

Tonawanda, New York, Site Long-Term Surveillance and Maintenance Plan

July 2018



U.S. DEPARTMENT OF
ENERGY

Legacy
Management

This page intentionally left blank

Contents

Abbreviations	ii
1.0 Site Conditions	1
1.1 FUSRAP Background	1
1.2 Operations.....	2
1.3 Contaminants	2
2.0 Remedial Action.....	5
2.1 FUSRAP Eligibility Determination.....	5
2.2 Cleanup Criteria.....	5
2.3 Remedial Action	5
2.4 Release Survey	8
2.5 Independent Verification	9
2.6 Use Restrictions.....	9
2.7 Assessment of Risk.....	10
2.8 Certification and Regulator Concurrence.....	10
2.9 Agreements and Permits.....	10
3.0 Long-Term Surveillance and Maintenance	15
3.1 Institutional Controls and Protective Measures.....	15
3.1.1 Institutional Controls	15
3.1.2 Protective Measures	15
3.2 Site Records.....	16
3.3 Site Visit	16
3.4 Site Fact Sheets.....	16
3.5 Field Operations	16
3.6 Environmental Monitoring.....	16
3.7 Regulatory Interfaces.....	16
4.0 References	17

Figures

Figure 1. Location of the Tonawanda, New York, Site	3
Figure 2. Aerial Photograph of Tonawanda, New York, Site.....	4
Figure 3. Tonawanda, New York Zoning	11
Figure 4. Properties Mentioned in the NYSDEC Letters	13

Table

Table 1. Tonawanda Site Contaminants of Concern (COC) and Soil Remediation Goals.....	5
---	---

Attachment

Attachment 1 Letter from New York State Department of Environmental Conservation

Abbreviations

AEC	U.S. Atomic Energy Commission
ANL	Argonne National Laboratory
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
FUSRAP	Formerly Utilized Sites Remedial Action Program
IC	institutional control
LM	Office of Legacy Management
LTS&M	long-term surveillance and maintenance
MED	Manhattan Engineer District
mrem/yr	millirems per year
NYSDEC	New York State Department of Environmental Conservation
OU	operable unit
Ra	radium
ROD	Record of Decision
Th	thorium
U	uranium
USACE	U.S. Army Corps of Engineers
UT	utility tunnel

1.0 Site Conditions

1.1 FUSRAP Background

The Manhattan Engineer District (MED) and the U.S. Atomic Energy Commission (AEC) are predecessor agencies of the U.S. Department of Energy (DOE) and were responsible for developing nuclear technology beginning in the early 1940s in support of World War II Manhattan Project efforts. The Formerly Utilized Sites Remedial Action Program (FUSRAP) was established in 1974 to remediate sites where radioactive contamination remained from MED and AEC operations.

DOE may determine a site's eligibility for inclusion in FUSRAP if it meets the four eligibility criteria outlined below:

- Work was conducted in support of MED or AEC activities.
- There is a reasonable, credible expectation that the activities resulted in residual radioactive contamination (primarily uranium, radium, and thorium and their daughter elements) that exceed current cleanup criteria.
- The site is not subject to remedial action under any other remedial action program nor is residual radioactive contamination addressed under a U.S. Nuclear Regulatory Commission (NRC) license or a state radioactive materials license.
- The authority to request appropriations to perform remedial action activities at the site is prescribed within existing legislation and guidelines.

When an eligible site is referred to the U.S. Army Corps of Engineers (USACE), the site may be designated for cleanup under FUSRAP if the following conditions are met:

- Site contamination is sufficient to warrant a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response action as determined through a preliminary assessment and site inspection.
- Contamination resulted from MED and/or AEC activities as determined by further detailed analysis.
- USACE has the authority to respond under CERCLA.

If a site is not designated into FUSRAP but has been determined to be eligible by DOE, USACE notifies DOE and stakeholders of the decision, and DOE will add documentation of USACE's decision to its record collections. DOE may then decide to consider the site as a FUSRAP Other Site. In addition, Congress may use appropriation language to designate a site for remediation under FUSRAP.

In 1980, DOE designated the Tonawanda, New York, Site (formerly known as the Linde Air Products Site) for remediation under FUSRAP. Eligibility and designation were based on the fact that portions of the Tonawanda site were "contaminated with radioactive residue as a result of activities of the Manhattan Engineer District and Atomic Energy Commission" (DOE 1980).

The Tonawanda site was remediated under FUSRAP between 1996 and 2013. DOE conducted investigation and removal actions at the site until the remediation efforts were turned over to the USACE in 1997. With the change in remediation responsibilities, a Memorandum of Understanding between DOE and USACE was established documenting that once remediation

was complete, FUSRAP sites would transfer back to DOE for long-term surveillance and maintenance (LTS&M) responsibilities. In December 2003, DOE established the Office of Legacy Management (LM). LM is the responsible party for LTS&M of remediated FUSRAP sites.

1.2 Operations

The Tonawanda site is a privately owned facility located at 175 East Park Drive in the town of Tonawanda, Erie County, New York (Figure 1).

Between 1942 and 1946, portions of the Tonawanda site formerly owned by Linde Air Products Co. (Linde), a subsidiary of Union Carbide Industrial Gases Inc., were used for uranium ore processing under contract with the MED. The processing and disposal activities resulted in elevated levels of radionuclides in portions of the property and buildings. Subsequent disposal and relocation of processing wastes from the site resulted in elevated levels of radionuclides at three nearby properties in the town of Tonawanda: the Seaway Site and Tonawanda North Units 1 and 2 (USACE 2015). The liquid waste was discharged into storm sewers, sanitary sewers, and onsite injection wells on the Tonawanda site (Aerospace 1981).

