD	MC	ADDED SURFACE WATER SAMPLING LOCATIONS
2	11/04	JSK	MC	ADDED PROPOSED MW-13/13D LOCATION
1	3/02	JSK	MC	ADDED MW-10/10D AND MW-11/11D LOCATIONS

DESIGNED BY: M. COLONE
DRAWN BY: J. KILLINGSWORTH
SHEET CHK'D BY: T. GRANT
CROSS CHK'D BY:
APPROVED BY:
DATE: NOVEMBER 2004

CDM Camp Dresser & McKee
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Tel: 919-787-5620 Fax: 919-781-5730

BUNCOMBE COUNTY
NORTH CAROLINA

CELL 6 AREA
BUNCOMBE COUNTY SOLID WASTE MANAGEMENT FACILITY

WATER QUALITY MONITORING PLAN
CELL 6 AREA

PROJECT NO. 6447-42379
FILE NAME: bunc-wqmp.dwg

FIGURE NO.
3-1

Results for Volatiles
by GCMS 8260 Appendix I

Client Sample ID: MW-13
Client Project ID: Buncombe County Cell 6
Lab Sample ID: G175-490-1A
Lab Project ID: G175-490

Analyzed By: JTF
Date Collected: 6/24/2005 13:00
Date Received: 6/25/2005
Matrix: Water

Compound	Result UG/L	Quantitation Limit UG/L	Dilution Factor	Date Analyzed
Acetone	BQL	100	1	6/29/2005
Acrylonitrile	BQL	200	1	6/29/2005
Benzene	BQL	5.00	1	6/29/2005
Bromochloromethane	BQL	5.00	1	6/29/2005
Bromodichloromethane	BQL	5.00	1	6/29/2005
Bromoform	BQL	5.00	1	6/29/2005
Methyl bromide	BQL	10.0	1	6/29/2005
MEK (2-Butanone)	BQL	100	1	6/29/2005
Carbon disulfide	BQL	100	1	6/29/2005
Carbon tetrachloride	BQL	10.0	1	6/29/2005
Chlorobenzene	BQL	5.00	1	6/29/2005
Chloroethane	BQL	10.0	1	6/29/2005
Chloroform	BQL	5.00	1	6/29/2005
Methyl chloride	BQL	10.0	1	6/29/2005
Chlorodibromomethane	BQL	5.00	1	6/29/2005
DBCP (1,2-Dibromo-3-chloropropane)	BQL	25.0	1	6/29/2005
Methylene bromide	BQL	10.0	1	6/29/2005
Ethylene dibromide (EDB)	BQL	5.00	1	6/29/2005
o-Dichlorobenzene	BQL	5.00	1	6/29/2005
m-Dichlorobenzene	BQL	5.00	1	6/29/2005
p-Dichlorobenzene	BQL	5.00	1	6/29/2005
t-1,4-Dichloro-2-butene	BQL	100	1	6/29/2005
1,1-Dichloroethane	BQL	5.00	1	6/29/2005
Vinylidene chloride	BQL	5.00	1	6/29/2005
Ethylene dichloride	BQL	5.00	1	6/29/2005
cis-1,2-Dichloroethene	BQL	5.00	1	6/29/2005
t-1,2-dichloroethene	BQL	5.00	1	6/29/2005
Propylene Dichloride	BQL	5.00	1	6/29/2005
cis-1,3-Dichloropropene	BQL	10.0	1	6/29/2005
t-1,3-Dichloropropene	BQL	10.0	1	6/29/2005
Ethylbenzene	BQL	5.00	1	6/29/2005
Methyl butyl ketone	BQL	50.0	1	6/29/2005
Methyl iodide	BQL	10.0	1	6/29/2005
Methylene chloride	BQL	10.0	1	6/29/2005
Methyl isobutyl ketone	BQL	100	1	6/29/2005
Styrene	BQL	10.0	1	6/29/2005
1,1,1,2-Tetrachloroethane	BQL	5.00	1	6/29/2005
1,1,2,2-Tetrachloroethane	BQL	5.00	1	6/29/2005
Tetrachloroethylene	BQL	5.00	1	6/29/2005
Toluene	BQL	5.00	1	6/29/2005
Trichloroethene	BQL	5.00	1	6/29/2005
1,1,1-Trichloroethane	BQL	5.00	1	6/29/2005
1,1,2-Trichloroethane	BQL	5.00	1	6/29/2005
CFC-11 (Trichlorofluoromethane)	BQL	5.00	1	6/29/2005
1,2,3-Trichloropropane	BQL	15.0	1	6/29/2005

