Akzo Nobel Polymer Chemicals

Burt, New York

Groundwater Monitoring Plan

December 2015

Barton & Loguidice

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Prepared For:

Akzo Nobel Polymer Chemicals
2153 Lockport-Olcott Road
Burt, New York 14028

Prepared By:

Barton & Loguidice, D.P.C.
Engineers • Environmental Scientists • Planners • Landscape Architects
290 Elwood Davis Road
Box 3107
Syracuse, New York 13220

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1.0 Introduction

1.1 Background

The Akzo Nobel Polymer Chemicals, LLC (Akzo Nobel) owns and operates a former chemical production facility (Site or Facility) located in Burt, New York. The Facility is subject to the requirements of 6 NYCRR Part 373 – Hazardous Waste Management Facilities. Akzo Nobel has a Part 373 Permit, which required them to conduct a Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) and a RCRA facility investigation (RFI) to determine the nature and extent of contamination associated with the Facility. These studies were conducted from 1994 to 2002. Based on the findings of the RFI, groundwater impacts were identified at the Site. A corrective measures study (CMS) was conducted to evaluate remedial alternatives. Monitored natural attenuation (MNA) and institutional controls were selected as the final corrective measures for the Site. Akzo Nobel's Part 373 Permit Number 9-02928-00001/00003 was renewed in December of 2005. The permit authorizes Akzo Nobel to implement corrective action measures to address the groundwater contamination at the Site.

This Groundwater Monitoring Plan details the sampling and analysis of groundwater to be conducted at the Site in order to evaluate the effectiveness of the MNA in order to meet the requirements of the Part 373 Permit.

1.1.1 Site Description

The Akzo Nobel property is located at 2153 Lockport-Olcott Road in Burt, New York. A Site Location Map is provided as Figure 1. Akzo Nobel formerly produced organic peroxides at this Facility. The property is 350 acres in size. The former production portion of the Site is 30 acres in size. A Site Layout is provided as Figure 2.

Chemical production was discontinued in April 2003. The facility remains in operation as a warehouse and distribution center.

1.2 Remedial Goals

As stated in Section C of Module II of the Permit, the remedial goals of the corrective action are:

a. Eliminate the future risk to human health posed by the contaminated soil and remaining source materials present within the industrialized area of the facility.

b. Eliminate the future risk to human health posed by the contaminated overburden groundwater present beneath the industrialized area of the facility; and

c. Control migration of the contaminated groundwater.

1.3 Remedial Criteria

As stated in Section C of Module II of the Permit, the remedial criteria of the corrective action are:

a. Maintain a long-term groundwater monitoring program to ensure that the concentration of contaminants continues to decline in the central area of the facility; and

b. Continue groundwater monitoring in the perimeter wells to ensure that there is no off-Site contaminant migration.

2.0 Sampling and Analysis Plan

2.1 Monitoring Well Network

The active monitoring well network consists of 14 groundwater monitoring wells. This number does not include the three archived monitoring wells (MW-6, MW-7, and MW-8) which NYSDEC approved for removal from the monitoring program in 2009 because the exhibited little or no contamination. Additionally, wells MW-1B, MW-3B, and MW-10B are now only sampled one time per year, during the First Semi-annual monitoring event due to seasonal dryness. The following table summarizes monitoring well details. Monitoring well locations are shown on Figure 3.

Well ID	Purpose	Unit	Approximate Depth (ft)[1]
MW-1	Background	Overburden	17.96
MW-1B [2]	Background	Bedrock	47.08
MW-2	Source Area	Overburden	16.40
MW-3	Downgradient Boundary	Overburden	16.78
MW-3B [2]	Downgradient Boundary	Bedrock	37.18
MW-4	Downgradient Boundary	Overburden	16.04
MW-4B	Downgradient Boundary	Bedrock	40.93
MW-5	Source Area	Overburden	15.03
MW-6 [3]	Downgradient Offset	Overburden	17.32
MW-7 [3]	Source Area	Overburden	17.32
MW-8 [3]	Source Area	Overburden	18.21
MW-9	Former Downgradient Boundary	Overburden	17.35
MW-9B	Former Downgradient Boundary	Bedrock	42.20
MW-10	Downgradient Offset	Overburden	17.60
MW-10B [2]	Downgradient Offset	Bedrock	46.60
MW-11	Downgradient Boundary	Overburden	21.10
MW-11B	Downgradient Boundary	Bedrock	52.38

Notes: 1 – Well depths must be verified prior to sampling.
2 – Sampling only takes place during First Semester event.
3 – Archived monitoring location.

