UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
Science and Ecosystem Support Division
Enforcement and Investigations Branch
980 College Station Road
Athens, Georgia 30605-2720

December 4, 2008

DEC 2008

4SESD-EIB

MEMORANDUM

SUBJECT: Comprehensive Ground Water Monitoring Evaluation for the City of Statesville – Third Creek Monofill; EPA ID No. NCR 000 001 602; SESD Project No. 09-0094

FROM: Sharon Matthews, PG
Enforcement Section
SEM 12/4/08

THRU: Mike Bowden, Acting Section Chief
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MB 12/4/08

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Attached is the CME report for the subject facility. If you have any questions about this document, please contact me at email matthews.sharon@epa.gov or at (706) 355-8608.

Attachment

United States Environmental Protection Agency
Region 4
Science and Ecosystem Support Division
980 College Station Road
Athens, Georgia 30605-2720

COMPREHENSIVE GROUND WATER MONITORING EVALUATION
City of Statesville – Third Creek Monofill
SESD Project Identification Number: 09-0094

Date of Final Report: December 4, 2008

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Title and Approval Sheet

Title: Comprehensive Ground Water Monitoring Evaluation
City of Statesville – Third Creek Monofill
Final Report

Approving Official:

12/4/08

Mike Bowden, Acting Section Chief
Enforcement Section
Enforcement and Investigations Branch

Date

SESD Project Leader:

Sharon Matthews

12/4/08

Sharon Matthews, P.G.
Enforcement Section
Enforcement and Investigations Branch

Date

COMPREHENSIVE GROUND WATER MONITORING EVALUATION
City of Statesville – Third Creek Monofill
EPA ID No. NCR 000 001 602; SESD Project No. 09-0094

INTRODUCTION

On December 2, 2008, a comprehensive ground water monitoring evaluation (CME) was conducted at the City of Statesville Third Creek Monofill in Statesville, North Carolina. This CME was requested by the USEPA RCRA Enforcement and Compliance Branch and the North Carolina Department of Environment and Natural Resources (NCDENR) to determine compliance with the applicable ground water monitoring regulations and to evaluate quality assurance and quality control (QA/QC) of the ground water sample collection/handling procedures. The CME also determines if the monitoring well system will yield representative ground water samples, reliable hydrologic data and to identify any deficiencies in the present ground water monitoring system.

The CME was performed by USEPA Science and Ecosystem Support Division (SESD) Enforcement Section (ES) personnel Sharon Matthews and consisted of file reviews and a site visit to observe sampling activities. Mr. Todd Norman represented the facility and Mr. Thomas Haynes of Waters Edge Environmental, LLC, Greensboro, NC conducted the ground water sampling. SESD-ES personnel requested lab data packages for monitoring wells MW-2, MW-7 and MW-9 for laboratory QA/QC evaluation. The evaluation of the lab data packages will be reported in a separate memo prepared by the SESD Quality Assurance Section.

SUMMARY

Mr. Haynes of Waters Edge Environmental answered questions and conducted well purging and sample handling techniques in a very competent manner. Mr. Norman, Plant Supervisor for the facility, was knowledgeable about the history of the site and he and his staff should be commended for site maintenance. Documents requested as part of the CME were made available prior to or during the inspection. At the time of the CME, the ground water monitoring system was in compliance with the applicable ground water monitoring requirements.

SITE BACKGROUND

The City of Statesville operates a wastewater treatment system at the Third Creek facility located southeast of the city limits of Statesville, NC (Figure1). The facility operates under a NPDES permit (Permit No. 0020591) and a non-discharge permit (Permit No. WQ004040). Concerns of elevated cadmium concentrations were raised in 1993. The non-discharge permit was modified to allow the removal and land-filling of over 20 years of accumulated solids from Aeration Basins 1 and 2 and the digester in an effort to reduce the amount of cadmium in the wastewater treatment system. Sludge from the facility was landfilled in eight trenches on property near the plant. Samples of the landfilled sludge indicated the presence of cadmium above the toxicity leaching procedure regulatory limit in seven of the eight trenches.

The City of Statesville and NCDENR entered into an Administrative Order of Consent in March 1995 to address this issue. The City contracted with Aquaterra Engineering, Inc. to perform subsurface characterization activities to determine ground water flow direction and to install soil borings and ground water monitoring wells. The Third Creek Monofill was closed in July 1996 by stabilizing and capping the trenches. The State accepted the closure certification in June 1998 and the post-closure care period began which included semi-annual monitoring of wells MW-2 through MW-8 that had been installed as part of the subsurface characterization activities. In July 1998, NCDENR requested the installation of another monitoring well. MW-9 was installed in August 1998 and was included as part monitoring well network.

In November 2000, NCDENR approved a request by the City of Statesville to reduce the analytical parameters and frequency of the detection monitoring program. Waters Edge Environmental, LLC submitted a revised ground water sampling and analysis plan in December 2000 with these changes. In March 2007, NCDENR also accepted another parameter reduction request to eliminate volatile organic compounds since they had been below detection limits for several years. At present, the facility's ground water monitoring sampling is conducted annually for wells MW-2 through MW-9.