A three-step process was used to separate uranium from the uranium ores and tailings: in Step I ores and occasional residues (from Step II operations and other MED processes) were processed to produce uranium trioxide (or orange oxide); in Step II, uranium trioxide was converted to uranium dioxide (or brown oxide); in Step III, uranium dioxide was converted to uranium tetrafluoride (or green salt). Residues from Steps II and III were recycled, whereas Step I produced large amounts of liquid and solid residue (USACE 2004).

The Tonawanda site is currently an active industrial facility owned and operated by Praxair Inc. On June 1, 2017, Praxair Inc. and the Linde Group announced that the companies had entered into a business combination agreement to come together under a new holding company through an all-stock merger. Linde and Praxair have set a deadline for finalization of the merger of October 24, 2018. The property contains several buildings, including warehouses, fabrication buildings, storage areas, and parking lots, as shown in Figure 2.

1.3 Contaminants

The contaminants of concern eligible for FUSRAP cleanup were determined to be radium-226 (^{226}Ra), thorium-230 (^{230}Th), total uranium (U) (made up of uranium-234 [^{234}U], uranium-235 [^{235}U], and uranium-238 [^{238}U]), and their decay products. Contamination was encountered in surface and subsurface soil, sediment, structure surfaces, and groundwater.

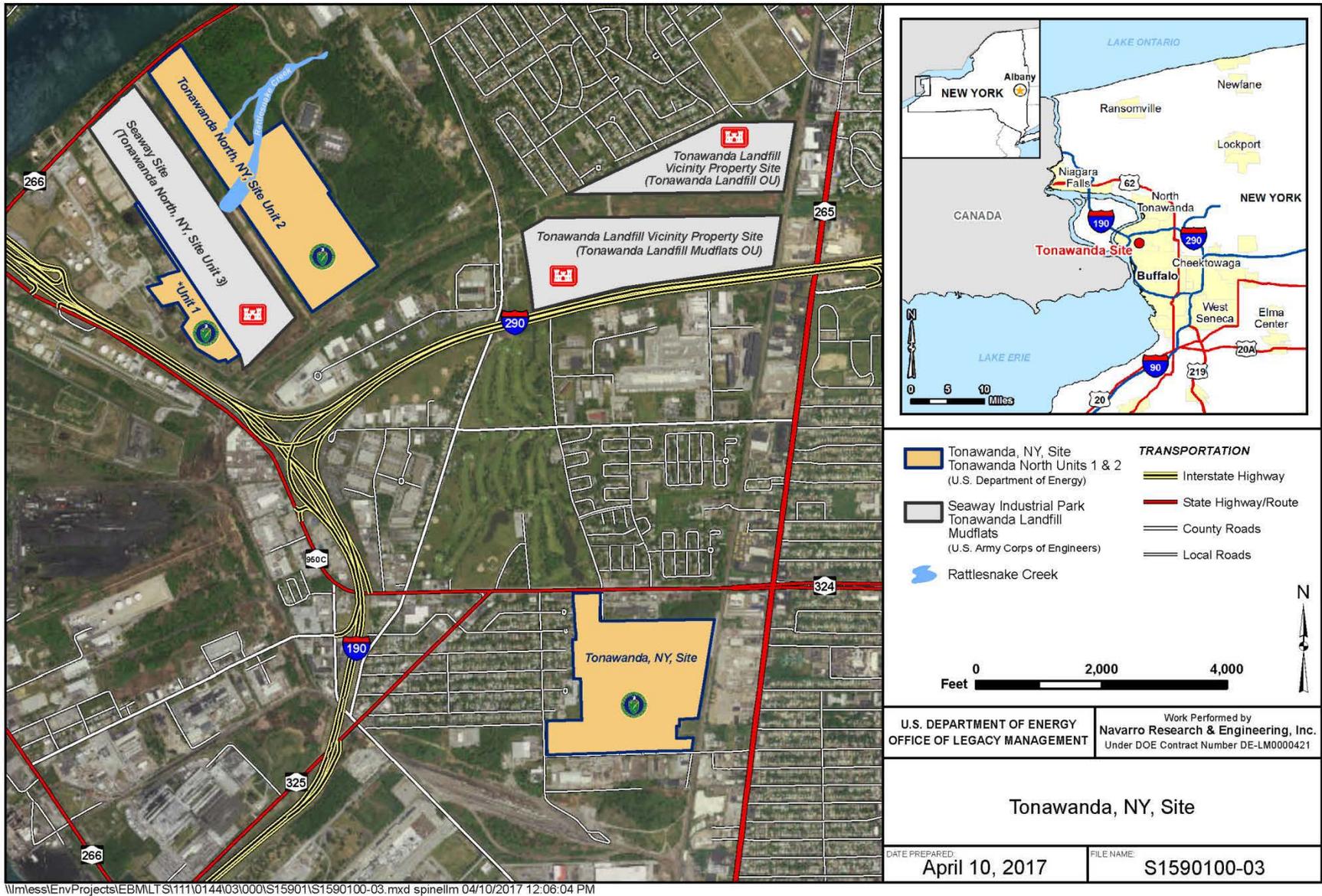


Figure 1. Location of the Tonawanda, New York, Site



\\mess\EnvProjects\EBMLTS\111\0144\03\000\15071\1507100-02.mxd spinellm 03/09/2017 1:44:18 PM

Figure 2. Aerial Photograph of Tonawanda, New York, Site

2.0 Remedial Action

2.1 FUSRAP Eligibility Determination

The Tonawanda site was designated for remedial action under FUSRAP in 1980. Eligibility and designation were based on the fact that portions of the Tonawanda site were “contaminated with radioactive residue as a result of activities of the Manhattan Engineer District and Atomic Energy Commission” (DOE 1980).

