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**FINAL
GROUNDWATER MONITORING WELL
DECOMMISSIONING COMPLETION REPORT**

**Former Lake Ontario Ordnance Works, Niagara County,
New York**

Contract No.: W912QR-08-D-0012

Delivery Order: DA02

FUDS Project No.: C02NY0025

Prepared for:

**U.S. Army Corps of Engineers
Buffalo District**

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June 2013

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COMPLETION OF INDEPENDENT TECHNICAL REVIEW

This document has been produced within the framework of ERT, Inc. (ERT)'s total quality management system. As such, an independent technical review, appropriate to the level of risk and complexity inherent in the project as defined in the Quality Control Plan for this project, has been conducted. This included review of assumptions (methods, procedures, and material used in analyses), alternatives evaluated; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product accomplishes the stated project objectives. Comments and concerns resulting from review of the document have been addressed and corrected as necessary.

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2 May 2013
Date

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ACRONYMS AND ABBREVIATIONS

AEC	U.S. Atomic Energy Commission
AFP	Air Force Plant
bgs	below ground surface
CELRB	U.S. Army Corps of Engineers, Buffalo District
CWM	Chemical Waste Management Chemical Services, LLC
DOD	Department of Defense
DOE	Department of Energy
ERDA	Energy Research and Development Administration
ERT	ERT, Inc.
ft	foot or feet
GPS	global positioning system
LOOW	Lake Ontario Ordnance Works
MW	monitoring well
NFSS	Niagara Falls Storage Site
NYSDEC	New York State Department of Environmental Conservation
Occidental	Occidental Chemical Corporation, Inc.
PAH	polycyclic aromatic hydrocarbons
PCA	preliminary contamination assessment
PCB	polychlorinated biphenyls
PVC	polyvinyl chloride
RI	Remedial Investigation
Somerset	Somerset Group, Inc.
SOW	statement of work
SVOC	semi-volatile organic compound
TEC	U.S. Army Topographic Engineering Center
TNT	trinitrotoluene
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WM	Waste Management, Inc.
WWTP	Waste Water Treatment Plant

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1.0 INTRODUCTION

This Completion Report has been prepared by ERT, Inc., (ERT) in accordance with the statement of work (SOW) for Delivery Order DA02 for Architectural/Engineering Services at the former Lake Ontario Ordnance Works (LOOW), Niagara County, New York, under the Hazardous, Toxic, and Radioactive Waste Indefinite Delivery/Indefinite Quantity Contract W912QR-08-D-0012. This SOW was issued by the U.S. Army Corps of Engineers, Buffalo District (CELRB) on 17 August 2011 (U.S. Army Corps of Engineers [USACE], 2011) under the Defense Environmental Restoration Program-Formerly Used Defense Sites, Project Number C02NY0025.

1.1 Purpose, Scope, and Objectives

This Completion Report documents the activities conducted and procedures implemented during the decommissioning of monitoring wells (MWs) at the former LOOW (**Figure 1-1**). Decommissioning activities were completed in accordance with the *Final Groundwater Monitoring Well Decommissioning Work Plan, Former Lake Ontario Ordnance Works, Niagara County, New York* (USACE, 2013) (hereinafter the “Work Plan”) and consistent with procedures outlined in the New York State Department of Environmental Conservation (NYSDEC) guidance document, *CP-43: Groundwater Monitoring Well Decommission Policy* (NYSDEC, 2009). The Work Plan was provided to the NYSDEC, Somerset property owner, and Chemical Waste Management Chemical Services, LLC (CWM) for comment; the Work Plan was also made available to the public before field work commenced.

It is recommended by the NYSDEC guidance that any MW that has been determined to not be needed and/or is deemed unsuitable for reuse should be appropriately decommissioned. The overall objective of this decommissioning effort was to remove any potential for adverse environmental effects due to unprotected, neglected, unserviceable and/or improperly abandoned MWs. The primary reason for decommissioning was to remove any potential preferential pathway to groundwater.

There are currently 56 MWs at the LOOW. CELRB identified 24 MWs for decommissioning (**Table 1-1** and **Figure 1-2**). The MWs scheduled to be decommissioned are located on properties owned by CWM and Somerset Group, Inc. (Somerset) (**Figures 1-3** through **1-5**).

1.2 Site Background

In 1942, the War Department obtained a 7,500-acre parcel of land in northwestern Niagara County, New York, for the construction of a trinitrotoluene (TNT) production facility, designated as the Lake Ontario Ordnance Works (**Figure 1-2**). Production operations, production support, and facility storage occupied 2,500 acres of the eastern portion of the LOOW. The remaining 5,000 acres were left undeveloped, to serve as a buffer zone for the TNT production facility, and to allow for the possible expansion of TNT production. Expansion of the facility never occurred, and in 1943, after nine months of operation, the LOOW was decommissioned due to excess TNT production at other War Department facilities. The eastern 2,500 acres, which comprised the TNT production area, were used in subsequent years by other agencies of the Department of Defense, including the U.S. Air Force and U.S. Navy, for manufacturing plants (i.e., U.S. Air Force Plant 38 [AFP-38], AFP-68, and the U.S. Navy

Interim Production Pilot Plant) to produce high-efficiency boron fuels. The U.S. Army subsequently used the acreage for the construction of a Nike Missile Base.

In the mid-1940s, 1,500 acres of the southern portion of the LOOW were transferred to the USACE Manhattan Engineer District. The Manhattan Engineer District later became the U. S. Atomic Energy Commission (AEC). In 1974, the AEC was replaced by the Energy Research and Development Administration (ERDA) and the U.S. Nuclear Regulatory Commission. In 1977, ERDA became the U.S. Department of Energy. While under operation by the Manhattan Engineer District, radioactive materials were stored on portions of the southern 1,500 acres of the LOOW. However, between the 1950s and 1980s, radioactive materials housed on the acreage were consolidated, removed, and transferred to the current 191-acre Niagara Falls Storage Site.

1.2.1 Previous Investigations

LOOW site investigations were conducted by USACE on the basis of property ownership and area of suspected Department of Defense (DOD) impact. The following properties and general areas of former DOD use and/or suspected impact have been evaluated:

- CWM property that contained nitration and general support areas, AFP-68 process areas, a Navy Interim Production Pilot Plant, and a NIKE Missile base.
- Somerset Group property that contained former AFP-68 process areas.
- Town of Lewiston property that contained former shops, a wastewater treatment plant (WWTP), 30-inch outfall line and discharge house, and a water intake with pump house.
- Town of Porter property, which contained a former storage area and AFP-38.
- U.S. Department of Energy (DOE) property (Niagara Falls Storage Site - NFSS) that contained former acid concentration areas and shops, a fresh water treatment plant, and steam generation plants.
- Modern Disposal Services, Inc. property that contained shops, an incinerator, a classification yard, and administration/transportation areas.
- Underground lines that conveyed wastes across properties currently owned by CWM, DOE, and the Town of Lewiston.
- Surface water drainage features that traversed several properties.
- Occidental Chemical Corporation, Inc. (Occidental) property that contained a storage area indicated by ground scarring.
- Lewiston-Porter Central School District property that contained anomalies identified from aerial photographs.

USACE investigations conducted to characterize areas of the LOOW property with suspected DOD impact are summarized below.

- 1985 - Surface water and sediment sampling was performed in the vicinity of a drum burial area (Area A) and Olin burn area (Area B) associated with AFP 68.
- 1988 - A field reconnaissance of areas of suspected DOD impact was performed at the former AFP 68, nitration houses, WWTP, and the southern control portion of the NIKE Missile Base.

- 1988 to 1990 - Investigations of the CWM property (Areas A, B, C, North of C, TNT waste line, and acid waste lines) were conducted during an initial Remedial Investigation (RI) and a supplemental RI for USACE-Kansas City District. The studies included groundwater sampling, soil sampling, underground line sampling, and geophysical investigations.
- 1989 - A document and background information search regarding DOD activities was performed for Areas A and B and areas of magnetic anomalies.
- 1991 - A Preliminary Contamination Assessment (PCA) was conducted, which included the collection and analysis of soil, groundwater, sludge, and sewage samples from potential source areas within AFP 68, the WWTP, and the former NIKE Missile Base.
- 1993 - A data search summary report was performed that summarized historical information associated with areas potentially impacted by DOD activities at AFP 68, the WWTP, and the Nike Missile Base.
- 1997 - An engineering evaluation/cost analysis was performed for removal of TNT waste lines, Area A buried drums, Area B burn pit, asbestos on the Somerset Group property, and miscellaneous containers. An associated investigation included the collection and analysis of soil, sludge, and sewage samples.
- 1998 - A Phase I RI included the collection of soil, groundwater, surface water, sediment, sludge, and wastewater from properties owned by Occidental, CWM, Modern Disposal Services, the Town of Lewiston, the Town of Porter, and the DOE (NFSS).
- 2000 - A Phase II RI was completed, which included the collection and analysis of soil, groundwater, sludge, and wastewater samples from areas investigated during the Phase I RI as well as additional locations on the Occidental property.
- 2002 - An analysis of aerial photographs was completed by the U.S. Army Topographic Engineering Center (TEC). The analysis used historic aerial photographs to locate possible areas of DOD use and answer questions about current areas of DOD use.
- 2004 - Small-bermed clearings, which were anomalies identified by the TEC aerial photo analysis, were investigated. Twelve locations were sampled for explosives, petroleum hydrocarbons, and some radiological elements.
- 2005 to 2007 - Underground utilities formerly used by the DOD were investigated in a Phase III RI.
- 2009 - A RI of the WWTP was performed, which included the collection and analysis of soil, water, and sludge/sediment samples.
- 2010 - A final site inspection of the Lewiston-Porter Central School District Campus was conducted. Samples were collected from anomalies identified in aerial photographs and from the Southwest Drainage Ditch and analyzed for chemical contaminants. Radiological analysis was also performed on samples collected from a mound on the school campus and from Southwest Drainage Ditch samples (water, sediment, and soil).
- 2010 to 2011 - A remedial investigation of the Occidental property was performed that included the collection and analysis of soil and surface water samples from six areas identified from aerial photographs and the previous Phase II RI.

USACE monitoring wells at LOOW were installed during the initial remedial investigation (1988), PCA (1991), and Phase II RI (2000).

1.3 Organization of Completion Report

Each section of this Completion Report provides information specific to the purpose, scope, and objectives of this task. The report is organized into the following sections:

- Section 1.0 - Provides project objectives, historical information regarding the LOOW, and the Completion Report organizational structure.
- Section 2.0 - Details the determinations made prior to decommissioning of the MWs, and the MWs selected for decommissioning.
- Section 3.0 - Presents MW decommissioning activities.
- Section 4.0 - Details the conclusions of the MW decommissioning activities.
- Section 5.0 - Provides the Completion Report references.

Table 1-1. Summary of Decommissioned MWs

Well ID	Property Owner	Associated Investigation	Construction Date	Decommission Date	Location ¹		Total Depth (ft)	Screen Length (ft)	Reference Figure ²	Well Type
					Easting	Northing				
MW-B-1S	CWM	Acres RI	1988	3/20/13	1043853	1176737	22	10	Figure 1-3	#10 slot 4" diameter screen, schedule 80 pvc
MW-B-1D	CWM	Acres RI	1988	3/20/13	1043846	1176730	47	10	Figure 1-3	#10 slot 4" diameter screen, schedule 80 pvc; 8" diameter steal casing set into aquitard
MW-C-1S ^{3,4}	CWM	Acres RI	1988	N/A	1044281	1175305	20	10	Figure 1-4	#10 slot 4" diameter screen, schedule 80 pvc
MW-C-1D ³	CWM	Acres RI	1988	N/A	1044293	1175310	39.5	8	Figure 1-4	#10 slot 4" diameter screen, schedule 80 pvc; 8" diameter steal casing set into aquitard
MW-C-2D ^{3,4}	CWM	Acres RI	1988	N/A	1044131	1175305	34.5	10	Figure 1-4	#10 slot 4" diameter screen, schedule 80 pvc; 8" diameter steal casing set into aquitard
MW-C-3S ³	CWM	Acres RI	1988	N/A	1043640	1175631	20	10	Figure 1-4	#10 slot 4" diameter screen, schedule 80 pvc
MW-C-3D ³	CWM	Acres RI	1988	N/A	1043653	1175633	34.0	8	Figure 1-4	#10 slot 4" diameter screen, schedule 80 pvc; 8" diameter steal casing set into aquitard
MW-D-1	CWM	Acres RI	1988	3/21/13	1043440	1175450	35.5	10	Figure 1-4	#10 slot 4" diameter screen, schedule 80 pvc
MWS-1S	Somerset	Acres PCA	11/22/1991	3/21/13	1042013	1176011	14	5	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-1I	Somerset	Acres PCA	12/17/1991	3/21/13	1042016	1176004	35	5	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-1D	Somerset	Acres PCA	12/4/1991	3/20/13	1042007	1176005	54	10	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-2I	Somerset	Acres PCA	12/13/1991	3/21/13	1041275	1176212	49	12	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-2D	Somerset	Acres PCA	12/13/1991	3/21/13	1041270	1176204	62	4.6	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-3S	Somerset	Acres PCA	12/27/1991	3/22/13	1041488	1176587	10	5	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-3I	Somerset	Acres PCA	12/31/1991	3/22/13	1041488	1176583	37	5	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-3D	Somerset	Acres PCA	12/31/1991	3/22/13	1041492	1176583	66	20	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-4I	Somerset	Acres PCA	1/9/1992	3/21/13	1041764	1176884	42	10	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
MWS-4D	Somerset	Acres PCA	1/9/1992	3/21/13	1041767	1176879	56	5	Figure 1-5	#10 slot 2" diameter screen, schedule 40 pvc
C2-3-BP5	Somerset	Phase II RI	11/7/2000	3/21/13	1041549	1176050	14	10	Figure 1-5	#20 slot 2" diameter screen, schedule 40 pvc
C2-3-BP7	Somerset	Phase II RI	11/27/2000	3/21/13	1041450	1176119	20	10	Figure 1-5	#20 slot 2" diameter screen, schedule 40 pvc
C2-5-BP4	Somerset	Phase II RI	8/9/2000	3/19/13	1041578	1176391	13	5	Figure 1-5	#20 slot 2" diameter screen, schedule 40 pvc
C2-5-BP5	Somerset	Phase II RI	11/7/2000	3/19/13	1041581	1176329	12	8	Figure 1-5	#20 slot 2" diameter screen, schedule 40 pvc
C2-5-E200	Somerset	Phase II RI	8/9/2000	3/19/13	1041624	1176358	13	5	Figure 1-5	#20 slot 2" diameter screen, schedule 40 pvc
C2-6-BP1	Somerset	Phase II RI	11/6/2000	3/19/13	1041706	1176430	14.5	10	Figure 1-5	#20 slot 2" diameter screen, schedule 40 pvc

Legend:
CWM = CWM Chemical Services, LLC
ft = feet
MW = monitoring well
N/A = not available
PCA = preliminary containment assessment
RI = Remedial Investigation
Somerset = Somerset Group, Inc.

¹ = Coordinates provided in New York State plane coordinate format NYS NAD83

² = reference figure in this Monitoring Well Decommissioning Completion Report

³ = MWs scheduled to be decommissioned that remain in place

⁴ = MWs were visually and magnetically searched for, but could not be located on the CWM property

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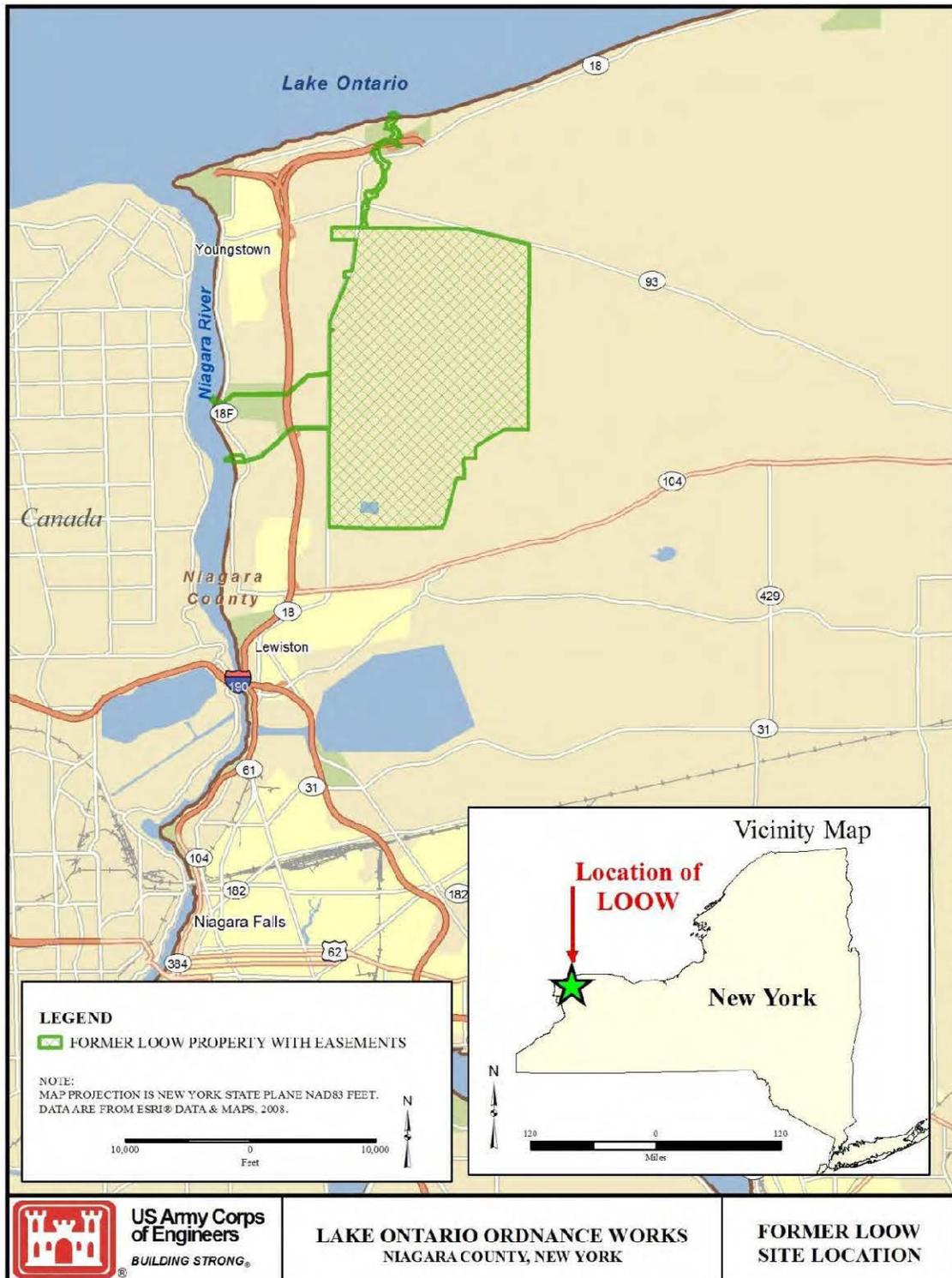