The most recent ground water monitoring analytical results of December 2007 indicated that no compounds were detected in any of the samples above the 15A NCAC 2L.0202 North Carolina Groundwater Standards (NCGS) except in MW-9. Lead was detected at 0.031 mg/L which is above the NCGS of 0.015 mg/L. Total dissolved solids (TDS) were detected in the four wells that were sampled, ranging from 42 mg/L to 100 mg/L; however none exceeded the NCGS of 500 mg/L. Total organic carbon was detected in the four wells that were sampled, ranging from 1.6 mg/L to 11.4 mg/L. There is no NCGS for this parameter, but the EPA secondary drinking water regulatory level is 500 mg/L. Nitrate was detected in the four wells sampled, ranging from 0.25 mg/L to 4.7 mg/L but none exceeded the NCGS of 10 mg/L. At present, the facility's ground water monitoring sampling is conducted annually.

SITE CHARACTERIZATION

Geology/Hydrology

The site is located in Iredell County, North Carolina, which lies within the Charlotte Belt of the Piedmont Physiographic Province. The Charlotte Belt is characterized by metamorphosed igneous and sedimentary bedrock such as granite, gneiss, schist, quartzite, slate, marble, and phyllite overlain by clay-rich saprolite. In site borings, granite and schist rock fragments were encountered, with auger refusal at about 86 feet below land surface (bls). The silty sands at surface graded into highly weathered mica schist at about 25 to 30 feet bls.

The ground water is typical of shallow aquifers within the Piedmont region of North Carolina, with unconfined water table conditions existing across the site. Recharge to the water table occurs through precipitation infiltration. Discharge from the aquifer occurs at topographic and hydrogeologic lows where the water table and surface water bodies are in contact. Recent potentiometric maps indicate the direction of ground water flow appears to be to the south/southwest with a horizontal gradient of 0.023 ft/ft.

COPY

COMPREHENSIVE GROUND WATER MONITORING EVALUATION

The following is an evaluation of the ground water monitoring program implemented at the facility and is based on field observations, discussions with sampling personnel and file reviews. A map of the well locations is given as Figure 2 and the Technical Enforcement Guidance Document CME checklist used to determine compliance with the applicable regulations was used as a reference, with a copy of that checklist included as Appendix A. A recent potentiometric map is included as Appendix B. For a summary of well construction details, the reader is directed to the January 2003 USEPA SESD-ES CME report for this site.

Ground Water Monitoring System

The groundwater monitoring system was designed to adhere to the 40 CFR 265 Subpart F (codified at 15A NCAC 13A. 0010) standards and requirements applicable to owner/operators of hazardous waste management facilities with interim status.

Monitoring wells MW-1 to MW-4 were installed in June 1987. These wells ranged from 30 to 70 feet below ground surface (bgs) and had 10-foot 0.010-slot 2-inch PVC screens placed in the bottom of the hole. A sand/gravel pack was placed around the screen, extending a foot or more above the screen. This was followed by a 1-foot bentonite seal. The well was then grouted to land surface for completion. MW-1 was abandoned in November 2000 and is no longer a part of the ground water monitoring system.

Monitoring wells MW-5 to MW-8 were installed in April 1995 by hollow stem auger methods. The wells ranged from 36 to 50 feet bgs and had 10-foot 0.010-slot 2-inch PVC screens placed in the bottom of the hole. A sand/gravel pack was placed around the screen, extending a foot or more above the screen. This was followed by a 2-foot bentonite seal. The well was then grouted to land surface for completion.

Monitoring well MW-9 was installed in August 1998. This well had a total depth of 43.5 feet bgs and had a 10-foot 0.010-slot 2-inch PVC screen placed in the bottom of the hole. A sand/gravel pack was placed around the screen, extending a foot or more above the screen. This was followed by a 2-foot bentonite seal and then grouted to land surface for completion.

Sampling and Analysis

The Sampling and Analysis Plan (SAP) includes the procedures and techniques specified in the ground water monitoring regulations. The most recent SAP was the December 2000 version prepared by Waters Edge Environmental, LLC and subsequently modified in March 2007 to eliminate volatile organic compounds. It should be noted that in the February 2008 submittal of the "December 2007 Ground Water Sampling and Analysis Report" it was requested that SVOCs be eliminated for future sampling events since they had not been detected above detection limits for several years. NCDENR will decide this issue at some later date.

The wells were locked prior to purging/sampling activities and appeared to be in good condition. It was noted that the well pads for wells MW-2 and MW-3 were cracked and that the outer protective casing for MW-3 was corroded at the base. Water levels were measured with a Solonist water level indicator to the nearest 0.01 foot prior to purging. This number is subtracted

from the total depth and plugged into a formula for calculating the static volume to determine the well volume to be purged. At the time of the inspection, wells MW-5 and MW-6 were dry.

