Operation, Maintenance, And Monitoring Plan
For Groundwater Monitoring

7980-7984 Brewerton Road in the Cicero, County of Onondaga, New York
Voluntary Cleanup Program VCA No. A7-0466-0702

INTRODUCTION AND PURPOSE

This Operation, Maintenance, and Monitoring (OM&M) Plan is prepared for the property located at 7980-7984 Brewerton Road in the Cicero, County of Onondaga, New York. This OM&M Plan is required for groundwater monitoring to be performed at the site for eight consecutive quarters following release to the site owner by the New York State Department of Environmental Conservation (DEC) of legal liability for past site contamination through completion of the Voluntary Clean-up Program.

Quarterly groundwater monitoring for eight consecutive quarters shall be performed to document the trend of groundwater concentrations. Institutional controls require the performance of quarterly groundwater monitoring at this site. Calendar quarters 1 through 4 will include groundwater quality sampling and analysis for monitoring wells to include

- MW-1, MW-2, MW-3, TW-5, MW-11, CES-MW-1, MW-10, MW-12, MW-14, and MW-18.
- MW-13 and MW-19 shall be retained as contingency wells, but not sampled unless requested by DEC for cause.

For QA/QC purposes, 90% of the samples collected in calendar quarter 3 will be analyzed and reported by the analytical laboratory with Category A documentation and 10% with Category B documentation. The third quarter round will also include four additional QA/QC samples in the form of a trip blank, field blank, a matrix spike and a matrix spike duplicate. Groundwater elevation readings will be collected during all sampling rounds. All groundwater samples shall

be analyzed for TCL VOCs by EPA Method 8260 and submitted to a New York State Department of Health certified laboratory for analysis.

Existing site monitoring wells not included in the monitoring network shall be abandoned in general accordance with DEC requirements for monitoring well decommissioning.

REPORTING

Reported results of sampling for calendar quarters 1, 2 and 3 shall include raw and tabular "hits" data only. Reporting of calendar quarter 4 results shall include an annual summary of groundwater quality results and the overall historical trend observed since the 2004 site investigation. The annual report will also include a groundwater contour map based on the third quarter groundwater elevation measurements.

SAMPLING PROCEDURE

Sample collection shall be performed in accordance with the following standard operating procedure for groundwater sampling. These procedures ensure that a groundwater sample collected is representative of the hydrogeologic formation and will be utilized anytime a monitoring well is sampled. There are no specific definitions for this procedure. Consult the Equipment Checklist for required materials. Precautions on the chemical preservative Material Safety Data Sheets must be followed.

Instructions

1. Obtain appropriate sample containers from the laboratory.

2. Prepare sampling equipment necessary for the program.

    a. Consult the Equipment Checklist.

    b. Reserve equipment, if necessary. NOTE: Try to have enough equipment on-site to avoid decontamination while sampling.

c. Check, test and clean all equipment before leaving for the site.

d. Always bring more than enough personal protective equipment and expendables (ex. gloves, tyvek, rope etc.) on-site to complete the program.

3. Examine the monitoring well.

   a. Confirm the well identification.

   b. Note any damage in the groundwater field log.

4. Place a plastic sheet around the monitoring well so the field equipment (bailer, rope, meters, etc.) is not in direct contact with the ground, avoiding contamination.

5. Wipe the monitoring well's outer casing cover clean of any foreign material that might enter the well when it is opened.

6. If locked, unlock the monitoring well. NOTE: Securely lock the monitoring well when it is left unattended and is not in direct view.

7. If organic contamination is suspected in the groundwater, monitor the well headspace with a photoionization detection (PID) meter.

   a. Open the outer well casing cover just enough to insert the PID probe.

   b. Monitor the well headspace for organic vapors.

   c. Remove the probe and close the casing cover.

   d. Record the results in the groundwater field log.

   e. Establish appropriate levels of personal protection.

8. Remove the outer well casing cover.

9. Put on a new pair of disposable gloves before doing any field measurements, preventing cross-contamination.

10. Measure the depth to water and the total depth of the monitoring well with an electronic water level indicator.

11. Calculate the water volume within the well.

Monitoring Well Volume Calculation:

SWL = Depth to Water	C = Conversion Factor
TD = Total Depth of Well	N = Number of Volumes to Evacuate
L = Length of Water Column	TV = Total Volume to Evacuate

TD - SWL = L

L x C = 1 well volume

1 well volume x N = TV

Common Conversion Factors:

0.16 2 inch well	0.65 4 inch well

NOTE: Quick field calculations for 3 well volume evacuation.

2-inch well: divide the length of the water column (L) by 2

4 inch well: multiply the length of the water column (L) by 2

12. Three well volumes are to be evacuated from each well prior to sampling. Either a dedicated bailer or a peristaltic pump with dedicated tubing shall be used to evacuate each well.