Figure 1-1: Site Location

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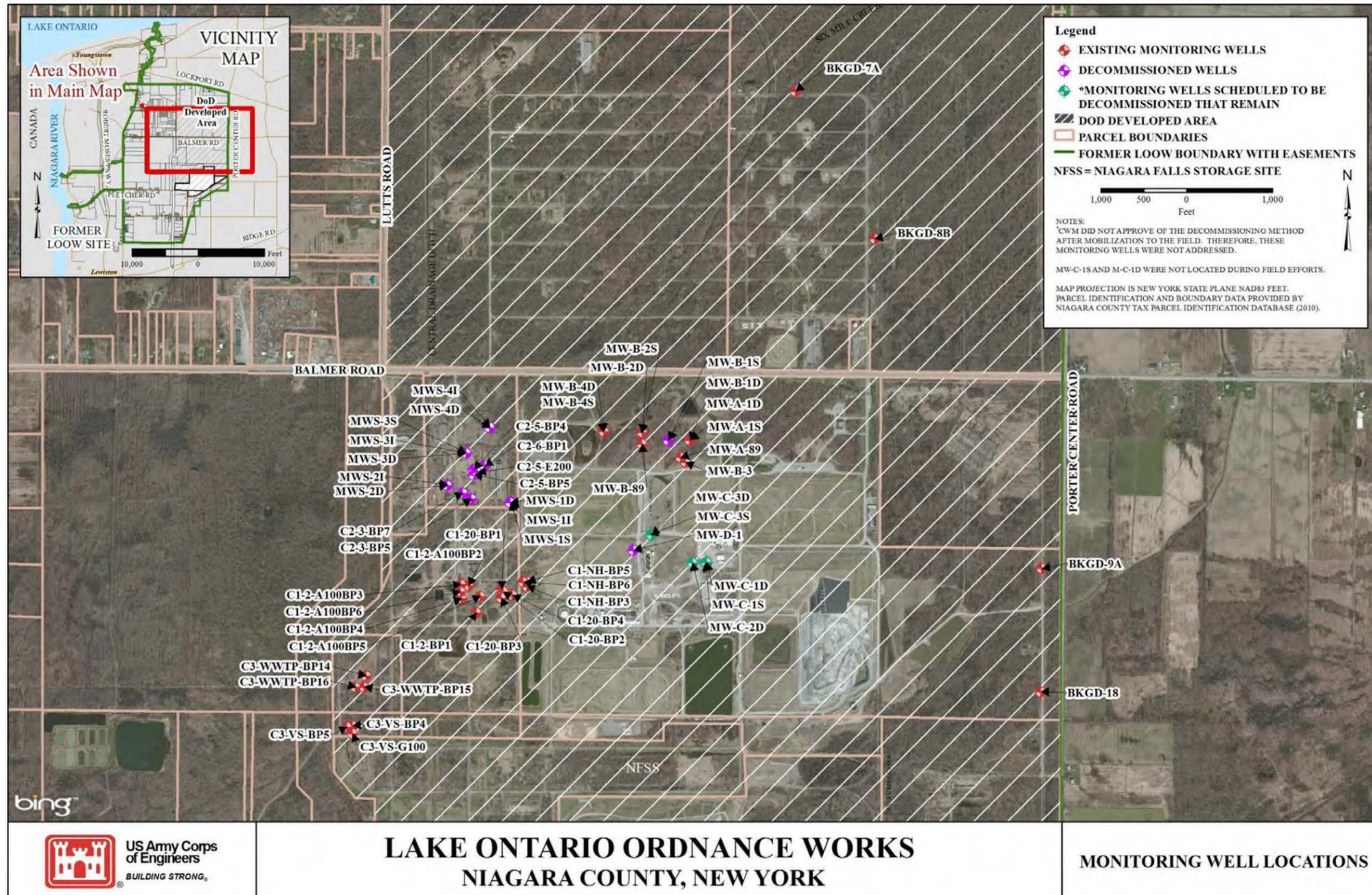


Figure 1-2: Groundwater MWs at LOOW

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Figure 1-3: Northeastern CWM MW Locations Identified for Decommissioning

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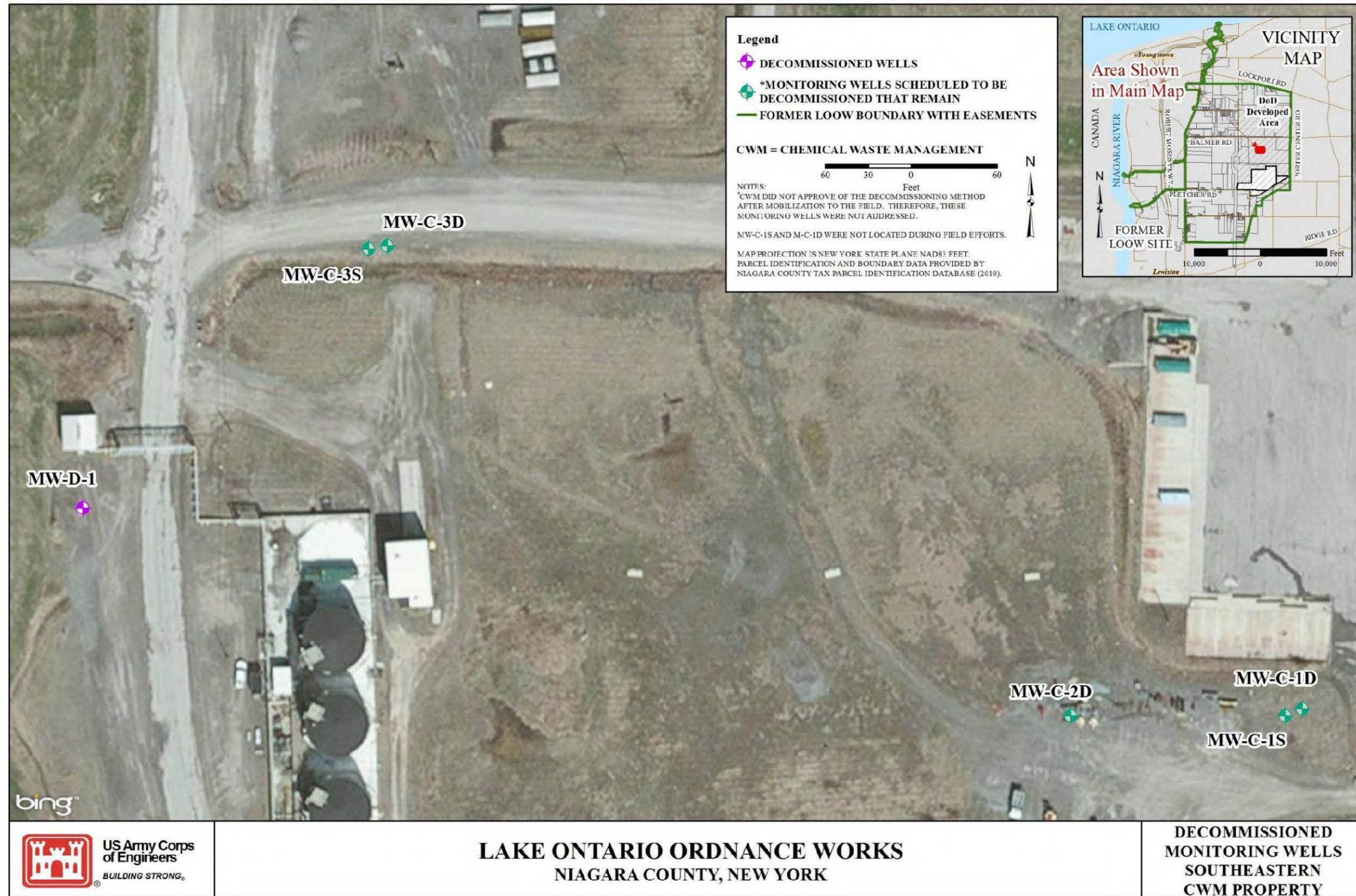


Figure 1-4: Southeastern CWM MW Locations Identified for Decommissioning

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Figure 1-5: Somerset MW Locations Identified for Decommissioning

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2.0 PLANNED DECOMMISSIONING ACTIVITIES

The required tasks to complete the MW decommissioning were executed in two phases. The first phase included a review of MW information, site inspection for serviceability, and assessment of MWs to develop an effective approach for decommissioning of the MWs. Section 2.0 of this report is a discussion of this first phase. The second phase consisted of the decommissioning field activities, which are discussed in Section 3.0.

2.1 Review of Information

2.1.1 Historical Monitoring Well Information

Prior to field activities, available historical MW information were compiled and reviewed. Pertinent historical MW information included, but was not limited to, installation records, construction details, and global positioning system (GPS) coordinates.

Appendix A includes a complete list of MWs at LOOW with respective construction details, including the 24 MWs identified for decommissioning.

2.1.2 Monitoring Well Inspections

In accordance with *CP-43: Groundwater Monitoring Well Decommission Policy* (NYSDEC, 2009), a MW site inspection was performed following the compilation and review of historical MW information. The MW inspection was completed by CELRB and ERT on 14 November 2012 to confirm the location, construction, and condition of each MW. During the MW inspection, two MWs (e.g., MW-C-1S and MW-C-2D) could not be located.

2.2 Proposed Activities

2.2.1 Selected Decommissioning Method

NYSDEC guidance recommends using the following criteria when selecting an appropriate decommissioning method:

- Geologic and hydrologic conditions at the site of the MW.
- Presence or absence of contamination in the groundwater.
- Original MW construction details.

The four primary NYSDEC-approved MW decommissioning methods include:

- Grouting in-place.
- Perforating the casing, followed by grouting in-place.
- Grouting in-place, followed by casing pulling.
- Over-drilling and grouting, with or without a temporary casing.

Based on a review of the historical MW information and completion of the MW inspection, grouting in-place was selected as the appropriate method for MW decommissioning. Grouting in-place is a viable method for properly decommissioning small-diameter single and double-cased MWs. It is also the most effective and frequently used MW decommissioning method, and is an essential component of all decommissioning methods. Additionally, grouting in-place is an

applicable and satisfactory decommissioning method if the well seal (bentonite seal above the sand pack in the annulus of the MW) is not compromised and no confining soil layer is present.

2.2.2 Decommissioning Approach

Based on the review of historical MW information and MW inspection activities, 24 MWs were identified for decommissioning. The overall objective of the decommissioning effort was to remove the potential for adverse environmental effects due to unprotected, neglected, and/or improperly abandoned MWs. Proper decommissioning of MWs decreases the potential of developing preferential pathways to groundwater. An appropriate MW decommissioning approach achieves the following objectives:

- Significantly reduces the potential for contamination to be introduced to the subsurface.
- Prevents unprotected and/or neglected MW from contributing to the unwanted mixing of groundwater and/or degradation of water quality within an aquifer.
- Removes MW construction materials to prevent interference with potential future construction and/or excavation activities that may occur at the site.

The following MW decommissioning approach was selected to achieve environmental objectives:

- Use of the grouting-in-place method.
- Completion of site restoration activities.
- Documentation of the overall efforts.

3.0 DECOMMISSIONING ACTIVITIES

Decommissioning activities were completed 18 – 22 March 2013 in accordance with the accepted Work Plan and applicable guidance. Following commencement of field activities, CWM asked USACE not to decommission five of the eight CWM MWs: MW-C-1S, MW-C-1D, MW-C-2D, MW-C-3S, and MW-C-3D. From the original eight CWM MWs proposed for decommissioning, three MWs (MW-B-1S, MW-B-1d, and MW-D-1) were decommissioned on 22 March 2013. Of the 24 MWs identified for decommissioning in the Work Plan, 19 MWs (see **Table 1-1**) were successfully decommissioned (see **Figures 1-2** through **Figure 1-5**). Of the 19 MWs decommissioned (see **Table 1-1**), 5 MWs (MW-B-1D, MW-D-1, MWS-1D, MWS-2D and MWS-3D) penetrated a confining layer. Decommissioning activities included the following:

- Confirming location of MWs.
- Grouting in-place.
- Removal of MW protective casing.
- Restoration.
- Waste management.

Table 1-1 presents a summary of the decommissioned MWs. **Appendix A** provides a list of current and former MWs at the LOOW. **Appendix B** provides MW abandonment logs. **Appendix C** includes a photo log of the decommissioning activities at the LOOW. **Appendix D** includes all field forms (i.e., site entry forms, health and safety briefings, and daily reports) generated during the decommissioning activities.

3.1 Confirming Location of Monitoring Wells

All but two MW locations were field verified from known coordinates via a handheld GPS unit (e.g., Trimble GeoHX) during the 18-22 March decommissioning activities. Two MWs (MW-C-1S and MW-C-2D) positioned on the CWM property could not be located during the MW inspection activities.

On 20 March 2013, as part of the decommissioning activities, a subsurface investigation was completed to locate MW-C-1S and MW-C-2D. A magnetometer (e.g., Schonstedt GA-52Cx) and light excavator (e.g., rubber-tracked back-hoe) were utilized in an attempt to locate, inspect, and decommission these MWs, based on their known GPS coordinates. These MW locations could not be located.

3.2 Grouting In-Place

Each of the 19 MW locations was decommissioned via the grout in-place method. The grout in-place method includes plugging the riser and screen casing of each MW with a grout mixture to approximately 5 feet (ft) below ground surface (bgs). **Appendix B** includes MW abandonment logs that document the grout in-place procedures at each location.

Periodic screening of the breathing zone with a photoionization detector identified no elevated readings during decommissioning activities. No analytical sampling was conducted as part of the decommissioning activities.

3.2.1 Standard Grout Mixture

As specified in NYSDEC guidance, a standard grout mixture was used and contained Type 1 Portland cement and 4 percent bentonite by weight. The grout mixture was formulated using the following recipe:

- One 94-pound bag of Type I Portland cement.
- 3.9 pounds of powdered bentonite.
- 7.8 gallons of potable water.

3.2.2 Grout Volumes and Placement

Prior to grouting each of the 19 MWs, the depth to water and depth to bottom were measured with a water level meter, and the volume of each MW from 5 ft bgs to bottom was calculated. Based on the calculated volume, an appropriate volume of the standard grout mixture was prepared, as described in Section 3.2.1, and pumped into each location via a 1-inch PVC (polyvinyl chloride) tremie pipe. The tremie pipe was extended to the bottom of each MW, prior to pumping, to ensure grout delivery through the water column at each MW location.

After grouting was complete, each MW was monitored for settling. Additional applications were completed as necessary.

3.3 Removal of Protective Casings

Each of the 19 MW locations was originally completed with a concrete pad and a lockable protective stick-up casing (steel guard pipe). Following grouting activities at each location, the concrete pad was broken and removed, allowing access to the protective casing. The protective casings varied slightly between the overburden and overburden/telescoping MWs. At 17 MW locations, the lockable protective stick-up casing was excavated and all MW materials were removed to approximately 5 ft bgs. At two MW locations (MW-B-1S and MW-D-1), the protective casing extended deeper and required cutting with an acetylene torch at approximately 5 ft bgs prior to removal.

The nonhazardous waste generated during removal of the concrete pads and protective casings was managed in accordance with the Work Plan and containerized in a steel roll-off container (e.g., dumpster) staged on the Somerset property.

3.4 Restoration

Following removal activities, each of the 19 MW locations were backfilled to grade with native soils. The ground surface at each MW location was restored to the condition of the surrounding area. After restoration to grade, grass seed was applied at each MW location at the Somerset property. For MW locations on the CWM property, restoration activities were approved by the CWM Permitting Manager and Site Coordinator prior to demobilizing from CWM property on Thursday, 21 March 2013.

Following restoration activities, the coordinates for each of the 19 MW locations were recorded by CELRB with a handheld Trimble GPS unit. In addition, a ferrous metal marker and labeled plastic safety cap were installed at grade at each of the 19 MW locations for visibility and identification purposes.

3.5 Waste Management

Non-hazardous waste generated during removal of the concrete pads and protective casings was managed in accordance with the Work Plan and containerized in a steel roll-off container (e.g., dumpster) staged on the Somerset property. The roll-off was delivered to the Somerset property on 20 March 2013 by Waste Management, Inc., (WM) for proper offsite disposal of generated waste. Non-hazardous waste generated during decommissioning activities totaled 4.57-tons (9,140 pounds) and included steel casing, PVC casing, concrete, steel bollards, and polyethylene tubing.

Following decommissioning activities, the roll-off container was removed from the Somerset property on 22 March 2013 by WM and transported to Chaffee Landfill in Chaffee, NY. The decommissioning activities did not generate any investigative derived waste.

Appendix E includes the bill of lading from WM for the roll-off container.

3.6 Deviations from Proposed Activities

At the request of the property owner, five of the eight CWM MWs (i.e., MW-C-1S, MW-C-1D, MW-C-2D, MW-C-3S, and MW-C-3D) were not decommissioned by USACE. The property owner, CWM, suspended the decommissioning and has assumed custody of the remaining five CWM MWs. From the original eight (8) CWM MWs scoped, three MWs (MW-B-1S, MW-B-1D, and MW-D-1) were decommissioned on 22 March 2013. The decommissioning of the remaining five CWM MWs will be completed by CWM.

Decommissioning activities were originally scheduled to be completed 18 – 29 March 2013. The decommissioning activities were completed by 22 March 2013; 5 days ahead of schedule. Of the 24 MWs identified for decommissioning in the Work Plan, 19 MWs (see **Table 1-1**) were successfully decommissioned (see **Figures 1-2** through **Figure 1-5**).

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4.0 CONCLUSIONS

The decommissioning of 19 MWs was successfully completed at LOOW via the grout in-place method. The MW decommissioning activities on 18 – 22 March 2013 were completed in accordance with applicable NYSDEC, U.S. Environmental Protection Agency, and USACE guidance. **Appendix A** presents a complete list of MWs at the LOOW. **Appendix B** provides MW abandonment logs generated during these activities.”