Wells were purged for a minimum of three well volumes or to dryness and until the field parameter measurements for pH, temperature and specific conductivity stabilized. Field measurements were made with a rented YSI meter that was calibrated prior to field work. Purge water was collected into a 5 gallon bucket, and then transferred to 55-gallon drum for later disposal at the WWTP. The water level recorder was deconned between each well with deionized water and non-phosphate detergent, then rinsed again with deionized water and dried with a paper towel between uses. Monitoring wells were purged and sampled with a dedicated polyethylene bailer on nylon cord.

The wells were sampled from least to most contaminated. Disposable gloves were worn for well purging/ sampling and changed between each well. Samples were collected directly into the sample containers, pre-cleaned by the lab, with labels affixed to each container documenting the sample location, time, analysis required, etc. Sample containers were pre-preserved.

Samples were labeled, bagged and iced for transport to Pace Analytical Services, Inc. in Huntersville, NC. Chain-of-Custody forms were completed for the samples. Field techniques for performing water level measurements, well purging/sampling procedures, sample preservation and handling were evaluated for adequacy and found to be in compliance with the current SAP. It is recommended that the pH of the metals sample be checked to insure the laboratory supplied enough nitric acid to lower the pH to less than 2.

According to the SAP, ground water samples from wells MW-2, MW-5, MW-6, MW-7 and MW-9 are analyzed for metals that include arsenic, barium, cadmium, chromium, lead, nickel, selenium and silver according to EPA Method 200.7, for mercury according to EPA Method 245.1 and for semi-volatile organic compounds (SVOCs) according to EPA Method 8270C. Well MW-2 is also sampled for total dissolved solids (TDS) according to EPA Method 160.1, total organic carbon (TOC) according to Standard Method 5310B and nitrate according to EPA Method 353.2 as required under the non-discharge permit. Ground water samples from wells MW-3, MW-4 and MW-8 are analyzed for arsenic, barium, cadmium, chromium, lead, nickel, selenium and silver according to EPA Method 200.7, and for mercury according to EPA Method 245. The wells are also sampled for TDS according to EPA Method 160.1, TOC according to Standard Method 5310B and nitrate according to EPA Method 353.2 as required under the non-discharge permit.

CONCLUSIONS/RECOMMENDATIONS

Field techniques for performing water level measurements, well purging/sampling procedures and sample handling were found to be in compliance with the current SAP. The December 2000 SAP notes wells can be purged with a dedicated Teflon bailer, a new disposable bailer or a submersible pump. During the December 2008 inspection, the dedicated bailer was polyethylene. The SAP should be modified to conform to this.

REFERENCES

"December 2007 Ground water Sampling and Analysis Report" prepared by Waters Edge Environmental, LLC for the City of Statesville Third Creek Monofill in Statesville, North Carolina, February 2008.

"Comprehensive Ground Water Monitoring Evaluation" prepared for the City of Statesville Third Creek Monofill in Statesville, North Carolina by USEPA Region 4 SESD-ES, January 2003.

"Revised Ground Water Sampling and Analysis Plan" prepared by Waters Edge Environmental, LLC for the City of Statesville Third Creek Monofill in Statesville, North Carolina, December 2000.