13. If initial field readings (i.e. eh, temperature, pH, specific conductivity, etc.) are necessary:

    a. Measurements are taken from the first water evacuated from the well. NOTE: Always calibrate field meters on site daily before initial use and check the calibration periodically.

    b. Field reading are taken in the following order:

        ORP/eh

        temperature

        pH

        specific conductivity

    c. Record the readings in the groundwater field log.

14. If a bailer is going to be used to evacuate the monitoring well:

    a. Push only the bailer loop through the protective polyethylene wrap, leaving the rest of the bailer covered.

    b. Attach a spool of 3/16-inch polypropylene rope to the bailer, using at least two half hitches, and weave the rope end through the main rope several times.

    c. Keep the bailer in the protective wrap until just before it is lowered into the monitoring well.

    d. Gently lower the bailer into the well until it contacts the water surface. NOTE: The contact is felt through the rope and may be audible.

    e. An immiscible layer check will be done prior to evacuation with the bailer:

        - Lower the bailer about 2 feet into the water (skim the surface).

- Retrieve the bailer.

  NOTE: The bailer rope is still attached to the spool and care must be taken to avoid contamination of the rope spool. In addition, the retrieved rope must not come in contact with sources of contamination.

- Pour the bailer contents into a clear glass container for observation.

- Return the bailer to the well.

- Record any amount of free product and associated observations in the field log (i.e. odor, sheen).

f. Gently lower the bailer to the bottom of the well.

NOTE: The bailer must go all the way to the bottom to ensure there is enough rope if the well must be bailed dry.

g. Cut the bailer rope from the spool.

h. Begin bailing.

- Gently retrieve the bailer.

- Empty the bailer into a graduated 5-gallon bucket.

- Gently lower the bailer 1 or 2 feet below the surface of the water.

- Repeat steps 1, 2 and 3 until the required water volume has been removed or the well is dry.

15. Evacuated well water is dumped away from the well so it doesn't flow back toward any monitoring well.

NOTE: If the evacuated water is contaminated (i.e. free product, strong odor or sheen), the purge water shall be stored on-site in a 55-gallon drum. Notify the client of the status of the drum after each sampling event and arrange appropriate disposal.

16. a. For samples collected for analysis by volatile parameters, 95% well recovery is not required. Sampling for VOCs should be performed as soon as sufficient volume of a sample can be collected without disturbing any sediment that may be present at the bottom of the well.

    NOTE: VOC samples must be collected within 2 hours of well evacuation.

    b. For samples collected for analysis by semi-volatile parameters, 95% well recovery is required prior to sampling. If 95% recovery is not noted within 24 hours, the DEC shall be consulted for proper sample collection procedure. This procedure is likely to consist of collecting the sample while taking care not to disturb any sediment that may be present at the well bottom.

17. If samples for both volatile and semi-volatile analysis are to be collected from the same well and 95% well recovery is not noted within 2 hours of well evacuation, the DEC shall be consulted for proper sample collection procedure. This will likely consist of collecting the samples separately by the procedures outlined in item 16.

18. Before collecting any samples:

    a. Check the sample containers are properly labeled as to client name, sample location, analysis to be performed and container preservation.

    b. Check sample containers are stored in a contaminant-free environment.

19. Samples are collected from the screened portion of the monitoring well in the order of the parameters' volatilization sensitivity unless otherwise specified in the scope of work.

20. Begin sample collection.

a. Do not overfill preserved sample containers. This may result in inadequately preserved samples.

b. Containers for volatile analysis are filled slowly in such a way that the sample runs down the inner wall of the container, reducing volatilization of the sample.

c. Containers for alkalinity and volatile analysis are filled with no headspace.

NOTE: If headspace is present in the container after it is capped, it is emptied out and refilled. The label is corrected to read "unpreserved", if necessary.

d. Containers for semi-volatile analysis are filled with as little headspace as possible.

e. Keep the quality control requirements of the program in mind and collect adequate sample volumes.

21. Immediately after sampling:

a. Store all collected samples in a cooler maintained at approximately 4 degrees Celsius.

b. Place the custody seals on the containers or coolers if the scope of work calls for them.

c. Fill out the chain of custody form.

d. Check to be sure the groundwater field log is complete.