A photo log generated during the decommissioning activities is included as **Appendix C**. **Appendix D** includes all health and safety, and field forms generated during the decommissioning activities.

Upon completion of decommissioning, the location of each of the previous 19 MWs (see **Table 1-1**) was marked with a ferrous metal marker driven into the ground and capped with a plastic safety cap. On which, the identification for each MW was marked with a permanent, oil-based paint pen. All spent MW materials were removed and properly disposed of by WM. The bill of lading is included as **Appendix E**.

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5.0 REFERENCES

- New York State Department of Environmental Conservation (NYSDEC), 2009. *CP-43: Groundwater Monitoring Well Decommissioning Policy*. November.
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- USACE, 1999. *Report of the Results for the Phase I Remedial Investigation at the Lake Ontario Ordnance Works (LOOW) Niagara County, New York*. February.
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- USACE, 2013. *Final Monitoring Well Decommissioning SSHP Addendum No. 2, Former Lake Ontario Ordnance Works (LOOW) Niagara County, New York*. March.

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Appendix A

List of MWs at the Former LOOW

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LOOW Monitoring Wells

Monitoring Wells Installed by Acres

Well ID	Property Owner	Site	Location		Elevation (ft AMSL) ⁽²⁾		Stick-up (ft ags)	Total Depth (ft bgs)	Well Screen or Intake			Annulus Backfill				Stratigraphy (depth to top of layer - ft bgs)					Construct Start Date	Construct End Date	Notes		
			Easting ⁽⁴⁾ (ft)	Northing ⁽⁴⁾ (ft)	Top of Casing ⁽³⁾	Ground Surface			Depth (ft bgs)	Length (ft)	Elev (ft AMSL)		Depth (ft bgs)		Type	Upper Clay	Mid Silt Till	Lower Clay	Silt/Sand	Red Till				Bedrock	
											Top	Bottom	Top	Bottom											
1	MW-A-1S	CWM	1044107.00	1176733.00	315.05	313.1	1.95	20	8.3	18.3	10	304.8	294.8	5 3	20 5	sand bentonite	15.8	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
2	MW-A-1D	CWM	1044096.00	1176733.00	315.02	313.1	1.92	39.1	27.2	37.2	10	285.9	275.9	25.2 21	39.1 25.2	sand bentonite	18	24.5	30	32.5	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
3	MW-A-89	CWM	Area A	1043989.00	1176531.00	316.48	314.2	2.28	18	8	17	306.2	297.2	7 4	18 7	sand bentonite	---	---	---	---	---	---	12/13/1989	12/13/1989	#6 slot 2" dia screen, sch 304 SS
4	MW-B-1S	CWM	1043853.00	1176737.00	313.80	312.0	1.8	22	7.7	17.7	10	304.3	294.3	6 2.5	22 6	sand bentonite	17.4	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
5	MW-B-1D	CWM	1043846.00	1176730.00	314.60	312.8	1.8	47	34.9	44.9	10	277.9	267.9	32 30	34.9 32	sand bentonite	18.3	33.5	---	---	45	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
6	MW-B-2S	CWM	1043533.00	1176814.00	311.83	310.2	1.63	15	5.8	14.8	9	304.4	295.4	3.4 0.5	15 3.4	sand bentonite	---	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
7	MW-B-2D	CWM	1043543.00	1176821.00	312.18	310.3	1.88	49.8	24.2	48	23.8	286.1	262.3	22.2 18.9	49.8 22.2	sand bentonite	14.4	20.3	---	29.5	---	49.4	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
8	MW-B-3	CWM	1044048.00	1176476.00	316.41	314.7	1.71	18.0	7.5	17.5	10	307.2	297.2	4 1	18 4	sand bentonite	16.4	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
9	MW-B-4S	CWM	1043084.00	1176830.00	313.19	311.1	2.09	13.5	5	12	7	306.1	299.1	3 0.3	13.5 3	sand bentonite	---	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
10	MW-B-4D	CWM	1043096.00	1176833.00	313.16	311.4	1.76	54.9	27.1	53.1	26	284.3	258.3	22.5 18.3	54.9 22.5	sand bentonite	14.9	20.3	---	22.8	53	54.9	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
11	MW-B-89	CWM	Area B	1043539.00	1176684.00	314.3	298.0	2.30	14	6.3	11.3	291.7	286.7	5.3 2.3	14 5.3	sand bentonite	---	---	---	---	---	---	12/12/1989	12/12/1989	#6 slot 2" dia screen, sch 304 SS
12	MW-C-1S	CWM	1044281.00	1175305.00	319.34	317.4	1.94	20	5.8	15.8	10	311.6	301.6	3.5 0.5	20 3.5	sand bentonite	15.2	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
13	MW-C-1D	CWM	1044293.00	1175310.00	319.13	317.3	1.83	39.5	30	38	8	287.3	279.3	27.9 22.8	39.5 27.9	sand bentonite	13.8	---	---	27.3	37.3	39.5	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
14	MW-C-2D	CWM	1044131.00	1175305.00	315.50	312.9	2.6	34.5	22.9	32.9	10	290	280	21 19	34.5 21	sand bentonite	10	---	---	22.5	33.5	35	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
15	MW-C-3S	CWM	1043640.00	1175631.00	313.17	311.5	1.67	20	5.8	15.8	10	305.7	295.7	3.5 0.5	20 3.5	sand bentonite	15.2	---	---	---	---	---	1988	1988	#10 slot 4" dia screen, sch 80 pvc
16	MW-C-3D	CWM	1043653.00	1175633.00	314.10	311.7	2.4	34.0	21	29	8	290.7	282.7	18.5 15.5	34 18.5	sand bentonite	15.5	23.4	24	16	28.7	34	1988	1988	#10 slot 4" dia screen, sch 80 pvc 8" dia steel casing set into aquitard
17	MW-D-1	CWM	1043440.00	1175450.00	315.23	313.5	1.73	35.5	23	33	10	290.5	280.5	21 8	35.5 21	sand bentonite	7	10	14.9	21.3	31.8	35.5	1988	1988	#10 slot 4" dia screen, sch 80 pvc
18	MWS-1S	Somerset	1042013.00	1176011.00	316	313.3	2.7	14	3.8	8.8	5	309.5	304.5	2.7 1	9.7 2.7	sand bentonite	---	---	---	---	---	---	11/22/1991	11/22/1991	#10 slot 2" dia screen, sch 40 pvc
19	MWS-1I	Somerset	AFP-68	1042016.00	1176004.00	315.9	313.3	2.6	35	29.4	34.4	283.9	278.9	27.2 25.4	35 27.2	sand bentonite	---	---	---	---	---	---	12/13/1991	12/17/1991	#10 slot 2" dia screen, sch 40 pvc
20	MWS-1D	Somerset	AFP-68	1042007.00	1176005.00	316.2	313.3	2.9	54	39	49	274.3	264.3	37 35	50.7 37	sand bentonite	18	28.5	34.8	37.5	50.7	---	11/25/1991	12/4/1991	#10 slot 2" dia screen, sch 40 pvc
21	MWS-2I	Somerset	AFP-68	1041275.00	1176212.00	313.8	310.8	3	49	34.5	46.5	276.3	264.3	32.1 30	47 32.1	sand bentonite	18.1	31.6	---	---	---	---	12/11/1991	12/13/1991	#10 slot 2" dia screen, sch 40 pvc
22	MWS-2D	Somerset	AFP-68	1041270.00	1176204.00	313.4	310.8	2.6	62	54.9	59.5	255.9	251.3	52.2 50.1	61 52.2	sand bentonite	18.1	31.5	48.5	52.3	60.8	---	12/5/1991	12/13/1991	#10 slot 2" dia screen, sch 40 pvc
23	MWS-3S	Somerset	AFP-68	1041488.00	1176587.00	312.8	310.4	2.4	10	5	10	305.4	300.4	3.9 2	10 3.9	sand bentonite	---	---	---	---	---	---	12/27/1991	12/27/1991	#10 slot 2" dia screen, sch 40 pvc
24	MWS-3I	Somerset	AFP-68	1041488.00	1176583.00	312.9	310.4	2.5	37	30	35	280.4	275.4	28 25	35 28	sand bentonite	22	29.5	36	---	---	---	12/27/1991	12/31/1991	#10 slot 2" dia screen, sch 40 pvc
25	MWS-3D	Somerset	AFP-68	1041492.00	1176583.00	312.8	310.4	2.4	66	42.2	62.2	268.2	248.2	40.2 37.6	63.5 40.2	sand bentonite	23.5	31.5	35.6	39.1	64	---	12/17/1991	12/31/1991	#10 slot 2" dia screen, sch 40 pvc
26	MWS-4I	Somerset	AFP-68	1041764.00	1176884.00	312.2	309.2	3	42	29.6	39.6	279.6	269.6	27.6 25.7	40 27.6	sand bentonite	23.2	31.5	40.4	---	---	---	1/6/1992	1/9/1992	#10 slot 2" dia screen, sch 40 pvc
27	MWS-4D	Somerset	AFP-68	1041767.00	1176879.00	312.2	309.2	3	56	50	55	259.2	254.2	48.3 46.3	56 48.3	sand bentonite	23.2	31.5	45.5	48.9	53.3	---	1/3/1992	1/9/1992	#10 slot 2" dia screen, sch 40 pvc

LOOW Monitoring Wells

Monitoring Wells Installed by EA Engineering Science

Well ID	Property Owner	Site	Location		Elevation (ft AMSL) ⁽⁵⁾		Stick-up (ft ags) ⁽³⁾	Total Depth (ft bgs)	Well Screen or Intake			Annulus Backfill				Stratigraphy (depth to top of layer - ft bgs)					Construct Start Date	Construct End Date	Notes			
			Easting ⁽⁴⁾ (ft)	Northing ⁽⁴⁾ (ft)	Top of Casing ⁽³⁾	Ground Surface			Depth (ft bgs)	Length (ft)	Elev (ft AMSL)		Depth (ft bgs)		Type	Upper Clay	Mid Silt Till	Lower Clay	Silt/Sand	Red Till				Bedrock		
											Top	Bottom	Top	Bottom												
28	BKGD-7A	DoD (YLTA)	background	1045328	1180787	309.59	308.59	1	20	9	19	10	299.59	289.59	7 4	20 7	sand bentonite	---	---	---	---	---	---	12/12/2000	12/12/2000	#20 slot 2" dia screen, sch 40 pvc
29	BKGD-8B	DoD (YLTA)	background	1046253	1179072	313.51	310.51	3	13	4	12	8	306.51	298.51	2 1	13 2	sand bentonite	---	---	---	---	---	---	12/11/2000	12/11/2000	#20 slot 2" dia screen, sch 40 pvc
30	BKGD-9A	CWM	background	1048202	1175240	Not shown in well completion log	Not shown in well completion log	2	21	10	20	10			8 6	21 8	sand bentonite	---	---	---	---	---	---	12/11/2000	12/11/2000	#20 slot 2" dia screen, sch 40 pvc
31	BKGD-18	CWM	background	1048189	1173808	Not shown in well completion log	Not shown in well completion log	1	20	9	19	10			7 5	20 7	sand bentonite	---	---	---	---	---	---	12/13/2000	12/13/2000	#20 slot 2" dia screen, sch 40 pvc
32	C1-20-BP1	CWM	Area C20	1041903	1175003	316.93	314.93	2	15	4.6	14.6	10	310.33	300.33	2.6 1.6	15 2.6	sand bentonite	---	---	---	---	---	---	11/28/2000	11/28/2000	#20 slot 2" dia screen, sch 40 pvc
33	C1-20-BP2	CWM	Area C20	1041926	1174970	316.64	314.24	2.4	14.6	4	14	10	310.24	300.24	2 1	14.6 2	sand bentonite	---	---	---	---	---	---	11/28/2000	11/28/2000	#20 slot 2" dia screen, sch 40 pvc
34	C1-20-BP3	CWM	Area C20	1041900	1174895	317.28	314.78	2.5	12.5	2.5	12.5	10	312.28	302.28	2 1	12.5 2	sand bentonite	---	---	---	---	---	---	11/28/2000	11/28/2000	#20 slot 2" dia screen, sch 40 pvc
35	C1-20-BP4	CWM	Area C20	1042028	1174931	316.96	313.96	3	15	4.5	14.5	10	309.46	299.46	2.5 1.5	15 2.5	sand bentonite	---	---	---	---	---	---	11/28/2000	11/28/2000	#20 slot 2" dia screen, sch 40 pvc
36	C1-2-A100BP2	CWM	Area C2	1041519	1175043	316.4	314.4	2	18.5	8	18	10	306.4	296.4	5 3	18.5 5	sand bentonite	---	---	---	---	---	---	11/29/2000	11/29/2000	#20 slot 2" dia screen, sch 40 pvc
37	C1-2-A100BP3	CWM	Area C2	1041430	1175056	316.06	313.56	2.5	13.5	4	13	9	309.56	300.56	3 2	13.5 3	sand bentonite	---	---	---	---	---	---	11/30/2000	11/30/2000	#20 slot 2" dia screen, sch 40 pvc
38	C1-2-A100BP4	CWM	Area C2	1041437	1174892	316.69	314.19	2.5	15.5	4.7	14.7	10	309.49	299.49	2.8 1.5	15.5 2.8	sand bentonite	---	---	---	---	---	---	11/30/2000	11/30/2000	#20 slot 2" dia screen, sch 40 pvc
39	C1-2-A100BP5	CWM	Area C2	1041657	1174918	316.21	313.71	2.5	17.5	6	16	10	307.71	297.71	3.5 2	17.5 3.5	sand bentonite	---	---	---	---	---	---	11/30/2000	12/1/2000	#20 slot 2" dia screen, sch 40 pvc
40	C1-2-A100BP6	CWM	Area C2	1041424	1174970	315.9	313.9	2	18.5	8	18	10	305.9	295.9	6 4.7	18.5 6	sand bentonite	---	---	---	---	---	---	12/1/2000	12/1/2000	#20 slot 2" dia screen, sch 40 pvc
41	C1-2-BP1	CWM	Area C2	1041608	1174727	316.88	314.88	2	18.5	8	18	10	306.88	296.88	5.5 3.25	18.5 5.5	sand bentonite	---	---	---	---	---	---	11/29/2000	11/29/2000	#20 slot 2" dia screen, sch 40 pvc
42	C1-NH-BP3	CWM	Nitration House	1042198	1175033	318.28	315.88	2.4	13	7	12	5	308.88	303.88	5 3	13 5	sand bentonite	---	---	---	---	---	---	8/8/2000	8/8/2000	#20 slot 2" dia screen, sch 40 pvc
43	C1-NH-BP5	CWM	Nitration House	1042201	1175085	318.02	316.02	2	13	7	12	5	309.02	304.02	5 3	13 5	sand bentonite	---	---	---	---	---	---	8/9/2000	8/9/2000	#20 slot 2" dia screen, sch 40 pvc
44	C1-NH-BP6	CWM	Nitration House	1042156	1175082	320.32	318.32	2	19	8	18	10	310.32	300.32	5 3	19 5	sand bentonite	---	---	---	---	---	---	8/9/2000	8/9/2000	#20 slot 2" dia screen, sch 40 pvc
45	C2-3-BP5	Somerset	Area C3	1041549	1176050	312.73	311.23	1.5	14	3	13	10	308.23	298.23	1.5 0.5	14 1.5	sand bentonite	---	---	---	---	---	---	11/7/2000	11/7/2000	#20 slot 2" dia screen, sch 40 pvc
46	C2-3-BP7	Somerset	Area C3	1041450	1176119	312.11	311.11	1	20	9	19	10	302.11	292.11	7 5	20 7	sand bentonite	---	---	---	---	---	---	11/27/2000	11/27/2000	#20 slot 2" dia screen, sch 40 pvc
47	C2-5-BP4	Somerset	Area C5	1041578	1176391	311.87	309.87	2	13	7	12	5	302.87	297.87	5 3	13 5	sand bentonite	---	---	---	---	---	---	8/9/2000	8/9/2000	#20 slot 2" dia screen, sch 40 pvc
48	C2-5-BP5	Somerset	Area C5	1041581	1176329	312.93	309.93	3	12	4	12	8	305.93	297.93	2 1	12 2	sand bentonite	---	---	---	---	---	---	11/7/2000	11/7/2000	#20 slot 2" dia screen, sch 40 pvc
49	C2-5-E200	Somerset	Area C5	1041624	1176358	312.65	310.65	2	13	7	12	5	303.65	298.65	5 3	13 5	sand bentonite	---	---	---	---	---	---	8/9/2000	8/9/2000	#20 slot 2" dia screen, sch 40 pvc
50	C2-6-BP1	Somerset	Area C6	1041706	1176430	313.25	311.25	2	14.5	4.5	14.5	10	306.75	296.75	2.5 1.5	14.5 2.5	sand bentonite	---	---	---	---	---	---	11/6/2000	11/6/2000	#20 slot 2" dia screen, sch 40 pvc
51	C3-VS-BP4	NFSS (USACE)	Vicinity Shops	1040167	1173411	317.34	315.34	2	19	8	18	10	307.34	297.34	5 3	19 5	sand bentonite	---	---	---	---	---	---	8/8/2000	8/8/2000	#20 slot 2" dia screen, sch 40 pvc
52	C3-VS-BP5	NFSS (USACE)	Vicinity Shops	1040101	1173399	317.78	315.38	2.4	19	8	18	10	307.38	297.38	5 3	19 5	sand bentonite	---	---	---	---	---	---	8/8/2000	8/8/2000	#20 slot 2" dia screen, sch 40 pvc
53	C3-VS-G100	NFSS (USACE)	Vicinity Shops	1040166	1173320	318.26	316.26	2	19	8	18	10	308.26	298.26	5 3	19 5	sand bentonite	---	---	---	---	---	---	8/7/2000	8/7/2000	#20 slot 2" dia screen, sch 40 pvc