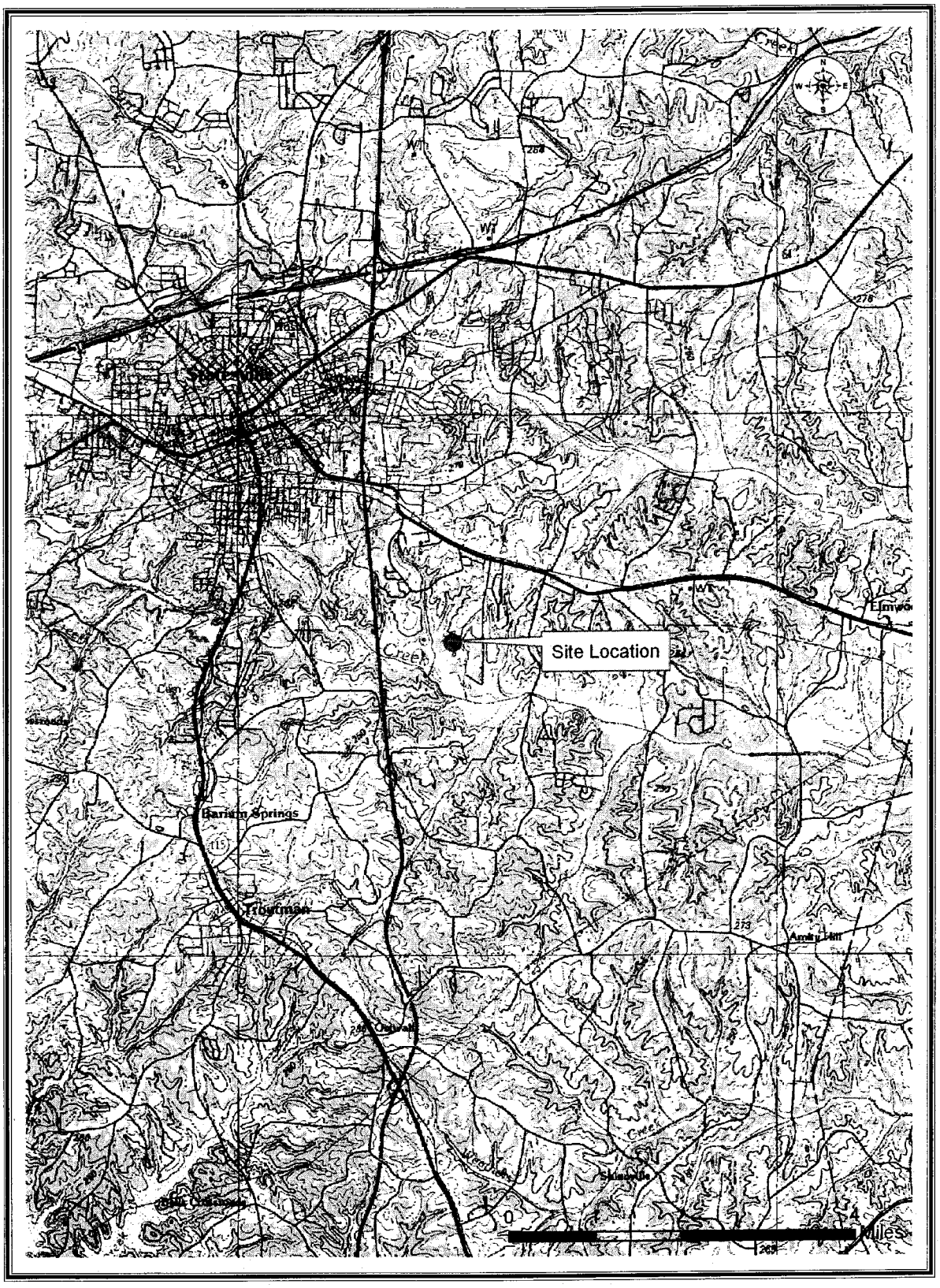


FIGURE 1 - FACILITY LOCATION MAP
THIRD CREEK MONOFILL
STATESVILLE, NORTH CAROLINA

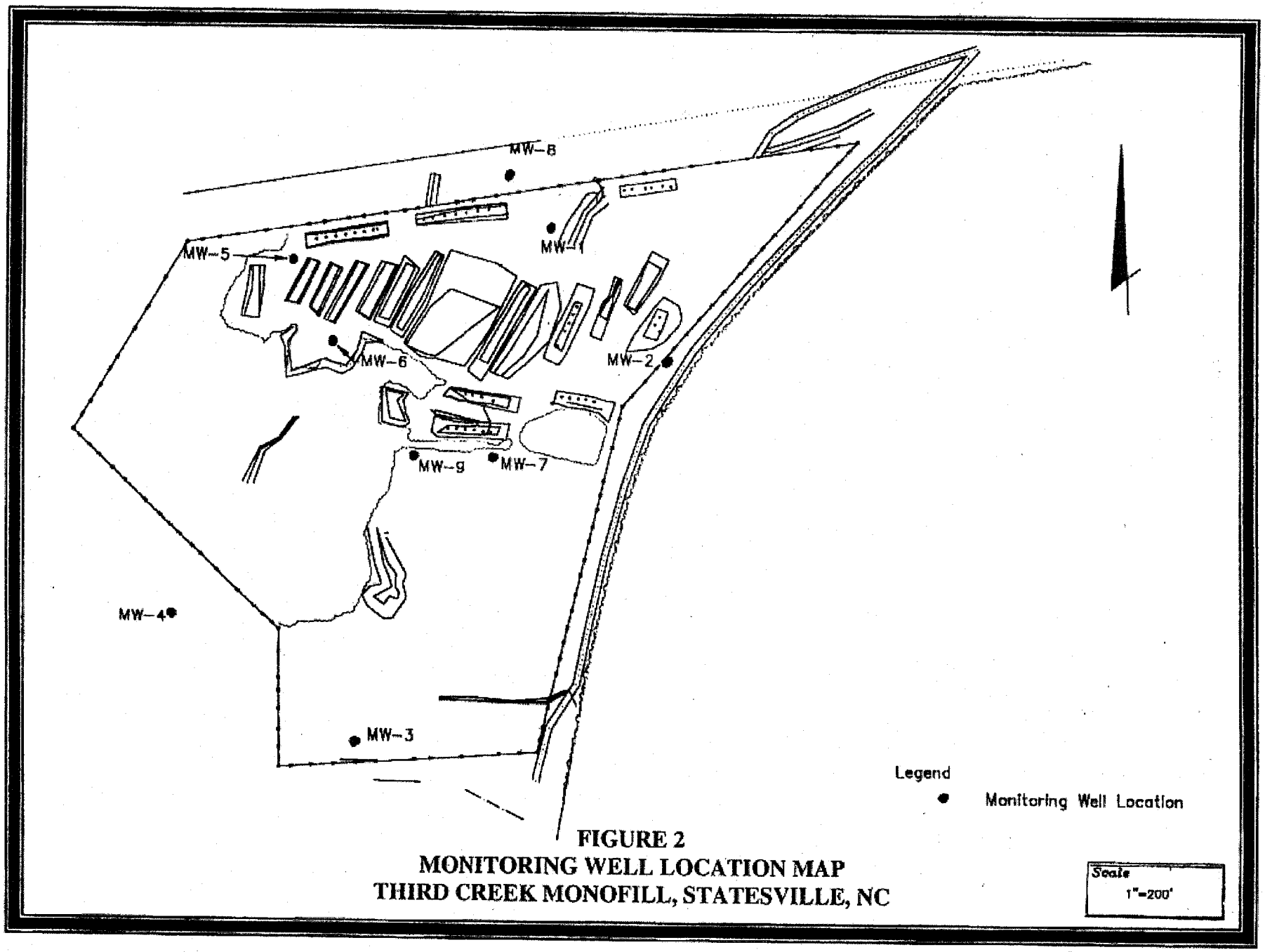


FIGURE 2
MONITORING WELL LOCATION MAP
THIRD CREEK MONOFILL, STATESVILLE, NC

After Waters Edge

APPENDIX A
COMPREHENSIVE GROUND WATER MONITORING CHECKLIST*

City of Statesville – Third Creek Monofill
Statesville, North Carolina
EPA ID No. NCR 000 001 602

* field evaluation portion of the checklist only

Field Evaluation

A. Ground Water Monitoring System:
Are the numbers, depths, and locations of monitoring wells in agreement with those reported in the facility's monitoring plan? (Y/N) Y

B. Monitoring well construction:

1. Identify construction material	Material	Diameter
a. Primary Casing	PVC	2 -inch
b. Secondary or outside casing	steel	4 – inch or more

2. Is the upper portion of the borehole sealed with concrete to prevent infiltration from the surface? (Y/N) Y
3. Is the well fitted with an above-ground protective device? locked
4. Is the protective cover fitted with locks to prevent tampering? (Y/N) Y

If a facility utilizes more than a single well design, answer the above question for each well design.

III. Review of Sample Collection Procedures

A Measurement of well depth elevations:
1. Are measurements of both depth to standing water and depth to the bottom of the well made? (Y/N) well depths measured annually
2. Are measurements taken to the 0.01 feet? (Y/N) Y
3. What device is used? Solonist water level recorder
4. Is there a reference point established by a licensed surveyor? (Y/N) Y
5. Is the measuring equipment properly cleaned between well locations to prevent cross contamination? (Y/N) Y

B. Detection of immiscible layers:
1. Are procedures used which will detect light phase immiscible layers? (Y/N) NA
2. Are procedures used which will detect heavy phase immiscible layers? (Y/N) NA

C. Sampling of immiscible layers:
1. Are the immiscible layers sampled separately prior to well evacuation? (Y/N) NA
2. Do the procedures used minimize mixing with water soluble phases? (Y/N) NA

D. Well evacuation:
1. Are low yielding wells evacuated to dryness? (Y/N) Y
2. Are high yielding wells evacuated so that at least three casing volumes are removed? (Y/N) Y
3. What device is used to evacuate the wells? dedicated bailer
4. If any problems are encountered (e.g., equipment malfunction) are they noted in a field logbook? (Y/N) field data sheets

E. Sample withdrawal:

1. For low yielding wells, are samples for volatiles, pH, and oxidation/reduction potential drawn first after the well recovers? (Y/N) NA

2. Are samples withdrawn with either fluorocarbon/resins or stainless steel (316, 304 or 2205) sampling devices? Using dedicated polyethylene bailers

3. Are sampling devices either bottom valve bailers or positive gas displacement bladder pumps? Using dedicated polyethylene bailers

4. If bailers are used, is fluorocarbon/resin coated wire, single strand stainless steel wire, or monofilament used to raise and lower the bailer? (Y/N) nylon cord

5. If bladder pumps are used, are they operated in a continuous manner to prevent aeration of the sample? (Y/N) NA

6. If bailers are used, are they lowered slowly to prevent degassing of the water? (Y/N) Y

7. If bailers are used, are the contents transferred to the sample container in a way that minimizes agitation and aeration? (Y/N) Y

8. Is care taken to avoid placing clean sampling equipment on the ground or other contaminated surfaces prior to insertion into the well?
(Y/N) plastic placed around the wells

9. If dedicated sampling equipment is not used, is equipment disassembled and thoroughly cleaned between wells? (Y/N) NA

10. If samples are for inorganic analysis, does the cleaning procedure include the following?
a. Dilute acid rinse (HN03 or HCl)? (Y/N) NA