2.2 Analytes and Sampling Frequency

Groundwater sampling will take place take place on a semi-annual basis (two times annually), typically during the Second and Fourth Quarters of each year. Groundwater samples will be analyzed for target compound list (TCL) volatile organic compounds (VOCs), general chemistry and specific field parameters. The TCL VOCs will be analyzed by United States Environmental Protection Agency (USEPA) SW-846 Method 8260. Analyzing for the TCL VOC list of parameters will indicate if the contaminants identified at the Site are decreasing in concentration as well as if daughter products are being produced providing an indication of degradation of contaminants by natural attenuation. The following natural attenuation parameters will be analyzed to assess whether conditions continue to be favorable for continued degradation or if enhancement of the natural attenuation may be necessary:

- Dissolved Oxygen (field measurement);
- Iron (II) (field measurement);
- Dissolved Iron (USEPA Method SW-846 200.7 Series);
- Dissolved Manganese (USEPA Method SW-846 200.7 Series;
- Nitrate (USEPA Method SW-846 300.0);
- Nitrite (USEPA Method SW 846-354.1);
- Sulfate (USEPA Method SW-846 300.0); and
- Methane (Method RSK 175).

2.3 Technical Approach and Field Activities

Prior to groundwater sample collection a static water level measurement will be taken at each well. The static water level will be measured to the nearest 0.01 foot from a designated location from the top of the well casing which has been previously surveyed and identified. Each well will be purged of a minimum three well volumes based on the static water level (USEPA Convention). Purging

is considered complete once stabilization is achieved or if three well volumes have been removed or the well goes dry.

Groundwater sampling will commence within 24 hours of purging activities. Groundwater samples will be collected using dedicated bailers. Sample bottles will be filled in the following order:

a. Field parameters including pH, temperature, conductivity, ORP, turbidity and dissolved oxygen

b. TCL VOCs

c. Methane

d. Nitrate, Nitrite, and Sulfate, and

e. Dissolved Metals

Groundwater samples to be analyzed for TCL VOCs and methane will be transferred from the bailer into a 40 milliliters (mL) vial preserved with 10 mL of hydrochloric acid (HCL). The vials will be topped with a Teflon-lined cap. Three 40-ml vials will be collected for TCL VOC analysis and three 40-ml vials will be collected for methane analysis.

Nitrate, nitrite and sulfate samples will be collected together in one 500-ml high-density polyethylene (HDPE) bottle with no preservative. The dissolved manganese and iron samples will be first filtered through a 0.45-micron filter prior to placing the sample in a 500-ml HDPE bottle preserved with nitric acid.

All samples will be placed in a cooler on ice and shipped to the analytical laboratory via overnight courier or hand delivered under standard chain of custody procedures.

The following information will be recorded in a logbook for each sample collected:

a. Monitoring Well Identification;
b. Date and Time of Purging and Sampling;
c. Static Water Level;
d. Results of Field Measurements;
e. Number of Well Volumes Purged;
f. Visual Observations; and
g. Analytical Parameters

3.0 Quality Assurance

3.1 QA/QC Samples

The QA/QC protocol for this project will be in accordance with Part 373 Appendix IX II-A.

- Duplicate Samples – Duplicate samples help to evaluate field precision. Duplicate samples will be collected at a rate of 5 percent per matrix for this assignment or one duplicate for every 20 samples collected. Where fewer than 20 samples are collected per matrix, one duplicate sample will be collected and analyzed.
- Trip Blanks – Trip blanks are used to determine if any on-Site volatile organic atmospheric contaminants are seeping into the sample vials or if any cross contamination of samples is occurring during shipment or storage of sample containers. Trip blanks consist of two 40-mL Teflon-lined septum vials, which have been filled with distilled water and are prepared prior to the sampling events and are kept with the investigation samples throughout the sampling event. They are handled and transported in the same manner as the samples collected that day and are then packaged for shipment with other samples sent for analysis. At no time after their preparation are the sample containers opened before they reach the laboratory.
- Matrix Spike/Matrix Spike Duplicates (MS/MSD) – MS/MSDs are used to assess laboratory accuracy and precision. For the laboratory to perform a MS/MSD analysis, the laboratory must be supplied with one additional 40-mL volatile organic analyte (VOA) for aqueous volatile organic analysis. MS/MSDs are performed at the same frequency (one in 20 samples) as field duplicates.