Monitoring Wells Installed by ERT

Well ID	Property Owner	Site	Location		Elevation (ft AMSL) ⁽⁵⁾		Stick-up (ft ags) ⁽³⁾	Total Depth (ft bgs)	Well Screen or Intake			Annulus Backfill		Stratigraphy (depth to top of layer - ft bgs)					Construct Start Date	Construct End Date	Notes					
			Easting ⁽⁴⁾ (ft)	Northing ⁽⁴⁾ (ft)	Top of Casing ^(3,6)	Ground Surface ⁽⁶⁾			Depth (ft bgs)	Length (ft)	Elev (ft AMSL)		Depth (ft bgs)		Type	Upper Clay	Mid Silt Till	Lower Clay				Silt/Sand	Red Till	Bedrock		
											Top	Bottom	Top	Bottom												
54	C3-WWTP-BP14	Town Lewiston	WWTP	1040324.164	1173990.994	317.06	315.56	1.5	22.5	12	22	10			10 8	22.5 10	sand bentonite	---	---	---	---	---	---	10/22/2009	10/22/2009	#10 slot 2" dia screen, sch 40 pvc
55	C3-WWTP-BP15	Town Lewiston	WWTP	1040301.627	1173862.405	319.54	318.39	1.15	23	12	22	10.0			10 8	23 10	sand bentonite	---	---	---	---	---	---	10/22/2009	10/22/2009	#10 slot 2" dia screen, sch 40 pvc
56	C3-WWTP-BP16	Town Lewiston	WWTP	1040201.628	1173863.759	320.06	318.71	1.35	23	12	22	10			10 8	23 10	sand bentonite	---	---	---	---	---	---	10/22/2009	10/22/2009	#10 slot 2" dia screen, sch 40 pvc

Notes:

- 1 CWM grid system (Ref. Acres Table 5-1, 1990)
 - 2 CWM datum (Ref. Acres Table 5-1, 1990)
 - 3 Top of PVC Riser
 - 4 NYS NAD 83
 - 5 NY NAVD 88
 - 6 Data acquired via GPS and is accurate to within 1 foot
- 7 Highlighted MWs have been decommissioned

Appendix B

Monitoring Well Abandonment Logs

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FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MWS-3S</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc.</i>	Inspector:
	Date: <i>3/18/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	/
Drilling Method(s)	/
Borehole Dia. (in.)	/
Temporary Casing Installed? (y/n)	<i>NA</i>
Depth temporary casing installed	/
Casing type/dia. (in.)	/
Method of installing	/

CASING PULLING

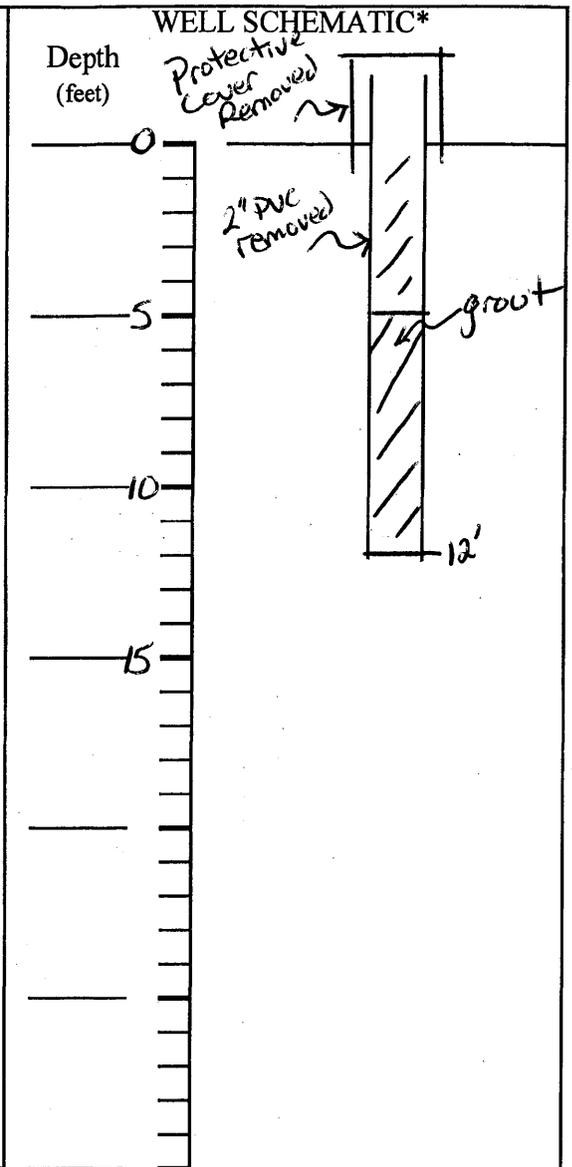
Method employed	<i>Cut & Pull</i>
Casing retrieved (feet)	<i>5'</i>
Casing type/dia. (in.)	<i>2" PVC</i>

CASING PERFORATING

Equipment used	/
Number of perforations/foot	/
Size of perforations	/
Interval perforated	/

GROUTING

Interval grouted (FBLs)	<i>0-12'</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>2.5</i>
Quantity of cement used (lbs.)	<i>28</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>1</i>
Quantity of calcium chloride used (lbs.)	<i>NA</i>
Volume of grout prepared (gal.)	<i>3</i>
Volume of grout used (gal.)	<i>3</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor _____

Department Representative _____

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MUS-3I</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc.</i>	Inspector:
	Date: <i>3/18/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

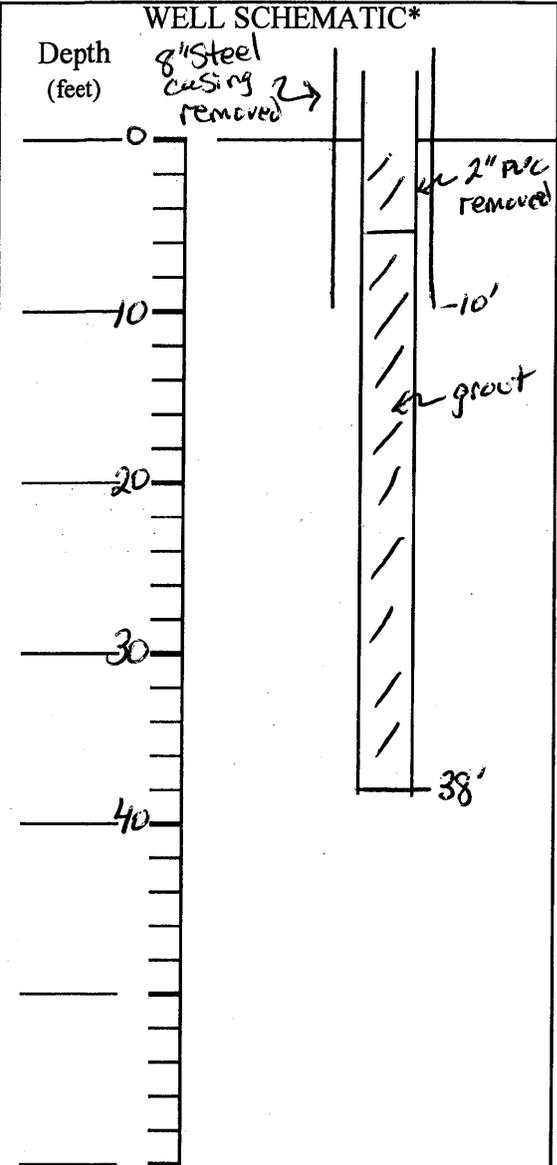
Method employed	Pull
Casing retrieved (feet)	10
Casing type/dia. (in.)	8" 5"
	Steel PVL

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	NA

GROUTING

Interval grouted (FBLs)	0-38
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	8
Quantity of cement used (lbs.)	94
Cement type	Portland
Quantity of bentonite used (lbs.)	4
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	10
Volume of grout used (gal.)	10



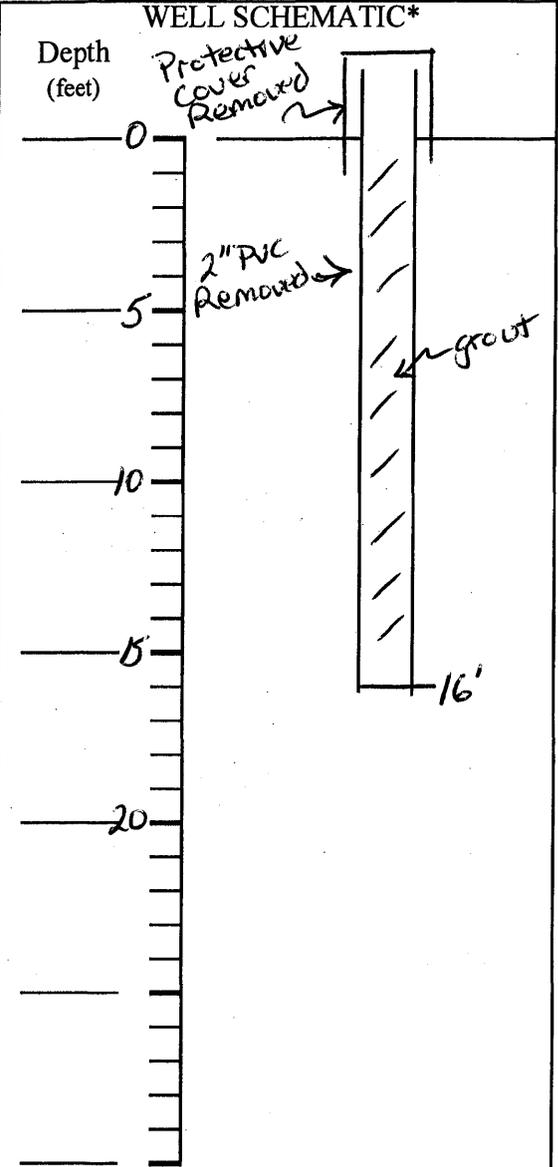
COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>C2-6-BPI</i>
Site Location: <i>Niagara County, New York</i>	Driller: XXXXXXXXXX
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/19/13</i>

DECOMMISSIONING DATA (Fill in all that apply)	
<u>OVERDRILLING</u>	
Interval Drilled	<input type="checkbox"/>
Drilling Method(s)	<input type="checkbox"/>
Borehole Dia. (in.)	<input type="checkbox"/>
Temporary Casing Installed? (y/n)	<input checked="" type="checkbox"/> NA
Depth temporary casing installed	<input type="checkbox"/>
Casing type/dia. (in.)	<input type="checkbox"/>
Method of installing	<input type="checkbox"/>
<u>CASING PULLING</u>	
Method employed	<input type="checkbox"/> Pull
Casing retrieved (feet)	<input type="checkbox"/> 16
Casing type/dia. (in)	<input type="checkbox"/> 2" PVC
<u>CASING PERFORATING</u>	
Equipment used	<input type="checkbox"/>
Number of perforations/foot	<input type="checkbox"/>
Size of perforations	<input type="checkbox"/>
Interval perforated	<input checked="" type="checkbox"/> NA
<u>GROUTING</u>	
Interval grouted (FBSL)	<input type="checkbox"/> 0-16
# of batches prepared	<input type="checkbox"/> 1
For each batch record:	
Quantity of water used (gal.)	<input type="checkbox"/> 4
Quantity of cement used (lbs.)	<input type="checkbox"/> 47
Cement type	<input type="checkbox"/> Portland
Quantity of bentonite used (lbs.)	<input type="checkbox"/> 2
Quantity of calcium chloride used (lbs.)	<input type="checkbox"/> 0
Volume of grout prepared (gal.)	<input type="checkbox"/> 5
Volume of grout used (gal.)	<input type="checkbox"/> 5



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3

WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>C2-5-E200</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/19/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	<i>NA</i>
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

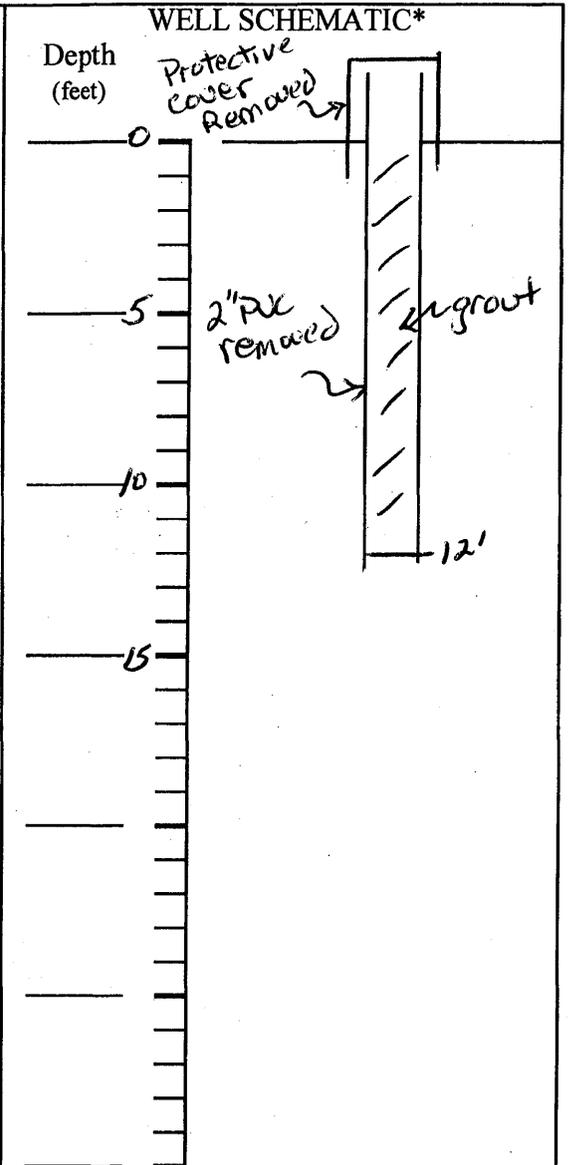
Method employed	<i>Pull</i>
Casing retrieved (feet)	<i>12'</i>
Casing type/dia. (in.)	<i>2" PVC</i>

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	<i>NA</i>

GROUTING

Interval grouted (FBS)	<i>0-12</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>2.5</i>
Quantity of cement used (lbs.)	<i>28</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>1.2</i>
Quantity of calcium chloride used (lbs.)	<i>0</i>
Volume of grout prepared (gal.)	<i>3</i>
Volume of grout used (gal.)	<i>3</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>C2-5-BP4</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/19/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

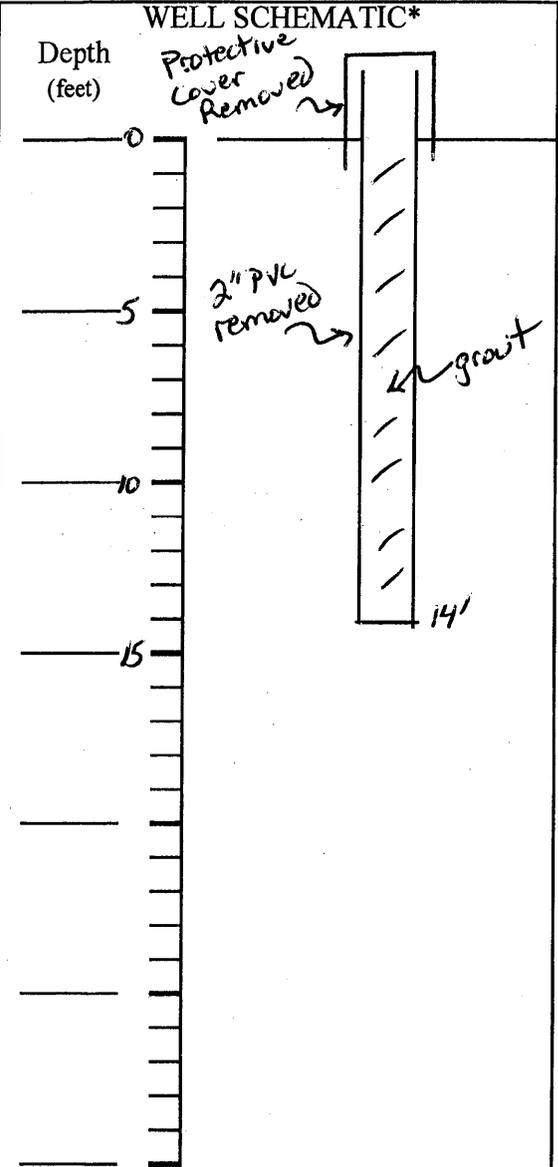
Method employed	Pull
Casing retrieved (feet)	14'
Casing type/dia. (in)	2" PVC

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	NA

GROUTING

Interval grouted (FBLs)	0-14
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	2.5
Quantity of cement used (lbs.)	28
Cement type	Portland
Quantity of bentonite used (lbs.)	1.2
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	3
Volume of grout used (gal.)	3



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>C2-5-BP5</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/19/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

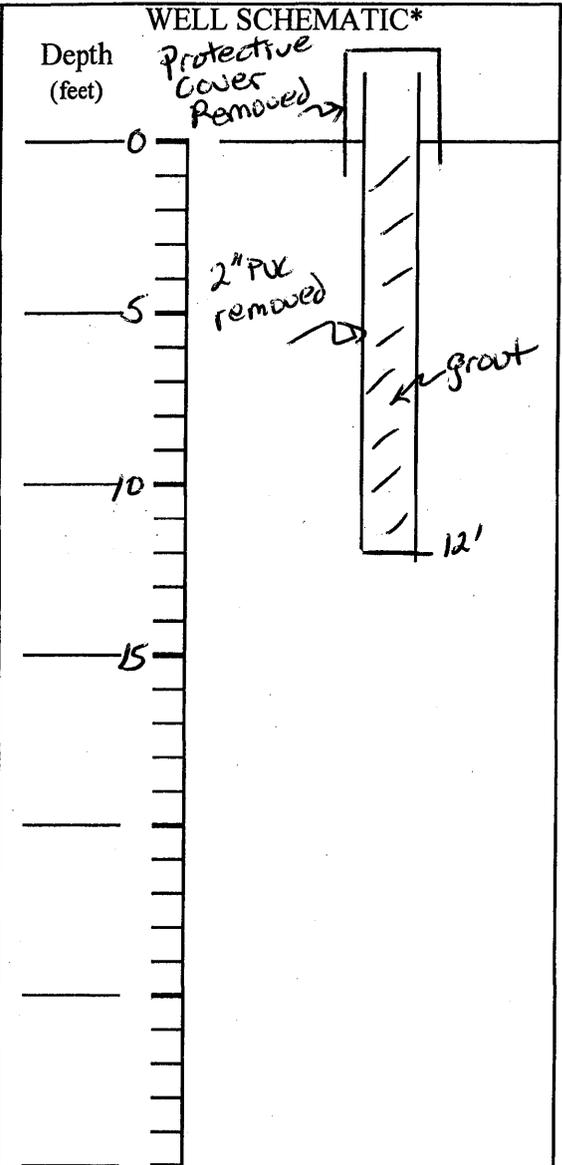
Method employed	Pull
Casing retrieved (feet)	12
Casing type/dia. (in.)	2" PVC