2.2 Cleanup Criteria

The Tonawanda site was remediated to cleanup criteria outlined in the Record of Decision (ROD) documents for ^{226}Ra , ^{230}Th , and total U (^{234}U , ^{235}U , and ^{238}U). The derived concentration guideline levels, based on a construction worker exposure scenario, as stated in the soils ROD (USACE 2000) are shown in Table 1.

Table 1. Tonawanda Site Contaminants of Concern (COC) and Soil Remediation Goals

COC	Background (pCi/g)	Soil Remediation Goal (pCi/g) (averaged over 100 m ²)		Soil Remediation Goal (pCi/g) (at any location)
		Surface	Subsurface	
^{226}Ra	1.1	5 ^a	15 ^a	N/A
^{230}Th	1.4	14 ^b	44 ^b	N/A
Total U	6.1	554 ^{b,c}	3021 ^{b,c}	600
^{238}U (surrogate for total U)	3.1	262 ^c	1429 ^c	293

Notes:

^a Requirement specified in Title 40 *Code of Federal Regulations* Section 192 (40 CFR 192) and 10 CFR 40 Appendix A.

^b Derived based on a dose limit of 8.8 millirem per year (mrem/yr) for surface soil contamination and 4.1 mrem/yr for subsurface soil contamination, for an industrial worker scenario.

^c Based on isotopic composition of natural uranium.

Abbreviations:

m² = square meters

N/A = not applicable

pCi/g = picocuries per gram

2.3 Remedial Action

FUSRAP was established in March 1974 to evaluate and remediate radioactive contamination at sites where work was performed to develop the nation’s nuclear program, first under MED and then under AEC. Between 1981 and 1997, DOE administered FUSRAP and performed site cleanups to comply with cleanup standards and guidelines in use at the time. In 1997 Congress assigned responsibility for characterization and cleanup of FUSRAP sites to USACE. The *Memorandum of Understanding Between the U.S. Department of Energy and the U.S. Army Corps of Engineers Regarding Program Administration and Execution of the Formerly Utilized Sites Remedial Action Program (FUSRAP)* (MOU) (USACE and DOE 1999) delineated the FUSRAP responsibilities for the two agencies.

The MOU stipulated that USACE would administer and execute cleanup at FUSRAP sites pursuant to the Energy and Water Development Appropriations Act of 1998

(Public Law 105-62) and 1999 (Public Law 105-245). Cleanup would be subject to regulation under CERCLA, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and any subsequent laws specifically relating to FUSRAP, CERCLA, and the NCP (DOE and USACE 1999). CERCLA Section 121(d) also requires that site cleanup attain state and federal applicable or relevant and appropriate requirements (ARARs), unless exempted by a waiver. After completion of cleanup, and for the first 2 years after site closeout, USACE is responsible for surveillance, operation, and maintenance of the site (DOE and USACE 1999).

FUSRAP sites on the National Priorities List (NPL) are regulated by state and federal environmental regulatory authorities. Sites that are not on the NPL are not regulated by additional authorities. In the case where the site is not on the NPL, Congress granted USACE lead agency status, which conveys the authority to establish cleanup criteria and certify that remedial action is complete.

Per the MOU, after completion of cleanup and the 2-year operation and maintenance phase, the site transfers to LM. At this time LM will assume the LTS&M responsibilities for the site and manage it based on the requirements of the RODs and the authority of the Atomic Energy Act of 1954 (AEA) as amended (NRC 2015).

USACE was the sole regulatory authority for remediation of FUSRAP-eligible contamination at the Tonawanda site because the Tonawanda site was not on the NPL. Remediation at the Tonawanda site was conducted by USACE and was subject to, and conducted in accordance with, CERCLA and the NCP and in accordance with three USACE ROD documents.

There were three operable units (OUs) identified for the Tonawanda site: a Soil OU, a Building 14 OU, and a Groundwater OU. As such, three USACE RODs were developed to align with the OUs, they are listed below:

- *Record of Decision for the Linde Site, Tonawanda, New York* (USACE 2000)
- *Record of Decision for the Building 14 Operable Unit, Linde Site, Tonawanda, New York* (USACE 2003)
- *Record of Decision for the Groundwater Operable Unit, Linde Site, Tonawanda, New York* (USACE 2006)

The Soil OU included surface and subsurface soil and building surfaces and infrastructure, but not Building 14 or the soil below Building 14. The selected remedy for cleanup was excavation and offsite disposal. Site remediation began in 1999 and continued into 2013. The remedy included excavating contaminated soil, building surfaces, and infrastructure and offsite transportation and disposal at licensed disposal facilities.

Between July 1999 and March 2013, the following remedial activities for the Soil OU included:

- Demolition of Buildings 8 East Annex, 8A, 31, 57, 58, 67, 73, 73A, 73B, and 90, including slabs and foundations, when necessary, to remediate the soil underneath.
- Removal of slabs from former Buildings 30, 38, and 39 along with tank saddles north of former Building 30.
- Remediation of radiologically contaminated soil above ROD criteria on adjacent properties owned by National Grid, CSX, Mil-Sher Complex; on Carrier property occupied by Old Dominion Trucking Co.; and on a small portion of the R.P. Adams property.