The sample(s) to be utilized for matrix spike/matrix spike duplicate analysis will be collected from areas where contamination is suspected to be present. The sample label will note that the sample is to be used for matrix spike/matrix spike duplicate analysis by the laboratory.

The following table summarizes the samples that will be collected at each quarterly sample event.

Type of Sample	Number of Samples	Location
Groundwater Samples		
TCL VOCs	Second Quarter: 17 – 1 per well Fourth Quarter: 14 – 1 per well in	All wells
Nitrate, Nitrite, Sulfate	Second Quarter: 17 – 1 per well Fourth Quarter: 14 – 1 per well in	All wells
Methane	Second Quarter: 17 – 1 per well Fourth Quarter: 14 – 1 per well in	All wells
Dissolved Metals (Iron and Manganese)	Second Quarter: 17 – 1 per well Fourth Quarter: 14 – 1 per well in	All wells
QA/QC Samples		
MS/MSD	1 per sample event	Source Area Well
Trip Blank	1 per day per sample event	NA
Field Duplicate	1 per sample event	Perimeter Well
Field Parameters		
Temperature, pH, Conductivity, ORP, Turbidity, Dissolved Oxygen	Measured in the field at each well	All wells
Iron (II)	Measured in the field at each well	All wells

3.2 Documentation

Each sample submitted for analysis will be properly documented to ensure timely, correct, and complete analysis for all parameters requested, and to support use of analytical data in potential enforcement actions. Sample documentation will include sample labels and Chain of Custody Records.

Field data will be collected on field data sheets which will be scanned into an electronic file. Each page shall record all relevant data including analytical parameters, locations, names of sampling personnel, and date.

3.3 Data Reporting

Data deliverables will be in accordance with Part 373 Appendix ix II-A.

An electronic copy of the analytical data will accompany the hardcopy submitted by the laboratory. The electronic copy will contain all information relevant on one sample delivery group, and will accompany the hardcopy package for the Sample Delivery Group.

Additionally, for each semi-annual monitoring event the contract laboratory will supply analytical result in a New York State Department of Environmental Conservation (NYSDEC) EQuIS formatted electronic file. This file will be processed for submission to the NYSDEC Environmental Information Management System (EIMS) database.

All physical and chemical data will be presented in the Groundwater Monitoring Reports.

3.4 Data Reduction Procedures

For this project, the equations that will be employed in reducing data are found in the appropriate chapters of SW-846, Third Edition. All calculations are checked at the conclusion of each operating day. Errors are noted and corrections are made, but the original notations are crossed out legibly.

Quality control data (e.g., surrogates, MS, and MSD) will be compared to the method acceptance criteria. Data considered to be acceptable will be entered into the laboratory computer system. Data summaries will be sent to the

Laboratory QA Officer for review. If approved, data are logged into the project database format. Unacceptable data shall be appropriately qualified in the project report. Case narratives will be prepared which will include information concerning data that fell outside acceptance limits and any other anomalous conditions encountered during sample analysis.

3.5 Data Validation

An internal validation is performed by the contract laboratory and the findings are reported in the laboratory case narrative associated with the analytical data. All contract laboratory analytical results will be requested as a Tier IV data package. Full data validation will be performed upon request by NYSDEC.

Full data validation will be conducted in accordance with "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", USEPA-540/R-99/008, October 1999. The data assessment will include a review of the technical holding time and all batch and matrix QC. This will include rinse blanks (if collected), field duplicates, MS/MSD, surrogate recoveries, method blanks, and laboratory control samples (LCS) results. Assessment of analytical and in-house data will include checks on data consistency by looking for comparability of duplicate analyses, adherence to accuracy and precision control criteria, and anomalously high or low parameter values. The results of these data validations will be reported to the project manager, noting any discrepancies and their effect upon acceptability of the data.

The data validation report will summarize the samples reviewed, any nonconformance with the established criteria, and validation actions (including data qualifiers). Data qualifiers will be consistent with established validation guidelines.

4.0 Support Plans

4.1 Health and Safety Plan (HASP)

B&L follows the newly instituted contractor HASP that has been developed by Akzo Nobel for the Burt, NY facility. Due to the limited potential exposure during the groundwater monitoring events, B&L currently feels that a separate, work specific HASP is not necessary.