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	NA

GROUTING

Interval grouted (FBSL)	0-12
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	2.5
Quantity of cement used (lbs.)	28
Cement type	Portland
Quantity of bentonite used (lbs.)	1.2
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	3
Volume of grout used (gal.)	3



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MWS-2I</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc.</i>	Inspector:
	Date: <i>3/19/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	<i>NA</i>
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

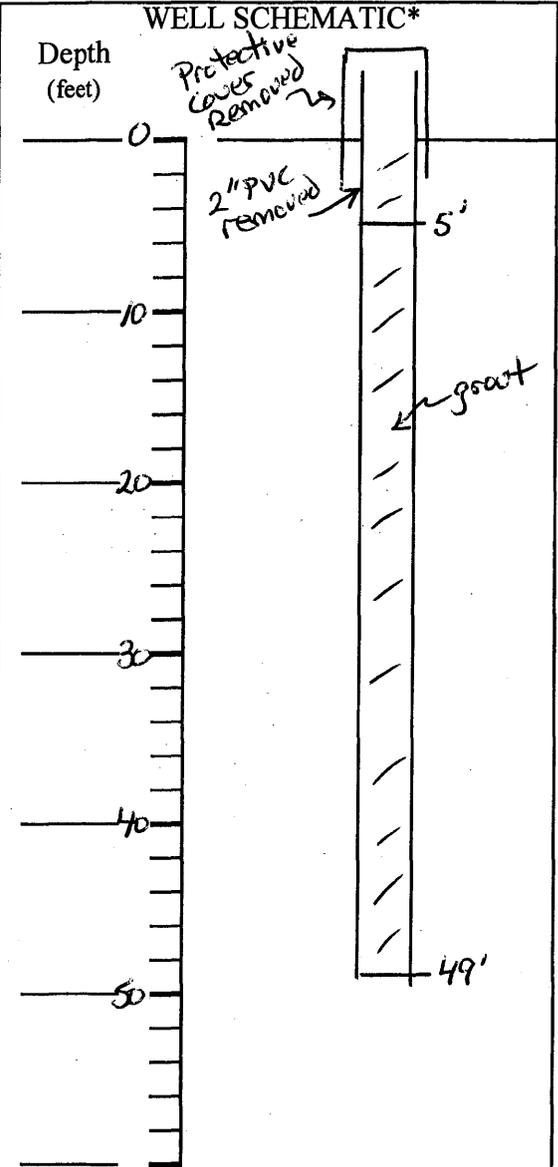
Method employed	<i>Cut + Pull</i>
Casing retrieved (feet)	<i>5</i>
Casing type/dia. (in.)	<i>2" PVC</i>

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	<i>NA</i>

GROUTING

Interval grouted (FBLs)	<i>0-49</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>11</i>
Quantity of cement used (lbs.)	<i>132</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>6</i>
Quantity of calcium chloride used (lbs.)	<i>4</i>
Volume of grout prepared (gal.)	<i>14</i>
Volume of grout used (gal.)	<i>14</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MWS-15</i>
Site Location: <i>Niagara County, New York</i>	Driller: XXXXXXXXXX
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/20/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	/
Drilling Method(s)	/
Borehole Dia. (in.)	/
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	/
Casing type/dia. (in.)	/
Method of installing	/

CASING PULLING

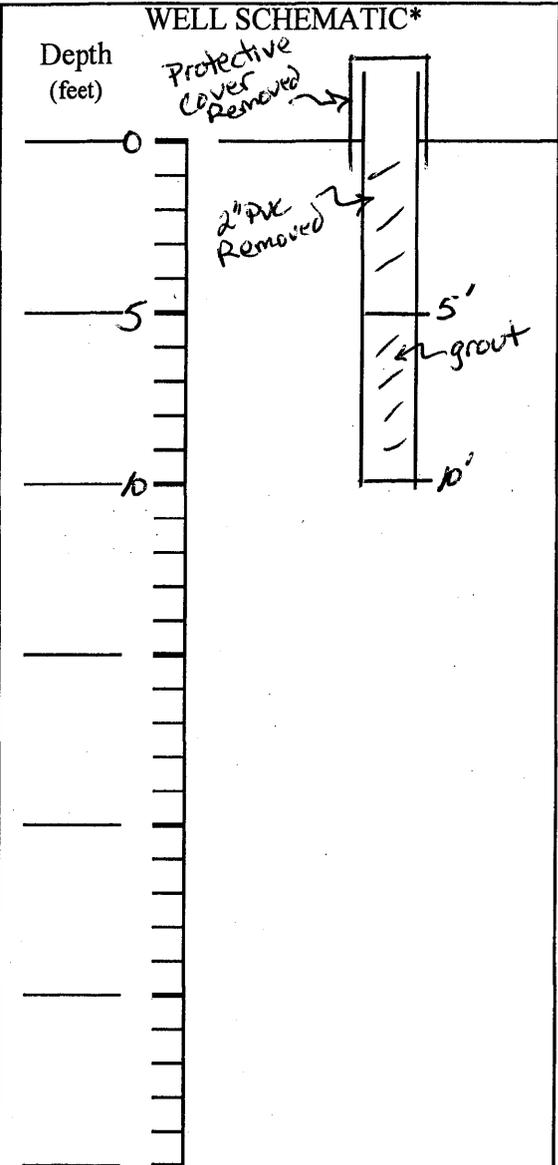
Method employed	<i>Cut+Pull</i>
Casing retrieved (feet)	<i>5</i>
Casing type/dia. (in)	<i>2" PVC</i>

CASING PERFORATING

Equipment used	/
Number of perforations/foot	/
Size of perforations	/
Interval perforated	/

GROUTING

Interval grouted (FBLs)	<i>0-10</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>2.5</i>
Quantity of cement used (lbs.)	<i>28</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>1.2</i>
Quantity of calcium chloride used (lbs.)	<i>0</i>
Volume of grout prepared (gal.)	<i>3</i>
Volume of grout used (gal.)	<i>3</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

**FIGURE 3
WELL DECOMMISSIONING RECORD**

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MWS-1 I</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/20/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	/
Drilling Method(s)	/
Borehole Dia. (in.)	/
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	/
Casing type/dia. (in.)	/
Method of installing	/

CASING PULLING

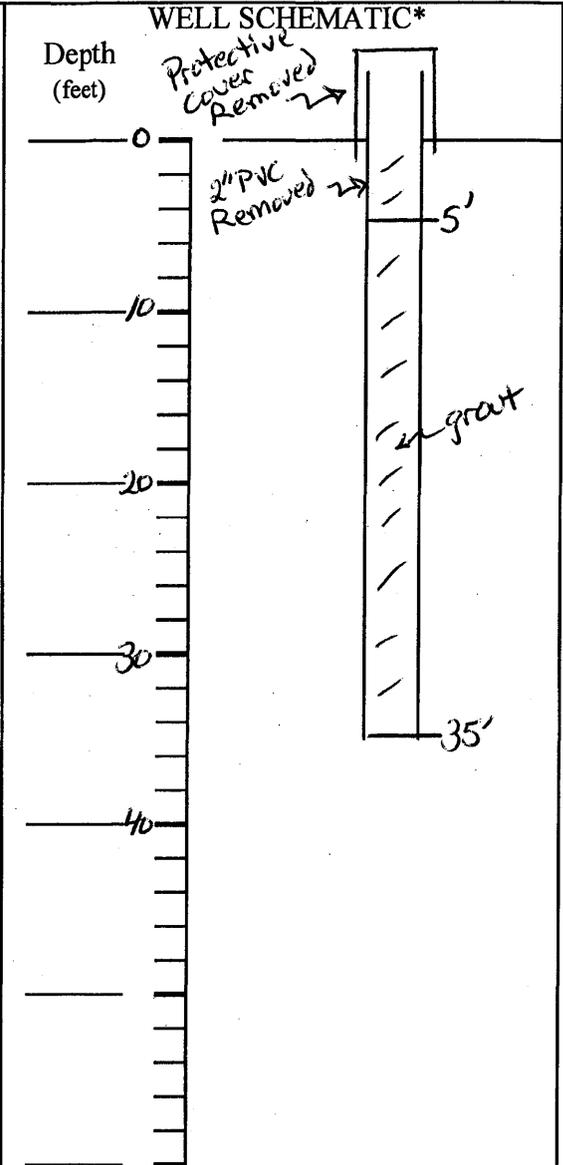
Method employed	Cut + Pull
Casing retrieved (feet)	5
Casing type/dia. (in)	2" PVC

CASING PERFORATING

Equipment used	/
Number of perforations/foot	/
Size of perforations	/
Interval perforated	/

GROUTING

Interval grouted (FBLs)	0-35
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	8
Quantity of cement used (lbs.)	94
Cement type	Portland
Quantity of bentonite used (lbs.)	4
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	10
Volume of grout used (gal.)	10



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3

WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MWS-4I</i>
Site Location: <i>Niagara County, New York</i>	Driller: XXXXXXXXXX
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>8/21/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	<i>NA</i>
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

Method employed	<i>Cut+Pull</i>
Casing retrieved (feet)	<i>5</i>
Casing type/dia. (in.)	<i>2" PVC</i>

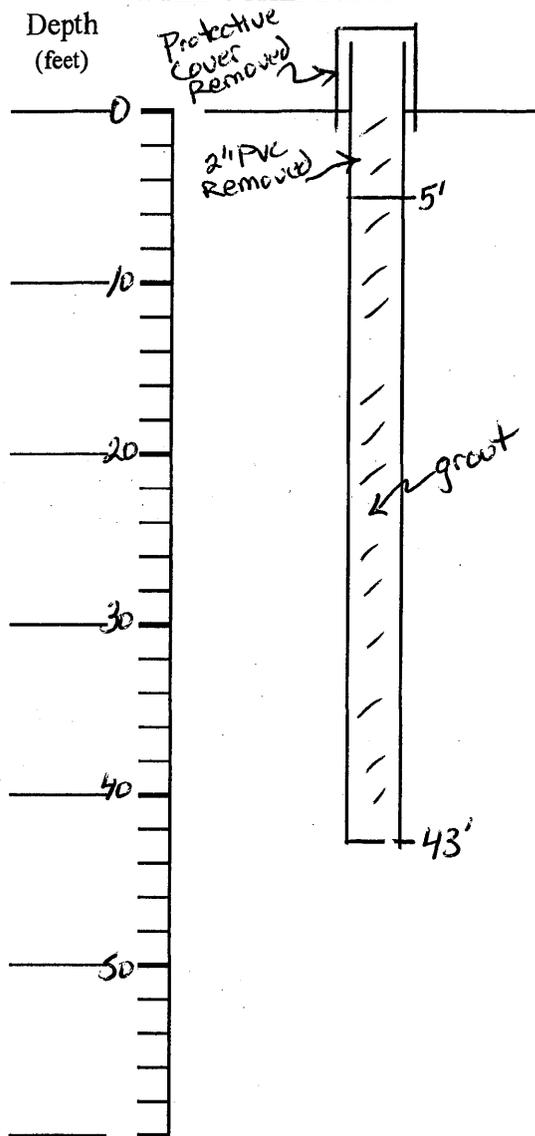
CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	<i>NA</i>

GROUTING

Interval grouted (FBS)	<i>0-43</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>10</i>
Quantity of cement used (lbs.)	<i>112</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>5</i>
Quantity of calcium chloride used (lbs.)	<i>6</i>
Volume of grout prepared (gal.)	<i>12</i>
Volume of grout used (gal.)	<i>12</i>

WELL SCHEMATIC*



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MWS-4D</i>
Site Location: <i>Niagara County, New York</i>	Driller: XXXXXXXXXX
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/21/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	/
Drilling Method(s)	/
Borehole Dia. (in.)	/
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	/
Casing type/dia. (in.)	/
Method of installing	/

CASING PULLING

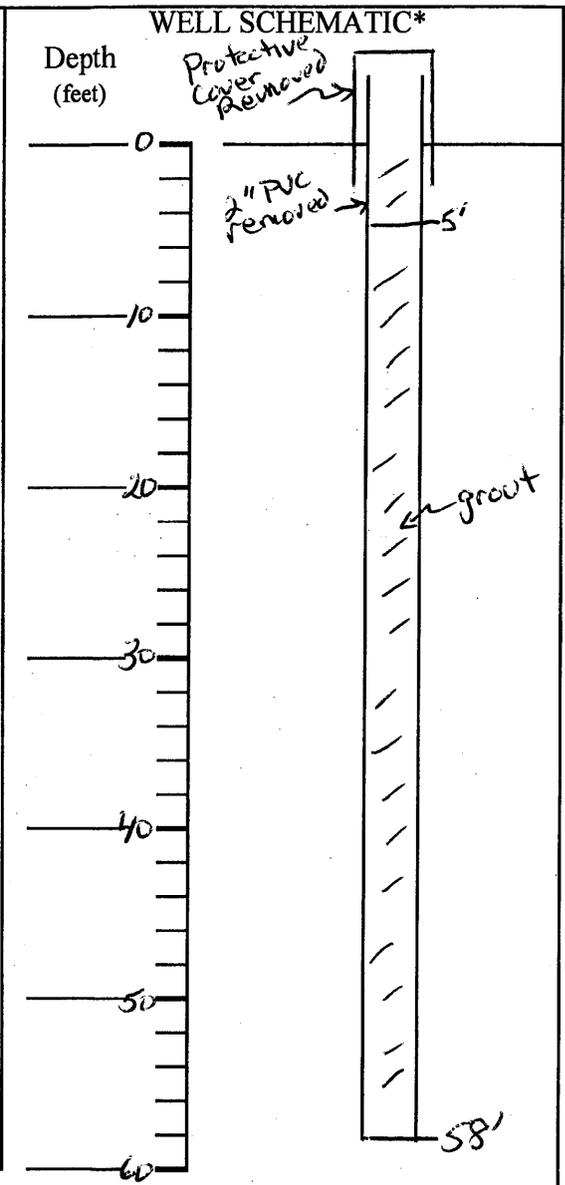
Method employed	<i>Cut+Pull</i>
Casing retrieved (feet)	<i>5</i>
Casing type/dia. (in)	<i>2" PVC</i>

CASING PERFORATING

Equipment used	/
Number of perforations/foot	/
Size of perforations	/
Interval perforated	/

GROUTING

Interval grouted (FBLS)	<i>0-58</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>13</i>
Quantity of cement used (lbs.)	<i>150</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>6</i>
Quantity of calcium chloride used (lbs.)	<i>0</i>
Volume of grout prepared (gal.)	<i>16</i>
Volume of grout used (gal.)	<i>16</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor _____

Department Representative _____

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>C2-3-BP7</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc.</i>	Inspector:
	Date: <i>3/21/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

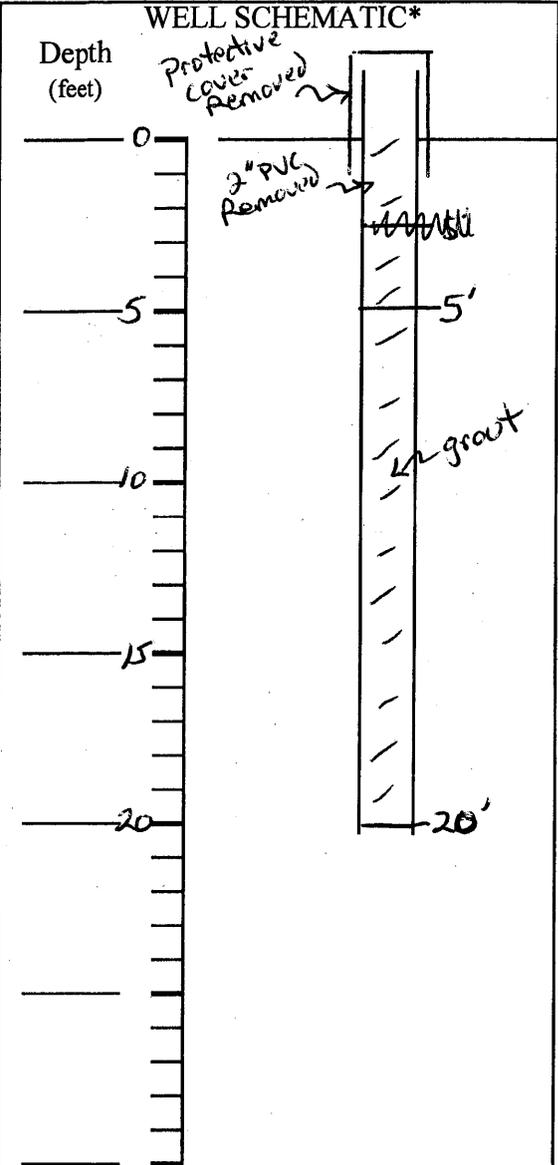
Method employed	Cut + Pull
Casing retrieved (feet)	5
Casing type/dia. (in.)	2" PVC

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	NA

GROUTING

Interval grouted (FBLs)	0-20
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	5
Quantity of cement used (lbs.)	56
Cement type	Portland
Quantity of bentonite used (lbs.)	2.4
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	6
Volume of grout used (gal.)	6



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>C2-3-BP5</i>
Site Location: <i>Niagara County, New York</i>	Driller: XXXXXXXXXX
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/21/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	<i>NA</i>
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

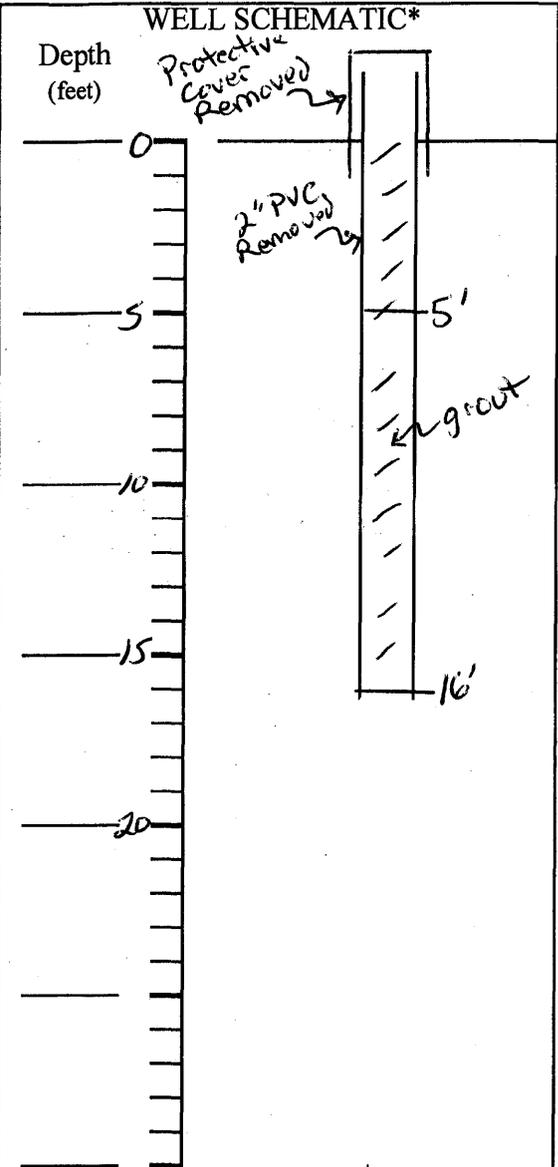
Method employed	<i>Cut+Pull</i>
Casing retrieved (feet)	<i>5</i>
Casing type/dia. (in)	<i>2" PVC</i>