Results for Volatiles
by GCMS 8260 Appendix I

Client Sample ID: MW-13
Client Project ID: Buncombe County Cell 6
Lab Sample ID: G175-490-1A
Lab Project ID: G175-490

Analyzed By: JTF
Date Collected: 6/24/2005 13:00
Date Received: 6/25/2005
Matrix: Water

Compound	Result UG/L	Quantitation Limit UG/L	Dilution Factor	Date Analyzed
Vinyl acetate	BQL	50.0	1	6/29/2005
Vinyl chloride	BQL	10.0	1	6/29/2005
m-,p-Xylene	BQL	2.00	1	6/29/2005
o-Xylene	BQL	2.00	1	6/29/2005

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	10	10.1	101
1,2-Dichloroethane-d4	10	11.5	115
Toluene-d8	10	10	100

Comments:

Flags:
BQL = Below Quantitation Limits.

Reviewed By: [illegible]

Results for Volatiles
by GCMS 8260 Appendix I

Client Sample ID: MW-13 deep
Client Project ID: Buncombe County Cell 6
Lab Sample ID: G175-490-2A
Lab Project ID: G175-490

Analyzed By: JTF
Date Collected: 6/24/2005 15:15
Date Received: 6/25/2005
Matrix: Water

Compound	Result UG/L	Quantitation Limit UG/L	Dilution Factor	Date Analyzed
Acetone	BQL	100	1	6/29/2005
Acrylonitrile	BQL	200	1	6/29/2005
Benzene	BQL	5.00	1	6/29/2005
Bromochloromethane	BQL	5.00	1	6/29/2005
Bromodichloromethane	BQL	5.00	1	6/29/2005
Bromoform	BQL	5.00	1	6/29/2005
Methyl bromide	BQL	10.0	1	6/29/2005
MEK (2-Butanone)	BQL	100	1	6/29/2005
Carbon disulfide	BQL	100	1	6/29/2005
Carbon tetrachloride	BQL	10.0	1	6/29/2005
Chlorobenzene	BQL	5.00	1	6/29/2005
Chloroethane	BQL	10.0	1	6/29/2005
Chloroform	BQL	5.00	1	6/29/2005
Methyl chloride	BQL	10.0	1	6/29/2005
Chlorodibromomethane	BQL	5.00	1	6/29/2005
DBCP (1,2-Dibromo-3-chloropropane)	BQL	25.0	1	6/29/2005
Methylene bromide	BQL	10.0	1	6/29/2005
Ethylene dibromide (EDB)	BQL	5.00	1	6/29/2005
o-Dichlorobenzene	BQL	5.00	1	6/29/2005
m-Dichlorobenzene	BQL	5.00	1	6/29/2005
p-Dichlorobenzene	BQL	5.00	1	6/29/2005
t-1,4-Dichloro-2-butene	BQL	100	1	6/29/2005
1,1-Dichloroethane	BQL	5.00	1	6/29/2005
Vinylidene chloride	BQL	5.00	1	6/29/2005
Ethylene dichloride	BQL	5.00	1	6/29/2005
cis-1,2-Dichloroethene	BQL	5.00	1	6/29/2005
t-1,2-dichloroethene	BQL	5.00	1	6/29/2005
Propylene Dichloride	BQL	5.00	1	6/29/2005
cis-1,3-Dichloropropene	BQL	10.0	1	6/29/2005
t-1,3-Dichloropropene	BQL	10.0	1	6/29/2005
Ethylbenzene	BQL	5.00	1	6/29/2005
Methyl butyl ketone	BQL	50.0	1	6/29/2005
Methyl iodide	BQL	10.0	1	6/29/2005
Methylene chloride	BQL	10.0	1	6/29/2005
Methyl isobutyl ketone	BQL	100	1	6/29/2005
Styrene	BQL	10.0	1	6/29/2005
1,1,1,2-Tetrachloroethane	BQL	5.00	1	6/29/2005
1,1,2,2-Tetrachloroethane	BQL	5.00	1	6/29/2005
Tetrachloroethylene	BQL	5.00	1	6/29/2005
Toluene	BQL	5.00	1	6/29/2005
Trichloroethene	BQL	5.00	1	6/29/2005
1,1,1-Trichloroethane	BQL	5.00	1	6/29/2005
,1,2-Trichloroethane	BQL	5.00	1	6/29/2005
CFC-11 (Trichlorofluoromethane)	BQL	5.00	1	6/29/2005
1,2,3-Trichloropropane	BQL	15.0	1	6/29/2005