4.2 Waste Management Plan

All wastes that are generated during the Groundwater Monitoring Program will be stored, transported, and disposed in accordance with all applicable State and Federal regulations. Every effort will be made to minimize the amount and toxicity of wastes generated. It is anticipated that the following wastes will be generated during the investigation:

a. Well Development and Purge Water: In 2012 NYSDEC granted approval for surface dispensing of waters generated during well development and well purging. Previously the water was collected in closed-top drums for storage and was then characterized for off-Site disposal;

b. Decontamination Fluids: Decontamination fluids, primarily water, may be generated during sampling activities to assure equipment is properly cleaned between locations. Decontamination waters will also be surface dispensed. Every effort will be made to minimize the amount of decontamination fluids generated by using dedicated and/or disposable equipment; and

c. Used Personal Protection Equipment (PPE) and Other Domestic Trash: Used PPE and other domestic trash will be generated during the sampling events. It will be treated as non-hazardous

waste and discarded in the appropriate municipal waste dumpster or compactor located on the Site.

When required, all waste manifests, bills of lading and other related paperwork will be maintained in the project files. All waste will be stored, transported, and disposed in accordance with applicable Federal and State rules and regulations.

Akzo Nobel will be responsible for preparing waste profiles and manifests or bills of lading for all waste shipments.

5.0 Reporting of Monitoring Results

One annual groundwater monitoring report summarizing each of the two semi-annual monitoring events will be submitted to the New York State Department of Environmental Conservation (NYSDEC) at the addresses specified in Module 1 Section H of the Permit. One copy will be submitted at the Bureau of Radiation and Hazardous Site Management Chief and one copy will be submitted to the Regional Hazardous Materials Engineer at the following address:

New York State Department of Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999
ATTN: Regional Hazardous Waste Remediation Engineer

Each report will include a summary of groundwater monitoring field activities, copies of field sampling forms, a summary of the analytical data compared to the NYS groundwater standards in 6 NYCRR 703.5, groundwater contour maps for both the overburden groundwater and bedrock groundwater, radial diagrams depicting changes in contaminant concentrations and natural attenuation parameters, and an interpretation of the data.

The groundwater monitoring program and the effectiveness of MNA as the selected remedy for the Site will also be evaluated annually. A Groundwater Monitoring Program Evaluation Report will be submitted annually to the NYSDEC detailing the findings for the year. The report will evaluate the contaminant concentration trends and natural attenuation parameters to determine if the remedy is effective in meeting the remedial goals and permit criteria. If an annual review shows that any well or wells consistently has results of non-detect for all parameters for at least four sampling events, Akzo Nobel may request that the NYSDEC allow Akzo Nobel to modify this Groundwater Monitoring Plan to reduce the sampling frequency for those wells.

If concentrations of site contaminants are observed to be increasing at any of the source area wells or contaminants are detected at any of the perimeter wells at concentrations above the 6 NYCRR Part 703.5 Standards, Akzo Nobel will develop and implement an interim corrective measures study (ICM) as required by Module II Section 1(a)(ii).

Additionally, if the sample results from any of the downgradient boundary wells (MW-3, MW-3B, MW-4, MW-4B, MW-10, MW-10B, MW-11, and MW-11B) indicate contamination for any TCL volatile organic compound(s) above the New York State groundwater standards in NYCRR 703.5, the well(s) will be re-sampled within two weeks of obtaining the results. Also, Akzo Nobel will immediately notify the NYSDEC that there was an exceedance at a boundary well.

As long as MNA continues to be an effective corrective measure for the Site, groundwater monitoring will be conducted until the Termination Criteria in Module II Section 1(a)(iii) of the permit are met. Termination monitoring and Post Termination monitoring will be conducted in accordance with Module II Sections 2 and 4 of the permit.

6.0 Schedule

Semi-annual monitoring events are anticipated to be conducted in April or May and October or November of each calendar year (depending on weather and/or site conditions). Akzo Nobel will notify the NYSDEC at least one week prior to any sampling activities. The Annual Monitoring report will be submitted to the NYSDEC within 90 days of the Fall/Winter monitoring event.

Figure 1

Site Location Map

SOURCE REFERENCE:
NEW YORK STATE GIS CLEARINGHOUSE, 2008.