- Removal of contaminated sediments from drain lines and sumps.
- Removal of contaminated soil from a blast wall structure east of Building 58.
- Remediation of a subsurface vault structure west of Building 73.
- Removal of the utility tunnel (UT) junction box JB1–JB6 and UT JB1–JB5.
- Demolition of the slab, foundation, and loading dock of former Buildings 8 East Annex and 90, including remediation of the soil underneath.
- Demolition of the foundation of the coal bin.
- Demolition of the slab of the Salt Barn.
- Demolition of UT Building 8 to Building 104, JB 8, UT JB6 to JB7, JB 6, UT JB7–JB9, JB7 and abandoned duct bank, and UT JB7 to Building 104.

The areas where USACE performed soil remediation were compared against a figure, from the *Feasibility Study for the Tonawanda Site* (BNI 1993), showing the extent of contamination. As part of this review, it was noted that contaminated soil was modeled beneath the CSX rail line in the area where excavation was not permitted by the property owner. Along the CSX railroad, excavation was only permitted to within 3.7 meters (12 feet) of the center line of the railroad track. USACE performed remedial actions up to this boundary, then performed biased sampling (e.g., biased samples were collected every 3.9 meters [10 feet]) to confirm that the remedial goals were met for the area outside the survey unit.

The Building 14 OU includes Building 14 and the soil beneath Building 14. The selected remedy for cleanup was removal and offsite disposal. Removal of Building 14 and the associated soil began in 2004 and continued into 2005. The remedy included excavating contaminated soil, building surfaces, and infrastructure and offsite transportation and disposal at a licensed disposal facility. As part of this remedial action, the utility tunnel beneath Building 14 was relocated to allow for removal of contamination within and around the tunnel structure. Building components and soil under the building were surveyed to ensure that all remaining material and soil met site remediation goals.

For the Groundwater OU, USACE concluded a no-action remedy allowing for unrestricted conditions for the groundwater OU at the Tonawanda site based on the conclusion that there were no complete pathways to human or environmental receptors existing for current or future exposure to FUSRAP-eligible constituents in affected groundwater.

In the Public Health Assessment Guidance Manual (Update) (Agency for Toxic Substances and Disease Registry [ATSDR] 2005) states that for a complete exposure pathway five elements are required. Each element and how it pertains to the Tonawanda groundwater is specifically addressed below:

- (1) **A contaminant source or release:** There was a release by injection of liquid wastes of FUSRAP eligible contaminants to the subsurface (the groundwater).
- (2) **Environmental fate and transport:** A medium for the contamination transport (the groundwater) existed at the time of contaminant injection and still exists today.
- (3) **Exposure point or area:** As stated in the ROD for the groundwater OU, groundwater sampling confirms that elevated levels of FUSRAP-eligible contaminants were detected only in the immediate vicinity of the historical injection wells.

- (4) **Exposure route:** Per the ROD for the groundwater OU, to use the deep groundwater at the Tonawanda site as drinking water would first require a deep well with the appropriate pumps and ancillary equipment. Assuming sufficient yield, groundwater could be available but it would not be suitable for drinking without costly treatment because of the naturally occurring concentrations of constituents in the groundwater (such as sulfates). It is further stated that, an evaluation of upgradient (background) wells in the area indicated that groundwater from wells not impacted by MED or AEC activities was naturally compromised and would require treatment also (USACE 2006). USACE concluded that, “As a practical matter, use of this water for drinking is not reasonable since treatment costs are high and a more than ample supply of fresh water exists in Tonawanda since the source of supply in this area in the Niagara River. Therefore, USACE concludes that there is no current or future completed drinking water exposure pathway for groundwater at the [Tonawanda] site.” The ROD for the groundwater OU provides a similar explanation for irrigation water based on the naturally occurring level of dissolved salts in the groundwater.
- (5) **Potentially exposed populations:** The ROD for the groundwater OU does not address the fifth element; however it can be assumed that because there are still residential properties in the vicinity of the site that this element exists.

The New York State Department of Environmental Conservation (NYSDEC) Office of General Council in a letter dated June 24, 2008, stated that "uranium and its decay products that were injected into the ground do not currently pose a significant threat to the public health or the environment" (Attachment 1).

No vicinity properties are associated with the Tonawanda site. The site boundary was drawn to include only the Praxair property; however, as stated in the ROD for the soils OU (USACE 2000), “The selected remedy will also include remediation of the adjacent Niagara Mohawk and CSX Corporation (formerly Conrail) properties, where radioactive contamination has already been identified or may be identified as the remediation work is implemented and will be limited to following releases that originated from the [Tonawanda] Site resulting from MED-related operations.” Therefore the adjacent properties have been included as part of the Tonawanda site rather than as vicinity properties.

2.4 Release Survey

In accordance with the *Site Closeout Report for the Linde FUSRAP Site, Tonawanda, New York* (USACE 2015b), the soil and structures at the Tonawanda site are verified at levels that allow for release without restrictions, and five-year reviews are not required pursuant to Section 121(c) of CERCLA and Part 300.430(f)(4)(ii) of the National Contingency Plan.