11. If samples are for organic analysis, does the cleaning procedure include the following sequential steps?
a. Non-phosphate detergent wash? (Y/N) NA
b. Tap water rinse? (Y/N) NA
c. Distilled/deionized water rinse? (Y/N) NA
d. Acetone rinse? (Y/N) NA
e. Pesticide-grade hexane rinse? (Y/N) NA

12. Is sampling equipment thoroughly dry before use? (Y/N) NA

13. Are equipment blanks taken to ensure that sample cross-contamination has not occurred? SAP calls for this; lab forgot to include them for this sampling episode

14. If volatile samples are taken with a positive gas displacement bladder pump, are pumping rates below 100 ml/min? (Y/N) NA

F. In-situ or field analyses:

1. Are the following labile (chemically unstable) meters determined in the field?

A.	pH?	(Y/N) Y
b.	Temperature?	(Y/N) Y
c.	Specific Conductivity?	(Y/N) Y
d.	Redox potential?	(Y/N) N
e.	Chlorine?	(Y/N) N
f.	Dissolved oxygen?	(Y/N) N
g.	Turbidity?	(Y/N) N
h.	Other (specify)	

2. For in-situ determinations, are they made after well evacuation and sample removal? Made during purging

3. If the sample is withdrawn from the well, is parameter measured from a split portion? (Y/N) NA

4. Is monitoring equipment calibrated according to manufacturers' specifications and consistent with SW-846? Calibrated by rental company prior to field use

5. Are the date, procedure, and maintenance for equipment calibration documented in the field logbook? Y/N) using field data sheets

IV. Review of Sample Preservation and Handling Procedures

A. Sample containers:

1. Are samples transferred from the sampling device directly to their compatible containers? (Y/N) Y

2. Are sample containers for metals (inorganic) analyses polyethylene with polypropylene caps? (Y/N) Y

3. Are sample containers for organics analysis glass bottles with fluorocarbon resin-lined caps? (Y/N) NA

4. If glass bottles are used for metals samples are the caps fluorocarbon resin-lined? (Y/N) NA

5. Are the sample containers for metal analyses cleaned using these sequential steps?

a. Non-phosphate detergent wash?	(Y/N) see below
b.1:1 nitric acid rinse?	(Y/N) see below
c. Tap water rinse?	(Y/N) see below
d.1:1 hydrochloric acid rinse?	(Y/N) see below
e. Tap water rinse?	(Y/N) see below
f. Distilled/deionized water rinse?	(Y/N) see below

Bottles come pre-cleaned from laboratory

6. Are the sample containers for organic analyses cleaned using these sequential steps?
   a. Non-phosphate detergent/hot water wash? (Y/N)__NA__
   b. Tap water rinse? (Y/N)__NA__
   c. Distilled/deionized water rinse? (Y/N)__NA__
   d. Acetone rinse? (Y/N)__NA__
   e. Pesticide-grade hexane rinse? (Y/N)__NA__

   Bottles come pre-cleaned from laboratory

7. Are trip blanks used for each sample container type to verify cleanliness? (Y/N) __N__

B. Sample preservation procedures:

1. Are samples for the following analyses cooled to 4° C?
   a. TOC? (Y/N) see below
   b. TOX? (Y/N) see below
   c. Chloride? (Y/N) see below
   d. Phenols? (Y/N) see below
   e. Sulfate? (Y/N) see below
   f. Nitrate? (Y/N) see below
   g. Coliform bacteria? (Y/N) see below
   h. Cyanide? (Y/N) see below
   i. Oil and grease? (Y/N) see below
   j. Hazardous constituents (§261, Appendix VIII)? (Y/N) see below

   All samples are iced

2. Are samples for the following analyses field acidified to pH <2 with HN03:
   a. Iron? (Y/N) see below
   b. Manganese? (Y/N) see below
   c. Sodium? (Y/N) see below
   d. Total metals? (Y/N) see below
   e. Dissolved metals? (Y/N) see below
   f. Fluoride? (Y/N) see below
   g. Endrin? (Y/N) see below
   h. Lindane? (Y/N) see below
   i Methoxychlor? (Y/N) see below
   j. Toxaphene? (Y/N) see below
   k. 2, 4, D? (Y/N) see below
   l. 2, 4, 5, TP Silvex? (Y/N) see below
   m. Radium? (Y/N) see below
   n. Gross alpha? (Y/N) see below
   o. Gross beta? (Y/N) see below

   Samples requiring preservation are pre-preserved by Pace lab

3. Are samples for the following analyses field acidified to pH <2 with H_2SO_4:
   a. Phenols? (Y/N)__NA__
   b. Oil and grease? (Y/N)__NA__

4. Is the sample for TOC analyses field acidified to pH <2 with HCl? (Y/N) __Y__

5. Is the sample for TOX analysis preserved with 1 ml of 1.1 M sodium sulfite? (Y/N) NA

6. Is the sample for Cyanide analysis preserved with NAOH to pH >12? (Y/N) NA

C. Special handling considerations:

1. Are organic samples handled without filtering? (Y/N) no filtering

2. Are samples for volatile organics transferred to the appropriate vials to eliminate head space over the sample? (Y/N) NA