NOTE: Field notes are critical to inform the client and laboratory personnel about the conditions of the well and other observations (i.e. weather, strange odors, bent

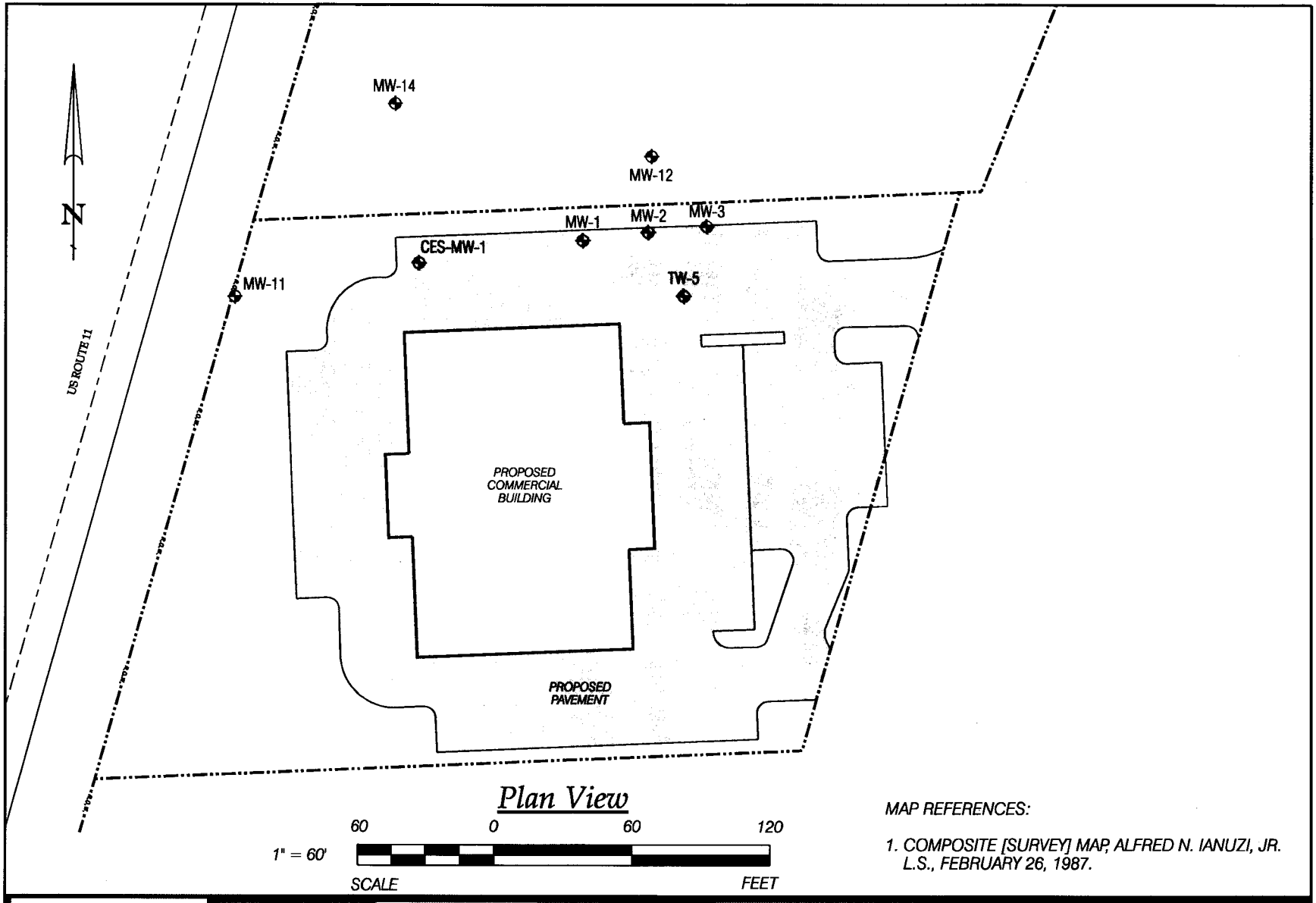
casing or flooded wells). These notes may help in running the samples, as well as interpreting the analytical results.

22. Collect the used expendables (i.e. gloves, rope etc.) in a plastic bag and properly dispose of them.

23. Lock the monitoring well.

24. Deliver the samples to the laboratory within all appropriate holding times for the parameters to be analyzed.

25. Clean all the used sampling equipment per Standard Procedures for Decontamination.



Plan View

1" = 60'

60 0 60 120

SCALE FEET

MAP REFERENCES:

1. COMPOSITE [SURVEY] MAP, ALFRED N. IANUZI, JR. L.S., FEBRUARY 26, 1987.

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REVISIONS: DATE: BY:

NOTE: NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

DESC.: OM&M PLAN - MONITORING WELLS

PROJ.: VOLUNTARY CLEANUP PROGRAM
VCA No. A7-0466-0702

CLIENT: HANCOCK & ESTABROOK, LLP

LCTN.: TOWN OF CICERO, ONONDAGA COUNTY, NEW YORK

PROJECT No.:	2009074
FILE NAME.:	OMM
SCALE:	1"=60'
DATE:	2008
ENG'D BY:	WJS
DRAWN BY:	JMD
CHECKED BY:	WJS