As described in the ROD for the groundwater OU (USACE 2006), no CERCLA action was warranted for groundwater at the Tonawanda site because there were no completed exposure pathways to human or environmental receptors. Therefore, the USACE concluded a no-action remedy allowing for unrestricted conditions for the groundwater OU at the Tonawanda site. This was based upon USACE’s determination that naturally occurring concentrations of constituents in groundwater underlying the site preclude its use without treatment, which would also remove any of the FUSRAP-eligible constituents that may be present in groundwater (USACE 2006).

2.5 Independent Verification

After the final status survey was completed by the USACE contractor, USACE performed a quality assurance review of contractor data and conducted verification gamma scans. Argonne National Laboratory (ANL) performed an independent review of the gamma walkover data, including mapping and plotting verifications. NYSDEC also conducted verification gamma scans. Per the site closure report, USACE and NYSDEC gamma scans were based on professional judgment and the nature and extent of contamination in that area. Any anomalies, elevated areas or discrepancies in the data were investigated and resolved. Concurrence was received from all parties prior to USACE approval to backfill an excavation (USACE 2015b).

2.6 Use Restrictions

In accordance with the *Site Closeout Report for the Linde FUSRAP Site, Tonawanda, New York* (USACE 2015b), “USACE has determined that the reasonably anticipated future land use of the [Tonawanda site] will be for commercial/industrial purposes. However, no land use restrictions are required at the site since the implemented remedy resulted in FUSRAP-eligible residuals at levels that allow for [unlimited use and unrestricted exposure] UU/UE.”

The Tonawanda site has been an industrial site for over 60 years and is expected to remain so in the foreseeable future. The Tonawanda site is included in the Performance Standards Use District (Figure 3) per the Town of Tonawanda Building Code. As described in the Town of Tonawanda Building Code, Chapter 215, Zoning, “The purpose of this district is to encourage and allow the most appropriate use of the land available now as well as approaching future commercial and industrial uses unhampered by restrictive categorizing, thus extending the desirability and flexible zoning, subject to change with changing conditions.”

As part of the annual site assessment, LM will verify that the land use at the site and surrounding properties (including the CSX property) remains industrial. This is important to the LTS&M at the site because: (1) the future land use at the site was determined to be industrial;(2) the dose assessment was performed for a commercial/industrial worker rather than a resident; and (3) zoning in the area does not specifically forbid residential use. The 2018 desktop assessment will document if there have been any changes in land use based on the merger between Linde and Praxair.

The ROD for the Groundwater OU concluded that there were no completed exposure pathways to human or environmental receptors for FUSRAP-eligible constituents of concern in the affected groundwater (i.e., the groundwater would not be used for potable uses). This conclusion was based on the need for costly treatment to remove naturally occurring total dissolved solids and other constituents from the deep groundwater, the requirement of a building and/or plumbing per permit per town code, and the need for Erie County Department of Health approval for any development of the shallow groundwater. Therefore the remedy USACE put in place for the groundwater OU was a no-action remedy.

As part of the annual site assessment, LM will monitor the number of groundwater wells being registered with NYSDEC within 1370 meters (4495 feet or 1 map-minute) of the site. Currently, NYSDEC has no well registrations within this search radius of the site. Monitoring of the well registrations in the area is an important step toward protectiveness because the use of groundwater in the area may change.

2.7 Assessment of Risk

USACE performed a post-remediation dose assessment for the Tonawanda site, *RESRAD Summary Report for the Commercial/Industrial Worker Scenario* (USACE 2015a), which was included in the *Site Closeout Report for the Linde FUSRAP Site, Tonawanda, New York* (USACE 2015b), to estimate radiation doses from residual radioactive materials in soil. The post-remediation radiological dose assessment was performed to determine the potential radiation doses under two scenarios, one for a commercial/industrial worker and one for a construction worker. The estimated annual radiation dose rates for the commercial/industrial worker and construction worker were determined to be 2.03 and 0.50 millirem per year (mrem/yr), respectively, which both meet the derived benchmark dose of 8.8 mrem/yr for surface cleanups and 4.1 mrem/yr for subsurface cleanups.

A National Environmental Policy Act review, based on CERCLA process information provided to LM, has determined that no natural, cultural, or historic resources are present at the Tonawanda site that would require post-closure federal protection. Baseline Risk Assessment and Feasibility Study documents identified no cultural resources at the site, and there are no threatened or endangered species or critical habitats at the Tonawanda site.

2.8 Certification and Regulator Concurrence

In 2017, NYSDEC distributed letters to four of the Tonawanda site property owners stating that NYSDEC did not agree with the USACE cleanup criteria and that limited subsurface contamination remained on these properties above the State's criteria. The letters stated that the material presents no significant health risk as it currently exists but that there might be a risk if intrusive activities are performed. The letters also stated that the waste is regulated under Title 6 *New York Codes, Rules and Regulations* Part 380-1.2(b). It was stated in the March 1, 2018, Quarterly LM/USACE Buffalo District meeting that neither NYSDEC nor the property owners have contacted USACE about any of the properties discussed in the letters. Nor has there been any inquiry to LM. The properties affected by the NYSDEC letters are shown in Figure 4.

2.9 Agreements and Permits

Site visits are not required on a regular basis to maintain the remedy at the Tonawanda site; therefore, no access agreement is required at this time.