3. Are samples for metal analysis split into two portions? (Y/N) N

4. Is the sample for dissolved metals filtered through a 0.45 micron filter? Y/N) NA

5. Is the second portion not filtered and analyzed for total metals? (Y/N) NA

6. Is one equipment blank prepared each day of ground water sampling? (Y/N) SAP calls for this; lab forgot to include them for this sampling episode

V. Review of Chain-of-Custody Procedures

A. Sample labels

1. Are sample labels used? (Y/N) Y

2. Do they provide the following information?
   a. Sample identification number? (Y/N) Y
   b. Name of collector? (Y/N) Y
   c. Date and time of collection? (Y/N) Y
   d. Place of collection? (Y/N) Y
   e. Parameter(s) requested and preservatives used? (Y/N) Y
3. Do they remain legible even if wet? (Y/N) Y

B. Sample seals:

1. Are sample seals placed on the containers to ensure the samples are not altered? (Y/N) no- will hand-deliver samples to lab

C. Field logbook:

1. Is a field logbook maintained? Field data sheets

2. Does it document the following?
   a. Purpose of sampling (e.g., detection or assessment)? Post-closure monitoring
   b. Location of well(s)? (Y/N) on a map
   c. Total depth of each well? (Y/N) Y
   d. Static water level depth and measurement technique? (Y/N) Y
   e. Presence of immiscible layers and detection method? (Y/N) NA
   f. Collection method for immiscible layers and sample ID numbers? (Y/N) NA

g. well evacuation procedures? (Y/N)___Y___
h. Sample withdrawal procedure? (Y/N)___Y___
i. Date and time of collection? (Y/N)___Y___
j. Well sampling sequence? (Y/N)___Y___
k. Types of sample containers and sample ID number(s)? (Y/N)___Y___
l. Preservative(s) used? (Y/N)___Y___
m. Parameters requested? (Y/N)___Y___
n. Field analysis data and method(s)? (Y/N)___Y___
o. Sample distribution and transporter? (Y/N)___Y___
p. Field observations
- o Unusual well recharge rates? (Y/N)___Y___
- o Equipment malfunction(s)? (Y/N)___Y___
- o Possible sample contamination? (Y/N)___Y___
- o Sampling rate? (Y/N)___Y___

D. Chain-of-custody record:
1. Is a chain-of-custody record included with each sample? (Y/N)__Y___
2. Does it document the following?
a. Sample number? (Y/N) _Y___
b. Signature of collector? (Y/N) _Y___
c. Date and time of collection? (Y/N) _Y___
d. Sample type? (Y/N) _Y___
e. Station location? (Y/N_ Y___
f. Number of containers? (Y/N) _Y___
g. Parameters requested? (Y/N) _Y___
h. Signatures of persons involved in the chain-of-custody possession? (Y/N)__Y__
i. Inclusive dates of possession? (Y/N)__Y___

E. Sample analysis request sheet
1. Does a sample analysis request sheet accompany each sample? (Y/N) NA___

2. Does the request sheet document the following?
a. Name of person receiving the sample? (Y/N) NA__
b. Date of sample receipt? (Y/N) NA__
c. Laboratory sample number (if different than field number)? (Y/N) NA___
d. Analyses to be performed? (Y/N) NA___

VI. Review of Quality Assurance and Quality Control

A. Is the validity and reliability of the Laboratory and field generated data ensured by a QA/QC program? (Y/N) Y____

B. Does the QA/QC program include?
1. Documentation of any deviations from approved procedures? (Y/N) Y____
2. Documentation of analytical results for:
a. Blanks? (Y/N) _Y___
b. Standards? (Y/N) Y____
c. Duplicates? (Y/N) _Y____
d. Spiked samples? (Y/N) _Y____
e. Detectable limits for each parameter being analyzed? (Y/N) _Y____

C. Are approved statistical methods used? (Y/N) Y

D. Are QC samples used to correct data? (Y/N) Y

C. Are all data critically examined to ensure it has been properly calculated and reported? (Y/N) Y

VII. Surficial Well Inspection and Field Observation

A. Are the wells adequately maintained? (Y/N) MW-2 & MW-3 need maintenance

B. Are the monitoring wells protected and secure? (Y/N) Y

C. Do the wells have surveyed casing elevations? (Y/N) Y

D. Are the ground water samples turbid? Some wells are turbid with purging

E. Have all physical characteristics of the site been noted in the inspectors field notes (i.e. surface waters, topography, surface features)? (Y/N) Y

F. Has a site sketch been prepared by the field inspector with a scale, north arrow, locations of buildings, location(s) of regulated units, location of monitoring wells, and a rough depiction of the site drainage pattern? (Y/N) Y