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	<i>NA</i>

GROUTING

Interval grouted (FBLs)	<i>0-16</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>4</i>
Quantity of cement used (lbs.)	<i>47</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>2</i>
Quantity of calcium chloride used (lbs.)	<i>0</i>
Volume of grout prepared (gal.)	<i>5</i>
Volume of grout used (gal.)	<i>5</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: <i>Former Lake Ontario Ordnance Works</i>	Well I.D.: <i>MW-B-15</i>
Site Location: <i>Niagara County, New York</i>	Driller: [REDACTED]
Drilling Co.: <i>Parratt-Wolff, Inc</i>	Inspector:
	Date: <i>3/22/13</i>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

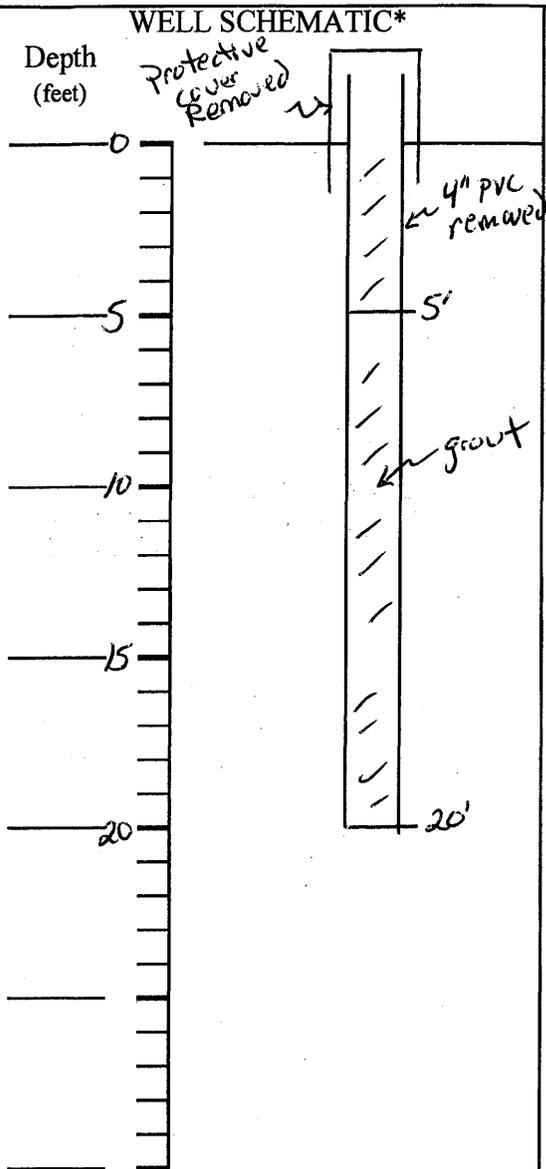
Method employed	<i>Cut + Pull</i>
Casing retrieved (feet)	<i>5</i>
Casing type/dia. (in)	<i>4" PVC</i>

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	NA

GROUTING

Interval grouted (FBLS)	<i>0-20</i>
# of batches prepared	<i>1</i>
For each batch record:	
Quantity of water used (gal.)	<i>14</i>
Quantity of cement used (lbs.)	<i>160</i>
Cement type	<i>Portland</i>
Quantity of bentonite used (lbs.)	<i>7</i>
Quantity of calcium chloride used (lbs.)	<i>0</i>
Volume of grout prepared (gal.)	<i>17</i>
Volume of grout used (gal.)	<i>17</i>



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: Former Lake Ontario Ordnance Works	Well I.D.: MW-B-1D
Site Location: Niagara County, New York	Driller: [REDACTED]
Drilling Co.: Parratt - Wolf, Inc.	Inspector: [REDACTED]
Date: 3/20/13	

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	

CASING PULLING

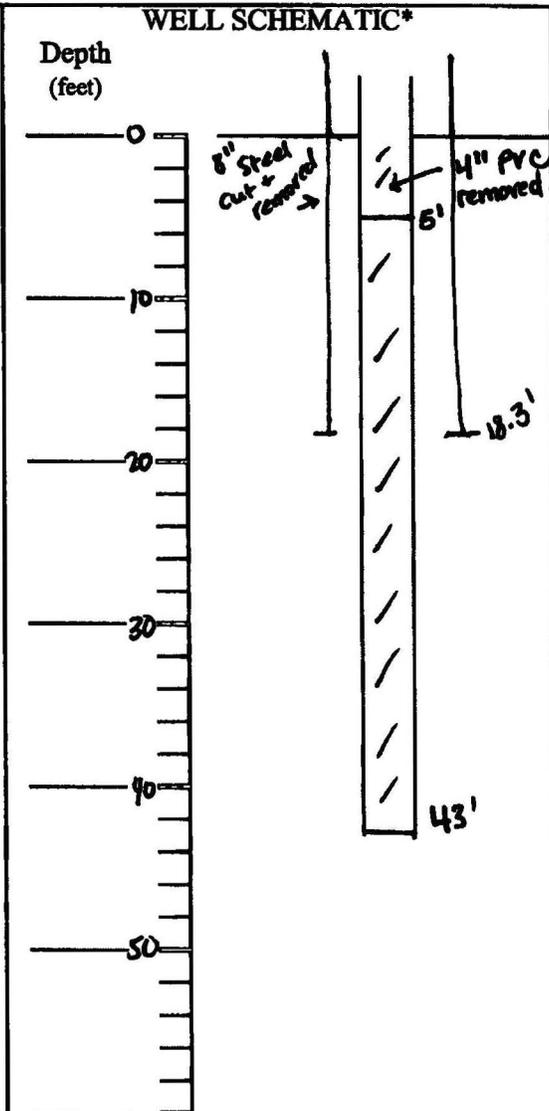
Method employed	Cut + Pull
Casing retrieved (feet)	5' 5'
Casing type/dia. (in.)	8" Steel 4" PVC

CASING PERFORATING

Equipment used	
Number of perforations/foot	
Size of perforations	
Interval perforated	NA

GROUTING

Interval grouted (FBS)	0-43
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	26
Quantity of cement used (lbs.)	310
Cement type	Portland
Quantity of bentonite used (lbs.)	13
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	33
Volume of grout used (gal.)	33



COMMENTS:

Historical const. diagrams are not available for MW-B-1D

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

**FIGURE 3
WELL DECOMMISSIONING RECORD**

Site Name: <u>Former Lake Ontario Ordnance Works</u>	Well I.D.: <u>MW-D-1</u>
Site Location: <u>Niagara County, New York</u>	Driller: XXXXXXXXXX
Drilling Co.: <u>Farratt-Wolf, Inc.</u>	Inspector: _____
Date: <u>3/21/13</u>	

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled	/
Drilling Method(s)	/
Borehole Dia. (in.)	/
Temporary Casing Installed? (y/n)	NA
Depth temporary casing installed	/
Casing type/dia. (in.)	/
Method of installing	/

CASING PULLING

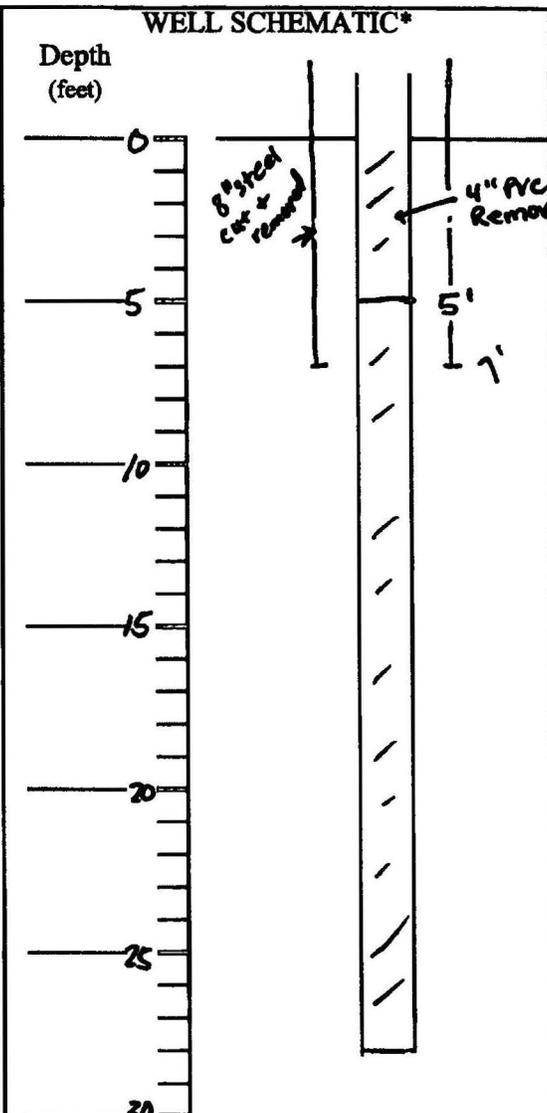
Method employed	Out + Pull
Casing retrieved (feet)	5' 5'
Casing type/dia. (in)	8" 4"
	Steel PVC

CASING PERFORATING

Equipment used	/
Number of perforations/foot	/
Size of perforations	/
Interval perforated	/

GROUTING

Interval grouted (FBLs)	0-28
# of batches prepared	1
For each batch record:	
Quantity of water used (gal.)	11
Quantity of cement used (lbs.)	132
Cement type	Portland
Quantity of bentonite used (lbs.)	6
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	14
Volume of grout used (gal.)	14



COMMENTS:
Historical construction diagrams are not available for MW-D-1

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor _____

Department Representative _____

**FIGURE 3
WELL DECOMMISSIONING RECORD**

Site Name: <u>Ferris Lake Ontario Ordinance Works</u>	Well I.D.: <u>MWS-1D</u>
Site Location: <u>Niagra County, New York</u>	Driller: XXXXXXXXXX
Drilling Co.: <u>Parratt-Wolff, Inc.</u>	Inspector:
	Date: <u>3/20/13</u>

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled

Drilling Method(s)

Borehole Dia. (in.)

Temporary Casing Installed? (y/n)

Depth temporary casing installed

Casing type/dia. (in.)

Method of installing

CASING PULLING

Method employed

Casing retrieved (feet)

Casing type/dia. (in)

CASING PERFORATING

Equipment used

Number of perforations/foot

Size of perforations

Interval perforated

GROUTING

Interval grouted (FBLs)

of batches prepared

For each batch record:

Quantity of water used (gal.)

Quantity of cement used (lbs.)

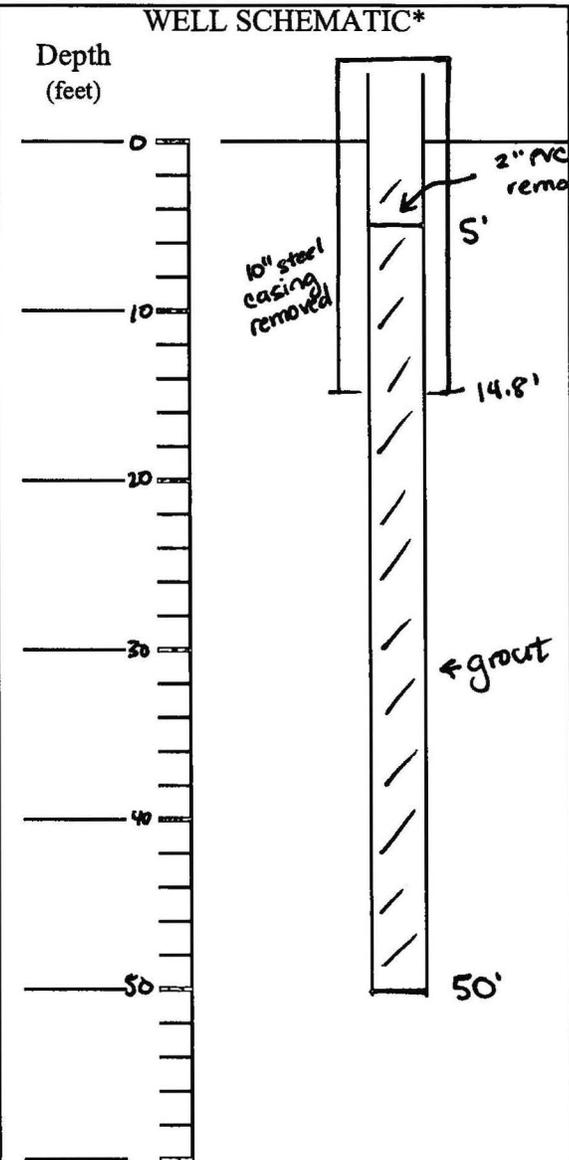
Cement type

Quantity of bentonite used (lbs.)

Quantity of calcium chloride used (lbs.)

Volume of grout prepared (gal.)

Volume of grout used (gal.)



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor _____

Department Representative _____

FIGURE 3

WELL DECOMMISSIONING RECORD

Site Name: Former Lake Ontario Ordnance Works	Well I.D.: MWS-2D
Site Location: Niagra County, New York	Driller: [REDACTED]
Drilling Co.: Parrott - Wolff, Inc.	Inspector:
	Date: 3/21/13

DECOMMISSIONING DATA

(Fill in all that apply)

OVERDRILLING

Interval Drilled	NA
Drilling Method(s)	
Borehole Dia. (in.)	
Temporary Casing Installed? (y/n)	
Depth temporary casing installed	
Casing type/dia. (in.)	
Method of installing	/

CASING PULLING

Method employed	Cut + Pull
Casing retrieved (feet)	5'
Casing type/dia. (in.)	2" PVC

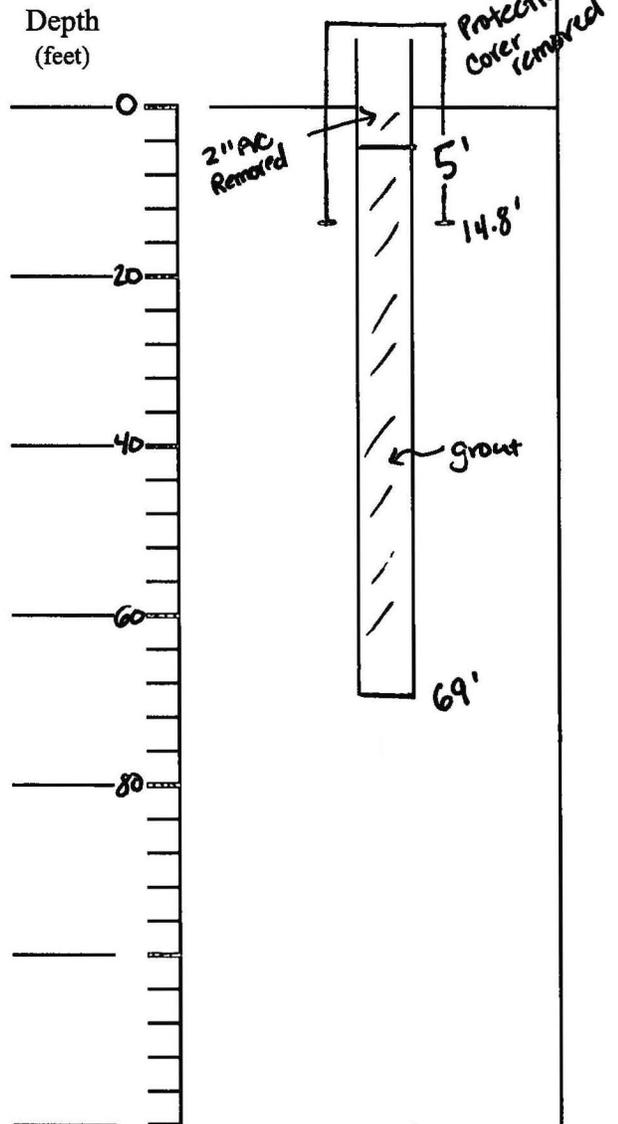
CASING PERFORATING

Equipment used	NA
Number of perforations/foot	
Size of perforations	
Interval perforated	

GROUTING

Interval grouted (FBLs)	0-69
# of batches prepared	1
<u>For each batch record:</u>	
Quantity of water used (gal.)	18
Quantity of cement used (lbs.)	207
Cement type	Portland
Quantity of bentonite used (lbs.)	9
Quantity of calcium chloride used (lbs.)	0
Volume of grout prepared (gal.)	22
Volume of grout used (gal.)	22

WELL SCHEMATIC*



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

Drilling Contractor

Department Representative

FIGURE 3
WELL DECOMMISSIONING RECORD

Site Name: Former Lake Ontario Ordnance Works	Well I.D.: MWS-3D
Site Location: Niagra County, New York	Driller: [REDACTED]
Drilling Co.: Parratt-Wolff, Inc.	Inspector:
	Date: 3/22/13

DECOMMISSIONING DATA
(Fill in all that apply)

OVERDRILLING

Interval Drilled

Drilling Method(s)

Borehole Dia. (in.)

Temporary Casing Installed? (y/n)

Depth temporary casing installed

Casing type/dia. (in.)

Method of installing

CASING PULLING

Method employed

Casing retrieved (feet)

Casing type/dia. (in.)

CASING PERFORATING

Equipment used

Number of perforations/foot

Size of perforations

Interval perforated

GROUTING

Interval grouted (FBSL)

of batches prepared

For each batch record:

Quantity of water used (gal.)

Quantity of cement used (lbs.)