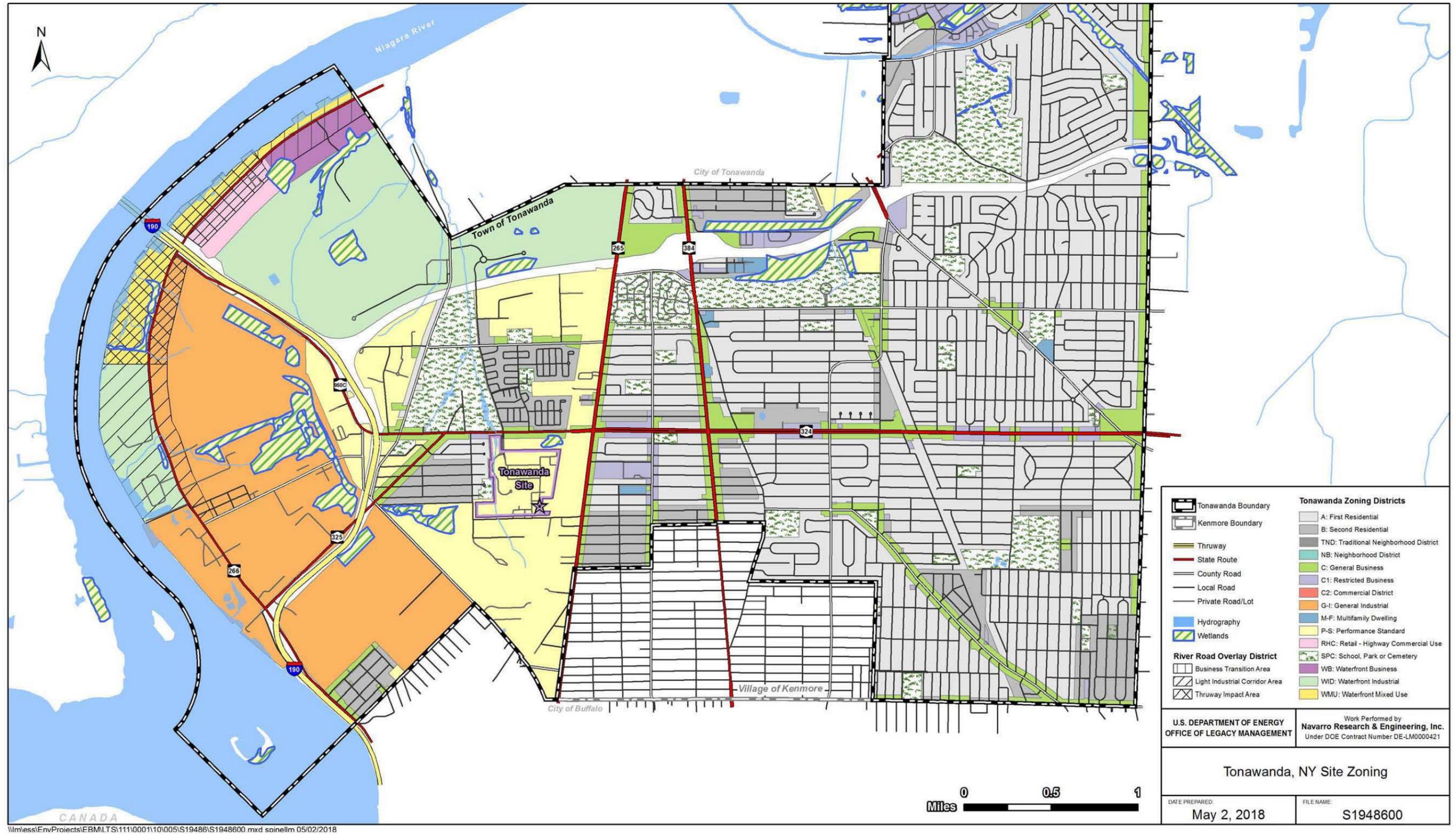


Figure 3. Tonawanda, New York Zoning

This page intentionally left blank

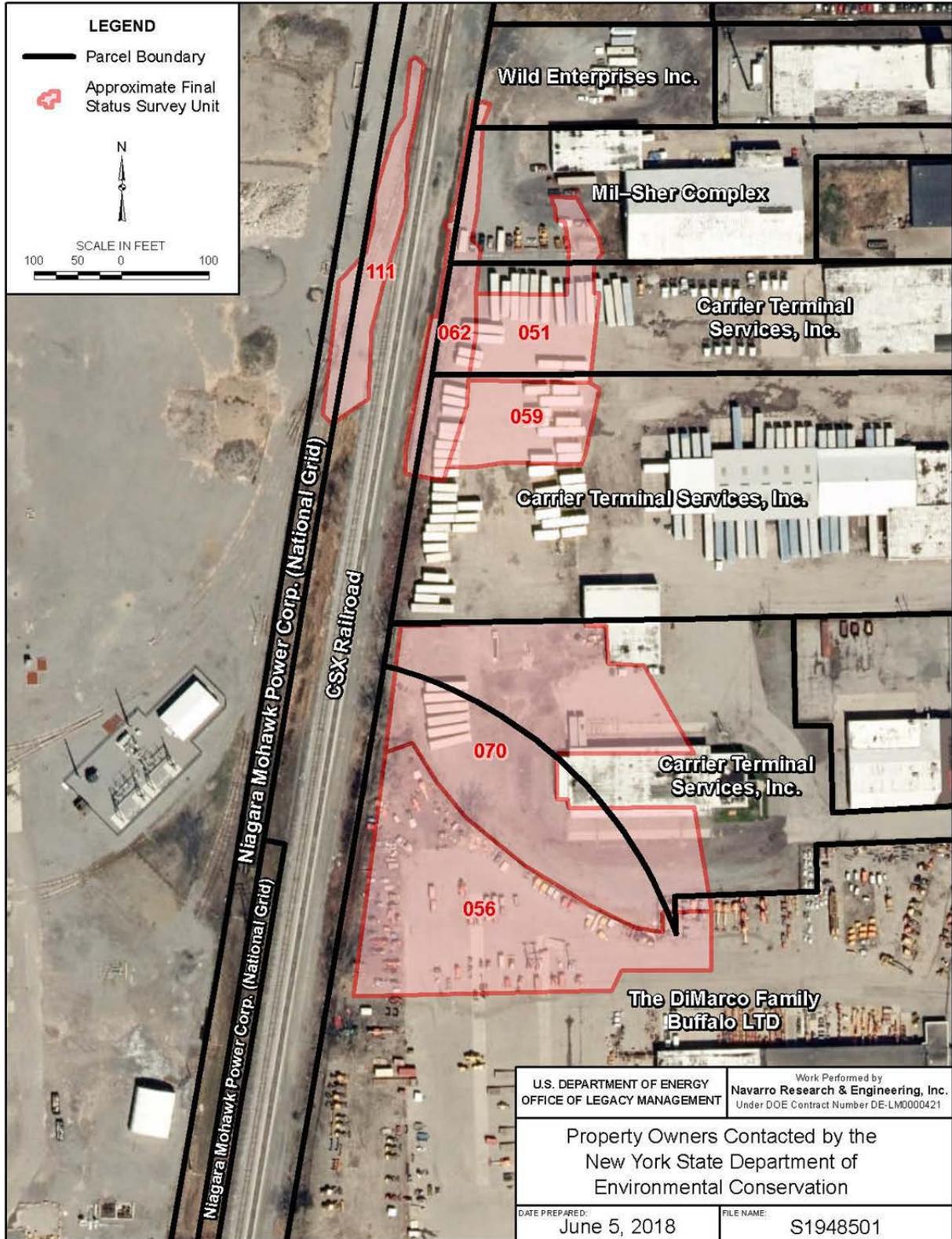


Figure 4. Properties Mentioned in the NYSDEC Letters

This page intentionally left blank

3.0 Long-Term Surveillance and Maintenance

LTS&M requirements for the Tonawanda site include:

- Performing an annual desktop assessment of the site.
- Summarizing the annual desktop assessments every 5 years.
- Managing site records.
- Responding to stakeholder inquiries.
- Maintaining the site fact sheet and website.

3.1 Institutional Controls and Protective Measures

3.1.1 Institutional Controls

There are no regulatory enforceable ICs required by the Tonawanda site ROD documents (USACE 2000; USACE 2003; USACE 2006) or post-closure documents. In compliance with DOE Policy 454.1, Use of Institutional Controls (DOE Policy), applies the term institutional controls (ICs) to include legal instruments (e.g., land use restrictions), physical or engineering controls (e.g., fences and signs), and methods of providing information to people (e.g., interpretive displays) that help minimize the risk of human exposure to contaminants and maintain the remedies at a site. The DOE Policy utilizes this broader application of the term ICs in order to encompass the diverse nature of ICs and measures used throughout DOE in a consistent yet flexible policy framework integrated into an overall site-wide program. However, as discussed in the next section, protective measures for sites transitioning to LM can be identified to fulfill DOE's post-closure responsibilities and to ensure the future protection of human health and the environment.

3.1.2 Protective Measures

Although no formal ICs have been identified, LM will implement protective measures towards site LTS&M responsibilities. As a protective measure, a desktop assessment will be performed annually to verify the site conditions and assess any changes. The desktop assessment will include:

- Verifying land use at the site and surrounding properties as industrial (Section 2.6). If necessary, the site representative may be contacted.