Results for Volatiles
by GCMS 8260 Appendix I

Client Sample ID: MW-13 deep
Client Project ID: Buncombe County Cell 6
Lab Sample ID: G175-490-2A
Lab Project ID: G175-490

Analyzed By: JTF
Date Collected: 6/24/2005 15:15
Date Received: 6/25/2005
Matrix: Water

Compound	Result UG/L	Quantitation Limit UG/L	Dilution Factor	Date Analyzed
Vinyl acetate	BQL	50.0	1	6/29/2005
Vinyl chloride	BQL	10.0	1	6/29/2005
m-,p-Xylene	BQL	2.00	1	6/29/2005
o-Xylene	BQL	2.00	1	6/29/2005

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	10	10	100
1,2-Dichloroethane-d4	10	11.6	116
Toluene-d8	10	9.95	99

Comments:

Flags:
BQL = Below Quantitation Limits.

Reviewed By: [illegible]

Results for Volatiles
by GCMS 8260 Appendix I

Client Sample ID: Trip Blank
Client Project ID: Buncombe County Cell 6
Lab Sample ID: G175-490-3A
Lab Project ID: G175-490

Analyzed By: JTF
Date Collected: 6/24/2005 0:00
Date Received: 6/25/2005
Matrix: Water

Compound	Result UG/L	Quantitation Limit UG/L	Dilution Factor	Date Analyzed
Acetone	BQL	100	1	6/29/2005
Acrylonitrile	BQL	200	1	6/29/2005
Benzene	BQL	5.00	1	6/29/2005
Bromochloromethane	BQL	5.00	1	6/29/2005
Bromodichloromethane	BQL	5.00	1	6/29/2005
Bromoform	BQL	5.00	1	6/29/2005
Methyl bromide	BQL	10.0	1	6/29/2005
MEK (2-Butanone)	BQL	100	1	6/29/2005
Carbon disulfide	BQL	100	1	6/29/2005
Carbon tetrachloride	BQL	10.0	1	6/29/2005
Chlorobenzene	BQL	5.00	1	6/29/2005
Chloroethane	BQL	10.0	1	6/29/2005
Chloroform	BQL	5.00	1	6/29/2005
Methyl chloride	BQL	10.0	1	6/29/2005
Chlorodibromomethane	BQL	5.00	1	6/29/2005
DBCP (1,2-Dibromo-3-chloropropane)	BQL	25.0	1	6/29/2005
Methylene bromide	BQL	10.0	1	6/29/2005
Ethylene dibromide (EDB)	BQL	5.00	1	6/29/2005
o-Dichlorobenzene	BQL	5.00	1	6/29/2005
m-Dichlorobenzene	BQL	5.00	1	6/29/2005
p-Dichlorobenzene	BQL	5.00	1	6/29/2005
t-1,4-Dichloro-2-butene	BQL	100	1	6/29/2005
1,1-Dichloroethane	BQL	5.00	1	6/29/2005
Vinylidene chloride	BQL	5.00	1	6/29/2005
Ethylene dichloride	BQL	5.00	1	6/29/2005
cis-1,2-Dichloroethene	BQL	5.00	1	6/29/2005
t-1,2-dichloroethene	BQL	5.00	1	6/29/2005
Propylene Dichloride	BQL	5.00	1	6/29/2005
cis-1,3-Dichloropropene	BQL	10.0	1	6/29/2005
t-1,3-Dichloropropene	BQL	10.0	1	6/29/2005