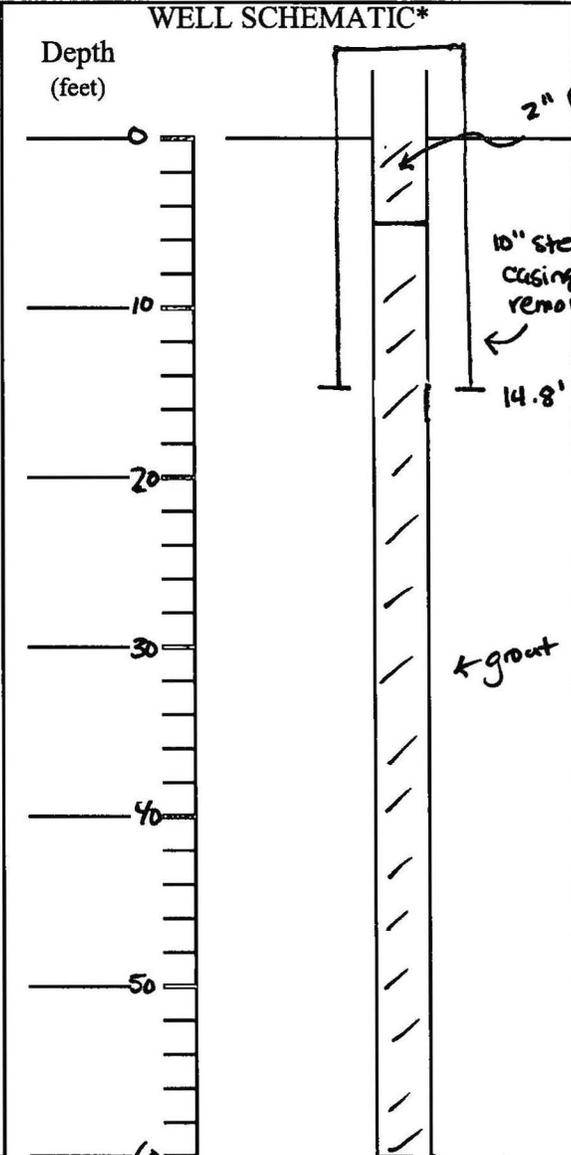
Cement type

Quantity of bentonite used (lbs.)

Quantity of calcium chloride used (lbs.)

Volume of grout prepared (gal.)

Volume of grout used (gal.)



COMMENTS:

* Sketch in all relevant decommissioning data, including: interval overdrilled, interval grouted, casing left in hole, well stickup, etc.

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Appendix C

Photo Log

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Photograph 1. MW-B-1D, 14 November 2012



Photograph 2. MW-B-1D, 20 March 2013



Photograph 3. MW-B-1S, 14 November 2012



Photograph 4. MW-B-1S, 20 March 2013



Photograph 5. MW-D-1, 14 November 2012



Photograph 6. MW-D-1, 21 March 2013



Photograph 7. MWS-4I, 14 November 2012



Photograph 8-MWS-4I and MWS-4D, 21 March 2013



Photograph 9. MWS-4D, 14 November 2012



Photograph 10. MWS-3S, 14 November 2012



Photograph 11. MWS-3I, 14 November 2012



Photograph 12. MWS-3D, 14 November 2012



Photograph 13 MWS-3S, MWS-3D and MWS-3I, 22 March 2013



Photograph 14. C2-6-BP1, 14 November 2012



Photograph 15 C2-6-BP1, 22 March 2013



Photograph 16. C2-5-BP4, 14 November 2012



Photograph 17 C2-5-BP4, 22 March 2013



Photograph 18. C2-5-E200, 14 November 2012



Photograph 19 C2-5-E200, 22 March 2013



Photograph 20. C2-3-BP5, 14 November 2012



Photograph 21 C2-3-BP5, 22 March 2013



Photograph 22. MWS-2I, 14 November 2012



Photograph 23 MWS-2I, 22 March 2013



Photograph 24. MWS-2D, 14 November 2012



Photograph 25 MWS-2D, 22 March 2013



Photograph 26. C2-3-BP7, 14 November 2012



Photograph 27 C2-3-BP7, 22 March 2013



Photograph 28. C2-5-BP5, 14 November 2012



Photograph 29 C2-5-BP5, 22 March 2013



Photograph 30. MWS-1S, 14 November 2012



Photograph 31. MWS-1D, 14 November 2012



Photograph 32. MWS-1I, 14 November 2012



Photograph 33 MWS-1S, MWS-1D, and MWS-1I, 21 March 2013

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Appendix D

Field Forms

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Appendix D: Table of Contents

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Site Safety and Health Review Record	Page 12
Author: [REDACTED]	
Site Entry and Exit Logs, 19 – 22 March 2013	Page 13
Author: [REDACTED]	
Field Notes, Field Team Lead, 18 – 22 2013	Page 17
Author: [REDACTED]	
Field Notes, Site Safety and Health Officer, 18 – 22 2013	Page 24
Author: [REDACTED]	

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DAILY LOG

Project: LOOW MW Decommissioning (ERT Project No.: 3108-004)

Date: Monday 18 March 2013

Prepared By: [REDACTED]

Submitted To: [REDACTED], USACE – CELRB

Report No.: 01

Weather: 30-35 degrees, clear but windy with intermittent snow

Contractor	Workforce	Activities	Incidents	Planned Activities
ERT	[REDACTED], FTL	Mobilization to Somerset property, lead the kick-off tailgate meeting, and oversee MW decommissioning activities.	None	Oversight of MW decommissioning activities.
USACE – CELRB	[REDACTED]	Mobilization to Somerset property, participate in the kick-off tailgate meeting, and provide HP services during MW decommissioning activities.	None	Subcontractor oversight of MW decommissioning activities and HP services.
Parratt-Wolff	[REDACTED]	Mobilization to Somerset property, participate in the kick-off tailgate meeting, and begin MW decommissioning activities.	None	Begin/perform MW decommissioning activities at 16 locations.

Activities Completed: ERT and Parratt-Wolff mobilized to the Somerset property at 0900 and completed staging of equipment.. ERT with assistance from CELRB, complete the kick-off tailgate meeting. Prior to beginning decommissioning activities, ERT/Parratt-Wolf/CELRB completed a site walk so that each MW location and any location or site-specific H&S concerns relative to planned activities could be identified. Following the site walk, Parratt-Wolff began MW decommissioning activities at the 16 MW locations identified for decommissioning. Parratt-Wolff completed the initial grouting at 12 of the 16 MW locations; including MWS-1S, MWS-1I, MWS-1D, MWS-2I, MWS-2D, MWS-3S, MWS-3I, MWS-3D, C2-5-P4, C2-5-BP5, C2-5-E200, and C2-6-BP1. No intrusive activities were completed. No near miss or reportable incidents occurred during the completion of field activities. ERT and Parratt-Wolff were offsite at 1700

Planned Activities: Mobilization to the Somerset property and staging of equipment by ERT and Parratt-Wolff.. Complete kick-off tailgate meeting; focusing on site-specific H&S concerns relative to planned activities, Begin MW decommissioning activities at the Somerset property; 16 MW locations have been identified for decommissioning; including MWS-1S, MWS-1I, MWS-1D, MWS-2I, MWS-2D, MWS-3S, MWS-3I, MWS-3D, MWS-4I, MWS-4D, C2-3-BP5, C2-3-BP7, C2-5-P4, C2-5-BP5, C2-5-E200, and C2-6-BP1.

Issues Encountered and Resolutions: During mobilization between MW locations, the drill rig encountered muddy conditions and due to poor traction needed to be pulled out by the mini-excavator. In response to potential muddy condition, ERT and Parratt-Wolff will pre-walk to each MW location and provide addition guidance during mobilizations. The mini-excavator has encountered no traction issues at the Somerset property.

DAILY LOG

Project: LOOW MW Decommissioning (ERT Project No.: 3108-004)

Date: Tuesday 19 March 2013

Prepared By: [REDACTED]

Submitted To: [REDACTED] USACE – CELRB

Report No.: 02

Weather: 30-35 degrees F, clear but windy with frequent snow flurries in the afternoon

Contractor	Workforce	Activities	Incidents	Planned Activities
ERT	[REDACTED], FTL [REDACTED], SSHO [REDACTED], DPM	Mobilization to Somerset property, lead the daily FTL/SSHO tailgate meeting, and oversee MW decommissioning activities.	None	Oversight of MW decommissioning activities.
USACE – CELRB	[REDACTED]	Mobilization to Somerset property, participate in the daily FTL/SSHO tailgate meeting, and provide HP services during MW decommissioning activities.	None	Subcontractor oversight of MW decommissioning activities and HP services.
Parratt-Wolff	[REDACTED]	Mobilization to Somerset property, participate in the daily FTL/SSHO tailgate meeting, and continue MW decommissioning activities.	None	Continue/perform MW decommissioning activities at 16 locations.
National Grid	2 Employees	NG activities were coordinated by [REDACTED] (CELRB).	None	NG activities were coordinated by [REDACTED] (CELRB).

Activities Completed: ERT and Parratt-Wolff mobilized to the site at 0700 to continue decommissioning activities at the Somerset property.. ERT completed the daily FTL/SSHO tailgate meeting. The daily FTL/SSHO tailgate focused on uneven terrain/muddy conditions and hydration during cold/dry weather conditions. Following the daily FTL/SSHO tailgate, Parratt-Wolff continued MW decommissioning activities at the 16 MW locations on the Somerset property. Parratt-Wolff completed the initial grouting at 4 locations (MWS-4I, MWS-4D, C2-3-BP5, and C2-3-BP7) and the secondary grouting of 6 MW locations. Secondary grouting was necessary due to settling within the MW Locations. No near miss or reportable incidents occurred during the completion of field activities. ERT and Parratt-Wolff were offsite at 1700.

Site Visitors: National Grid were onsite between 0930 and 1100 to complete overhead electric utility activities. All National Grid activities were coordinated by [REDACTED] (CELRB) and were not directly associated with the MW decommissioning activities being overseen by ERT.

Planned Activities: Complete the daily FTL/SSHO tailgate meeting; focusing on site-specific H&S concerns relative to planned activities. Continue MW decommissioning activities at the Somerset property. Four MW locations (MWS-4I, MWS-4D, C2-3-BP5, and C2-3-BP7) will receive an initial grouting. In addition, Parratt-Wolff will evaluate how much settling has occurred at the twelve MW locations initially grouted yesterday (MWS-1S, MWS-1I, MWS-1D, MWS-2I, MWS-2D, MWS-3S, MWS-3I, MWS-3D, MWS-4I, MWS-4D, C2-3-BP5, C2-3-BP7, C2-5-P4, C2-5-BP5, C2-5-E200, and C2-6-BP1).

Issues Encountered and Resolutions: During mobilization between MW locations, the drill rig continues to encounter muddy conditions and due to poor traction has needed to be pulled out by the mini-excavator. ERT and Parratt-Wolff will continue to pre-walk and identify the best path between each MW location and provide addition guidance during mobilizations. The mini-excavator has encountered no traction issues at the Somerset property.

DAILY LOG

Project: LOOW MW Decommissioning (ERT Project No.: 3108-004)

Date: Wednesday 20 March 2013

Prepared By: ██████████, SSHO: ██████████, FTL

Submitted To: ██████████, USACE – CELRB

Report No.: 03

Weather: 25-30 degrees F, windy and cloudy with frequent, heavy snow flurries

Contractor	Workforce	Activities	Incidents	Planned Activities
ERT	██████████, FTL ██████████, SSHO	Mobilization to Somerset/CWM properties, lead the daily FTL/SSHO tailgate meeting, and oversee MW decommissioning activities at the CWM property.	None	Oversight of MW decommissioning activities at the CWM property. Attempt to locate 2 MWs believed to be below grade in construction equipment staging area.
USACE – CELRB	██████████	Mobilization to Somerset/CWM properties, participate in the daily FTL/SSHO tailgate meeting, and provide HP services during MW decommissioning activities at the CWM property.	None	Subcontractor oversight of MW decommissioning activities and HP services at the CWM property.
Parratt-Wolff	██████████	Mobilization to Somerset/CWM properties, participate in the daily FTL/SSHO tailgate meeting, and MW decommissioning activities at the CWM property.	None	Commenced MW decommissioning activities at 3 locations on the CWM property; excavate/backfill 2 suspected below grade MWs.

Activities Completed: ERT, Parratt-Wolff, and USACE mobilized to the Somerset property at 0700 where ERT completed the daily FTL/SSHO tailgate meeting. The tailgate focused on uneven terrain/muddy/snow-covered conditions, hydration during cold/dry/windy weather conditions, and working around/near excavation equipment and activities. Following the tailgate, at 0800 all personnel left the Somerset property to meet John Rizzo at the CWM property for CWM's health/safety meeting and site walkthrough of MW sites. Parratt-Wolff commenced MW decommissioning activities at the 3 MW locations (MW-B-1S, MW-B-1D, MW-D-1) on the CWM property. Parratt-Wolff completed the initial grouting at all 3 locations and removed outer casings and concrete from MW-B-1S and MW-B-1D. MW-B-1S was excavated to approximately 5ft bgs to allow for removal of outer casing with cutting torch. Proper excavation sloping procedures and fall restraints on fuel cylinders were used during these activities. A 15 cubic yard roll-off container was delivered to the Somerset property by WM at 1000 for disposal of C&D material.

USACE used GPS coordinates and FTL used Schonstedt magnetometer to attempt to locate 2 MWs (MW-C-1S, MW-C-2D) for excavation suspected to be in construction equipment staging area. The two MWs could not be located and the approximately 10ft radius excavations were backfilled after USACE approval. ERT and Parratt-Wolff were offsite at 1700.

No near miss or reportable incidents occurred during the completion of field activities.

Planned Activities: Complete the daily FTL/SSHO tailgate meeting, focusing on site-specific health/safety concerns relative to planned activities and commence MW decommissioning activities at the CWM property. Three MW locations (MW-B-1S, MW-B-1D, MW-D-1) will be decommissioned.

Issues Encountered and Resolutions: The drill rig could not be mobilized immediately near to 2 MWs (MW-B-1S and MW-B-1D) in the heavily wooded area due to uneven, muddy, snow-covered terrain. The excavator was used to clear the way as much as possible so Parratt-Wolff personnel could fill buckets of grout and manually carry them to the MWs. ERT and Parratt-Wolff will continue to pre-walk and identify the best path between each MW location and provide additional guidance during mobilizations. The mini-excavator encountered no traction issues at the CWM property. Additionally, upon further review of the planned

decommissioning activities at CWM, CWM personnel would not allow the abandonment of MW-C-3S, MW-C-3D, MW-C-1D, MW-C-2D, and MW-C-1S, and CWM assumed responsibility for the future abandonment of these MWs.

DAILY LOG

Project: LOOW MW Decommissioning (ERT Project No.: 3108-004)

Date: Thursday 21 March 2013

Prepared By: [REDACTED], SSHO; [REDACTED], FTL

Submitted To: [REDACTED], USACE – CELRB

Report No.: 04

Weather: 15 degrees F, clear and sunny during morning; by afternoon, cloudy, flurries and temperature rose to 27 degrees

Contractor	Workforce	Activities	Incidents	Planned Activities
ERT	[REDACTED], FTL [REDACTED], SSHO	Mobilization to CWM/Somerset property, lead the daily FTL/SSHO tailgate meeting, and oversee MW decommissioning activities at the Somerset property.	None	Oversight of MW decommissioning activities at the CWM/Somerset property.
USACE – CELRB	[REDACTED] [REDACTED]	Mobilization to CWM/Somerset property, participate in the daily FTL/SSHO tailgate meeting, and provide HP services during MW decommissioning activities at the Somerset property.	None	Subcontractor oversight of MW decommissioning activities and HP services at the CWM/Somerset property.
Parratt-Wolff	[REDACTED]	Mobilization to CWM/Somerset property, participate in the daily FTL/SSHO tailgate meeting, and MW decommissioning activities at the Somerset property.	None	Commenced MW decommissioning activities at on the CWM/Somerset property.
NYSDEC	[REDACTED]	Regulatory oversight of abandonment activities.	None	None

Activities Completed: ERT, Parratt-Wolff, and USACE mobilized to the CWM property at approximately 0700 where ERT completed the daily FTL/SSHO tailgate meeting. The tailgate focused on uneven terrain/muddy/snow-covered conditions, hydration during cold/dry/windy weather conditions, and working around/near excavation equipment and activities. Following the tailgate, all personnel mobilized to mark MWs MW-B-1S, MW-B-1D with rebar driven into ground and topped with plastic utility safety cap. Parratt-Wolff commenced excavation on MW-D-1 and used cutting torch to remove casing and completed decommissioning; the MW was marked in the same manner as previously mentioned. ERT personnel then mobilized to place markers for MW-C-2D and MW-C-1S based on USACE GPS coordinates. All personnel checked out with CWM and removed all MW materials from site. Personnel re-mobilized to Somerset to continue decommissioning wells. Parratt-Wolff removed and disposed of bollards, concrete, and casing, then backfilled, and the FTL applied grass seed to the following MW locations: MWS-1S, MWS-1D, MWS-1I, MWS-4I, MWS-4D, C2-3-BP5, C2-3-BP7, MWS-2D, MWS-2I. Disposed of concrete, bollards and casing from the following wells: C2-5-BP4, C2-5-PB5, C2-5-E200, C2-6-BP1, which had been removed on 3/19/13. ERT and Parratt-Wolff were offsite at 1500.

Site Visitors: [REDACTED] and [REDACTED] from NYSDEC visited site activities at the CWM property at approximately 0930, were pleased with progress and left approximately 15 minutes later. [REDACTED] from CWM visited site at approximately 1000, and FTL escorted him to check the MWs; he left shortly afterward. [REDACTED] and [REDACTED] of USACE visited site at approximately 1430, checked previously decommissioned wells, and left shortly thereafter.

Planned Activities: Complete the daily FTL/SSHO tailgate meeting, focusing on site-specific health/safety concerns relative to planned activities, complete MW decommissioning activities at the CWM property, and continue MW decommissioning activities at the Somerset property.

Issues Encountered and Resolutions: No issues were encountered during today's work. ERT and Parratt-Wolff will continue to pre-walk and identify the best path between each MW location and provide additional guidance during mobilizations. The mini-excavator encountered no traction issues at the CWM property.