- Monitoring for any new groundwater well permits within 1370 meters (4495 feet or 1 map-minute) of the site (Section 2.6).
- Using publicly available websites to verify site information.
- Documenting any issues found and their resolution.
- Assessing the protectiveness of the remedy (USACE 2015b).
- Assessing if the risks identified in the *Site-Specific Transition Plan for the Tonawanda, New York, FUSRAP Site* (DOE 2016) are still valid and determining if additional investigation is required based on changing site conditions.

Upon completion of the desktop assessment, the results, including a determination of the site's protectiveness, will be provided to the LM site manager for final concurrence. If the LM site

manager concurs the assessment will be placed in the project records, however if actions are warranted based on the findings LM and LMS will determine the appropriate actions to close out the assessment.

The ROD for the soils OU states that USACE will perform all required 5-year reviews. Under CERCLA Section 121(c), a 5-year review is required for remedial actions conducted at sites where hazardous substances, pollutants, or contaminants are above levels that allow for UU/UE. UU/UE means that the selected remedy will place no restrictions on the potential use of land or other natural resources. One CERCLA 5-year review was issued by USACE during the time of remediation at the site, the *Five-Year Review Report for the Linde FUSRAP Site* (USACE 2010). However, during the next 5-year period remediation at the site was completed and USACE determined that the site could be released for UU/UE (as discussed in Section 2.6) thus no further 5-year reviews were performed.

CERCLA 5-year reviews are not required by site closure documents (USACE 2015). Every 5 years after March 31, 2017, LM will perform a site assessment summary. The assessment summary will compile the results of the previous 5 years of annual desktop assessments as listed above. This assessment is designed to meet the intent of oversight on a CERCLA site (EPA 2001). Upon completion and following LM review and approval, the assessment summary will be posted on the site website.