Ethylbenzene	BQL	5.00	1	6/29/2005
Methyl butyl ketone	BQL	50.0	1	6/29/2005
Methyl iodide	BQL	10.0	1	6/29/2005
Methylene chloride	BQL	10.0	1	6/29/2005
Methyl isobutyl ketone	BQL	100	1	6/29/2005
Styrene	BQL	10.0	1	6/29/2005
1,1,1,2-Tetrachloroethane	BQL	5.00	1	6/29/2005
1,1,2,2-Tetrachloroethane	BQL	5.00	1	6/29/2005
Tetrachloroethylene	BQL	5.00	1	6/29/2005
Toluene	BQL	5.00	1	6/29/2005
Trichloroethene	BQL	5.00	1	6/29/2005
1,1,1-Trichloroethane	BQL	5.00	1	6/29/2005
,1,2-Trichloroethane	BQL	5.00	1	6/29/2005
CFC-11 (Trichlorofluoromethane)	BQL	5.00	1	6/29/2005
1,2,3-Trichloropropane	BQL	15.0	1	6/29/2005

Results for Volatiles
by GCMS 8260 Appendix I

Client Sample ID: Trip Blank
Client Project ID: Buncombe County Cell 6
Lab Sample ID: G175-490-3A
Lab Project ID: G175-490

Analyzed By: JTF
Date Collected: 6/24/2005 0:00
Date Received: 6/25/2005
Matrix: Water

Compound	Result UG/L	Quantitation Limit UG/L	Dilution Factor	Date Analyzed
Vinyl acetate	BQL	50.0	1	6/29/2005
Vinyl chloride	BQL	10.0	1	6/29/2005
m-,p-Xylene	BQL	2.00	1	6/29/2005
o-Xylene	BQL	2.00	1	6/29/2005

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	10	10.1	101
1,2-Dichloroethane-d4	10	11.3	113
Toluene-d8	10	10	100

Comments:

Flags:
BQL = Below Quantitation Limits.

Reviewed By: MW

Results for Metals

Client Sample ID:	MW-13	Analyzed By:	PSW
Client Project ID:	Buncombe County Cell 6	Date Collected:	6/24/2005 13:00
Lab Sample ID:	G175-490-1	Date Received:	6/25/2005
Lab Project ID:	G175-490	Matrix:	WATER
Batch ID:	3136		

Metals	Result	RL	DF	Units	Method	Date Analyzed
Antimony	BQL	0.0300	1	MG/L	6010B	7/6/2005
Arsenic	BQL	0.0100	1	MG/L	6010B	7/6/2005
Barium	BQL	0.500	1	MG/L	6010B	7/6/2005
Beryllium	BQL	0.00200	1	MG/L	6010B	7/6/2005
Cadmium	**0.00265**	0.00100	1	MG/L	6010B	7/6/2005
Chromium	**0.0294**	0.0100	1	MG/L	6010B	7/6/2005
Cobalt	BQL	0.0100	1	MG/L	6010B	7/6/2005
Copper	BQL	0.200	1	MG/L	6010B	7/6/2005
Lead	BQL	0.0100	1	MG/L	6010B	7/6/2005
Nickel	BQL	0.0500	1	MG/L	6010B	7/6/2005
Selenium	BQL	0.0200	1	MG/L	6010B	7/6/2005
Silver	BQL	0.0100	1	MG/L	6010B	7/6/2005
Thallium	BQL	0.0100	1	MG/L	6010B	7/6/2005
Vanadium	BQL	0.0400	1	MG/L	6010B	7/6/2005
Zinc	BQL	0.0500	1	MG/L	6010B	7/6/2005