DAILY LOG

Project: LOOW MW Decommissioning (ERT Project No.: 3108-004)

Date: Friday 22 March 2013

Prepared By: [REDACTED], SSHO; [REDACTED], FTL

Submitted To: [REDACTED], USACE – CELRB

Report No.: 05

Weather: 20-25 degrees F, cloudy, constant flurries all day

Contractor	Workforce	Activities	Incidents	Planned Activities
ERT	[REDACTED], FTL [REDACTED], SSHO	Mobilization to Somerset property, lead the daily FTL/SSHO tailgate meeting, and oversee MW decommissioning activities at the Somerset property. Demobilize from the site.	None	
USACE – CELRB	[REDACTED]	Mobilization to Somerset property, participate in the daily FTL/SSHO tailgate meeting, and provide HP services during MW decommissioning activities at the Somerset property.	None	None. All activities completed.
Parratt-Wolff	[REDACTED]	Mobilization to Somerset property, participate in the daily FTL/SSHO tailgate meeting, and MW decommissioning activities at the Somerset property. Demobilize from the site	None	None. All activities completed.

Activities Completed: ERT, Parratt-Wolff, and USACE mobilized to the Somerset property at 0700 where ERT completed the daily FTL/SSHO tailgate meeting. The tailgate focused on uneven terrain/muddy/snow-covered conditions, hydration during cold/dry/windy weather conditions, and working around/near excavation equipment and activities. Following the tailgate, all personnel mobilized to complete the decommission of, and remove concrete, bollards, and outer casings associated with MWS-3S, MWS-3D, MWS-3I. MWS-3S and MWS-3D were double cased. All decommissioned MWs on the Somerset property were marked using a hammer-driven rebar rod, capped with a labeled, plastic safety cap. Grass seed was applied to all excavated areas around the decommissioned wells, after these areas were backfilled and graded. At the conclusion of decommissioning activities, Waste Management picked up the dumpster that contained all C&D generated from the site (concrete, bollards, casings, tubing remove from wells, etc.) at approximately 1500. After the dumpster was removed, all personnel and equipment were escorted from the site by USACE. Demobilization from the site was complete at 1515.

Planned Activities: None, all tasks associated with this activity were completed.

Issues Encountered and Resolutions: No issues were encountered during today's work.

APPENDIX B

SITE ENTRY AND EXIT LOG

Project: Phase IV RI/FS Activities

Site: Lake Ontario Ordnance Works (LOOW), Niagara County, New York

ERT Project No.: 3108

Date	Name	Representing	Date/Time	
			In	Out
3-19-13	[REDACTED]	ERT	0715	5:00 pm
3/19/13		ERT	0715	5:00 pm
3-19-13		ERT	0715	11:45 am
3-19-13		P/W	0700	5:00 pm
3/19/13		P/W	0700	5:00 pm
19-MAR-13		USACE	0700	5:00 pm

[Handwritten mark]

APPENDIX B

SITE ENTRY AND EXIT LOG

Project: Phase IV RI/FS Activities

Site: Lake Ontario Ordnance Works (LOOW), Niagara County, New York

ERT Project No.: 3108

Date	Name	Representing	Date/Time	
			In	Out
3-20-13	[REDACTED]	PW	7:00	5:00
3/20/13		PW	7:00	5:00
3/20/13		ERT	7:15	5:00
20 MAR 13		USACE	7:15	5:00
3/20/13		ERT	7:15	5:00

APPENDIX B

SITE ENTRY AND EXIT LOG

Project: Phase IV RI/FS Activities

Site: Lake Ontario Ordnance Works (LOOW), Niagara County, New York

ERT Project No.: 3108

Date	Name	Representing	Date/Time	
			In	Out
3-21-2013	[REDACTED]	ERT	7:00	5:00
3/21/13		ERT	7:00	5:00
3-21-13		P/W	7:00	5:00
21MART13		USACE	7:00	5:00
3/21/13		P/W	6:58	5:00

APPENDIX B

SITE ENTRY AND EXIT LOG

Project: Phase IV RI/FS Activities

Site: Lake Ontario Ordnance Works (LOOW), Niagara County, New York

ERT Project No.: 3108

Date	Name	Representing	Date/Time	
			In	Out
3-22-13	[REDACTED]	ERT	7:00	3:00
3/22/13		ERT	7:00	3:00
3/22/13		P/W	7:00	3:00
3-22-13		P/W	7:00	3:00
22 MAR 13		USACE	7:00	3:00

LOOW 3108-004 3/12/13

Weather: low-mid 30's, mostly cloudy with flurries

8:30 - [redacted] & [redacted] (both USACE-CELRB) met [redacted] @ Portage House Motel in Lewiston to escort [redacted] to LOOW site. (Somerset property)

9:00 - arrived at LOOW site, met with additional USACE-CELRB personnel & dillers with Parrott-Wolff (P-W)

Personnel on site:

ERT	USACE-CELRB	P-W
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

- kickoff tailgate & safety meeting conducted by USACE & ERT. All personnel then conducted site walk to identify each MW location and address any issues.

10:30 - [redacted] off site, as preparation for MW decommissioning begins. P-W then began granting MWs on the Somerset property.

LOOW

3/18/13

- 12:00 - lunch

- before & after lunch, the following MWs were initially granted: MWS-1S, MWS-1I, MWS-1D, MWS-2I, MWS-2D, MWS-3S, MWS-3I, MWS-3D, C2-5-P4, C2-5-PP5, C2-5-E200 and C2-6-BP1.

- 17:00 stopped work for the day, all personnel off site.

- Spoke with [redacted] periodically throughout day, due to airport delays he & [redacted] did not make it to site. Will be on site tomorrow.

LOOW

3/20/13

Weather: mid-upper 20s, windy with frequent snow flurries, heavy at times.

Field - [redacted] & [redacted] met USACE & P-W personnel on site @ Somerset property.

ERTUSACEP-W

[redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

- safety tailgate meetings/planned activities overview, mainly addressing work on the CWM property.

Di:00 - moved to CWM property, met John [redacted] inside the gate. [redacted] conducted a safety briefing, as well as obtaining driller signatures for "hot work" permit (needed for use of cutting torch).

- Also reviewed revised CWM property work scope, which was to decommission 3 wells, and attempt to locate 2 suspected buried wells, under a gravel covered construction area.

- [redacted] escorted us to well locations

LOOW

3/20/13

and conducted site walk throughs.

- P-W then began grouting activities. MW-B-1D and MW-B-1S were located in the woods. Brush too heavy and ground too soggy to drive grouting truck/rig close to these two wells. Rig had to be staged on gravel road east of wells, and the grout had to be carried by hand in buckets. Excavator was driven back to the wells to clear a path & also for concrete/casing removal.

- Gravel road for staging is located immediately west of retention pond that is immediately adjacent to (west of) administration building.

- after ^{initial} grouting of first two wells complete, team moved to MW-D-1 for initial grouting of that well.

10:00 - Waste Management delivered dumpster to Somerset property.

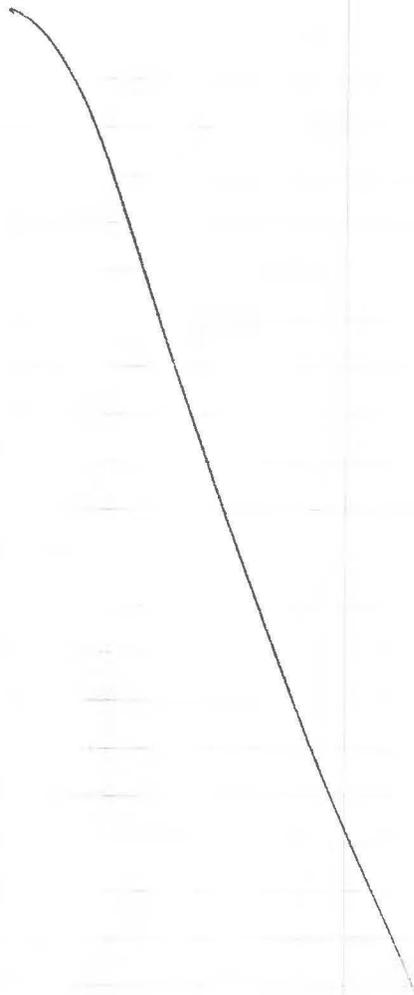
200W

3/20/13

- lunch @ 12:00

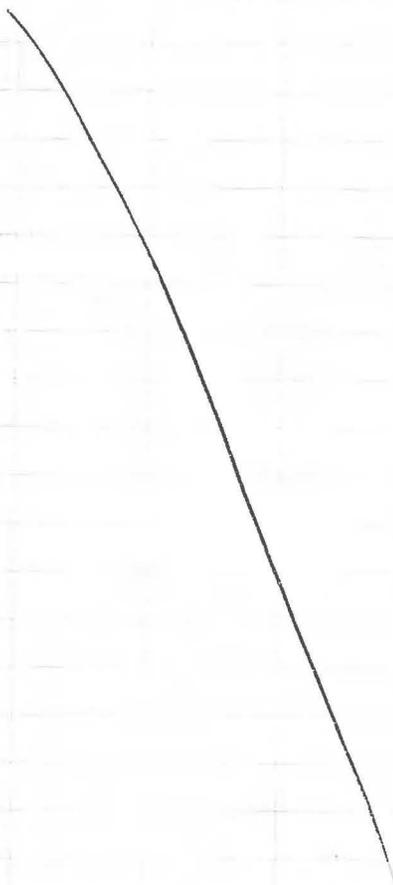
- after lunch, [redacted] used GPS & [redacted] to find locations for excavations to find suspected two wells in gravel area (MW-C-15, MW-C-20).
- [redacted] inconclusive, found only surface metal debris, P-W began excavation based on GPS coordinates.
- Excavations [redacted] inconclusive, and areas were backfilled.
- initial grouting of MW-D-1 conducted.
- team moved back to MW-B-10 and MW-B-15 to remove concrete & casings. This required [redacted] excavation on MW-B-15 to 5' bss in order to cut casing with torch.
- Concrete & casings removed, and area backfilled.
- 14:30 [redacted] returned to check on progress, & we explained that we could not locate missing wells.

3/20/13

- finished activities @ 17:00, let site.

200w

3/21/13
 - finished work @ 17:00, all personnel
 off site.



RLC

200w

3/22/13

Weather: low-mid 20's, cloudy, almost
 constant flurries

7:00 [redacted] met USACE &
 P-W personnel on site at Somerset property.

ENT

USACE

P-W



- safety tailgate meeting / planned activities overview after drillers arrive @ 7:15.
- after meeting, team finished decontamination and materials removal from: MWS-35, MWS-3D, MWS-3I.
- All wells on Somerset property were marked with rebar and plastic safety caps.
- All areas had grass seed applied.
- M Legeza screened all waste & equipment for radiation, no issues.
- Waited until about 15:00 for WM to finally show up for dumpster removal.
- driver could not provide bill of lading, due to company switching to electronic format.

LDDW

3/22/13

- offsite @ 15:00, went to hotel to finish work equipment shipping prep. and packing.
- drove to Buffalo airport FedEx and got packages shipped.
- Arrived @ airport @ ~ 17:15
- Plane scheduled to depart @ 19:00, delayed until 20:00 due to weather.
- back @ BWZ @ 21:00

3/19/13

LOOW well decommissioning

- Meet on site by 7:00am, discuss day's activities and health / safety briefing
- Signed in site control log
- Continue to top off wells from previous day and remove bollards, concrete, casing, etc.
- Lunch at 12pm, [redacted] left site by 1pm for his 5:30pm flight (approx. times)
- [redacted] continue oversight with USACE
- Personnel in PPE, stay clear of equip^{ment}
- Work continues through some snow/wind, accumulation seen by 4pm
- No incidents
- Leave site by 5pm

3/19/13

3/20/13

LOOW well decommissioning

- At site by 7:00am, meet Panott & Wolfe guys and USACE
- Discussion of day's activities and contingency plans in case we are held up by anything
- Head to CWM to meet [redacted] for site tour and H.S. brief (by 8am). He gives us hot work permit and says we don't need to stand down when he's in meetings, so we stay at CWM. Well locations in woods, so we re-mob to CWM with drill and excavator to location, waiting for excavator to relocate and clear a path - now 10:30am.
- 2:30pm Currently excavating to try locating 2nd well. No luck finding 1st well. Used Schonstadt and GPS to assist ~~operator~~ excavator operator
- Personnel in PPE, staying clear of excavator while in operation.
- Signed control log / SSHP review log

Lunch/break 12pm

~ 2:35pm [redacted] stopped by site to check progress, we updated him on our efforts to locate two wells

- No incidents.
 - Continue well decommissioning work; things going smoothly.
 - Snow.
- Offsite at 5pm

[redacted]
[redacted]
[redacted] 3/20/13

LOOW well decommission. 3/21/13

[redacted] at site 7AM, led FTI/SSHO briefing. Began work for the day at CWM location.

[redacted] - NYSDEC } 9:30 AM
[redacted] - HP - DEC } 9:45 AM
Pleased with site.

[redacted] visited at 10AM, [redacted] escorted him to check wells. Pleased with progress.

- Concrete, casings, bollards continual removal, smooth progress.
- Lunch break - 1hr
- Remobilized to Somerset

2:30pm [redacted] onsite

- Asked a few questions, checked finished wells, left site after approximately 30mins.

Briefly discussed all roll-off removal plans. We confirmed with USACE we would assure cleanup of site.

- All materials piled neatly for removal tomorrow.
- ↓

- Every site seeded as necessary
- Personnel stayed clear of excavator while in operation and 2 ft away from all excavation openings.
- Excavations sloped $\frac{1}{2}$ as OSHA directed. All spoils stacked 2 ft away from excavation opening as per OSHA.
- Abdi reminded excavator operator to wear safety vest before [redacted] arrived.
- No incidents.

Offsite
~ 5pm

LOOW Well Decommission 3/22/13

7AM

[redacted] onsite @ 7A
Meet USACE at gate, drillers arrive @ 7:15AM. Begin work after ES&H discussion and what work remains.

- Removed ^{decom} 3 MWS. 2 were double cased. Removed all concrete, bollards, and casings. Cleared debris and seeded sites.

10:30 AM

Mark from USACE ran a Miniker and an alpha-beta-gamma hand geiger to check for radiation. He said it was all-clear.

~~12:00 PM~~ 12pm

Have fully cleaned up site and are waiting for roll-off to be picked up from site.

- No incidents

Roll-off and all materials collected from site by ~ 3pm.

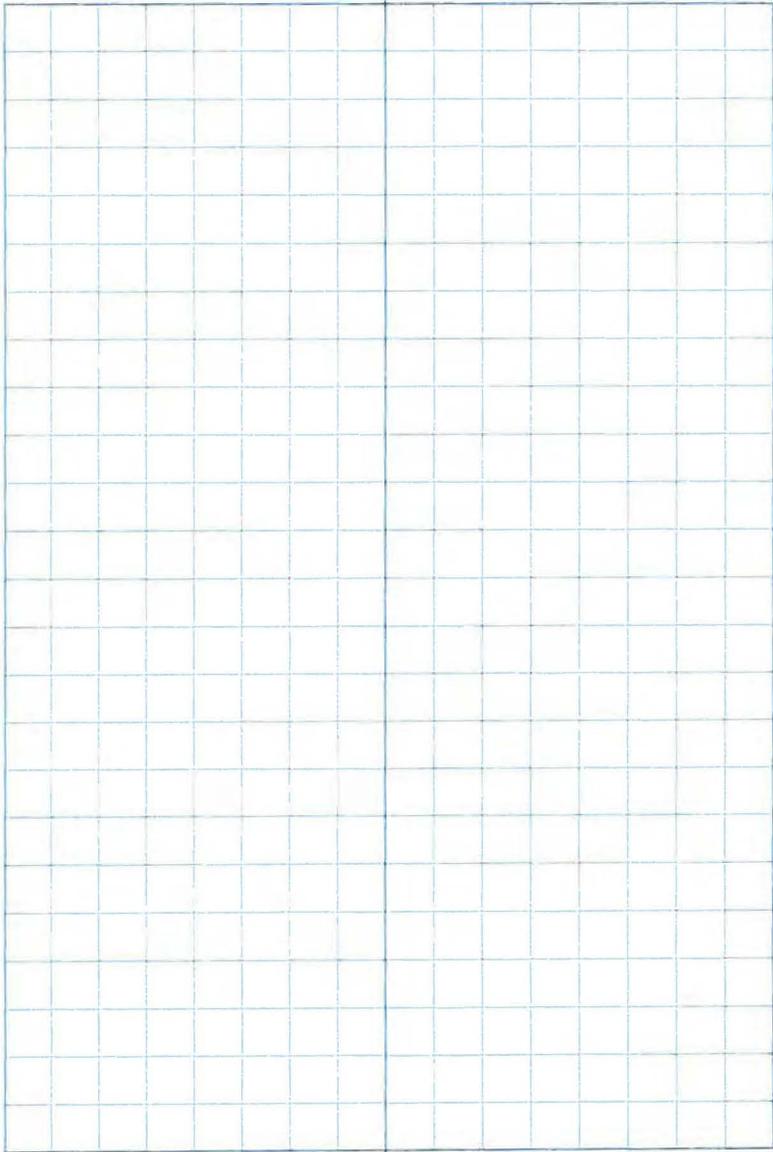
Shipments prepared, mailed by 4:30pm

[redacted] at airport ~ 5:15p

Plane scheduled to leave 7pm.
Delayed at airport due to snow.
Plane departed @ ~ 8pm.
Landed in BWI ~ 9pm.



3/22/13



Appendix E

Bill of Lading

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342-111246 Parratt wolf
FXN
492277

Chaffee LF
10880 Dlean Rd
Chaffee, NY, 14030
Ph: [REDACTED]

Original
Ticket# 380846

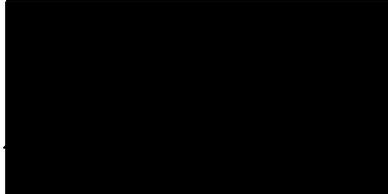
Customer Name	WM-CLIROLLOFF WM-CLI ROLL OFF	Carrier	WM WASTE MANAGEMENT
Ticket Date	03/29/2013	Vehicle#	410574200
Payment Type	Credit Account	Container	
Manual Ticket#		Driver	
Hauling Ticket#		Check#	
Route		Billing #	0000001
State Waste Code		Gen EPA ID	
Manifest	492277		
Destination			
PG			
Profile	()		
Generator			

	Time	Scale	Operator	Inbound	Gross	44760 lb
In	03/29/2013 12:13:43	INBOUND	dbaker		Tare	35620 lb
Out	03/29/2013 12:13:43		dbaker		Net	9140 lb
					Tons	4.57

Consents (111246) PARRATT WOLFF
492277

Product	LD%	Qty	UOM	Rate	Fee	Amount	Origin
1 MSWT-MSW TONS	100	4.57	Tons				NIA

Driver's Signature



Total Fees
Total Ticket



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