3.2 Site Records

The site records are maintained and managed by LM. Updates to the site records will be conducted as necessary such that LM will be able to respond to stakeholder inquiries as they pertain to the site LTS&M responsibilities.

3.3 Site Visit

Site visits will be performed as determined by LM, based on the results of the annual desktop assessment.

3.4 Site Fact Sheets

The LM public site fact sheet and website will be maintained and reviewed annually and updated as necessary.

3.5 Field Operations

There are no field operations required at the Tonawanda site.

3.6 Environmental Monitoring

There is no environmental monitoring required at the Tonawanda site.

3.7 Regulatory Interfaces

No regulatory interfaces are required at the Tonawanda site.

4.0 References

Aerospace, (1981). Evaluation of the 1943-to-1946 Liquid Effluent Discharge from the Linde Aire Products Company Ceramics Plant. December.

ATDSR (Agency for Toxic Substances and Disease Registry), 2005, *Public Health Assessment Guidance Manual (Update)*, January.

BNI (Bechtel National Incorporated), 1993. Feasibility Study for the Tonawanda Site. DOE/OR/21950-234, November.

DOE (U.S. Department of Energy), 1980. *Notification of Need for Some Form of Remedial Action – Linde Air Products Division, Union Carbide Corporation, Tonawanda, New York*, February.

DOE (U.S. Department of Energy), 2003. DOE Policy 454.1, *Use of Institutional Controls*, April.

DOE (U.S. Department of Energy), 2016. *Site-Specific Transition Plan for the Tonawanda, New York, FUSRAP Site*, March.

Eckl, 2008. James H. Eckl, Office of General Counsel, New York State Department of Environmental Conservation, letter to Janes Rauch, Secretary of F.A.C.T.S.

EPA (U.S. Environmental Protection Agency), 2001. *Comprehensive Five-Year Review Guidance*, OSWER No. 9355.7-03B-P. June.

NRC (U.S. Nuclear Regulatory Commission), 2015. *Nuclear Regulatory Legislation, 113th Congress; 2nd Session*, NUREG-0980, Vol. 1, No. 11, December.

USACE (U.S. Army Corps of Engineers), 2000. *Record of Decision for the Linde Site, Tonawanda, New York*, Buffalo District Office, March.

USACE (U.S. Army Corps of Engineers), 2003. *Record of Decision for the Building 14 Operable Unit, Linde Site, Tonawanda, New York*, Buffalo District Office, April.

USACE (U.S. Army Corps of Engineers), 2004. *Feasibility Study Report for the Groundwater Operable Unit, Linde Site, Tonawanda, New York*, Buffalo District Office, October.

USACE (U.S. Army Corps of Engineers), 2006. *Record of Decision for the Groundwater Operable Unit, Linde Site, Tonawanda, New York*, Buffalo District Office, December.

USACE (U.S. Army Corps of Engineers), 2010. *Five-Year Review Report for the Linde FUSRAP Site, Town of Tonawanda, Erie County, New York*, Buffalo District Office, August.

USACE (U.S. Army Corps of Engineers), 2015a. *RESRAD Summary Report for the Commercial/Industrial Worker Scenario*, prepared by Argonne National Laboratory for USACE, in Attachment B of *Site Closeout Report for the Linde FUSRAP Site, Tonawanda, New York*, Buffalo District Office, March.

USACE (U.S. Army Corps of Engineers), 2015b. *Site Closeout Report for the Linde FUSRAP Site, Tonawanda, New York*, Buffalo District Office, March.

Attachment 1

**Letter from New York State Department of
Environmental Conservation**

This page intentionally left blank

New York State Department of Environmental Conservation

Office of General Counsel, 14th Floor

625 Broadway, Albany, New York 12233-1500

FAX: (518) 402-9018 or (518) 402-9019

Website: www.dec.ny.gov



Alexander B. Grannis
Commissioner

June 24, 2008

Mr. James Rauch
Secretary, F.A.C.T.S.
263 Exchange Street
Alden, New York 14004

Dear Mr. Rauch:

This responds to your March 4, 2007 letter to Barbara Youngberg, of this Department, regarding the US Army Corps of Engineers' Record of Decision (ROD) for the groundwater operable unit at the Linde FUSRAP site. In your letter, you referred to this Department's comments on the proposed plan for the Linde groundwater and asked why we had requested monitoring and institutional controls, instead of recommending corrective action. You also asked whether the new administration intends to enforce environmental laws that are "flouted by federal agencies."

We have reviewed again the points that F.A.C.T.S. made in comments to the Department of Energy and the Corps, which you included with your letter. We respect the thoroughness and care with which F.A.C.T.S. has analyzed these issues. However, we do not believe that we have the authority, under current State and federal law, to force the Corps to undertake a remedial action.

In this situation, our only recourse is to challenge the ROD in court. The court would likely give great deference to the Corps, because the Corps is charged by Congress with making this decision. In addition, although there are a few monitoring results that exceed drinking water standards, the fact is that the uranium and its decay products that were injected into the ground do not currently pose a significant threat to the public health or the environment. Given the characteristics of the groundwater, it is difficult to create a reasonable scenario in which that would change. Without a significant threat, there would be little basis for arguing in a legal challenge that remediation was needed.

Thank you for your efforts. If you have any technical questions, please contact John Mitchell, of our Bureau of Hazardous Waste & Radiation Management, at 518-402-8579.

Cordially,

James H. Eckl
Associate Attorney

This page intentionally left blank