VIII. Conclusions

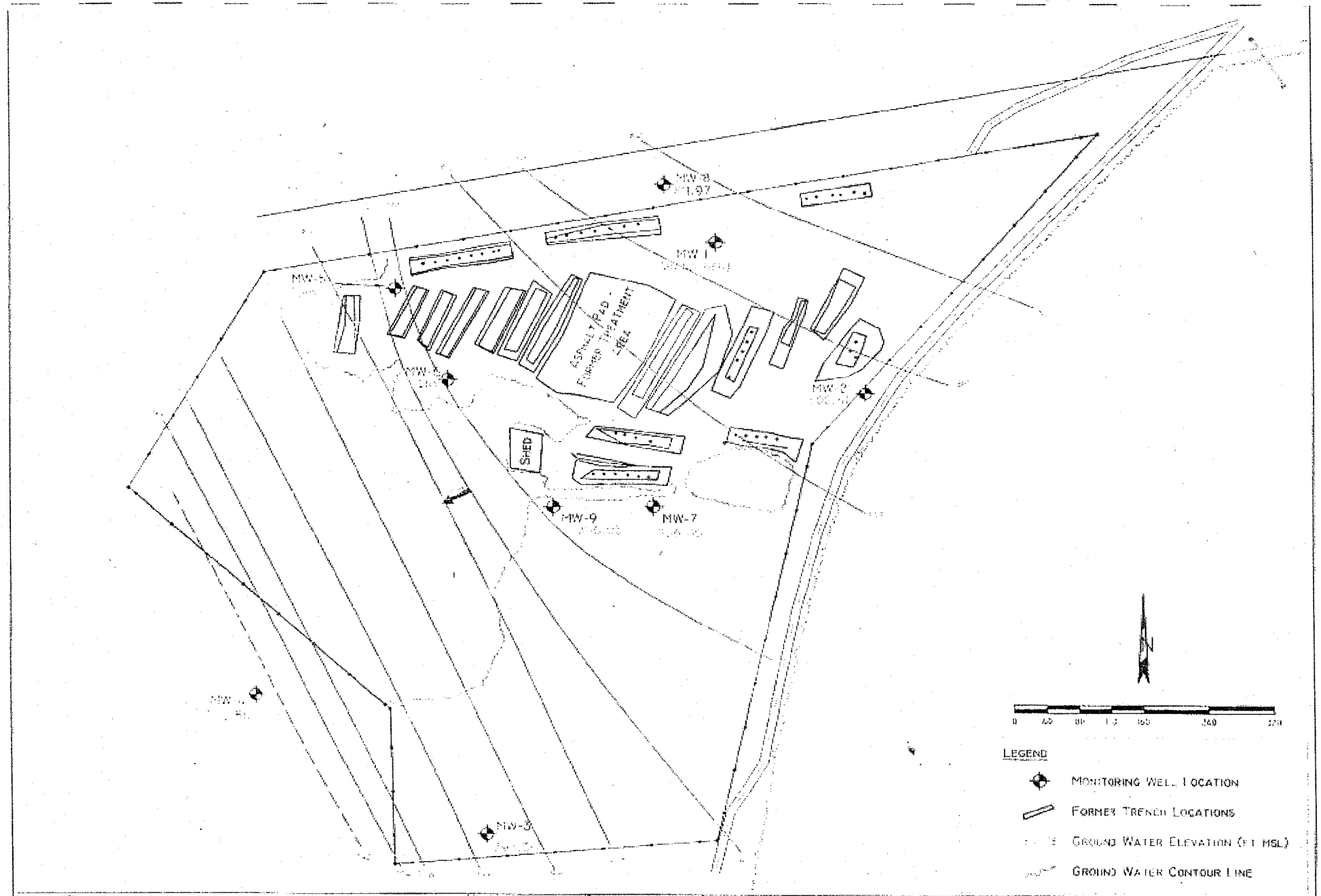
A. Is the facility currently operating under the correct monitoring program? according to the statistical analyses performed by the current operator? (Y/N) Y

B. Does the ground water monitoring system, as designed and operated, allow for detection or assessment of any possible ground water contamination caused by the facility? (Y/N) Y

C. Do the sampling and analysis procedures permit the owner/operator to detect and, where possible, assess the nature and extent of a release of hazardous constituents to ground water from the monitored hazardous waste management facility? (Y/N) Y

APPENDIX B
DECEMBER 2007 POTENTIOMETRIC MAP
After Waters Edge Environmental, LLC

City of Statesville – Third Creek Monofill
Statesville, North Carolina
EPA ID No. NCR 000 001 602



WATERS EDGE ENVIRONMENTAL, LLC	Author	Drawing	Layers	Date	Title
	mbb/jme	08-014 F02		6-19-90	Ground Water Contour Map (Data collected December 11, 2007)
	Job No.	Revision	Figure	Scale	Project
	R4-01	2-20-08	2	1" = 160'	Third Creek Monofill Facility Statesville, North Carolina