Comments
BQL = Below Quantitation Limits
DF = Dilution Factor
J = Between MDL and RL

Reviewed By: MA

Results for Metals

Client Sample ID:	MW-13 deep	Analyzed By:	PSW
Client Project ID:	Buncombe County Cell 6	Date Collected:	6/24/2005 15:15
Lab Sample ID:	G175-490-2	Date Received:	6/25/2005
Lab Project ID:	G175-490	Matrix:	WATER
Batch ID:	3136		

Metals	Result	RL	DF	Units	Method	Date Analyzed
Antimony	BQL	0.0300	1	MG/L	6010B	7/6/2005
Arsenic	BQL	0.0100	1	MG/L	6010B	7/6/2005
Barium	**1.75**	0.500	1	MG/L	6010B	7/6/2005
Beryllium	**0.00200**	0.00200	1	MG/L	6010B	7/6/2005
Cadmium	**0.00144**	0.00100	1	MG/L	6010B	7/6/2005
Chromium	**0.0169**	0.0100	1	MG/L	6010B	7/6/2005
Cobalt	**0.0164**	0.0100	1	MG/L	6010B	7/6/2005
Copper	BQL	0.200	1	MG/L	6010B	7/6/2005
Lead	**0.0108**	0.0100	1	MG/L	6010B	7/6/2005
Nickel	**0.0658**	0.0500	1	MG/L	6010B	7/6/2005
Selenium	BQL	0.0200	1	MG/L	6010B	7/6/2005
Silver	BQL	0.0100	1	MG/L	6010B	7/6/2005
Thallium	BQL	0.0100	1	MG/L	6010B	7/6/2005
Vanadium	**0.210**	0.0400	1	MG/L	6010B	7/6/2005
Zinc	**0.0721**	0.0500	1	MG/L	6010B	7/6/2005

Comments
BQL = Below Quantitation Limits
DF = Dilution Factor
J = Between MDL and RL

Reviewed By: [signature]

List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL = Reporting Limit

RPD = Relative Percent Difference

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% soilds = Percent Solids

Special Notes:

1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.

2) Uncertainty for all reported data is less than or equal to 30 percent.

PARADIGM ANALYTICAL LABORATORIES, INC.
5500 Business Drive, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 47667
Page 1 of 1

Client: COM
Address: 5400 Glenwood Ave. Ste. 300
Address: Raleigh, NC 27612
Quote #:

Project ID: Buncombe County Cell 6
Contact: Mat Colone
Phone: 919-787-5620
Fax: 919-781-5730

Date: 6-24-05
Turnaround: STANDARD
Job Number:
P.O. Number:

Report To: Mat Colone
Invoice To: Same

Sample ID	Date	Time	Matrix	Preservatives: HCL	HNO3	Ice	~~None~~	Analyses: 8260 VOCs	~~8260 Metals~~									Comments: Please specify any special reporting requirements
																		G175-490
MW-13	6/24/05	1300	W	✓	✓	✓		3	1									- Provide low run results
MW-13 deep	6/24/05	1515	W	✓	✓	✓		3	1									
Trip Blank	—	—	W	✓		✓		2										Appendix I
																		on M-Colone 6/27/05 gx

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
Daniel Farley	6/24/05	1700	[illegible]	6/27/05	1005	3.4°C	NC X SC ___ Other ___
							SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

PARADIGM ANALYTICAL LABORATORIES, INC.
N.C. CERTIFICATION #481