1000' 0 1000'
1"=1000'

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AKZO NOBEL POLYMER CHEMICALS LLC

SITE LOCATION MAP

TOWN OF BURT NIAGARA COUNTY, NEW YORK

Date	Scale
JULY 2015	AS SHOWN

Figure Number
1

Project Number
1398.001.015

Plotted: Jul 13, 2015 - 10:32AM SYR By: jgs2
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Figure 2

Site Layout

Plotted: Oct 20, 2015 – 9:47AM SYR By: jgs2
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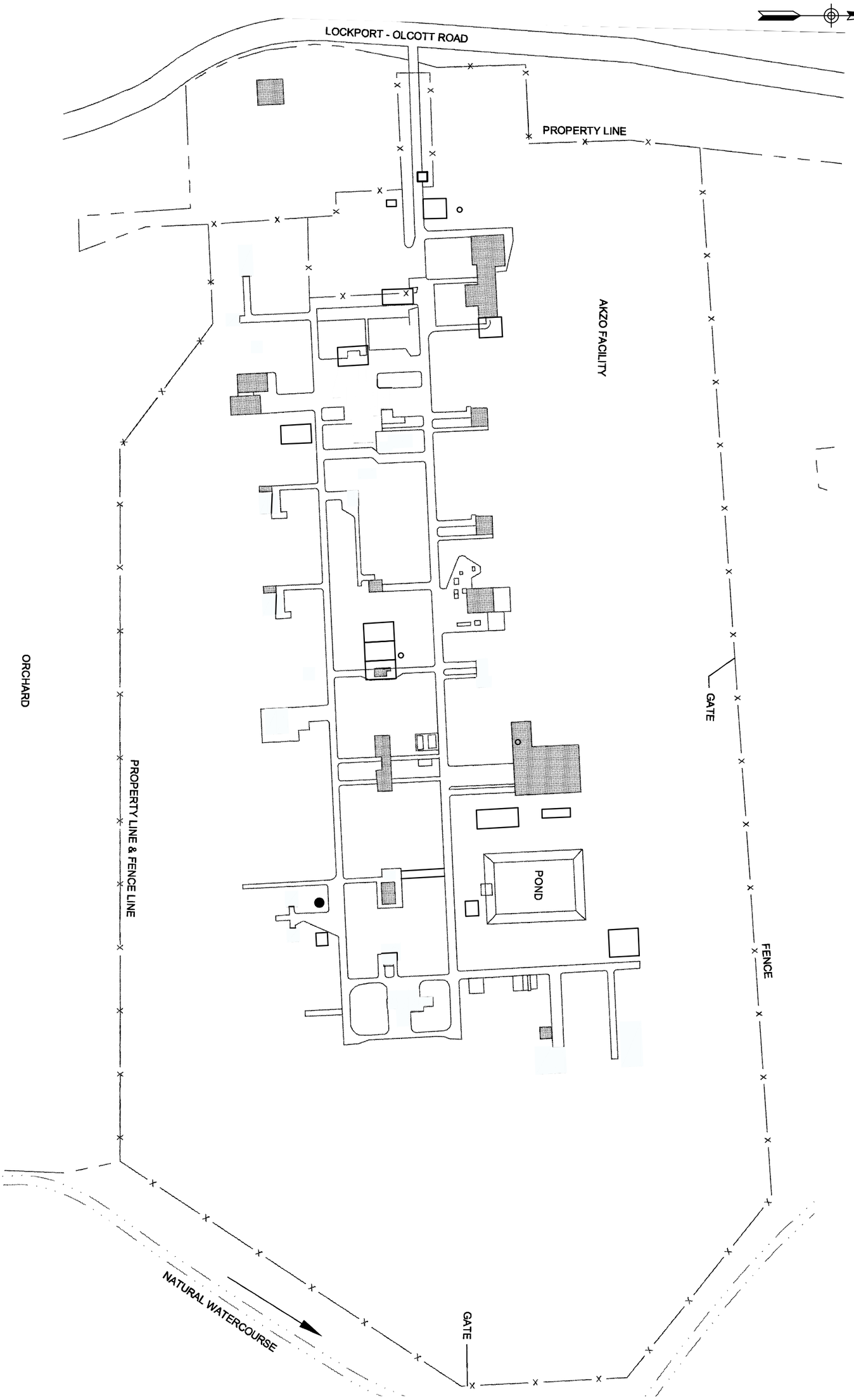

Project Number	Figure Number	Scale	Date	
1398.001.015	2	1"=200'	JULY 2015	Barton & Loguidice, D.P.C.

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SITE LAYOUT

TOWN OF BURT NIAGARA COUNTY, NEW YORK

Figure 3

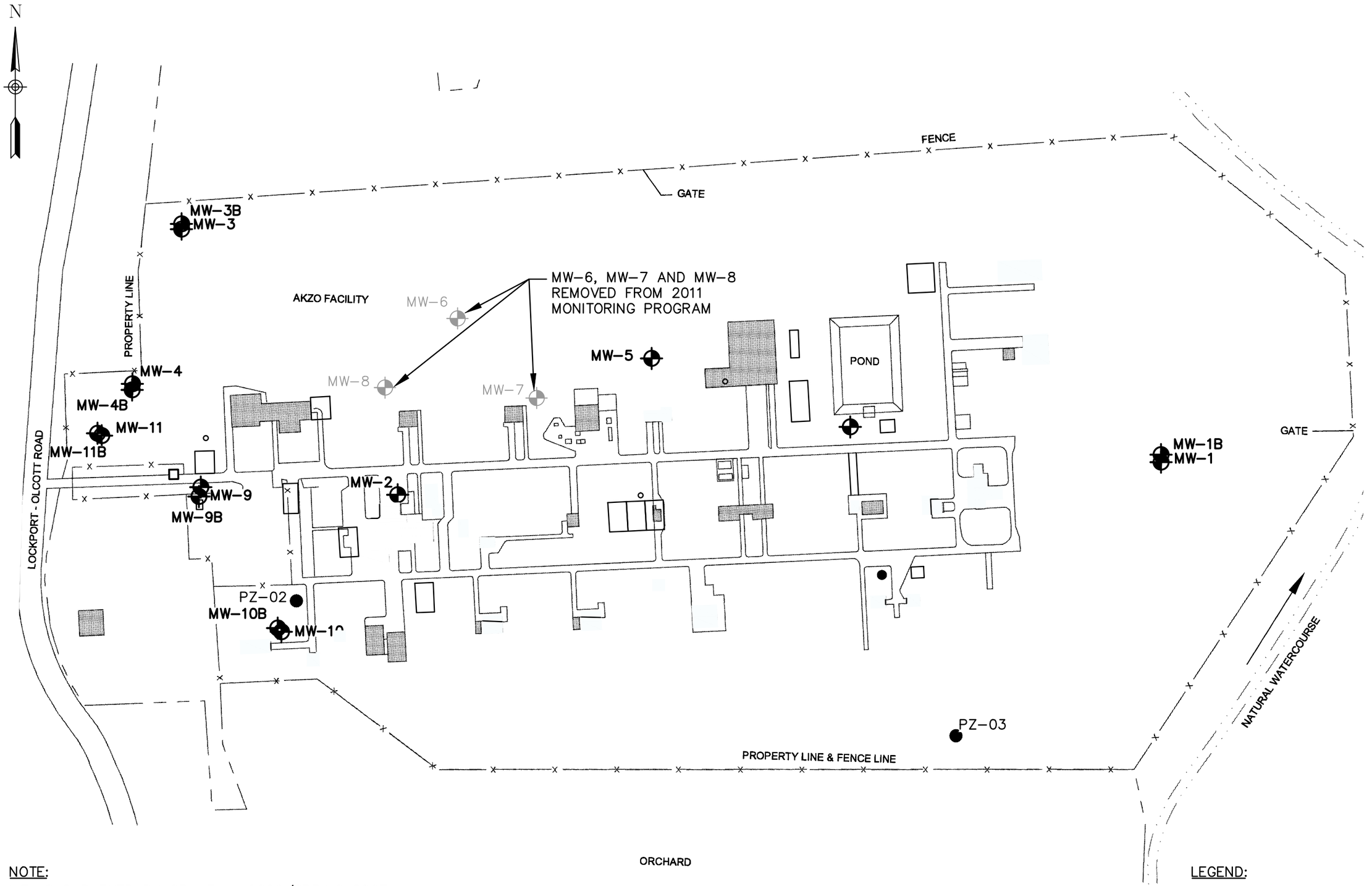
Monitoring Well Locations

WELL LOCATIONS

AKZO NOBEL POLYMER CHEMICALS LLC

NIAGARA COUNTY, NEW YORK

TOWN OF BURT



NOTE:

WELLS SURVEYED BY CRA FALL 2006/SPRING 2007 WITH REFERENCED ELEVATION OF 100.00'. WELLS RESURVEYED SPRING 2007 IN STATE PLANE NY WEST NAD83 VERTICAL DATUM NAVD88.

SOURCE:

TRC FIGURE FACILITY LOCATION MAP PJ.#19045

LEGEND:

- MONITORING WELL
- PIEZOMETER

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Date	JULY 2015
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Figure Number	3
Project Number	1398.001.015

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